TRADE & INDUSTRIAL POLICY STRATEGIES

INDUSTRY STUDY

Electronics Industry

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TIPS industry studies aim to provide a comprehensive overview of key trends in leading industries in South Africa. For each industry covered, working papers will be published on basic economic trends, including value added, employment, investment and market structure; trade by major product and country; impact on the environment as well as threats and opportunities arising from the climate crisis; and the implications of emerging technologies. The studies aim to provide background for policymakers and researchers, and to strengthen our understanding of current challenges and opportunities in each industry as a basis for a more strategic response.

This industry study examines global trade trends in the electronics industry, with a focus on South Africa's position in the global trade of electronic products.

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CONTENTS

Abbreviations 3
SECTION 1: MAPPING THE INDUSTRY 4
Executive summary 4
1. The electronics industry value chain 5
2. Contribution to the economy 9
3. Gross Fixed Capital Formation 11
4. International and domestic trade 13
4.1 Domestic trade in the electronics industry 13
4.2. Regional trade in electronic products 16
5. Employment 18
6. Functional inequality 19
7. Market structure of major companies 21
8. Main locations 22
SECTION 2: GOVERNANCE STRUCTURES AND STAKEHOLDERS 23
9. Government structures 23
10. Business associations and unions 26
11. Stakeholder engagement 29
12. Major policy and infrastructure initiatives 30
13. Main policy debates 32
14. SWOT Analysis 34
References 35

ABBREVIATIONS

AfCFTA	African Continental Free Trade Area
Arei	Association of Representatives for the Electronics Industry
dtic (the)	Department of Trade, Industry, and Competition
DEMP	Digital Economy Master Plan
DCDT	Department of Communications and Digital Technologies
DSI	Department of Science and Innovation
DTT	Broadcasting Digital Migration Policy (or Digital Terrestrial Television)
EDMASA	Electronics Developers and Manufacturers Association of South Africa
ETIC	Electro Technical Industry Cluster of South Africa
EU	European Union
eWASA	Electronic Waste Association of South Africa
GDP	Gross Domestic Product
GFCF	Gross Fixed Capital Formation
ICASA	Independent Communication Authority of South Africa
ICT	Information, Communications, and Technology
ICTU	Information Communication and Technology Union
IDC	Industrial Development Corporation
IoT	Internet of Things
IPAP	Industrial Policy Action Plan
IT	Information Technology
ITA	Information Technology Association
MDDA	Media Development and Diversity Agency
merSETA	Manufacturing, Engineering and Related Services Sector Education and Training Authority
MICT SETA	Media, Information and Communication Technologies Sector Education and Training Authority
NIPP	National Industrial Participation Programme
NUMSA	National Union of Metalworkers of South Africa
OEMs	Original Equipment Manufacturers
PCB	Printed Circuit Board
PC	Personal Computers
R&D	Research and development
SAEEC	South African Electrotechnical Export Council
SABS	South African Bureau of Standards
SACU	Southern African Customs Union
SADC	Southern African Development Community
SAIEE	South African Institute of Electrical Engineers
SMMEs	Small, Medium, and Micro Enterprises
SPI	Support Programme for Industrial Innovation
STB	Set-Top Box
TIA	Technology Innovation Agency
USAASA	Universal Service and Access Agency of South Africa
USAF	Universal Service and Access Fund
VAMCOSA	Valve and Actuator Manufacturers Cluster of South Africa

SECTION 1: MAPPING THE INDUSTRY

EXECUTIVE SUMMARY

The electronics industry is diverse, encompassing various sectors and products. The industry primarily manufactures consumer electronics, household appliances, and telecommunications equipment (including devices crucial for communication networks), and it includes the Information and Communication Technology (ICT) sector. The electronics industry encompasses the design, development, and manufacturing of electronic devices and components, while the ICT sector concentrates on utilising these electronic systems for processing, storing, and transmitting information. Products produced in this sector include smartphones, computers, televisions and radios, medical appliances and instruments, and control components used in sub-assemblies of modern machinery and equipment. This study relates primarily to ICT and professional equipment, including medical devices.

The electronics industry is growing and fuelling technological advancements worldwide, marking an era of digitalisation and automation in manufacturing. Conversely, South Africa's electronics sector remains relatively small. The country produces electronics on a smaller scale compared to many other upper-middle-income nations. It has struggled to expand beyond niche products and accounts for only 1% of global electronics exports. In comparison, China holds a 29% share, while Latin America represented 10% of the total electronics exports between 2018 and 2022.

The South African electronics industry (excluding computer and related services) contributed 0.18% to gross domestic product (GDP) in 2024, down from 0.29% in 2004. Over the past decade, production volumes in the electronics sector have essentially plateaued, while real sales have been in continuous decline since late 2012. Despite this stagnation, investments in the industry, measured by gross fixed capital formation, have surged since 1993, accounting for 0.2% of total investment in 2024. Notable downturns in investment were recorded in 2009 and 2021, likely attributed to the impacts of the global financial crisis and the COVID-19 pandemic, respectively.

In the trade market, South Africa remains a net importer of electronic products, with substantial import growth since the early 2000s, driven by rising demand for computers and smartphones. Despite this growth, electronics imports have consistently made up over 5% of South Africa's total imports over the past two decades (2003–2023). Key electronic components, such as semiconductors and capacitors, are provided by original equipment manufacturers (OEMs) to automotive producers in the automotive industry. Semiconductors are the most imported electronic components in South Africa, followed by capacitors, with the majority of these imports coming from China.

The electronics industry in South Africa has had a relatively small workforce, with fewer than 30 000 people employed in the sector between 2010 and 2023. In comparison, the computer and related services sector, which centres on software production and services for hardware, is larger, employing around 98 000 individuals during the same period. Employment within the industry is disproportionately white, and women represent a small portion of the workforce.

Functional inequality in the electronics industry is assessed by comparing gross operating surplus to employee compensation. In 2022, the share of remuneration (which includes executive pay) was 61% in the office and computing machinery sub-industry and 62% in the professional equipment sub-industry. The radio and communication apparatus sub-industry had the lowest share of remuneration, at 39%, during the same period.

The electronics value chain is primarily dominated by multinational corporations, with a few local manufacturers. Major global OEMs like Dell, HP, and Lenovo hold a strong presence in South Africa's consumer electronics sector, particularly in the laptop market. Nevertheless, publicly listed tech companies such as Mustek Limited, 4Sight Holdings Limited, Datatec Limited, and Business Connexion Group play a crucial role in software development and ICT services. Furthermore, in recent years, companies like Teraco, Vantage Data Centres, Dimension Data, Acronis, Microsoft, and Equinix have invested heavily in data centres across the country.

The Department of Trade, Industry, and Competition (the dtic) plays a key role in formulating initiatives and policies that support the electronics industry as part of South Africa's broader industrial policy and industrialisation efforts. Through a range of initiatives, incentives, and grant programmes, the dtic works to foster industry growth, innovation, and global competitiveness. Within the department, the Sectors Branch monitors the performance of strategic sectors such as electronics, which are vital to economic development and transformation. In addition, the dtic was instrumental in the initial coordination and development of the Digital Economy Master Plan (DEMP), which has since been mandated to the Department of Communications and Digital Technologies (DCDT) for implementation. In the telecommunications sector, the ICT Infrastructure Development and Support Programme is led by the DCDT. This initiative aims to expand access to reliable, affordable information and communication technologies, with a particular focus on addressing digital inequality in underserved provinces and rural communities.

The first section of this study examines the electronics value chain, while the second section focuses on the industry's performance and economic activity within the manufacturing sector and, where relevant, includes aspects of the computer and related services sector. The third section analyses investment trends in the industry. Subsequent sections explore South Africa's trade patterns, employment trends, functional inequality, market structure, and geographical distribution of the sector. The governance framework is addressed in section two, highlighting key stakeholders, as well as critical policy issues and ongoing debates. The study concludes with a SWOT analysis of the sector.

1. THE ELECTRONICS INDUSTRY VALUE CHAIN

This section provides a comprehensive breakdown of the electronics industry value chain. The electronics sector includes equipment designed to process and store information. The value chain begins with raw materials, which are converted into components, followed by assembly, integration, and installation, and then moves on to distribution and marketing. The process ends with post-sales services. In South Africa, production is primarily focused on assembly, with design and advanced technologies largely dominated by international OEMs, except for medical appliances.

Raw material sourcing and component manufacturing

The value chain starts with the extraction and production of raw materials, which involves mining, refining, and processing key minerals and metals like silicon, copper, silver, and cobalt, along with non-metallic materials such as ceramics and plastics. These materials are used to create microchips, capacitors, resistors, and other components essential to the electronics industry. These components are found in a variety of products, including computers, automobiles, smartphones, and medical scanners. Their widespread use drives innovation across multiple sectors, such as healthcare, automotive, aerospace, and defence, contributing to technological advancement and enhancing everyday life. In South Africa, while many raw materials are imported, local companies also participate in designing consumer products.

Component assembly

After the production of microchips, capacitors, resistors, and other essential components for building printed circuit boards (PCBs), the next step is component assembly. This process involves mounting and interconnecting these components onto a PCB or substrate using soldering or other joining techniques. PCB assembly is critical for attaching electronic components to the PCB, which is essential for linking and controlling various parts of an electronic device. PCBs are fundamental to all electronic products and play a vital role in their development, providing a foundation for assembling components that require precise integration during manufacturing.

In South Africa, several local companies specialise in PCB assembly, offering services such as PCB design, testing, and prototyping. These South African PCB assembly companies also export their services to other African countries (Winow New Energy Co., 2024) boasting full-scale production capabilities. In addition, companies in this sector may utilise either manual assembly or automated equipment, with manual assembly often being highly labour-intensive.

Product assembly

PCBs are essential to the production of electronic products. They are integrated into sub-assemblies for various industries and incorporated into a wide range of electronic devices, including smartphones, computers, televisions, medical equipment, automobiles, and industrial machinery. At this point in the value chain, different techniques are used to manufacture electronics. PCBs can also be sold to other sectors, such as capital equipment, machinery, and auto OEMs. The assembly process may either be outsourced to specialised manufacturers or handled in-house by OEMs, depending on the company's capabilities and specific needs.

Consumer electronics consist of a diverse range of devices equipped with electronic circuit boards designed to improve daily life for users. These products include items like televisions, smartphones, computers, and more. In South Africa, there is a heavy dependence on imports for consumer electronics, particularly computers and smartphones. The market is largely dominated by major multinational original equipment manufacturers, which often import products from their home countries and perform only assembly locally for regional export. Multinational companies typically outsource production to countries with lower labour costs, such as China and India, even though the production of set-top boxes (STBs) is designated for local manufacturing.

The Information Technology (IT) sub-industry plays a crucial role in integrating hardware and software, enhancing the storage, retrieval, and manipulation of data. This integration drives efficiency and innovation across various industries. Embedded software consists of specialised instructions stored in ROM (read-only memory) or flash memory chips, essential for the functioning of electronic devices, particularly those designed for specific tasks rather than general use. It is found in products such as cars, phones, robots, appliances, and medical devices. In more advanced applications, such as airplanes and process control systems, embedded software can be highly sophisticated, significantly improving performance. In South Africa, embedded software is integral to numerous electronic devices across different sectors, with several local companies specialising in developing and implementing these solutions.

In the medical appliances sub-industry, these devices are crucial for diagnosis, treatment, and surgery, often incorporating advanced electronic technologies. The private sector offers significant opportunities for further advancements in medical technology. Several companies in South Africa are committed to the manufacturing and development of innovative medical equipment.

In the automotive industry, a range of electronic subsystems and components are used in consumer, commercial, industrial, and military vehicles. These components include capacitors and resistors, with semiconductors being vital in modern vehicles. Semiconductors aid in electrification (electric vehicle technologies), enhance safety (through systems, i.e., collision-avoidance sensors and blind-spot detection), support connectivity (enabling technologies such as GPS and mapping), and improve vehicle handling. Additional electronic products include Electronic Control Units, Microcontrollers, and sensors.

Automotive electronics are provided by OEM suppliers as components for manufacturers or directly to consumers through aftermarket sales. Automotive OEM products are typically divided into powertrains and safety systems. In South Africa, the Automotive Master Plan 2035 highlights the necessity for modifications to powertrains and drivetrains within the local market and encourages the domestic automotive industry to become part of an evolving product development ecosystem, focusing on increasing value through specialised products, i.e., passive and active safety features. In electronic manufacturing, components are generally classified into passive and active technologies, each serving specific functions within electronic circuits.

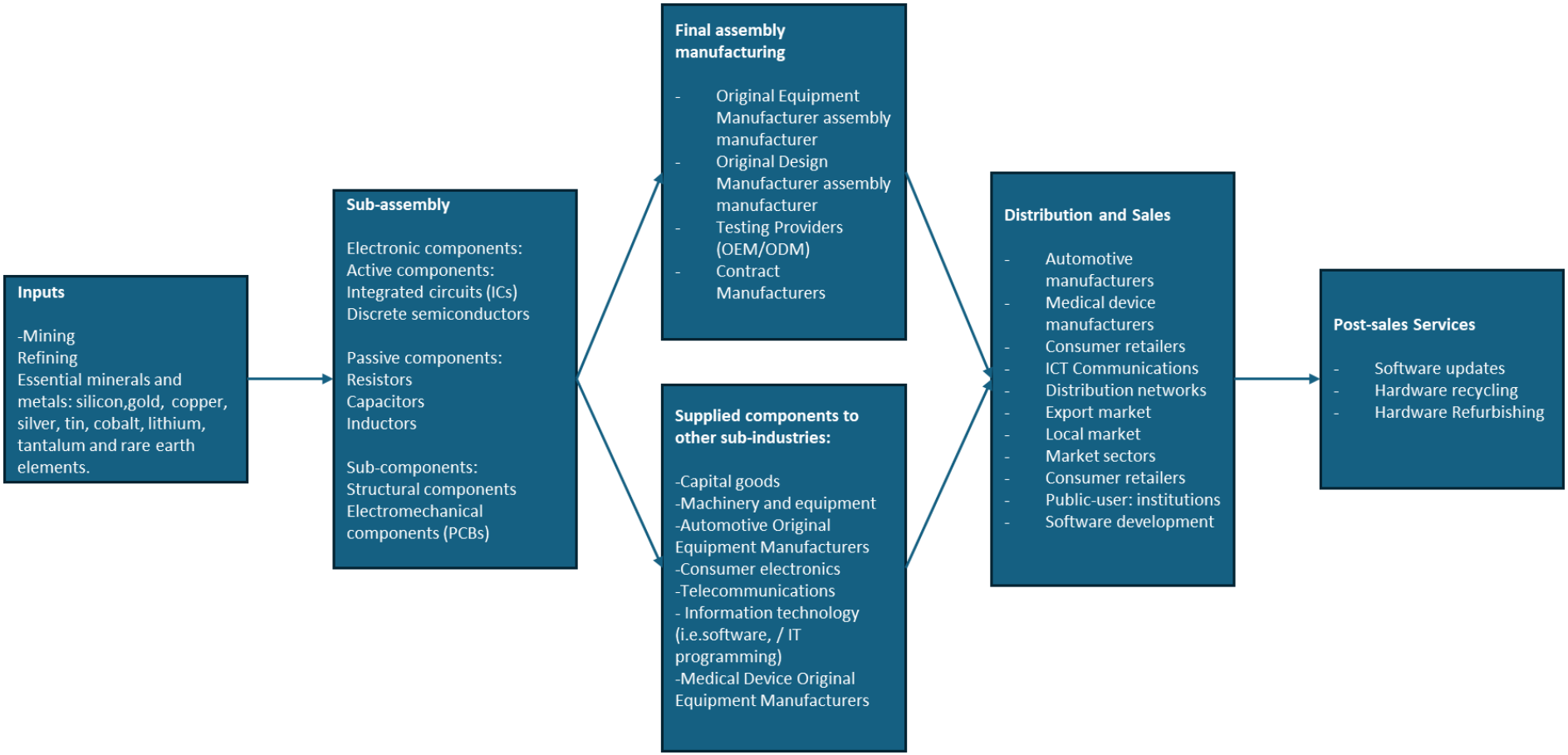
Distribution, sales, and post-sales

The final phase of this value chain is centered on distributing products to consumers and machinery and equipment manufacturers. Additionally, the post-sales stage plays a crucial role by providing essential services such as repairs, software updates, and hardware enhancements, all of which contribute to customer satisfaction and the extended lifespan of the product.

This research study examines the electronics industry, specifically SIC 37, which includes the manufacturing of radio, television, and communication equipment, as well as medical, precision, and optical instruments, watches, and clocks. The industry also encompasses information and communications technology, so the study will include computer-related activities (SIC 86) where applicable. Below is a list of electronic products categorised by their respective SIC codes.

- Office, accounting, and computing machinery (SIC 359).
- Radio, television, and communication apparatus (SIC 371-373).
- Medical appliances and instruments, optical instruments and photographic equipment, and watches and clocks (SIC 374-376).
- Computer and related services (SIC 86).

Figure 1: The electronics industry value chain



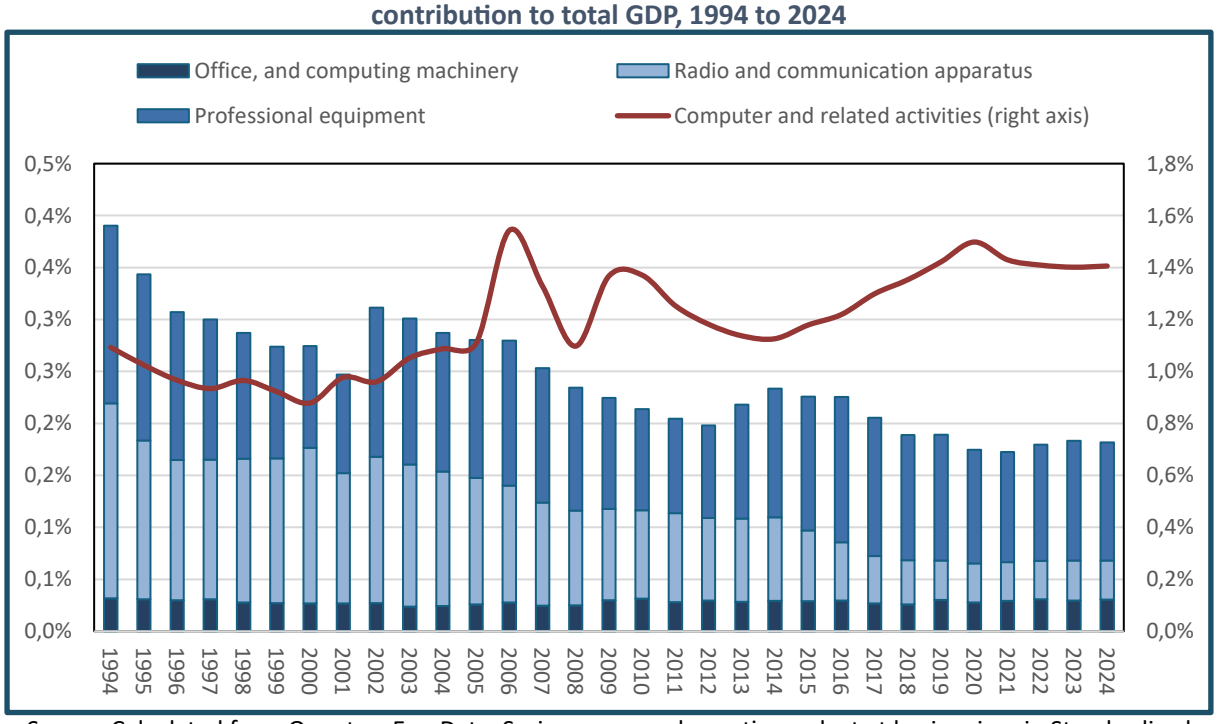
Source: Adopted from Coote and Coetzee, 2005, and the dtic, 2010.

2. CONTRIBUTION TO THE ECONOMY

In the three decades from 1994 to 2024, the strongest growth in the electronics industry was in the computer and related services sector (including software production and services for hardware-related services). In contrast, the office and computing machinery sub-industry maintained the smallest share of GDP, with modest yet steady improvements. Production trends were volatile between 2004 to 2024, including notable declines in 2015 across both the radio and communication equipment and professional equipment sub-industries (in real terms). Additionally, since 2012, the industry has experienced a sustained decline in sales, in constant rands. This section provides a detailed analysis of the economic contribution of the electronics industry.

South Africa's electronics industry has shown fluctuating contributions to GDP over the past 30 years (). Within electronics manufacturing, the professional equipment sub-industry, comprising medical devices, optical instruments, and timekeeping equipment such as watches and clocks, has remained relatively stable, ranging between 0.1% and 0.17%. However, it has not exceeded its 1994 peak of 0.17%, declining to 0.11% by 2024. The radio and communication apparatus sub-industry, including radio receivers, television sets, mobile phones, set-top boxes, and related devices, experienced a sharp decline from 0.18% in 1994 to just 0.03% in 2024, with a significant drop after 2006. The office and computing machinery sub-industry, primarily encompassing computers and laptops, has consistently contributed less than 0.04% of GDP, despite modest growth in recent years. In contrast, the computer and related services sub-industry has shown robust and sustained growth, surging from 1.2% in 1994 to around 1.4% in 2024, reflecting the ongoing expansion in IT and digital services.

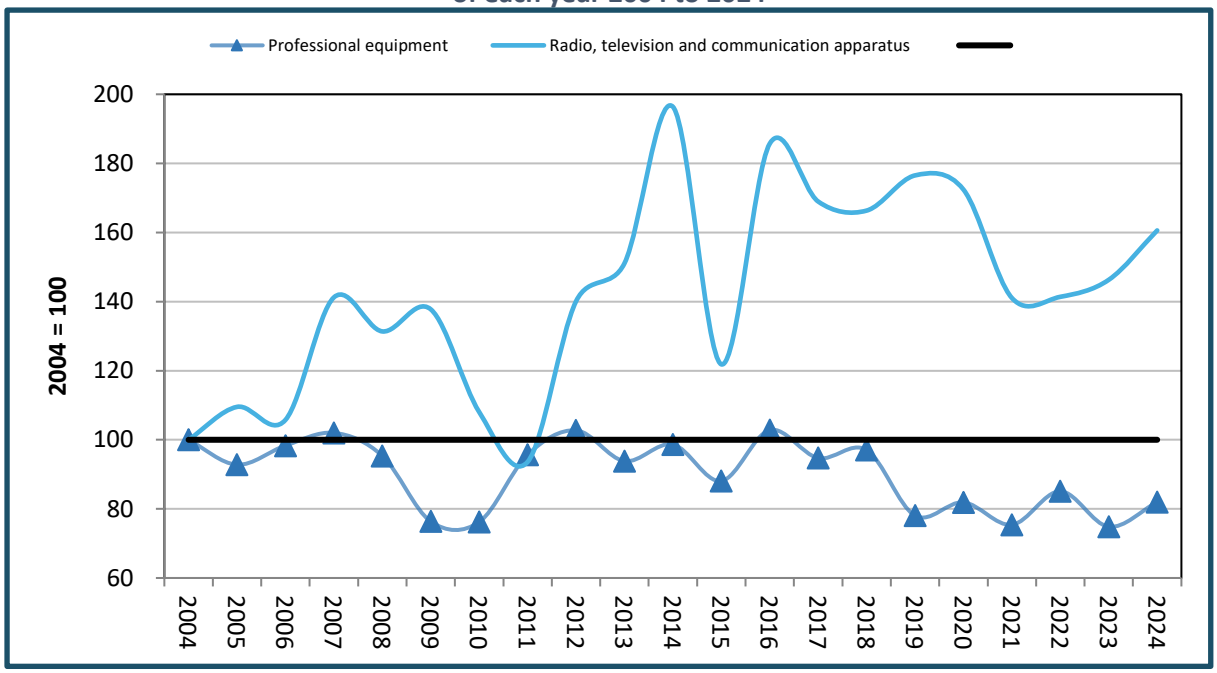
Graph 1: Gross domestic product (GDP) of office, accounting, and computing, radio, television, and communication apparatus, and professional equipment as a percentage contribution to total GDP, 1994 to 2024



Source: Calculated from Quantec, EasyData. Series on gross domestic product at basic prices in Standardised Industry Series. Accessed at www.easydata.co.za in June 2025. *Note:* Reflated with CPI rebased to 2024.

Graph 2 highlights production trends in the electronics industry over the past decade, specifically within two sub-industries: radio, television, and communication apparatus, and professional equipment. In 2011, radio and communication apparatus production declined by 6%, reaching its lowest output volume in the past decade. This downturn is attributed to a sluggish global economic recovery following the 2009 recession, which affected South Africa and potentially dampened demand for manufactured goods, including communication devices. Although production rebounded by 14%, increasing from 141 000 units in December 2021 to 161 000 units in December 2024, it has remained stable at an average of 147 000 units in the post-COVID-19 period, still below the pre-pandemic average of 164 000 units recorded between late 2012 and December 2020. Similarly, the production of professional equipment has fluctuated since the early 2000s but has consistently remained below the 125 000 unit baseline set in 2004. Additionally, its output has shown minimal growth, stagnating between late 2019 and December 2024.

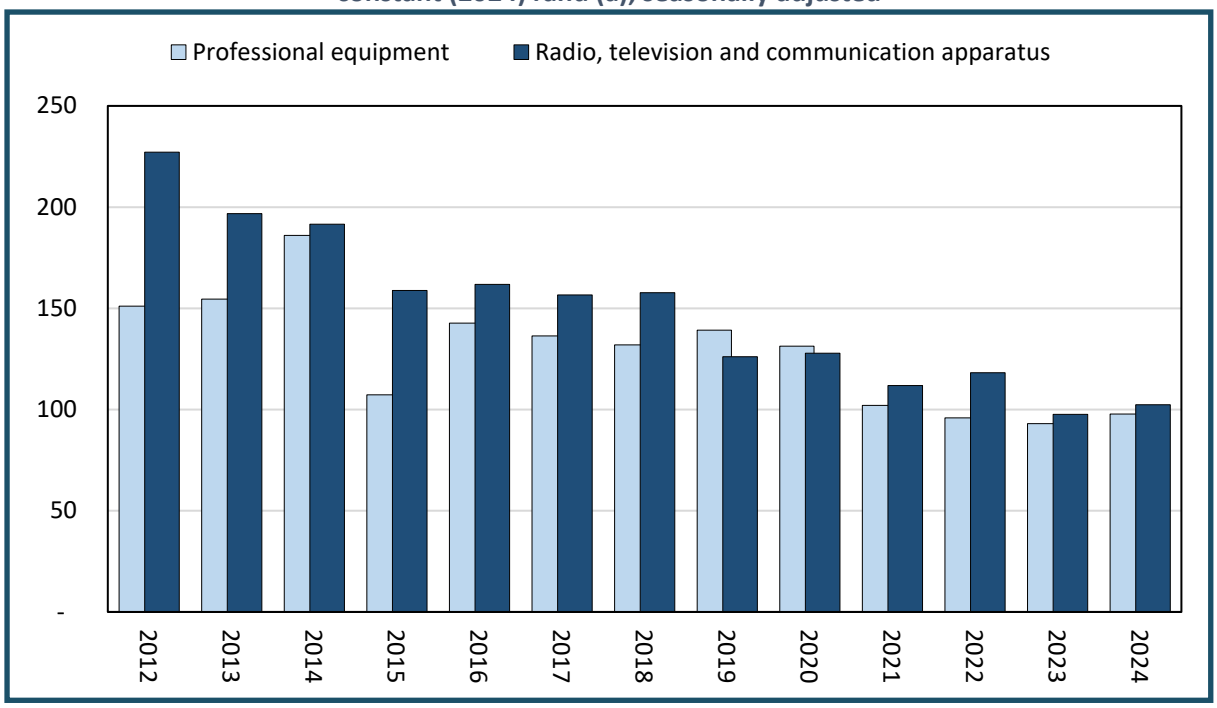
Graph 2: Professional equipment and Radio, television, and communication apparatus volume index production (December 2004 = 100), seasonally adjusted, December of each year 2004 to 2024



Source: Calculated from Statistics South Africa. Manufacturing: Production and Sales, December 2024. Accessed at www.statssa.gov.za in February 2025. *Note:* Monthly data averaged for index.

The electronics industry has faced a continuous decline in sales (in constant rands) since late 2012 (refer to Graph 3). The radio and communication apparatus sub-industry saw a sharp 55% drop, falling from a peak of R227 billion in December 2012 to R102 billion by December 2024. Similarly, sales in the professional equipment sub-industry have been declining since late 2012, with a 47% decline from a peak of R186 billion in late 2014 to R98 billion in late 2024. Despite the decline, sales of radio and communication apparatus have consistently remained higher than those of professional equipment over the past 12 years.

Graph 3: Sales by professional equipment and radio, television, and communication apparatus subindustries from 2012 to 2024, December, in billions of constant (2024) rand (a), seasonally adjusted



Source: Calculated from Statistics South Africa. Manufacturing: Production and Sales, December 2024. Accessed at www.statssa.gov.za in February 2025. *Note:* (a) Reflated with PPI rebased to December 2024.

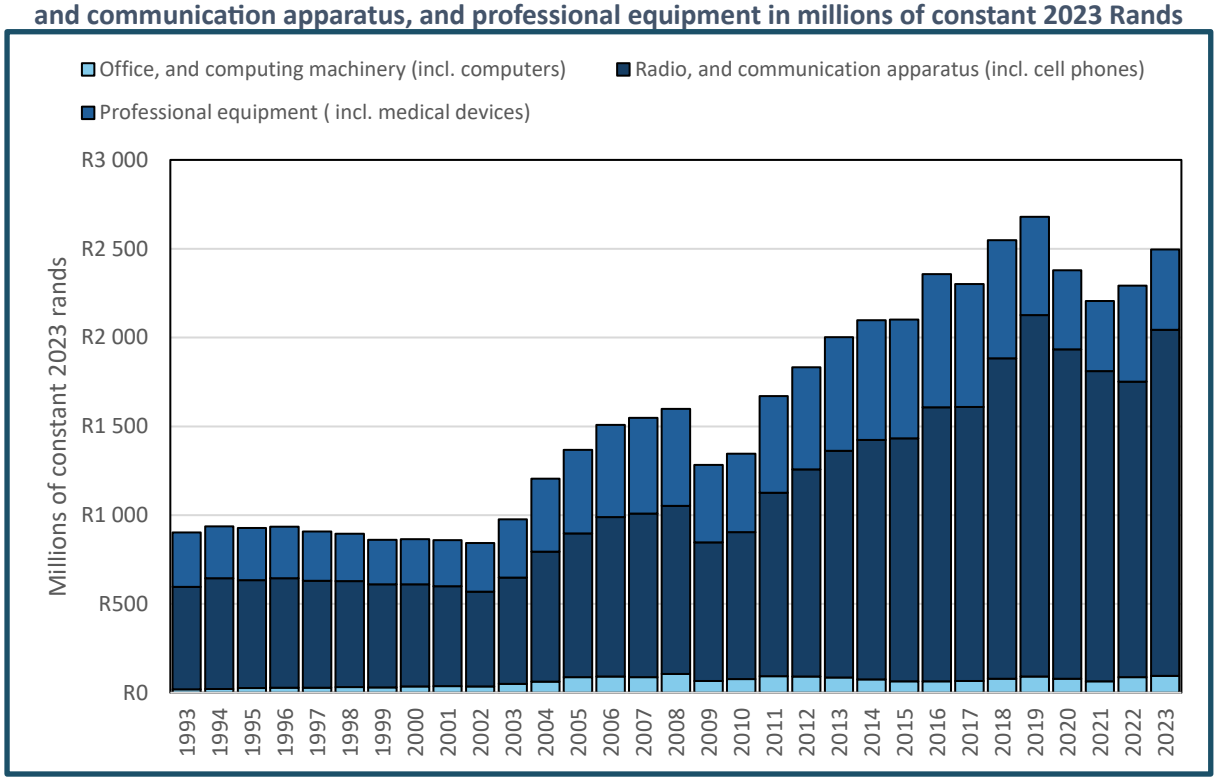
3. GROSS FIXED CAPITAL FORMATION

Gross fixed capital formation (GFCF) in the electronics industry showed a general upward trend between 1993 and 2018, after which it plateaued. In contrast, significant drops occurred in 2009 and 2021, presumably driven by the impact of the global financial

crisis and the COVID-19 pandemic. Overall, the electronics industry's share of total manufacturing investment remains low, accounting for less than 2%. This section explores investment patterns electronics industry in more detail. Graph 4 illustrates investment trends in the electronics industry over the past 30 years. In real terms, the largest investments are in the radio and communications apparatus sub-industry, while the office and machinery sector, including computers, receives the least. Since the early 1990s, investments in radio and communication apparatus have grown significantly, with gross fixed formation averaging R1 billion over the period. Conversely, investments in professional equipment, such as medical devices and optical instruments, have experienced volatility with a downward trend emerging since 2017.

Overall, the electronics industry is prone to external shocks, with notable declines occurring during 2009/2010 and 2020/2021, presumably due to the global financial crisis and the COVID-19 pandemic, respectively. The office and communication equipment sector experienced the steepest declines, with investments falling by 37% from R106 million in 2008 to R67 million in 2009, and an 18% decline from R79 million in 2020 to R65 million in 2021. However, investments in this sector have since rebounded in 2023, indicating a recovery in the market.

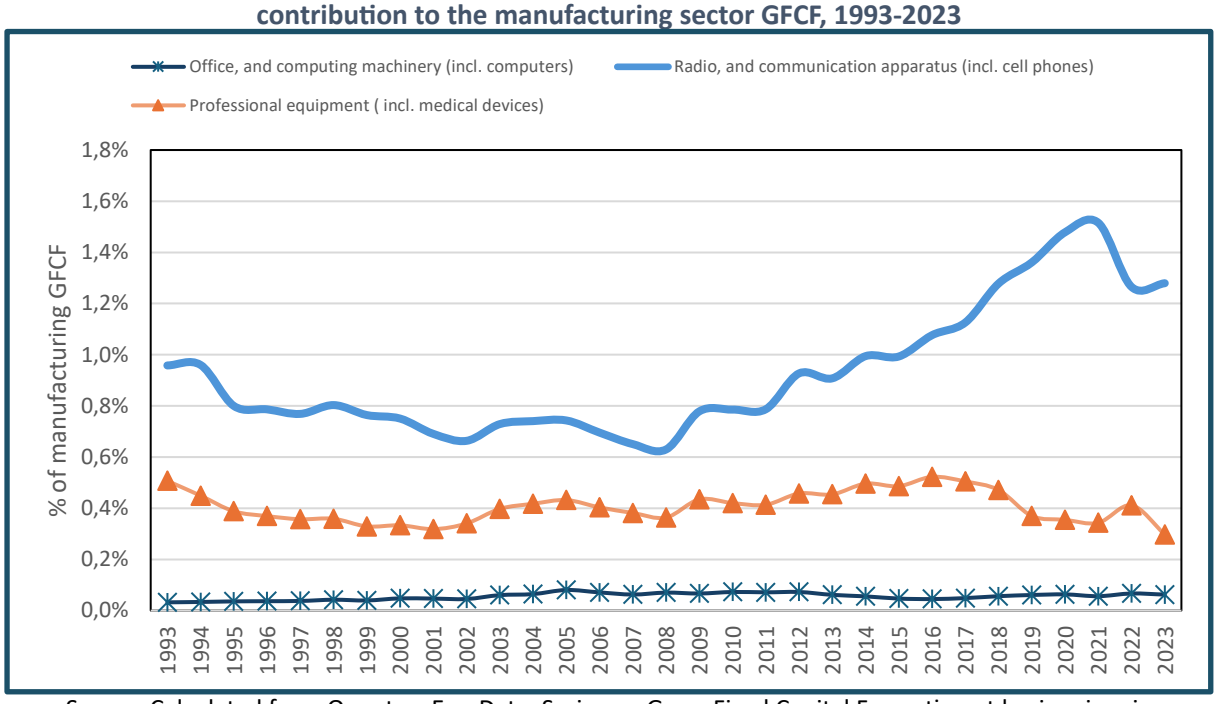
Graph 4: Gross fixed capital formation of office, accounting, and computing, radio, television, and communication apparatus, and professional equipment in millions of constant 2023 Rands



Source: Calculated from Quantec, EasyData. Series on Gross Fixed Capital Formation at basic prices in Standard Industry Service. Accessed at www.easydata.co.za in June 2024. *Note:* Calculated industry deflators using their current and 2015 Rand figures, then rebased the deflators to 2023 and applied it to the current prices.

The electronics industry has made only a modest contribution to overall manufacturing investment, averaging around 1% over the past 30 years. Within the industry, the radio and communications subsector (including mobile phones) accounts for the largest share of this investment, reinforcing earlier observations that this subsector dominates electronics-related investment spending. Its average contribution to total manufacturing investment has remained around 1% over the period. In comparison, the professional equipment sub-industry, which includes medical appliances, optical instruments, and watches and clocks, has remained steady with a contribution of about 0.4%, both before and after major economic disruptions. While the office and communication apparatus sub-industry (including computers and laptops) continues to make only a slight contribution to overall manufacturing investment (Graph 5).

Graph 5: Gross fixed capital formation of office, accounting, and computing, radio, television, and communication apparatus, and professional equipment as a percentage contribution to the manufacturing sector GFCF, 1993-2023



Source: Calculated from Quantec, EasyData. Series on Gross Fixed Capital Formation at basic prices in Standard Industry Service. Accessed at www.easydata.co.za in June 2024.

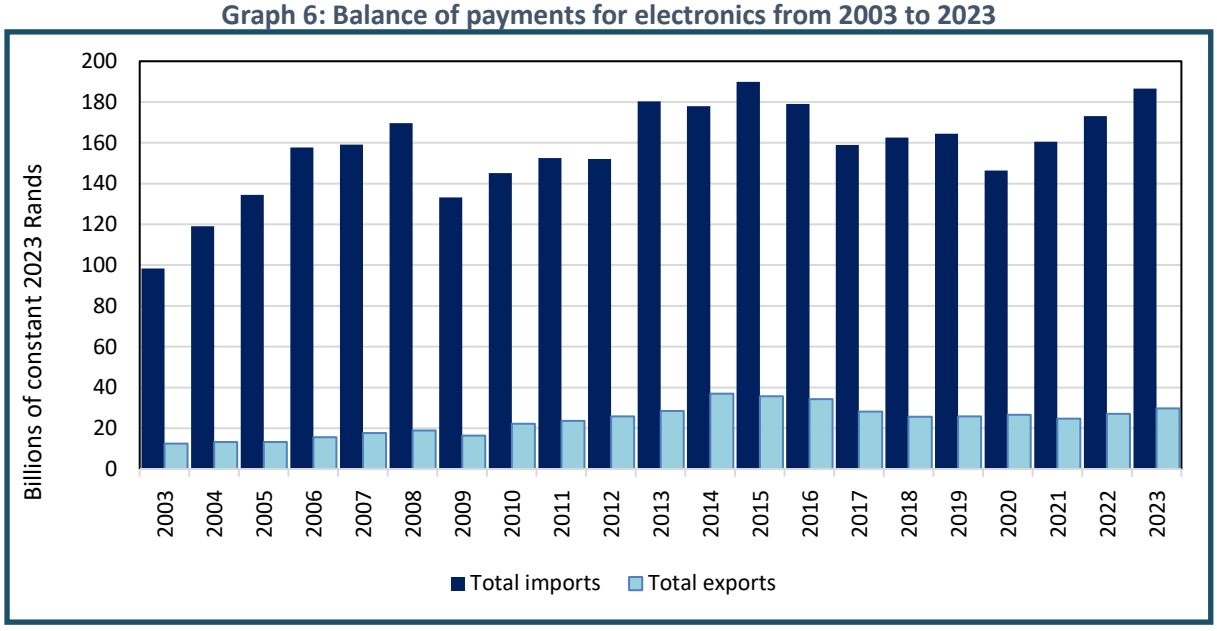
4. INTERNATIONAL AND DOMESTIC TRADE

South Africa's electronics industry relies heavily on imports, which grew steadily from 2003 to 2023. Smartphones and telephones are the most imported products, exceeding computers and medical appliances and instruments (including devices for measuring, checking, testing, navigating, and other purposes, excluding optical instruments). However, electronics account for only a small share of the country's total imports. Essential electronic components, including semiconductors and capacitors, and other key parts, are supplied by original equipment manufacturers to automotive producers, making it important to account for these imports in Section 4.1.1. With exports, South Africa mainly ships medical appliances and instruments. China is the leading supplier of electronics to South Africa, while the country primarily exports to African economies. This Section 4 analyses both international and domestic trade trends in the electronics sector.

4.1 Domestic trade in the electronics industry

South Africa's electronics industry has been grappling with a persistent trade imbalance, transitioning to a net importer since the early 2000s (refer to Gra[h 6). While import levels have generally remained high, significant declines were recorded in 2003, 2017, and 2020. In real terms, the sharpest drop occurred in 2009, when imports fell by 21% from R170 billion in 2008 to R133 billion, largely due to the impact of the global financial crisis. Conversely, the industry showed unexpected resilience during the COVID-19 pandemic, with exports increasing by 3% in 2020, despite an 11% decline in imports. The export market saw substantial growth in 2010, rising by 35% from R16 billion in 2009 to R22 billion, likely driven by demand linked to the 2010 FIFA World Cup. Another major surge occurred in 2014, when exports increased by 30%, reaching a peak of R37 billion, up from R29 billion in 2013. Although exports declined by 7% in 2021 amid ongoing pandemic-related disruptions, they have since recovered, with an average growth rate of 10% between 2022 and 2023.

Graph 6: Balance of payments for electronics from 2003 to 2023

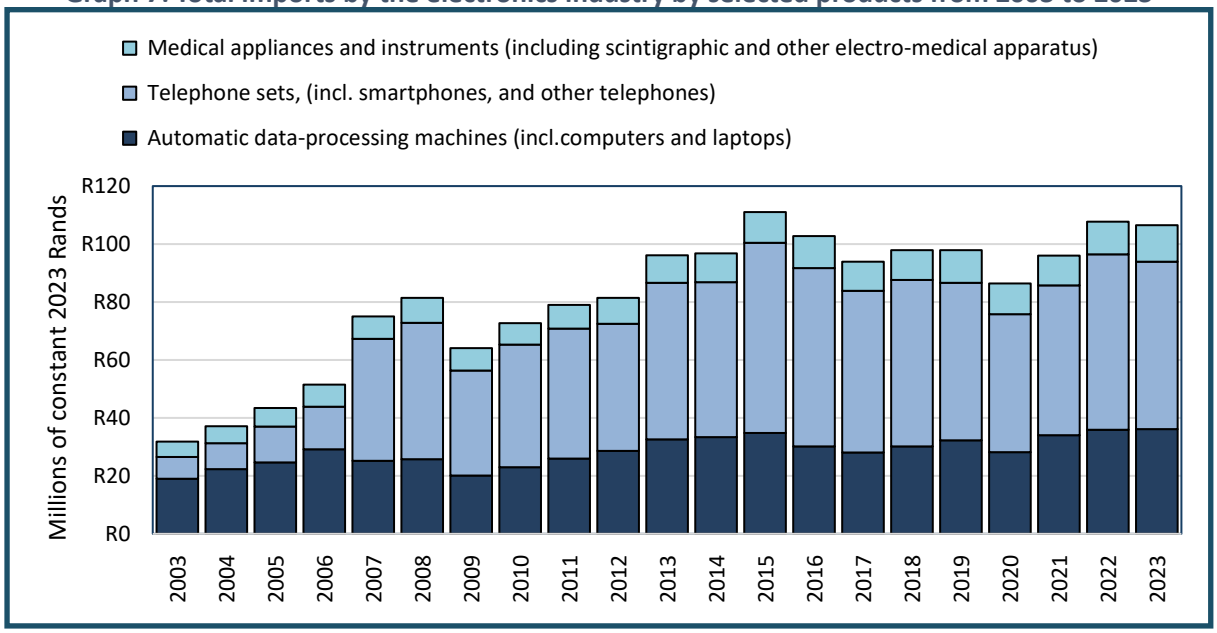


Source: Calculated from Quantec, EasyData. Series on RSA National Trade in International Trade Service. Accessed at www.easydata.co.za in June 2024. *Note:* Reflated with CPI rebased to 2023.

4.1.1 Domestic imports of electronic products

Smartphones, other telephones, and computers are the most imported electronic products, exceeding medical appliances and instruments, including scintigraphy and other electro-medical devices (refer to Graph 7). Since 2003, smartphone imports have surged significantly, increasing from approximately R7 million in constant Rands to around R58 million in 2023. Similarly, the demand for computers expanded from R19 million in 1993 to roughly R36 million in 2023. In addition, imports of medical appliances and instruments also grew in real terms, from R5 million in 2003 to R13 million in 2023.

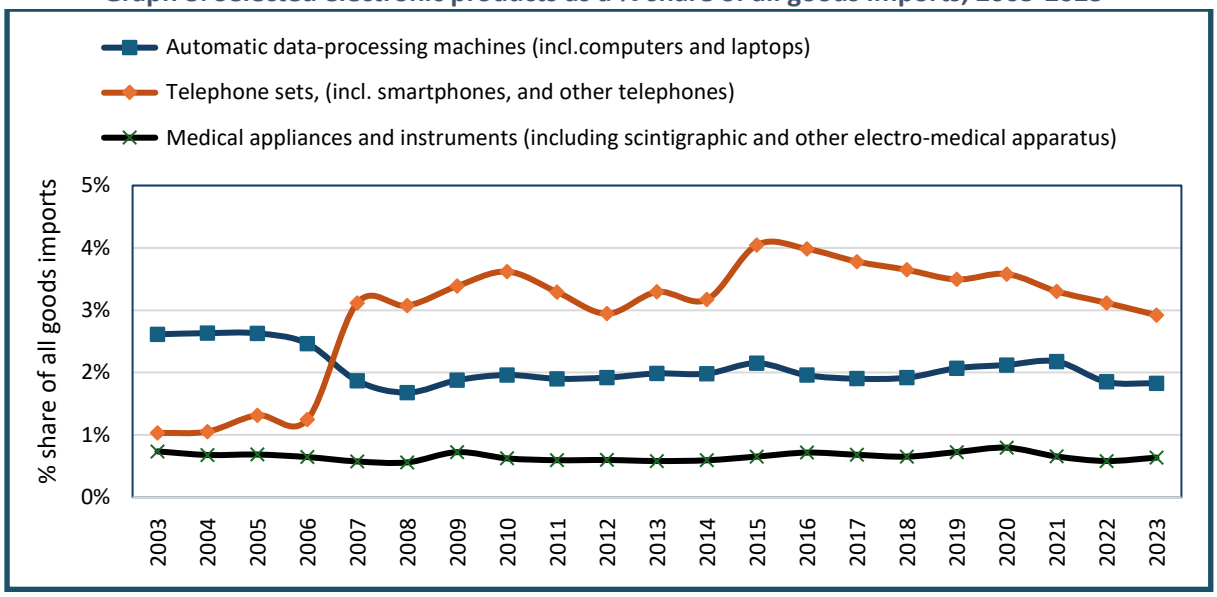
Graph 7: Total imports by the electronics industry by selected products from 2003 to 2023



Source: Calculated from ITC Trade Map data. Accessed at www.trademap.org in October 2024. *Note*: Rebased, using CPI data from Stats SA. Instruments and appliances used in medical, surgical, dental or veterinary sciences, including scintigraphic apparatus, other electro-medical apparatus, and sight-testing instruments n.e.s (HS 9018). Automatic data-processing machines and units thereof; magnetic or optical readers, machines (i.e., computers, laptops, barcode readers, magnetic tap readers, scanners, credit card readers, optical character recognition machines) (HS 8471).

Graph 8 shows imports of electronic products have constituted a small portion of South Africa's total imports, averaging around 5% over the past two decades, between 2003 and 2023. Since 2007, the share of smartphone and telephone imports has climbed, indicating a growing consumer demand. In addition, imports of computers and laptops have averaged about 2% over the same period. In contrast, imports of medical instruments and appliances have remained relatively stable at approximately 1%.

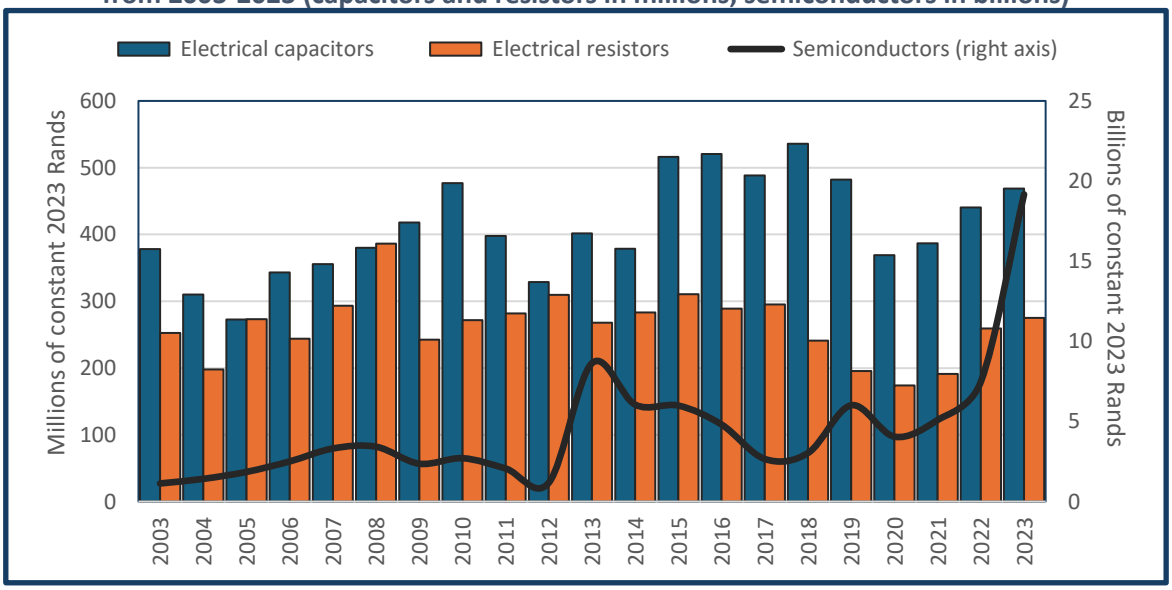
Graph 8: Selected electronic products as a % share of all goods imports, 2003-2023



Source: Calculated from ITC Trade Map data. Accessed at www.trademap.org in October 2024.
Note: Rebased, using CPI data from Stats SA.

Electronic components essential for automobile production include capacitors, resistors, semiconductors, and other related parts. These components are primarily supplied by original automotive equipment manufacturers to automotive producers. As depicted in Graph 9, semiconductors are the most imported electronic components in South Africa, followed by capacitors. In 2023, China emerged as the leading exporter of these components, supplying 88% of semiconductors, 43% of capacitors, and 29% of resistors to South Africa.

Graph 9: Total imports of selected electronic components used in automobile production from 2003-2023 (capacitors and resistors in millions; semiconductors in billions)

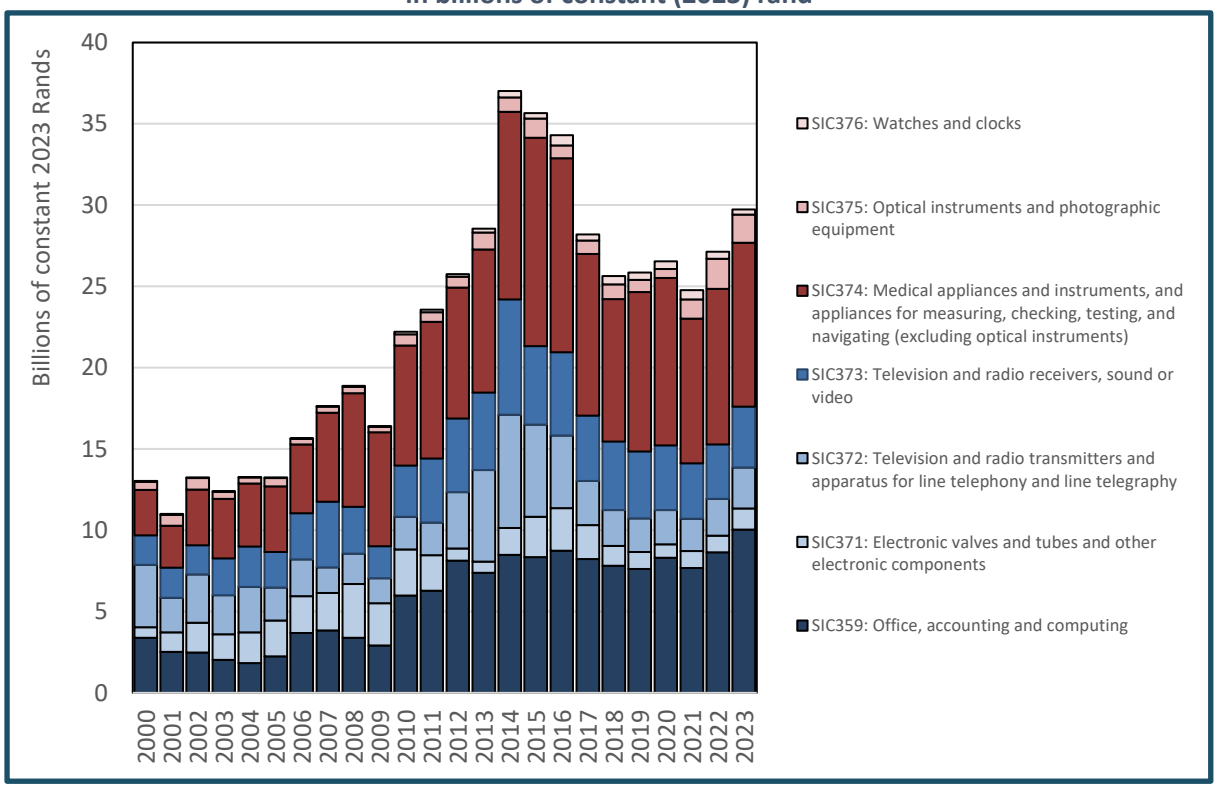


Source: Calculated from Quantec, EasyData. Series on RSA National Trade in International Trade Service. Accessed at www.easydata.co.za in June 2024. *Note*: Reflated with CPI rebased to 2023.

4.1.2. Domestic exports of electronic products

Exports experienced substantial growth from the early 2000s, reaching a peak of R37 billion in 2014. South Africa primarily exports medical appliances and instruments (including devices for measuring, checking, testing, navigating, and other purposes, excluding optical instruments), which accounted for an average of 33% of total electronics exports over the past 23 years. In addition, office and computing products contributed 25% of exports, while television and radio receivers contributed 16%, and television and radio transmitters accounted for 14%. Overall, exports have increased since the post-global financial crisis period in 2009 (refer to Graph 10).

Graph 10: Total exports in the electronics industry by product 2000-2023, in billions of constant (2023) rand



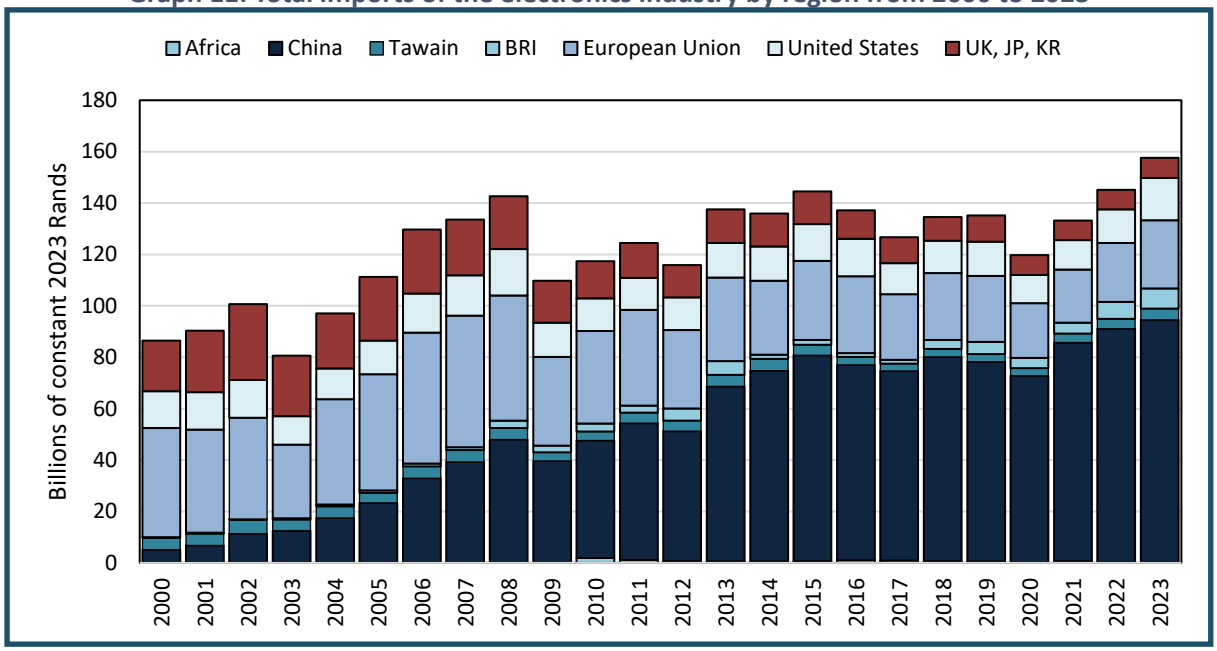
Source: Calculated from Quantec, EasyData. Series on RSA National Trade in International Trade Service. Accessed at www.easydata.co.za in June 2024. *Note*: Reflated with CPI rebased to 2023.

4.2. Regional trade in electronic products

China is the leading supplier of electronics to South Africa, while the country primarily exports to African economies. The following Section 4.2 analyses regional goods trade in the electronics industry.

Since the early 2000s, South Africa primarily imported electronic products from the European Union (EU) until China emerged as the dominant supplier in 2009 (refer to Graph 11). Prior to the global financial crisis, the EU accounted for approximately 40% of South Africa's electronic imports, while China held an 18% share. Nonetheless, in the aftermath of the crisis, demand shifted toward China, which now supplies over half of South Africa's electronic imports, while the EU's share has declined to below 25%. China's electronic exports to South Africa are dominated by office and computing machinery, like computers and laptops, which have accounted for an average of 49% (in constant 2023 rands) of total electronics imports from China over the past 23 years. Television and radio transmission equipment, including broadcasting transmitters and radio towers, has made up an additional 21% on average in real terms. This shift in import patterns likely reflects China's rapid expansion in electronics manufacturing since 2003. In contrast, the United States has contributed an average of 11% to South Africa's electronics imports, while Brazil, Russia, and India combined have accounted for just 2%.

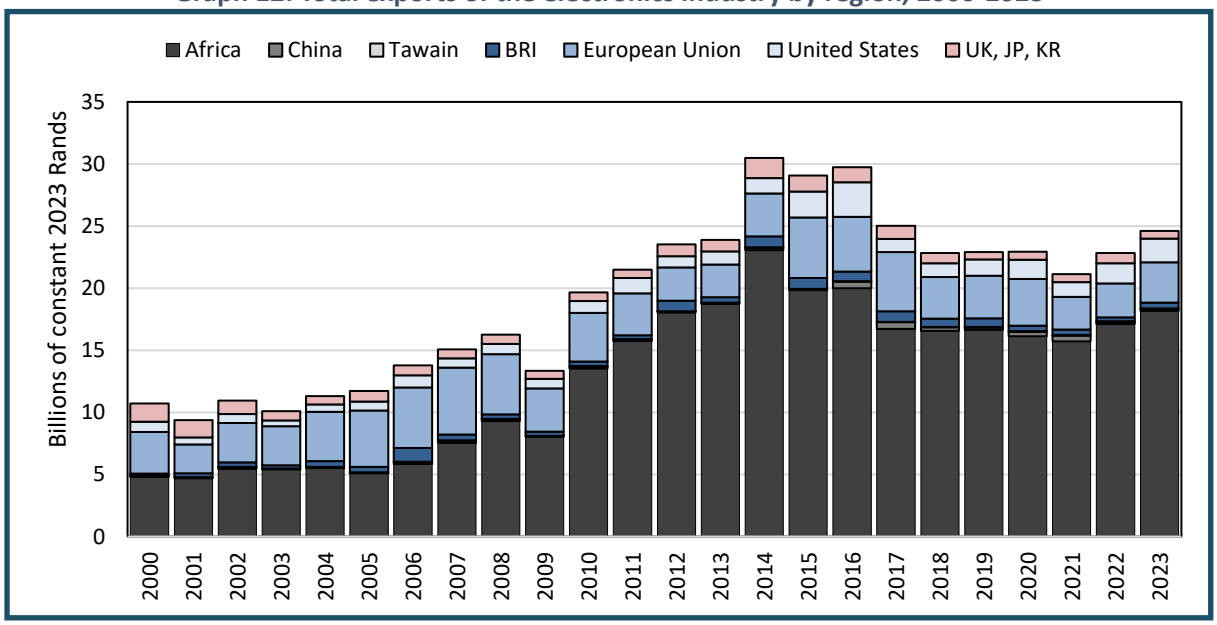
Graph 11: Total imports of the electronics industry by region from 2000 to 2023



Source: Calculated from Quantec, EasyData. Series on RSA National Trade in International Trade Service. Accessed at www.easydata.co.za in June 2024. *Note*: Reflated with CPI rebased to 2023.

Graph 12 shows that South Africa primarily exports electronic products to other African countries. Since the COVID-19 period, over 70% of electronic exports were directed to the continent, with the highest demand for medical appliances and instruments medical appliances and instruments (including devices used for measuring, checking, testing, navigating, and other purposes, excluding optical instruments), as well as office and computing apparatus, like computers and laptops. The European Union also serves as a key export partner. Between 2000 and 2023, South Africa's exported electronic products included medical appliances and instruments, which accounted for an average of 34% of total exports. This was followed by office and communication machinery at 21%, electronic valves and components at 19%, and television and radio receivers at 15%.

Graph 12: Total exports of the electronics industry by region, 2000-2023



Source: Calculated from Quantec, EasyData. Series on RSA National Trade in International Trade Service. Accessed at www.easydata.co.za in June 2024. Note: Reflated with CPI rebased to 2023.

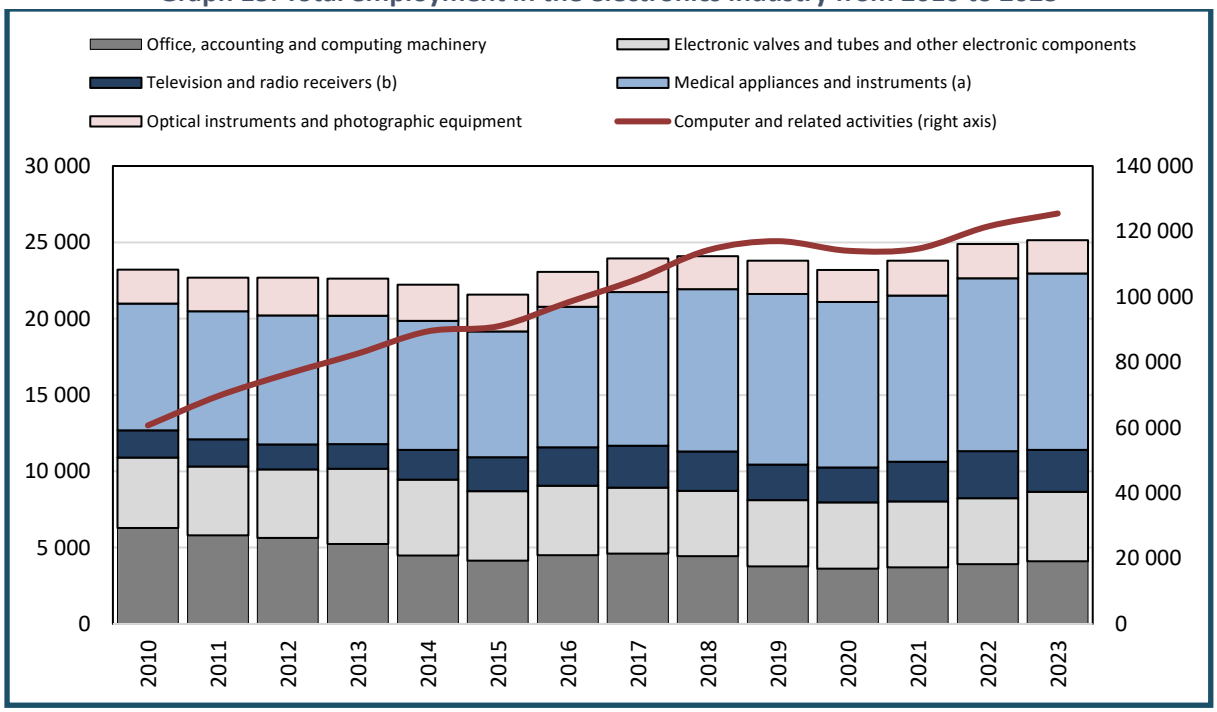
5. EMPLOYMENT

The electronics industry employs a relatively small workforce in South Africa, whereas the ICT services sector, measured by computer and related activities, is significantly larger. Employment in the industry is disproportionately white, with a lower representation of women. This section examines employment trends and provides an analysis of the industry.

Employment in the electronics industry is primarily concentrated in medical appliances and instruments (including appliances for measuring, checking, testing, navigating, and other purposes, excluding optical instruments), averaging around 9 000 jobs between 2010 and 2023.

The small number means that the sample in the Quarterly Labour Force Survey is too small for reliable analysis, although some long-run trends emerge. Employment in computer and related services (including technical support) is, however, much larger. It has surged since 2017, reaching over 100 000 employees during that period (Graph 13).

Graph 13: Total employment in the electronics industry from 2010 to 2023

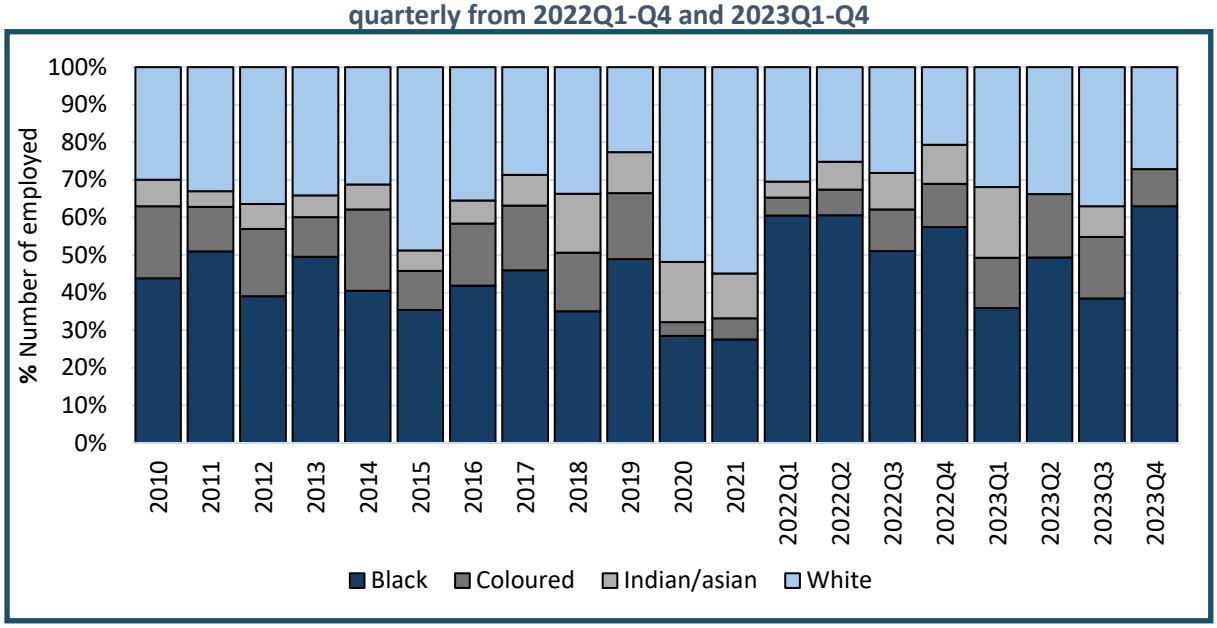


Source: Statistics South Africa. Quarterly Employment Statistics (QES) March 2024. Accessed on www.statssa.gov.za in October 2024. *Note*: (a) Medical appliances and instruments include appliances for measuring, checking, testing, navigating, and for other purposes, except optical instruments. (b) Television and radio receivers, sound or video recording or reproducing apparatus, and associated goods. Employment by computer-related activities is measured by QES-surveyed large enterprises. It is representative of a sample of large enterprise employment and does not include self-employed businesses and those in formal sector small-medium enterprises.

Employment in the industry is disproportionately white, as Gra[h 14 depicts.

White people made up around 30% of the electronics workforce, although their share of the population is now below 10%.

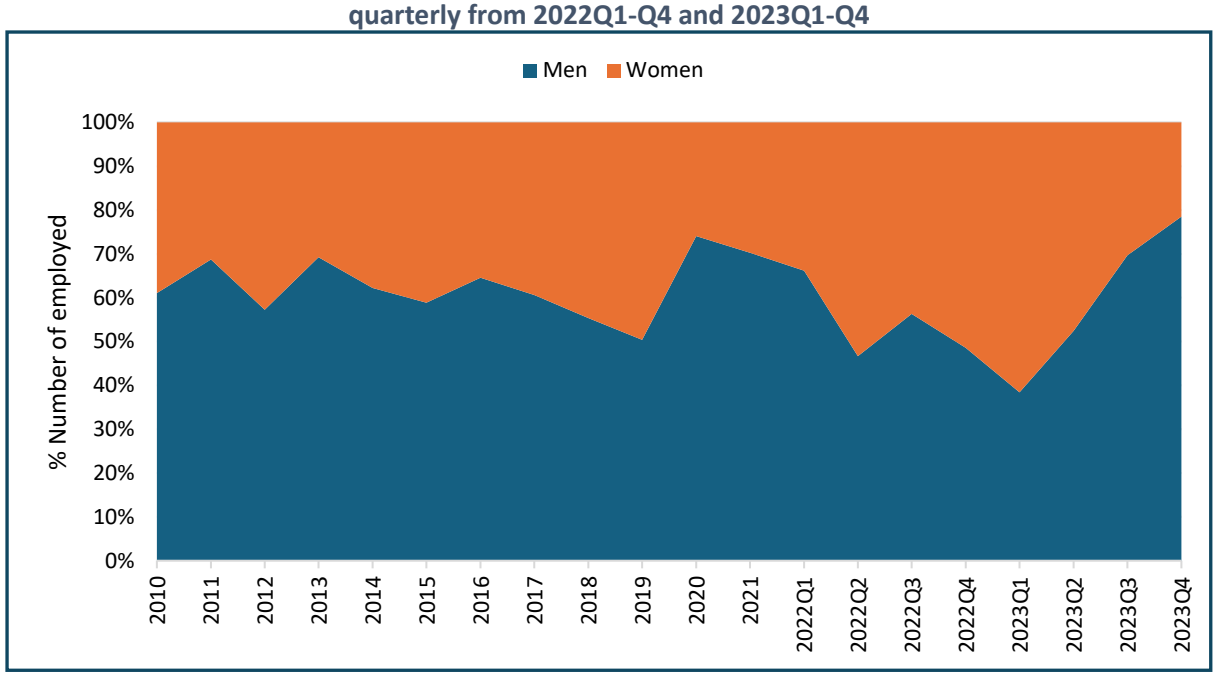
Graph 14: Employment by race in the electronics industry annually from 2010 to 2021, quarterly from 2022Q1-Q4 and 2023Q1-Q4



Source: Calculated from Statistics South Africa. Labour Market Dynamics. Series on employment by industry. Electronic databases. Accessed at Nesstar: www.statssa.gov.za in June 2024.

Graph 15 illustrates that women account for roughly one-third of employment in the electronics industry, a proportion that is generally consistent with the overall trend in formal employment.

Graph 15: Employment by gender in the electronics industry annually from 2010 to 2021, quarterly from 2022Q1-Q4 and 2023Q1-Q4



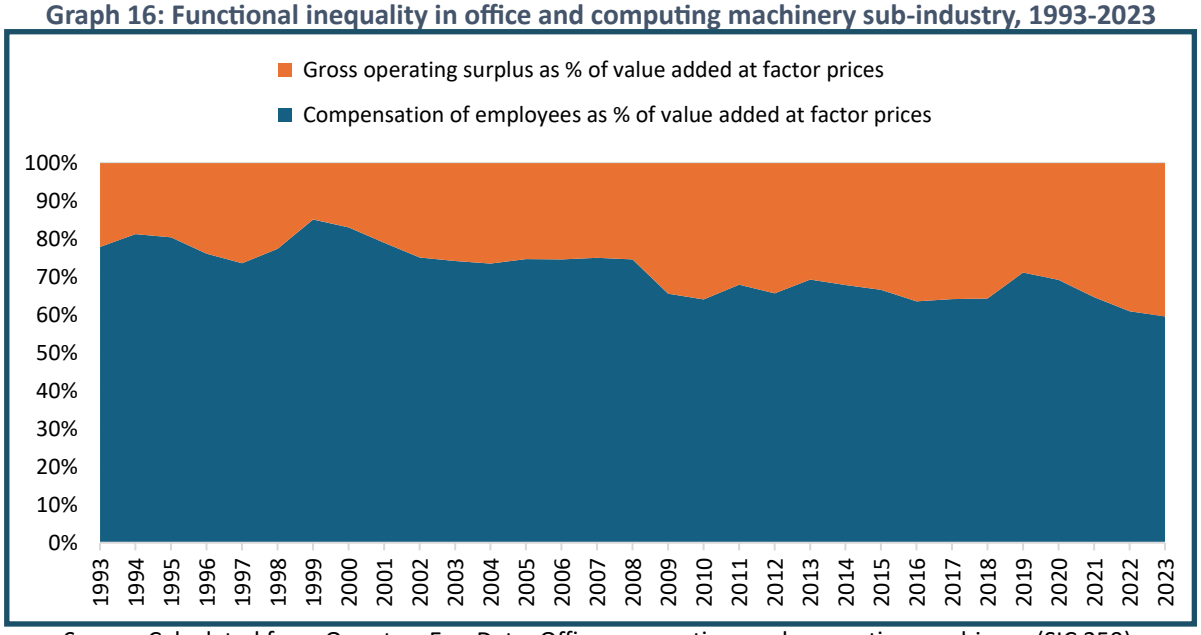
Source: Statistics South Africa. Labour Market Dynamics, 2010 – 2021 and Quarterly Labour Force Survey, 2022Q1 – 2023Q4. Series on employment by education qualification. Electronic databases. Accessed at Nesstar: www.statssa.gov.za in June 2024.

6. FUNCTIONAL INEQUALITY

Graph 16 compares the gross operating surplus with the compensation of employees in office equipment. The share of remuneration (including executive pay) was 61% in 2022, down from

approximately 80% in the 1990s. This contrasts with 46% for the rest of manufacturing and 51% for the economy as a whole. In 2023, the share of remuneration saw a slight decline of 2%.

Graph 16: Functional inequality in office and computing machinery sub-industry, 1993-2023

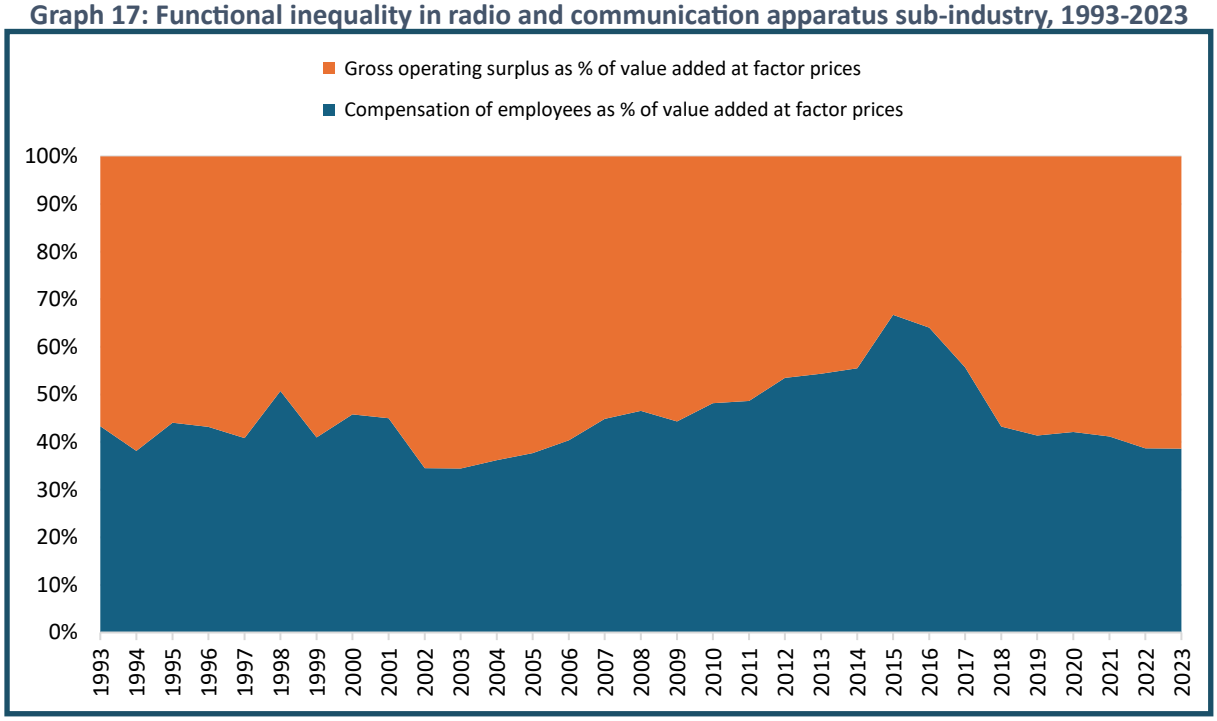


Source: Calculated from Quantec, EasyData. Office, accounting, and computing machinery (SIC 359); Standardised Industry series. Accessed at www.easydata.co.za in June 2024.

Graph 17 analyses the relationship between the gross operating surplus and employee compensation in the radio and communication apparatus sector. In 2022, remuneration, including executive pay, accounted for 39%, reflecting a slight decline from the 1990s.

The sector shows minor variations compared to overall manufacturing and the broader economy. In 2023, the share of remuneration remained steady at 39%.

Graph 17: Functional inequality in radio and communication apparatus sub-industry, 1993-2023

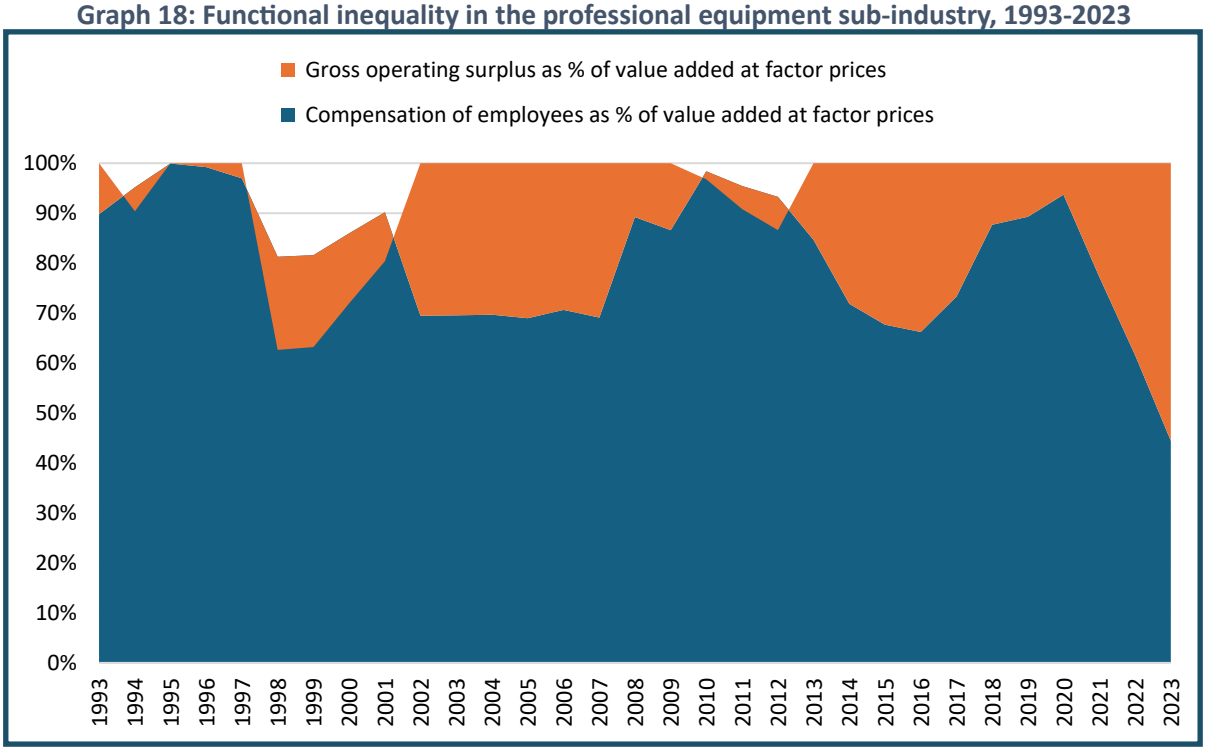


Source: Calculated from Quantec, EasyData. Radio, television, and communication apparatus (QSIC 371-373); Standardised Industry series. Accessed at www.easydata.co.za in June 2024.

Graph 18 compares the gross operating surplus with the compensation of employees in the professional equipment sector, including medical appliances, instruments, and devices for measuring, checking, and testing (excluding optical instruments). In 2022, the share of remuneration (including executive pay) was 62%, a decline from over 90% in the 1990s.

This proportion exceeds that of the broader manufacturing sector and the overall economy. In 2023, the share of remuneration declined by 28% from the previous year.

Graph 18: Functional inequality in the professional equipment sub-industry, 1993-2023



Source: Calculated from Quantec. EasyData. Professional equipment (QSIC 374-376); Standardised Industry series. Accessed at www.easydata.co.za in June 2024.

7. MARKET STRUCTURE OF MAJOR COMPANIES

The domestic electronics industry has few local manufacturers. Large multinational enterprises generate the majority of the income in the sector, despite the industry's overall contribution to the manufacturing sector being under 1%. This section offers a more detailed analysis of the sector's market structure.

Saab South Africa is a prominent player in the local electronic valves and tubes sub-industry, providing services to the global market. In the consumer electronics sector, which includes computers, laptops, and smartphones, multinational original equipment manufacturers like Dell, HP, and Lenovo South Africa are dominant. These global companies usually import products, offer wholesale services locally, assemble, and then export to regional markets.

Prominent assemblers of telecommunications equipment, such as television components, set-top boxes, decoders, and PCB boards, include CZ Electronics Manufacturing and Microtronix Manufacturing. These companies also operate as electronic contract manufacturing firms, providing assembly and production services for various industries.

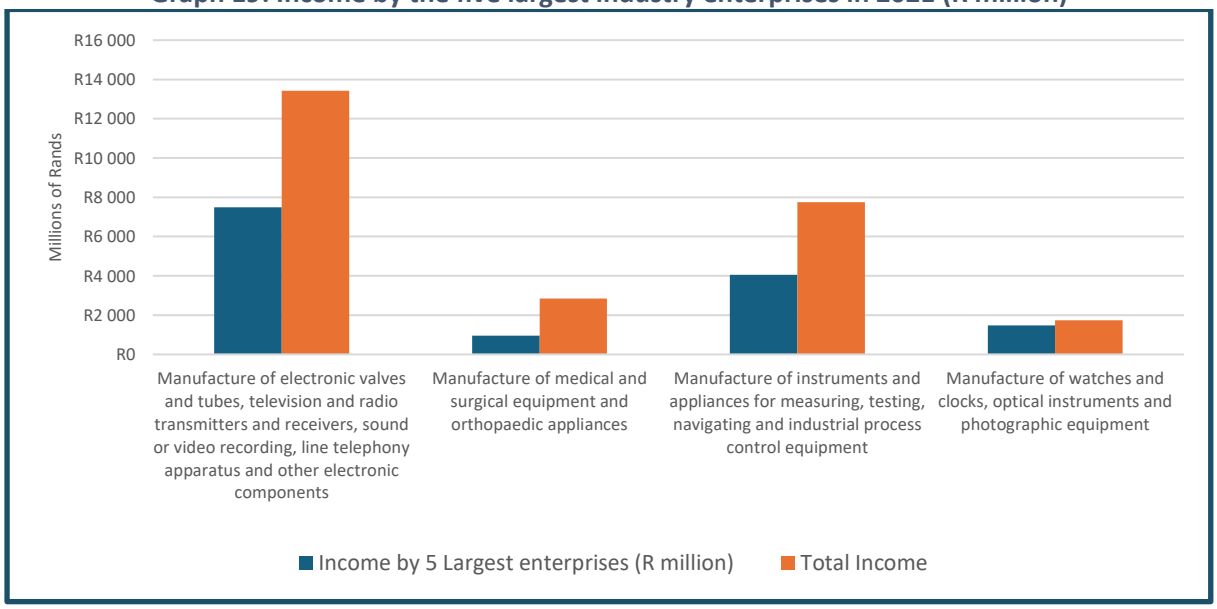
The ICT market is primarily dominated by large publicly listed companies that offer hardware wholesale and software distribution services, such as Mustek, 4Sight, and Datatec. These firms assemble and

distribute products from global OEMs (WoW, 2024). Mustek, for example, assembles and distributes personal computer products and peripherals for major brands. Moreover, there has been significant growth in data centres in South Africa, with companies such as Teraco, Vantage Data Centers, Dimension Data, Acronis, and Equinix making substantial investments in building data centres across the country.

In the medical appliances and instruments sector, leading players include TiTaMed, Sinapi Biomedical, DISA Life Sciences, Centre for Rapid Prototyping and Manufacturing, CapeRay, Southern Medical, and Elite Surgical (WoW, 2023). Conversely, the main exporters in this field are large multinational corporations like BSN Medical, B Braun Medical, and Drager South Africa. These companies primarily produce medical products for export to neighbouring Sub-Saharan countries, although they also import goods from developed nations. In addition, manufacturers and innovators such as Medical Diagnostech, Electrospyres Medical, and South Implants focus on creating new products and processes.

The bulk of income in the industry comes from telecommunication and, within precision equipment, from measurement instruments (refer to Gra[h 19). The top five large enterprises generate over 50% of the total income in this sub-industry. In contrast, the top five companies in the watches and optical instruments sub-industry account for 85% of the total income. Conversely, the concentration ratio in the medical sub-industry is considerably lower than in the other sub-industries.

Graph 19: Income by the five largest industry enterprises in 2021 (R million)

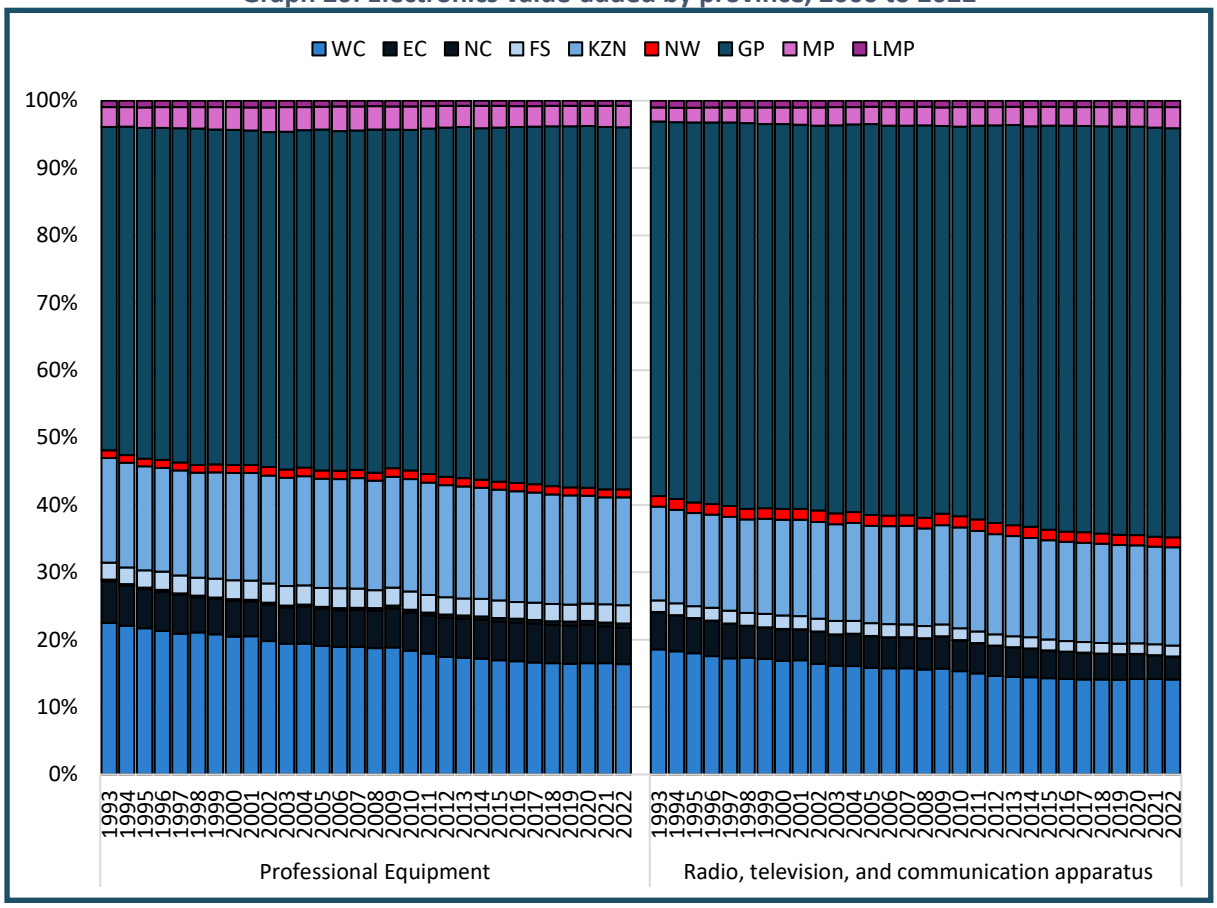


Source: Calculated from Statistics South Africa. Manufacturing industry: Financial, 2021. Accessed from https://www.statssa.gov.za in October 2024.

8. MAIN LOCATIONS

The majority of electronics products are produced in Gauteng. Since the early 1990s, the province's gross value added by manufacturers has consistently remained above 50%, averaging 58% in the radio and communication apparatus sub-industry and 51% in professional equipment (including medical appliances, instruments, and devices for measuring, checking, and testing, excluding optical instruments). The Western Cape and KwaZulu-Natal follow, with output ranging between 14% and 19%, although the Western Cape's share has declined steadily (Graph 20).

Graph 20: Electronics value-added by province, 2000 to 2022



Source: Calculated from Quantec. EasyData. Interactive dataset. Regional service. Accessed at www.quantec.co.za in April 2024. *Note*: Office machinery (SIC 359) is excluded from the graph because Quantec data does not disaggregate the data for the sub-industry, but groups it.

SECTION 2: GOVERNANCE STRUCTURES AND STAKEHOLDERS

9. GOVERNMENT STRUCTURES

The Department of Trade, Industry, and Competition develops policies and programmes to support the electronics industry as part of its industrialisation efforts. It offers various initiatives, incentives, and grants to promote growth and competitiveness. The Sectors Branch tracks the progress of sectors like the electrotechnical industries, which include the electronics industry. In earlier years, the Industrial Policy Action Plans (IPAPs) provided support programmes to enhance local industry competitiveness. However, later IPAPs did not set specific targets for the electronics sector. Despite this, the dtic has outlined objectives in its 2024/25 Annual Performance Plan that include support for projects in sectors such as the electronics industry.

In the telecommunications sector, the Department of Communications and Digital Technologies oversees the ICT Infrastructure Development and Support programme. Additionally, the Department of Science and Innovation (DSI) supports research within the industry, collaborating with the CSIR, an implementing agency that houses a research group focused on developing technology components. Furthermore, the South African Bureau of Standards (SABS) ensures that electronics and appliance companies comply with certification, product testing, and standardisation requirements.

Table 1: Government departments and agencies within the electronics industry

DEPARTMENT/AGENCY	MANDATE/OBJECTIVES
The dtic: Electrotechnical Sector Desk	The sector desk's primary goal is to promote the development of products and components for power and electrical products, consumer electronics, and electronic contract manufacturing. The work includes developing and reviewing sector strategies and action plans, tracking implementation progress, and continually engaging stakeholders to strengthen the sector's ability to create jobs, retain existing jobs, and increase value addition and competitiveness in both domestic and export markets. Industrial Policy Action Plans: 2015/16-2017/18 IPAP: The IPAP support programme for broadband policy rollout. The set targeted outcomes: - Revitalise and scale up the local electronics industry, leveraging on the potential of both broadband and e-learning platforms to raise aggregate demand. - Improved competitiveness of the local industry. - Supporting the rollout of broadband by the DCDT's broadband policy. An action programme for IT equipment, the targets include: - Local procurement of personal computers (PCs) and tablets. - Attract existing OEMs in the industry and other local investors to consider increasing production lines to locally produce other devices, such as smartphones. - Also, to create a value proposition for OEMs (i.e., Dell and HP) to invest in the local assembly of their products. - Growing the market for local assemblers and contract manufacturers to supply government and other state-owned entities. 2016/17-2018/19 IPAP: The IPAP sets a support programme for the local design and development of mobile applications for the Information, Communications, and Technology sector. The targeted outcomes include: - Introduction of new and innovative applications. - Technology transfer, capacity building, etc. - Supporting localisation for ICT and electro-technical sectors through public procurement. 2018/19-2020/21 IPAP: The designation of electronic products, such as set-top boxes, was set at 30% local production and content, while electrical cable products (including power and telecommunication cables) were designated at

	90%. However, following the Constitutional Court's February 2022 ruling invalidating the Preferential Procurement 2017 Regulations, these designations are no longer applicable. dtic: Annual Performance Plan 2025/2026- Sector Branch The branch aims to implement the Medical Devices Sector Master Plan, launched in May 2024. In addition to master plans, it will also prioritise the implementation of key programmes and projects across multiple sectors, including the Electro technical Industries.
Support Programme for Industrial Innovation (SPII)	SPII aims to stimulate technology development in South Africa's industry by providing funding for the development of innovative goods and/or processes. SPII focuses on the development phase, which begins after fundamental research and concludes when a pre-production prototype is completed.
The Industrial Development Corporation (IDC)	The IDC Machinery, Equipment, and Electronics Strategic Business Unit offers funding to companies involved in the value chain of electronics in technology and digital equipment. This comprises the following businesses: - The production of television and radio transmitters. - Measuring, verifying, testing, and navigating devices. - Production of household appliances. - Professional and scientific equipment, television, radio, and communication.
Department of Communications and digital technologies: ICT Infrastructure Development and support	Facilitating the creation of a strong, dependable, secure, and affordable ICT infrastructure that enables universal access to applications and services is the programme's main objective. It includes outputs such as the Revised SA Connect Model and policy direction for 5G development.
The Independent Communication Authority of South Africa (ICASA)	ICASA's duties include public interest regulation of the postal, television, and telecommunications sectors as well as providing all South Africans with high-quality, reasonably priced services. The Authority also licenses telecommunications and broadcasting service providers, enforces laws and regulations, and more.
Universal Service and Access Agency of South Africa (USAASA)	USAASA's mandate is to promote the goal of universal access and service for Electronic Communications Network Services, Electronic Communications Services, and Broadcasting Services.
Universal Service and Access Fund (USAF)	The fund was established to provide financial assistance/resources for initiatives and activities aimed at achieving universal service and access to ICT. - The fund offers subsidies for the construction or extension of electronic communication networks in underserved areas. - Purchasing broadcasting and electronic communications networks, as well as providing access to schools, education, and training institutions. - Establishing and operating broadcasting services.
CSIR: Electronic warfare technology demonstrator	The CSIR has a dedicated research section that creates technology components for technology demonstrators to assist with specialised tests and evaluations.

Department of Science and Innovation (DSI)	The DSI's objective is to provide funding for research infrastructure that will increase South Africa's research and innovation capabilities, including advancing innovation to improve the country's global competitiveness. The department intends to sponsor 85 technology demos, prototypes, products, and services in the medium term.
Technology Innovation Agency (TIA)	TIA provides sector funding to industries such as information, communication, and technology, advanced manufacturing, energy, and natural resources. In the ICT sector, TIA focuses on technological topics such as wireless communication. Wireless connectivity refers to wireless technologies that will improve rural connectivity or enable 5G networks.
Media Development and Diversity Agency (MDDA)	MDDA was founded in 2003 in collaboration with the South African government, as well as print and media firms. The agency's goal is to foster community and small commercial media throughout the country. It also offers grant financing.
South African Bureau of Standards (SABS)	The SABS provides services for management system certification, product testing and certification, and standardisation. This includes categories like electronics and appliances. SABS electromagnetic compatibility certificates of compliance are issued to producers of non-telecommunications electronic and electrical equipment.

Source: National Department Annual Reports, Industrial Policy Action Plans, Medium-term Framework, and state-owned entities.

10. BUSINESS ASSOCIATIONS AND UNIONS

The business associations in this industry are primarily non-profit organisations established in the 1990s. In addition, stakeholder engagement within the industry takes place through the Electro-Technical Industry Cluster of South Africa (ETIC), a non-profit organisation comprising manufacturers and service providers in the electronic, electrical, electro-mechanical, software, and associated industries. Union representatives in the industry include the Metal and Electrical Workers' Union of South Africa and the South African Communications Union, among others.

Table 2: Business Associations and Trade Unions in the electronics industry

BUSINESS ASSOCIATIONS	OBJECTIVES
The South African Electrotechnical Export Council (SAEEC)	SAEEC is a non-profit organisation formed as a Public-Private Partnership between South African enterprises and dtic to help its members grow their exports and expand internationally. The organisation is centered on the electrotechnical industry, which encompasses the following subsectors: - The electrical engineering subsector, which covers cables, transformers, switchgear, metering, substations, and renewable energy solutions. - The electronics subsector, which includes consumer and defense electronics, aerospace, automotive subsystems, white goods, and access control and security equipment. - The information communication and digital technology subsector, which involves

	hardware, software, blockchain, and other related technologies. SACCE's membership includes companies that produce and supply products and services in the fields of electronics, electrical engineering, digital and IT, and telecommunications.
Association of Representatives for the Electronics Industry (Arei)	Arei (previously ADEC) was founded in 1991 as a non-profit organisation to serve the interests of South Africa's electronics sector. Its main goal is to help create an environment in South Africa that promotes the rapid growth of the electronic manufacturing industry, both at the component and system levels.
Electronics Developers and Manufacturers Association of South Africa (EDMASA)	EDMASA is a recognised non-profit organisation dedicated to supporting and advocating for the electronics design, development, and manufacturing sector in South Africa. It focuses on the assessment, study, and analysis of the industry, particularly regarding health and safety issues.
Electrical Conformance Board of South Africa (ECB)	The ECB, a non-profit organisation, was founded in 1983 as the national umbrella group and customer advocate for the electrical and electronic industries. As a registration body, it collaborates with the SABS to help regulate the industry.
Electronic Waste Association of South Africa (eWASA)	eWASA is a non-profit company dedicated to providing cost-effective compliance on behalf of its producer members. eWASA represents some of the largest producers in the household electrical and electronic industries that are subject to the Extended Producer Responsibility Regulations of November 2020.
South African Institute of Electrical Engineers (SAIEE)	SAIEE, established in 1909, has over 6 000 members engaged in various engineering fields, including academic research, manufacturing, electronics, telecommunications, measurement and control, mining, and power infrastructure services. The institute offers Continuing Professional Development training classes through the SAIEE Training Academy, which provides engineering courses in three different formats to enhance knowledge across a range of engineering specialities.
The South African Valve and Actuator Manufacturers Association	The organisation was established in 1974 and comprises 21 members, including valves and actuators produced or assembled in South Africa.
Information Technology Association (ITA)	ITA, founded in 1934 and combined with the IT Users Council in 2000, comprises more than 200

	South African companies that provide IT equipment, systems, software, recruitment, and services. Notable members include Microsoft SA, Dell EMC, BCX, Netcampus, DG Stores, Duxbury, and Go Green Electronic Recycling.
The Southern Africa Digital Broadcasting Association (Sadiba)	The Southern African Digital Broadcasting Association is a voluntary industry forum led by four members of its executive committee and steering group. It encourages the coordinated, market-driven development of digital broadcasting technology in South Africa.
South African Communications Forum (SACF)	SACF is an ICT industry group that was formed in 2001 to replace the African Telecommunications Forum (ATF). Its purpose is to ensure that South Africa's ICT policy environment remains competitive and inclusive, able to attract and retain investment.
Medical Device Manufacturers of South Africa (MDMSA)	MDMSA is an association of South African medical device manufacturers. It addresses significant industry-wide issues with stakeholders in the medical device sector. Their purpose is centred on the deployment of safe and effective medical technologies that allow for high-quality patient outcomes.
TRADE UNIONS	**ESTABLISHMENT AND MEMBERSHIP**
Metal and Electrical Workers' Union of South Africa	The union represents workers in engineering and related trades. It was formed in 1989 through the merger of the Electrical and Allied Workers Trade Union of South Africa with the Electronic and Electrical Workers' Union, the Engineering and Allied Workers' Union, and the United Automobile and Motor Workers' Union. The union's purpose is to organise workers across various industries, including electrical and electronic engineering, information systems, technology, and computer industries, among others. It has about 34 000 members.
National Union of Metalworkers of South Africa (NUMSA)	NUMSA is the largest metalworkers union, having been created in 1987 through the merger of other unions. Union members work in the engineering, motor, and auto industries, as well as the electronics sector (a small fraction). The union has more than 338 000 members.
South African Communications Union	Established in 1917, this union represents workers in the communications and IT-related industries. It has about 5 000 members (2011).
Communication Workers Union	The organisation has 18 662 members representing most of South Africa's communications industry. Its focus includes

	communication sectors such as Telkom (telecommunications), SAPO (postal services), SABC (broadcasting), Vodacom and MTN (cellular), CCI (cable), Nashua and SA Blick (computers), TDS (information), and Sun Couriers (courier services). The union itself has approximately 44 000 members.
Information Communication and Technology Union (ICTU)	ICTU is a union in South Africa, and its primary focus is on the ICT and media sectors.

Source: Accessed at relevant organisational websites in July 2024.

11. STAKEHOLDER ENGAGEMENT

This section explores engagement platforms for businesses in the industry. The two clusters within the industry appear to focus on localisation and designation, which are considered potential drivers for industry growth. Additionally, education and training play a vital role, with SETAs actively promoting skills development in the sector.

Electro Technical Industry Cluster of South Africa

ETIC is a non-profit organisation led by industry representatives, comprising manufacturers and service providers in the electrical, electronic, electromechanical, software, and related sectors. The cluster primarily focuses on localisation and import replacement. Its objectives include gaining access to opportunities in the local marketplace, fostering supportive and productive relationships with new project facilitators, and creating new market opportunities.

The Valve and Actuator Manufacturers Cluster of South Africa (VAMCOSA)

VAMCOSA collaborates with the designated cluster parameters of the dtic. Its focus is to bring together local valve and actuator manufacturers to achieve common goals for the industry. The objectives of the cluster include promoting localisation, supporting the export of locally manufactured valves and actuators, and fostering transformation.

Media, Information and Communication Technologies Sector Education and Training Authority (MICT SETA)

MICT SETA supports five subsectors, including electronics, IT, and telecommunications. It is a skills development institution established to generate, facilitate, and accelerate quality skills development across all levels within the MICT sectors. The organisation aims to implement learning programmes and ensure quality assurance in education and training initiatives. These efforts are designed to help address the digital divide in rural areas.

Manufacturing, Engineering and Related Services Sector Education and Training Authority (merSETA)

MerSETA was established to promote skills development within the manufacturing, engineering, and related services sectors. It encompasses five subsectors, including component manufacturing, which is relevant to the electronics industry. MerSETA's primary function is to facilitate the training process by providing grants, monitoring the quality of training, and registering moderators and assessors. It does not, however, provide training directly.

12. MAJOR POLICY AND INFRASTRUCTURE INITIATIVES

This section highlights policy initiatives and programmes within the electronics industry. Initiatives from the dtic, as reflected in industrial policy action plans before 2019 and the master plans processes thereafter, have been relatively small in scope and funding. Key policies have primarily emerged from the telecommunications sector. One notable example is the Broadcasting Digital Migration Policy (BDM), which governs the transition from analogue to digital terrestrial television (DTT) and affects the radio and communication equipment sub-industry. In addition, the Department of Communications and Digital Technologies has published a final draft of its Digital Economy Masterplan, which was developed by an outside consultant (Genesys and Knowledge Executive).

Research and development (R&D) initiatives aimed at industry development

The Annual Performance Plans of the Department of Science and Innovation emphasise R&D efforts focused on industry growth, such as the Technology Stations Programme, established in 2002. Through this programme, the Department has provided funding and support to five technology stations located at universities of technology. These stations offer specialised assistance in areas such as electronics, chemicals, and advanced tooling, with a notable emphasis on activities at the Tshwane University of Technology.

The Customised Sector Programme

The Customised Sector Programme (CSP) aims to stimulate growth and raise the global profile of South Africa's Electro-technical sector, particularly the electronics sub-sector. Its key objectives are to promote local procurement, boost export activity, and enhance domestic competitiveness to reduce dependence on imported products. Strategic interventions include encouraging storage service providers to establish and maintain server infrastructure within the country; facilitating collaboration between the manufacturing and telecommunications sectors to develop smartphones tailored to African conditions, thereby supporting the local assembly of mobile devices; and assessing the feasibility of establishing a domestic laptop assembly industry.

The broadcasting digital migration policy

The DTT migration policy provides the framework for South Africa's move to digital broadcasting. The policy's goal was to transition to digital terrestrial television signals starting on November 1, 2008, with an analogue shutdown planned for three years later. To support this shift, STBs or decoders are being used, enabling free-to-air broadcasting services to switch from analogue to digital television. As part of this effort, the South African government awarded a tender worth approximately R4 billion in 2015 for the production of five million STBs and antennas. This contract was split among 26 organisations, each receiving a share. The initiative aimed to help around five million low-income households access digital television. The DCDT, along with its agencies, such as USAF and Sentech, are in charge of installing set-top boxes for eligible households. Several local manufacturers in South Africa have contributed to the production of these set-top boxes, supporting the country's transition from analogue to digital broadcasting.

Localisation of personal computers and tablets, and implementation of broadband rollout policy

The 2015/16–2017/18 Industrial Policy Action Plan set a goal for the dtic to promote the localisation of PCs, tablets, and composite infrastructure products in the ICT sector. The IT equipment action programme focused on locally procuring PCs and tablets, creating more opportunities for local assemblers and contract manufacturers to supply government and state-owned entities. It also aimed

to attract OEMs, such as Dell and HP, by presenting a strong value proposition for investing in local assembly operations. In addition, the department sought to support the government's broadband rollout initiative to boost electronics manufacturing and assembly. The IPAP includes a support programme with specific targets for implementing the broadband policy.

Local design and development of mobile applications within the Information and Communications Technology sector

The 2016/17–2018/19 IPAP featured a support programme aimed at promoting local design and development of mobile applications within the ICT sector. The initiative sought to drive growth by encouraging the creation of innovative mobile applications in South Africa, leveraging National Industrial Participation (NIP) obligations as a key resource. The expected outcomes included the introduction of new and innovative applications, technology transfer, capacity building, and the promotion of localisation in the ICT and electro-technical sectors through public procurement.

The designation of electronics products under the Preferential Procurement Policy Framework Act

The 2018/19-2020/21 Industrial Policy Action Plan outlines certain electronic products, such as set-top boxes and telecommunication cables, for local production in the public sector. Specifically, designated products include set-top boxes with a minimum local content requirement of 30%, electrical and telecom cables at 90%, valves and actuators at 70%, and two-way radios at 60%. In 2022, the courts decided that the then-existing designation measures were not valid under the law. In response, the Public Procurement Act No. 28 of 2024 established designations as a policy instrument, but required that all designations must be re-established to remain valid. The Act lays out new procedures for designations, including impact analyses and consultation, and requires that there be three local producers of every designated product. As of April 2025, the regulations for the Act had not been published, so the detailed requirements are not yet known.

ICT and Digital Economy Masterplan

The Masterplan identifies Physical Technology Production as a key sector for South Africa's digital economy. Its goal is to transition the country from being a consumer of digital technologies to becoming a producer. This shift presents opportunities for generating inclusive growth, creating jobs, and fostering transformation across various sectors.

Key objectives include fostering local manufacturing of digital devices, particularly the domestic production of essential electronic components for Internet of Things (IoT) applications, such as sensors, chips, circuit boards, microcontrollers, and telecommunications equipment like routers and communication modules. The Masterplan also highlights the need for increased investment in locally developed satellite technologies, particularly in the design and production of nanosatellites and small satellites. These technologies are seen as vital for expanding internet access and improving digital inclusion across the country. In addition, the Masterplan also underscores the importance of building capabilities in drone technology, from component manufacturing to final assembly. These technologies are seen as vital for expanding internet access and improving digital inclusion across the country. A second major focus is on supporting small, medium, and micro enterprises (SMMEs) in the technology manufacturing space. This support aims to drive innovation and generate employment opportunities.

13. MAIN POLICY DEBATES

The policy discussions within the electronics industry are intricate due to the diversity of sub-industries involved. This complexity makes it difficult to address policy matters effectively without consulting relevant stakeholders for in-depth analysis and information. The central debate focuses on the level of South Africa's participation in the global electronics trade, as this is seen as the key to scaling up in the electronics sector. To tackle this issue, this section examines policy debates related to consumer electronics, automotive (electronic subsystems), and ICT (i.e., digital divide), highlighting their impact on the industry.

South Africa's consumer electronics sub-industry relies heavily on imports, with major global original equipment manufacturers establishing a strong presence in the domestic market. Products like computers, laptops, and smartphones are entirely imported, although sometimes there is a limited level of domestic assembly. Ongoing discussions revolve around whether South Africa should focus on developing a knowledge base to become an OEM, following the path of Asian countries, or whether it should pursue contracting with existing OEMs for local assembly aimed at export.

The dtic's 2015/16-2017/18 Industrial Policy Action Plan encouraged public-private partnerships, involving established OEMs and local investors, to expand production lines for devices such as smartphones. Efforts were also made to create an enabling environment for companies like Dell and HP to invest in local assembly operations. However, neither company currently operates production lines in South Africa, although HP did previously maintain a local assembly plant. In contrast, a local company, Mobicel, operates facilities in South Africa and assembles its smartphones domestically, although the components are imported. Another local company, Mara Phones, launched a smartphone manufacturing facility at the Dube Trade Port in 2019, but ceased operations in 2022. Since around 2019, the dtic has shifted its strategic focus from Industrial Policy Action Plans (IPAPs) to sector-specific Master Plans, with the aim of targeting resources towards industries with high socio-economic impact. Consequently, the dtic delegated responsibility for the Digital Economy Master Plan to the Department of Communications and Digital Technologies.

DEMP outlines several strategic priorities, including the expansion of digital infrastructure, the development of digital skills, the promotion of innovation, and the digital transformation of key economic sectors. The Master Plan has significant implications for South Africa's electronics industry, as it stimulates demand for locally manufactured electronic components and supports the development of critical hardware such as sensors, microcontrollers, and telecommunications devices, as detailed in Section 12. This approach aligns with efforts to reduce reliance on imports, generate employment, and integrate local firms into global value chains. The DEMP also focuses on expanding digital infrastructure, including broadband networks, 5G connectivity, and data centres, which further accelerates demand for electronic products and services. In addition, the Master Plan emphasises support for SMMEs through targeted incentives and access to innovation hubs. It also prioritises skills development through technical training and digital education initiatives aimed at building a digitally skilled workforce capable of supporting the demands of an increasingly digital economy.

The second significant debate in the industry centres on whether South Africa, as a late entrant to the electronics market and geographically distant from major global markets, should aim to engage in global trade or focus on exporting to Africa while replacing imports. If the latter is pursued, the question arises whether there is sufficient demand to scale up production. Local electronic manufacturing in South Africa faces several challenges that limit its ability to compete globally, including high production costs, limited access to advanced technology, reliance on imports, high labour costs, and a shrinking pool of skilled technicians and engineers. Despite these obstacles, regional trade agreements present opportunities for South Africa to export electronic goods to African

markets. As a member of the African Continental Free Trade Area (AfCFTA), the country benefits from preferential trade access across the continent. South Africa has a significant opportunity to boost its electronic exports to the Southern African Customs Union (SACU) and the Southern African Development Community (SADC), which together represent over 80% of the country's total electronics exports to Africa from 2000 to 2023. The primary exports, including medical appliances and instruments for measurement, testing, and navigation, along with office and computing machinery such as computers and laptops, play a vital role in this trade. By focusing on enhancing regional integration in the SACU and SADC areas, South Africa can foster substantial growth in its domestic electronics industry, ultimately contributing to economic development and innovation in the region.

Another key debate focuses on identifying electronic products suitable for scaling up production and whether there are well-defined strategies to achieve this objective. The South African Automotive Masterplan 2035, for instance, highlights the importance of developing new technologies, emphasising the significance of auto components, particularly electronic subsystems, as a focal point for advancement. A crucial aspect of this plan is advancing electric and electronic vehicle technologies, particularly in powertrain and drivetrain systems, as well as active and passive safety technologies and infotainment systems. Modern vehicles increasingly depend on a diverse array of electronic components to elevate safety and enhance the driving experience. Active safety systems include sensors, actuators, and electronic control units, while passive safety systems include crash sensors and airbag control modules. Additionally, infotainment systems depend on central processing units and connectivity modules to provide seamless communication and entertainment features. Similarly, powertrain and drivetrain systems are becoming increasingly dependent on advanced electronics, such as engine control units and transmission control modules, to improve vehicle efficiency, performance, and control. Therefore, these technological advancements are not only integral to the automotive industry but also represent a significant opportunity for growth in the electronics manufacturing sector.

The digital divide remains a major challenge in South Africa, affecting social progress, economic opportunities, access to information, and educational equality. While internet access increased from 2011 to 2022, benefiting the majority of the population, a significant gap remains, particularly in rural areas, where network coverage is still inadequate due to past ICT policies (Aruleba and Jere, 2022). In response, the Department of Telecommunications and Postal Services launched the Digital Terrestrial Television project, as outlined in Section 12 of this report. The project was supported by the Department of Trade, Industry and Competition, particularly in implementing broadband policy and advancing localisation through product designation measures. Despite these efforts, the rollout of the DTT project has encountered a number of challenges, leading to significant delays in the transition from analogue to digital broadcasting. Problems in the procurement and distribution of set-top boxes include issues with tender irregularities, allegations of corruption, and a lack of transparency in the procurement process. Additionally, financial instability among STB manufacturers has further complicated the project. These challenges have slowed South Africa's progress with digital migration, highlighting the need for transparent procurement practices, strong project management, and cohesive policy frameworks to ensure the successful execution of national ICT initiatives.

14. SWOT ANALYSIS

STRENGTHS	WEAKNESSES
✚ South Africa has some capacity in the production of precision instruments for production and manufacturing. ✚ Some local firms of precision equipment have international accreditation. ✚ The country possesses a pool of well-educated engineers, software experts, and academic researchers. ✚ The local decoder assembly industry is now established.	✚ South Africa has a latecomer status in the electronics industry. ✚ Microchip production is dominated by advanced countries. ✚ While South Africa struggles to compete globally, its domestic market is too small to support a sizable electronics industry. ✚ Outside of medical appliances, South African production is mostly assembly, with design and higher-end technologies controlled almost exclusively by OEMs. ✚ The digital divide remains a significant challenge.
OPPORTUNITIES	**THREATS**
✚ Expanding exports based on existing footholds in Africa, particularly through AfCFTA, can help South Africa achieve economies of scale. ✚ South Africa can build up its software industry based on its existing pool of skills. ✚ The Automotive Master Plan proposes upgrading components production to include digital inputs, which should increase domestic demand for electronic inputs. A similar strategy could be pursued for capital goods and renewable energy inputs. ✚ Digitalisation of healthcare information to improve healthcare analytics and improve patient outcomes. ✚ The Digital Economy Master Plan highlights key opportunities in Physical Technology Production, particularly in the local manufacturing of digital hardware such as sensors, chips, circuit boards, and microcontrollers for IoT applications. ✚ Support for SMMEs within the technology manufacturing sector.	✚ Inequalities reflected in the digital divide limit domestic and regional demand. ✚ Competition from other economies that have a far more established and large-scale electronics industry. ✚ Brain drain, as South Africans with relevant skills are employed overseas or as part of their global team by overseas companies, even if they are based in South Africa. ✚ Negative impact of load-shedding ✚ Move to streaming reduces demand for STBs and other broadcast equipment

Source: Ellipsis, 2024, WoW 2022 and 2023, and author's own.

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