

## CHAPTER IV

### ECONOMIC AND FINANCIAL TIES BETWEEN THE ROC AND THE RSA, 1948-1998

#### 4.1 INTRODUCTION

The economic and financial relations between the ROC and the RSA were one of the most important aspects of the bilateral relations of the two countries. The ROC–RSA economic and financial interaction encompassed trade, investment, tourism, air and sea links, fishing, development aid, loans, technical co-operations and technology transfers.

Similar to the development of ROC–RSA diplomatic relations, the ROC's economic and financial links with South Africa can be broadly divided into three distinct phases: the period of minimal economic contact (1948-1970), the expansion of ROC–RSA economic and financial linkage (1971-1996), and the stagnation of economic and financial relations (1996-1998). Before 1971, the ROC's economic relations with South Africa were of low priority compared to its relations with the USA, Japan and the newly-independent African states. As analysed in Chapter II, during the 1950s and 1960s, the ROC's Africa policy goal was mainly to solicit support from the African states in order to retain its seat in the UN Security Council. In order to garner enough votes to prevent the PRC from entering the UN, the ROC made strenuous efforts to strengthen its relations with the newly-independent African states.<sup>1</sup> In this period, most of the ROC's agricultural and economic co-operation programmes were directed at African countries. The ROC's economic linkage with South Africa was very limited and the financial interrelationship between the two countries was almost non-existent. It was only after 1971 that the ROC was willing to expand its economic and financial relations with South Africa.<sup>2</sup> The period from 1971 to 1996 thus saw the expansion of ROC–RSA economic ties.

The forging of close bilateral economic and financial links between the ROC and the RSA was partially attributable to the existence of the cordial diplomatic relationship during the period 1976-1997, and partially due to the complementary nature of the two economies. ROC–RSA bilateral economic and financial ties expanded at the time through the two governments' promotion of, and joint efforts in, creating an environment conducive to sound and orderly economic development. It was during this period that the ROC and the RSA signed 39 inter-governmental bilateral agreements or treaties including air services, trade, tariffs, shipping, agriculture, science, technology and technical co-operation and the promotion of investment.<sup>3</sup> With these agreements in place, the foundation and framework of the economic links between the two countries had been laid down. The ROC maintained its partnership with the RSA until 1998 when the ANC-led South Africa government completely abandoned this framework following South Africa's recognition of Beijing. The ROC strengthened its economic links with South Africa, and offered various economic incentives to Pretoria with the aim of retaining diplomatic ties with the RSA. To achieve this goal, the ROC's investments, development aid, loans and financing of South Africa's Reconstruction and Development Programme (RDP) were mostly based on diplomatic needs and effected to serve its political and strategic objectives.<sup>4</sup> In addition to the existence of a co-operative framework, the two governments also held regular bi-national ministerial meetings to promote bilateral trade and economic interchanges.

In a purely economic context, the ROC's and the RSA's national interests coincided during the 1980s, and the mutual attraction of the two economies to each other were important factors for the gradual deepening of ROC–RSA economic and financial relations from the 1970s to 1998. As the two economies were basically complementary, the distinct characteristics of the two economies had led each country to pursue common economic and strategic interests, in particular when South Africa's major trading partners imposed international sanctions. Under the threat of economic isolation, the South African government naturally looked to the ROC to assist it in countering the economic sanctions imposed by Western countries.

The ROC regarded the RSA as an ideal partner in Africa to further its own economic and strategic interests because of the RSA's natural and mineral resources, its geographic location and the complementary characteristics of the South African economy. The United States' Department of State summed up the South African economy as an industrialising country with most of the characteristic associated with developing economies – a division between formal and informal sectors, uneven distribution of wealth and income, a dependence on commodity exports, and a legacy of government intervention.<sup>5</sup>

In contrast to the ROC's lack of natural resources, South Africa has a rich resource base. The RSA economy has traditionally relied on mining and agriculture to earn foreign exchange, while the gold and diamond mining industries are key sectors of the economy. The RSA's mineral wealth, in particular its gold resources, has been the cornerstone of its economic development, as it has the largest known deposits of low-grade gold in the world. The gold and diamond mining industries generated large amounts of foreign exchange and made a major contribution to capital formation in South Africa. About 21.2% of the world's gold was supplied by South Africa in 1996.<sup>6</sup> Apart from being one of the largest producers of gold, gem diamonds and platinum, South Africa is a major producer of manganese, chrome, antimony, lithium, asbestos, vanadium, uranium and nickel. These vast natural resources, together with the extensive physical infrastructure, healthy banking system, first world financial markets, a well-organised modern private sector and sound regulatory framework are the positive factors of the South African economy.

However, mining at depth with low-grade ore requires a substantial inflow of large foreign capital and advanced techniques. Consequently, large firms dominated the RSA's private sector, and small and medium enterprises were discouraged. Reliance on the exports of commodities, volatile foreign capital flows, and the domination of conglomerates over the South African economy, together with widespread unemployment, extreme inequality, a shortage of skills, a deep-rooted racial divide, high

levels of crime, low productivity of labour and the inflexibility of the labour market are the negative factors of the South African economy.<sup>7</sup>

Agriculture and mining traditionally have been South Africa's principal earners of foreign exchange. South Africa's agricultural environment and land space are well suited to large-scale farming. In the ROC, the agricultural producers are mainly small farmers engaging in intensive farming of rice, betel nuts, sugar cane, mushrooms, corn, tea, bamboo shoots, watermelons, pineapples, mangoes, bananas, peanuts, pears, grapes and sweet potatoes. The ROC produces sufficient rice and rice wine. But the ROC's rising standard of living and changing diet have boosted the demand for the import of South African products, such as wine and spirits, citrus, apples, fruit juices, and wool. There is also a demand for maize to be utilised as cattle feed. In short, South Africa's major agricultural export products to the ROC are maize, fruit, wine and wool. Wood pulp and chips also provide substantial export earnings for South Africa.<sup>8</sup>

Fishing off the 3,000 kilometre South African coastline is important for the ROC fishing industry. As the ROC is an island country, the Taiwanese people are generally fond of fish. Although the ROC is famous for its high-tech aquaculture which produces a wide range of fish, prawns and eels, deep-sea commercial fishing has become more and more important to the ROC's fishing industry. The growing proportion of deep-sea fishing to the ROC's total fishing production is largely due to declining fish stocks in the Taiwan Straits. Overfishing and pollution from industrial and household waste have depleted the ROC's coastal and offshore fish stocks. It is estimated that the ROC's coastal and offshore fishing yields fell more than 10 percent each year since the beginning of the 1990s. Under such circumstances, fish imports are rising, and the ROC's fishing fleet, which numbers in the thousands, engage in deep-sea fishing that brings home about 50 percent of the catch of its annual fish production.<sup>9</sup>

In the aspect of the manufacturing industry, the ROC is one of the most experienced countries in developing a strong and competitive manufacturing economy. The manufacturing industry is the central nucleus of the ROC's national economy. In 1994,

the manufacturing industry contributed 37.28% of the ROC's GDP, while the contributions of agriculture, mining and trade were 3.57%, 0.4% and 16.9% respectively.<sup>10</sup> Compared to the ROC, manufacturing was relatively unimportant to the RSA's national economy. The South African manufacturing industry's share of GDP was only about 23.4%.<sup>11</sup>

The manufacturing industries of the two countries were thus complementary. Although the RSA has an advanced manufacturing sector, the cost of the production of clothing, footwear, electronics, furniture and other consumer goods was much higher, and not as competitive as the ROC's products. The South African manufacturing industries mostly targeted the domestic high-end market, or at most were regionally orientated, and well protected. The trade unions have further constrained the ability of the South African manufacturing industries to compete internationally with the ROC. Therefore, the market share of the South African manufacturing sector mainly focused on the white market or upmarket social groups who had more sophisticated and expensive tastes.

By contrast, the ROC's low value-added consumer products industry found its niche in the world economy with its competitive lower prices. Due to its lack of strong trade unions, higher productivity and a disciplined workforce, the ROC's manufacturing industries were able in the three decades, from the 1950s until the 1980s, to produce much cheaper, low cost products to compete at the bottom end of the world market. The ROC's Export Processing Zones (EPZs) were designed to promote the export of manufactured goods to the outside world, rather than to the ROC's domestic market. Unlike the South African manufacturing sector, the backbone of the ROC economy is the outward-orientated, small to medium enterprises focusing on international trade with both advanced and developing countries. These export-related cheap products were well suited to the RSA's lower income group, which was dominated by the black community, even though the latter's purchasing power was comparatively lower than the white community.<sup>12</sup>

As to trade relationships, foreign trade is an important factor, not only in the ROC's economic development, but also in its external relations. This is due to the fact that the ROC is one of the world's leading trading nations. In terms of the aggregate value of imports and exports, the ROC ranked among the 15 largest trading powers internationally between the 1970s and 1996. Foreign trade, in particular export, contributed greatly to rapid economic growth and the realisation of full employment. To sustain its export-orientated industrial economy, the ROC had to continually find new markets to which it could export its manufactured products. ROC-made goods covered a wide range of products, including textiles, electronics, metal products, machinery, clothing, footwear, furniture, chemicals, auto parts, computers, giftware, sporting goods, plastic and rubber equipment and processed agricultural products. Most of these products were the output of the ROC's labour-intensive industries. Exports of the above-mentioned, low-cost, low-value added consumer goods, not only helped the ROC achieve high-level economic growth, but also ensured that consumers in the world enjoyed reasonable quality products at very competitive prices.<sup>13</sup>

From 1949 to 1997, the ROC economy went through three phases of development. During the 1950s, its development was focused on agricultural growth and import-substituting industries. The ROC started to introduce some export promotion measures such as the custom duty rebate on exports in the late 1950s. But the ROC's real export expansion drive was initiated only a decade later. It was during the 1960s and 1970s that the ROC government encouraged the expansion of labour-intensive industries aimed at the export market. A series of economic reforms and steps were implemented. The most noticeable ones were the establishment of several EPZs, the introduction of a five-year income-tax holiday for selected industries and the setting up of various industrial parks. As a result of the ROC government's vigorous promotion of trade and industries, the prime focus of the economy shifted from agriculture and domestic import-substitution development to export orientation. Taking advantage of its efficient, low-cost labour, the ROC was able to penetrate world-markets.<sup>14</sup>

Despite the ROC's diplomatic setbacks, the period of the 1970s and 1980s witnessed the rapid growth of the ROC's foreign trade and the establishment of basic and heavy industries. Ten major development projects and twelve new development projects were executed in 1973 and 1978 respectively, to upgrade the ROC's infrastructure, highways, harbours and airports. During the 1980s, the ROC re-orientated its economy from that of labour-intensive industries to a new phase of high technology, capital-intensive industries. A programme for the development of science and technology was formulated in 1980. The Institute for Information Industry and the Hsinchu Science-Based Industrial park were set up. The ROC economy continued to expand during the 1980s and 1990s.<sup>15</sup>

However, the ROC's economic success also generated its own problems, and conditions began to deteriorate as from the late 1970s and during the 1980s. The combination of the scarcity of land, labour shortages, increased labour costs, the rise of militant, independent trade unions, environmental degradation, appreciation of the New Taiwan Dollar (NT\$), trade protection of developed countries and increasing foreign competition, led the ROC entrepreneurs to seek new low-cost production sites, such as mainland China, South East Asia and the RSA, during the 1980s. While the majority of the ROC manufacturing enterprises relocated their factories and equipment to the nearby Chinese mainland, South East Asia and East Asian regions, some investment went to the RSA, mainly to the former homelands of South Africa.<sup>16</sup>

Nevertheless, the ROC's traditional major markets were the industrialised Western countries, Middle Eastern and Asian states or economic entities such as Japan, Hong Kong, Singapore, Indonesia and South Korea. During the period 1975-1985, 41% of the ROC's total two-way foreign trade dealt with North America, 31.7% with Asia, 10.7% with Europe, 7.7% with the Middle East, 3.5% with Oceania, 2.4% with Latin America and 2.1% with Africa.<sup>17</sup> The ROC's top eleven major exports markets during this period were: USA, Hong Kong, Japan, West Germany, Canada, Australia, Singapore, UK, the Netherlands, Indonesia and Saudi Arabia.<sup>18</sup>

In order to lessen dependence on the USA, and a few other major trading partners, the ROC government made an effort to diversify its export markets as from the 1980s. The ongoing market diversification was one of the factors that prompted the ROC to develop closer trade and economic ties with the RSA. The problem of quotas was another contributing factor that motivated the ROC's entrepreneurs to relocate their enterprises to South Africa. The ROC's main trading partners, the USA and the European Community, imposed quantitative restrictions on the annual quotas of ROC exports to those markets, and the quotas were hard to obtain as from the second half of the 1980s. Consequently, the ROC's exporters saw South Africa not only as a potential new market, but also as an opportunity to get quotas to export their products to the USA and Europe and the rest of the African continent as well.

#### **4.2 THE EVOLUTION OF ROC-RSA TRADE RELATIONS**

As already indicated, before 1971, the ROC government was anxious to gain the support of the newly-independent African states. Therefore, the ROC had kept the RSA at arm's length and trade relations between the two countries were negligible. However, from 1949 to 1971, the African continent as a whole, had been unimportant to the ROC's exports. And the opposite was also true: geographically and historically, the ROC was never an important traditional trading partner for South Africa. Apart from this geographic and cultural remoteness, there was not much inter-trade or any significant economic linkage between the two countries prior to the 1960s. The small portion of trade that existed between the ROC and RSA was largely irrelevant to each country's international business. From 1949 to 1951, the volume of the ROC's bilateral trade with the African continent was so small that The Statistical Yearbook of the Republic of China did not even list its trade figure with Africa. The ROC's official record of trade between the ROC and Africa started from 1952 when the ROC's exports to the whole of Africa amounted to USA\$6.43 million, and the ROC's imports from Africa were USA\$946,000. The total value of the two-way trade between the ROC and Africa was

USA\$ 7.38 million in 1952.<sup>19</sup> In the composition of the ROC's external trade, the bilateral trade between Africa and the ROC was of no importance prior to the 1970s.

The bilateral trade between the ROC and South Africa in the 1950s was also rather insignificant. For example, in 1952 the combined value of exports from the ROC to South Africa and southern Rhodesia was a mere 0.01% of the ROC's total exports. The combined imports from South Africa and southern Rhodesia made up only 0.07% of the ROC's overall imports. In dollar terms, the value of the ROC's exports to South Africa and southern Rhodesia in 1952 was NT\$82,000 which was equivalent to USA\$5,659.07 at the exchange rate of NT\$14.49 to USA\$1.00, and the value of the combined imports from South Africa and southern Rhodesia was NT\$1178,000 which was equivalent to only USA\$81,297.44.<sup>20</sup>

In the decade between 1960 and 1970, the two-way trade between the ROC and the RSA remained largely unchanged. The ratios of the ROC's exports to the RSA and the ROC's imports from the RSA fluctuated from 0.02% to 0.25% of the ROC's respective imports and exports.<sup>21</sup>

From the above analysis, it is clear that from 1949 to 1970, the trade/economic relations between the ROC and the RSA were very limited. During these twenty-one years, the ROC merely maintained low-level consular links with the RSA. However, after 1971, following the gradual cementing of bilateral diplomatic relations, the bilateral trade relations between the two countries were on the rise. The value of the ROC's imports from the RSA in 1971 was almost double the amount of 1970. The amount of the ROC's imports from the RSA increased from NT\$118,369,000 (the equivalent of USA\$3,123,192.60) in 1970 to NT\$253,842,000 (the equivalent of USA\$6,697,678.10) in 1971. Imports from South Africa, in the ROC's total imports from overseas, expanded from 0.19% in 1970 to 0.34% in 1971. The amount of the ROC's exports to South Africa grew steadily after 1971, although exports did not increase as dramatically as the ROC's imports from South Africa in the same period. In 1961, ROC's exports to South Africa were valued at NT\$1,231,000 (equivalent to USA\$30,751.93), and increased to

NT\$294,991,000 (equivalent to USA\$7,773,148.80) by 1971. In percentage terms, the ROC's total exports increased from 0.02% in 1961 to 0.37% in 1971.<sup>22</sup>

The year 1971 marked the ousting of the ROC from the UN. As a result of its departure, the ROC government was free to strengthen relations with the RSA without fear of losing the support of the African states in the UN. Taipei viewed the RSA as a strategic partner and as a provider of natural resources, mineral supplies and agricultural products for the ROC, as well as a market and gateway for the ROC manufactured products in southern Africa. In order to keep up its economic development, the availability of minerals and other raw materials, such as maize and wood pulp, was very important to the ROC's industrialised economy. While the ROC became more and more isolated following diplomatic setbacks from the 1970s, there was a deep concern among the ROC leadership over the security of mineral supplies and a pervasive fear of the disruption of resource supplies.<sup>23</sup>

The South African government also saw advantages in economic co-operation with the ROC. Faced with growing ostracism from the Western economies and the gathering momentum of international sanctions and boycotts, the South African government was anxious to enhance economic and trade relations with the ROC. To facilitate the interaction of bilateral trade and economic co-operation, the rudimentary mechanisms of promoting bilateral trade were established during the period 1972-1975. The most noticeable ones were the 1972 Maize Trade (procurement) Agreement between the Board of Foreign Trade, Ministry of Economic Affairs of the ROC and the Maize Board of the RSA; the 1975 Trade Agreement between the government of the ROC and the government of the RSA; and the establishment of the Office of the Commercial Attaché of the ROC in Johannesburg in 1974. The 1975 Trade Agreement between the ROC and the RSA granted each other most-favoured nation status. As a result of the setting up of the mechanisms of commercial linkage, the ROC-RSA bilateral trade increased rapidly as from 1973 onwards. The total two-way trade between the two countries increased from R30.506 million in 1973 to R38.834 million in 1974, R69.606 million in

1975 and further to R77.862 million in 1976. Within three years, the volume of two-way trade had more than doubled<sup>24</sup> (See Table 5).

The 1976 establishment of full diplomatic relations between Taipei and Pretoria provided further momentum to the development of economic ties. While many countries distanced themselves from the RSA, the ROC sought closer ties in spite of the fact that from 1974 the South African government was faced with daunting domestic and international challenges. On the domestic front, the South African government's harsh suppression of the black youths uprising in 1976 not only intensified opposition, but also triggered off an economic downturn during 1976-1977. On the international front, the ring of neighbouring white buffer zones such as Mozambique, Angola and Rhodesia, either collapsed or were about to collapse, and military conflicts moved southwards, closer to South Africa's doorstep. Although the RSA restored its internal stability, and its economy recovered by 1978, the RSA was still in crisis. The economic upswing lasted only until 1981 when economic recession set in for almost a decade.

From 1977, the two-way trade between the two countries grew at a much faster pace. The volume of two-way trade soared to USA\$118.78 million in 1977, to USA\$190.06 million in 1978, to USA\$685.896 million in 1981, USA\$912.796 million in 1987 and USA\$1.749 billion in 1988 respectively.<sup>25</sup> By 1987, the ROC had become one of South Africa's top ten trading partner.<sup>26</sup> (See Table 6 for annual trade figures).

The emergence of the RSA's economic crisis in the 1980s, and the subsequent uncertainty of the ROC–RSA bilateral diplomatic relations in the 1990s did not however hinder the growth of bilateral trade and economic ties between the two countries. The ROC tried its utmost to expand bilateral trade and deepen economic co-operation so as to keep its diplomatic relations with South Africa.

The trade flows between the ROC and the RSA during 1990-1997 reflect a similar trend of rapid growth. The ROC was one of the leading top ten countries that imported South African goods. In 1994, the ROC ranked as South Africa's seventh largest trading

partner with a total two-way trade of USA\$1.623 billion (equivalent to R5.35 billion). There was a surplus of R664 million in the RSA's favour. In 1995, the ROC took 3.2% of the South Africa's total exports, amounting to R3.2 billion, next only to Italy (R4 billion, 3.6%) and the PRC/Hong Kong (R3.4 billion, 3.3%).<sup>27</sup> Germany, UK, USA, Japan, the PRC/Hong Kong, Italy, Switzerland, the ROC, Zimbabwe and Belgium were South Africa's top ten trading partners.<sup>28</sup> The details of the increase of the ROC–RSA bilateral trade in the 1990s are shown in Table 6.

Nonetheless, the bilateral trade between the ROC and the RSA constituted a small portion of each countries external trade. In terms of the ROC's exports, South Africa's imports from the ROC were a mere 0.48% of the ROC's total exports to overseas markets in 1979. By 1982, this percentage increased to 1.2%. The ROC became South Africa's ninth most important supplier of various manufacturing products. In 1988, the RSA absorbed about 1.1% of the ROC's total exports. However, the ROC's trade with South Africa has never exceeded 2% of the ROC's total external trade. From 1990 onwards, the importance of the ROC's exports to South Africa gradually decreased. During the 1990s, the average percentage of South Africa's imports from the ROC was a mere 0.71% of the ROC's total exports. The ROC–RSA two-way trade was about 0.8% of the ROC's total annual trade.<sup>29</sup>

In terms of the ROC's imports, in 1979 South Africa's exports took up 1.45% of the ROC's total imports. By 1986, the bilateral trade between the ROC and the RSA accounted for 3% of South Africa's foreign trade. In 1997, the ROC's imports from South Africa were 3.2% of South Africa's total exports.<sup>30</sup>

In conclusion, the establishment of diplomatic relations in 1976 provided further momentum to the expansion of the ROC–RSA two-way trade. Bilateral trade between the ROC and the RSA grew at a fast pace during the 1980s and the first half of the 1990s when the two countries still maintained diplomatic relations. The trade balance was in South Africa's favour. In 1977, one year after the formation of diplomatic ties, South Africa enjoyed a trade surplus of USA\$57.522 million. By 1979, the trade surplus

grew to USA\$137.382 million. In the late 1980s, South Africa's trade surplus with the ROC was nearly three to four times that of the 1970s. For instance, in 1988, South Africa enjoyed a surplus of USA\$404.253 million and in 1989, the RSA trade surplus was USA\$280.69 million. During the 1990s, South Africa still ran a moderate trade surplus. In 1990, the trade surplus with the ROC was USA\$414.379 million, and it decreased to USA\$326.546 million in 1991. The RSA's trade surplus, however, soared to USA\$554.900 million in 1992 and further to USA\$724.500 million in 1993. Nevertheless, as from 1994, the RSA's trade surplus became much smaller than in the preceding three years. The figures dropped from USA\$724.5 million in 1993 to USA\$201.147 million in 1994, USA\$174.155 million in 1995, USA\$139.04 million in 1996, USA\$259.816 million in 1997 and further down to USA\$112.233 million in 1998.<sup>31</sup>

#### **4.3 THE COMPOSITION OF ROC–RSA BILATERAL TRADE**

Bilateral trade between the ROC and the RSA was structured along North–South lines; the RSA exported mineral products, base metals and raw materials to the ROC, and in return imported ROC manufactured goods.

According to the 1996 reports made by the ROC Embassy and the Economic Division of the Taipei Liaison Office (TLO) in the RSA (as the Embassy was renamed after the severance of diplomatic ties), the main commodities exported by the RSA to the ROC were: (1) minerals: such as coal, gold briquettes, ovoid and similar solid fuels manufactured from coal, titanium ores and concentrates; (2) base metals: such as ferro alloys, unwrought aluminium, semi-finished products of iron and non-alloy steel, ferrous waste and scrap, remelting scrap ingots of iron and steel as well as refined copper and copper alloys; (3) chemicals and wood pulp (dissolving grades and soda or sulphates) and other fibrous cellulose material; (4) agricultural products: such as maize, wool, wine and drink, and food; (5) articles of stone and metal; and (6) motor vehicles.<sup>32</sup>

From the above list, it is clear that South Africa's principal exports to the ROC were minerals and primary products. Some of the above-mentioned mineral products and base metals such as titanium, ferro alloys and aluminium were strategically important to the ROC's industries. However, other exporting countries, such as Australia, Canada and the USA, could easily substitute some of the mineral products. The availability of iron, gold, wood pulp, maize, wine and wool was a case in point. The ROC purchased these products from the RSA because of diplomatic considerations, as well as an attempt to diversify sources of supply.<sup>33</sup>

South Africa's imports from the ROC comprised mainly manufactured goods and light industry consumer products. In the 1980s, the ROC's major export items to the RSA were machinery, mechanical appliances, electrical equipment, radios, sound recorders, woodwork tools, electrical cables and wires, accessories of sound articles, sewing machines, air compressors, pumps, electrical fans, television sets, auto parts, articles of base metals (locks, pipes, pliers), yarns, textiles, woven fabrics, garments, shoes, umbrellas, plastic flowers, toys, travel bags, suitcases, bicycles, sports' equipment, and optical, photographic and medical apparatus. The ROC's top three products exported to the RSA during the 1980s were: (1) machinery, mechanical appliances and electrical equipment (23.2–27.4%); (2) textiles and textile articles including garments (24.1%–24.5%); and (3) footwear, headgear, umbrellas and plastic articles (8.1%).<sup>34</sup> However in the 1990s, as the South African economy had once again become integrated into the international market, and as the ROC textiles could no longer compete with cheap products from newly emerging developing countries with their massive, less expensive labour supply, such as mainland China, the ROC has moved away from textiles and footwear products to computer and cybernetic devices. In 1998-1999, the RSA's top three imports from the ROC were (1) computer parts and accessories (27.2%); (2) factory equipment and machines for processing (21.3%); and (3) motor vehicle parts and accessories (14.5%).<sup>35</sup>

The change in the composition of the ROC's exports to South Africa reflects the fact that the ROC succeeded in upgrading its labour-intensive light industries to science and

technology based high-tech industries during the 1980s. The restructuring of the ROC economy has enabled it to produce more sophisticated products, with wider profit margins that can absorb escalating high wage levels.

#### **4.4 BILATERAL INSTITUTIONAL STRUCTURES TO STRENGTHEN ROC–RSA ECONOMIC AND TRADE INTERACTIONS**

In order to tackle the various issues arising from bilateral economic relations and to promote trade and investment, the two countries founded institutional structures. A two-tier approach was adopted to strengthen bilateral economic ties. The first tier was the inter-governmental level, the second, the people-to-people level.

On the inter-governmental level, the two governments initiated the ROC–RSA Ministerial Conference on Economic and Technical Co-operation in 1977. This Ministerial Conference, similar to a bi-national commission, took place once a year alternatively in the respective capitals of the two countries. Initially, the ROC–RSA Ministerial Conference was co-chaired by the Vice-Minister of Economic Affairs of the ROC and the Deputy Minister or Director-General of Industries and Commerce and Consumer Affairs of the RSA during 1977-1978. From 1979 onwards, based on the recommendation made by the South African government, the Ministerial Conference was upgraded to the level of full Ministers. In 1979, the Conference, co-chaired by Kwang-shi Chang, Minister of Economic Affairs of the ROC, and S.W. van der Merwe, Minister of Industries and Commerce and Consumer Affairs of the RSA, was held in Pretoria during November 11th-16th. Senior officials of the relevant ministries or organisations of the two governments, such as the RSA's Council for Scientific and Industrial Research (CSIR), the ROC's National Science Council (NSC), the RSA's Department of Finance, Department of Agriculture, Department of Tourism, Customs and Excise of both countries, the RSA's Department of Transport, National Calibration Service (NCS), South African Iron and Steel Corporation (ISCOR), the ROC's Ministry

of Transportation and Communication, National Bureau of Standards and China Steel Corporation were also invited to attend the annual conference.<sup>36</sup>

On the people-to-people level, several institutions were established by the two countries to serve as forums for the business sector to develop links and exchange views with each other. The most notable organisations were the RSA/ROC Chamber of Economic Relations (also known as SAROC) in Pretoria and its counterpart, the ROC/RSA Economic Council (also known as ROCSA) in Taipei, which were established simultaneously in 1982. The members of ROCSA and SAROC were comprised of private and parastatal enterprises. The principal goal of ROCSA and SAROC was to facilitate the exchange of visits between the private sectors of the two countries, closer co-operation of the organisations which had been established to promote trade and the enhancement of ROC–RSA economic and trade relations.<sup>37</sup> The first Chairman of ROCSA was the Chairman of the Board of Directors of the Taiwan Power Company (Taipower), Lan-kao Chen. Although ROCSA and SAROC survived the severance of diplomatic ties, the said two organisations were not very effective in terms of the promotion of bilateral interactions, except the arrangement of annual meetings.

The contact between the China External Trade Development Council (CETRA) and the South African Foreign Trade Organization (SAFTO) was another channel of interaction at the private business level. The principal function of CETRA was, and still is, to advance closer co-operation between the ROC government and industries to develop foreign trade relations with its trading partners. To achieve this end, CETRA gathers trade information, conducts market research, promotes made-in-Taiwan products, organises exhibitions, offers convention venues, and trains business people. Assisted by CETRA, 13 countries, as well as 14 American states and the American Institute in Taiwan (AIT) have set up trade offices in the Taipei World Trade Centre (TWTC). Five Central American countries, namely Costa Rica, El Salvador, Guatemala, Nicaragua and Honduras, established a joint Central American Trade Office at the TWTC in 1998-1999.

Interaction between CETRA and SAFTO was frequent during the 1980s. For example, between 1981 and 1982, CETRA organised four trade missions to visit South Africa. Before 1997, the ROC had participated in most of the South African exhibitions, such as the Rand Show, the Building Material Show and the Fashion Trade Fair. On the South African side, SAFTO also organised many trade missions to visit the ROC to promote trade during the 1980s. For instance, in May 1980, SAFTO arranged for a group of industrialists to visit Taipei. They were extremely well received by the ROC government and private sector, and a successful conference was held on technical co-operation between the two countries. In 1982, the Cape Town Chamber of Commerce, the Johannesburg Chamber of Commerce and the Durban Chamber of Commerce arranged several trade missions to visit the ROC. A number of selling assignments to Taipei were undertaken by SAFTO's subsidiary, SAFMEX, to market South African products. In the later part of the 1980s, the exchange of visits continued. The two organisations regularly exchanged trade information and hosted economic seminars.<sup>38</sup>

As a result of the promotion of CETRA and SAFTO, the ROC–RSA private sectors' ties were cordial. Individual businesses, banks, trade associations, as well as various sectors of commerce and industry and the Chambers of Commerce and Industry of the two countries maintained close contact during the 1980s. The South African Federated Chamber of Industries signed a “Sisterhood Relationship Agreement” with the ROC National Association of Industry and Commerce in 1980. These promotional activities made by the respective private sectors of the two countries, in conjunction with the inter-governmental Ministerial Conference, contributed a great deal to the enhancement of ROC–RSA economic and trade ties.

#### **4.5 ROC INVESTMENT IN THE RSA**

In the 1980s, South Africa's economy was in crisis and there was stagnation in economic growth: growing unemployment; the outflow of capital; the refusal of Western banks to extend further loans and new credits; the 1985-1986 debt crisis; the decline in

foreign exchange reserves; a weak Rand; and a severe balance of payments instability.<sup>39</sup> This economic crisis was attributable to a combination of factors. The notable immediate causes were domestic political tensions; a spell of drought; heavy military spending; the impact of the downward trend of the world economy; the fall of the gold price in 1983; heightening international economic sanctions; and the financial crunch of 1984-1985. However, the crisis was also in part due to South Africa's economic structure. As indicated in the introduction to this chapter, the South African economy was heavily dependent on mining and exports of minerals and raw materials. For capital goods, machinery and investments, the RSA was reliant upon Western powers. South Africa's domestic savings were too scant to fund its own economic growth. During the 1980s, five Western states accounted for 90% of all foreign investment in South Africa; half of the total foreign investment came from the UK, and about 20% came from the United States. The bulk of the rest came from Germany, France and Switzerland.<sup>40</sup> The structural problems were not only due to the above-mentioned over-dependence on primary exports and foreign capital, but also the militant and politicised trade unions and the highly skewed income distribution. Therefore, as a result of these structural weaknesses, when the gold price and the profitability of investment were high, and there was an inflow of foreign direct investment, South Africa's economy enjoyed rapid growth. However, foreign investment in the 1970s was in decline after the oil shock of late 1973 and this, compounded with the outflow of capital in the 1980s, manifested slow economic growth.<sup>41</sup>

The other major cause of South Africa's economic recession in the 1980s was the re-emergence of political conflict during the 1980s and the subsequent economic sanctions imposed against South Africa by the major Western powers. The introduction of a new constitution of three chambers of Parliament in 1984, and the escalating regional conflicts resulting from the adoption of the "total strategy", triggered serious protest and violence by the majority African population inside South Africa. The repression of the heightened protest and opposition, in turn, sparked the escalation of internal pressures and the imposition of economic sanctions against South Africa. Internal black opposition interacted with external pressures. Western governments were pressured to

act decisively against South Africa. Sanctions were thus stepped up after 1984. All OPEC member states imposed an embargo on the sale of oil to South Africa. A growing number of countries, including all OECD members, imposed restrictions on new investments and loans and on the export of high technology goods to South Africa. Even the imports of Kruger Rands, iron, steel, coal, uranium, agricultural products and textiles were banned or restricted by a number of countries such as India and the Scandinavian states. In addition, there were numerous restrictions on air links, and most OAU member states severed air links with the RSA. The United States Congress passed the Comprehensive Anti-Apartheid Act of 1986 to introduce stringent measures against South Africa.

The imposition of international economic sanctions had detrimental effects on the South African economy, particularly on its finance. Major foreign banks, following the lead of Chase Manhattan in New York, refused to roll over maturing short-term loans to South Africa; the Rand dropped to under 35 USA cents in 1985, depreciating by over 40% against the USA dollar during that year. In July 1985, the South African government declared a state of emergency, and on August 27, 1985 Pretoria imposed a four-month moratorium on the repayment of foreign debt, amounting to about half of its total of USA\$23.8 billion. In the meantime, exchange control on capital transfers by non-residents was re-introduced in the form of the financial Rand.<sup>42</sup>

As the economic sanctions were tightened, there was a net outflow of capital, and very little capital inflow to South Africa during the 1980s. By 1986, Western firms started to pull out of the RSA. During a time span of eighteen months, from January 1985 to June 1986, 55 USA companies left South Africa, including General Motors and IBM.<sup>43</sup> South Africa's uranium exports to the USA were halted by September 1987, and total exports to the USA dropped 40%. The fall of the gold price and the recession of the economy had reduced the volume of South Africa's foreign reserves to an amount equivalent to a mere three months merchandise exports.<sup>44</sup>

Confronting the economic crisis and the drying up of capital inflow for its economy, the South African government looked to the ROC as a source of investment to substitute the lost capital that flowed out of South Africa through disinvestment. In order to tackle the massive unemployment in the rural areas, as well as to sustain the legitimacy of the homeland governments and to curb urban migration, the RSA formulated its industrial decentralisation policy as early as 1960. However, the ROC investors only started to relocate their factories after 1981. The industrial decentralisation programme was designed by the South African government to counter the over-concentration of industries in or near white urban areas, and because there was a surplus of labour in the rural black homelands. Attractive incentives, such as rebates on the cost of relocation, subsidies providing for the cost of training workers, rebates on wage bills and tax concession benefits were offered by the various Industrial Development Corporations (IDCs) to both local and foreign entrepreneurs to establish industries in the decentralised industrial areas inside the homelands and border regions. These areas included Dimbaza, Sada, Butterworth, Bisho, East London, Birlin, King William's Town, Isithebe, Ladysmith, Newcastle, Richards Bay, Qwaqwa, Ga-rankuwa, Thaba Nchu, Botshabelo, Witsiehoek, Selosesha, Pietersburg and Tzaneen. These IDCs were semi-official institutions and were funded either directly or indirectly by the state. They assisted entrepreneurs who were interested in decentralisation, or relocation from Taiwan to South Africa with finance, relocation of industries and leasing factory shells or buildings at relatively low interest rates. The IDCs undertook to develop and provide infrastructure and basic facilities in the above-mentioned areas for the industrialists.<sup>45</sup> For the South African government, the ROC was considered as an important strategic partner to serve as a source of investment for the homelands to create new jobs and economic growth, and to mitigate the loss of trade with its traditional trading markets in the West, as many Western companies chose to disinvest and withdraw from South Africa in the 1980s.<sup>46</sup>

The decentralisation policy was well suited to the ROC's labour-intensive industries. The incentives offered were attractive to industrialists who were keen on moving their factories from Taiwan to other countries. Apart from the attractive incentive package,

the ROC investors were also delighted to note that trade unions were not active in the homelands. The homelands governments restricted trade unions because they were regarded as a political threat and a stumbling block to foreign investment. Moreover, the South African government was at the time so friendly towards ROC investors that it often readily granted residence permits and allowed their families to stay in the white areas as from the mid-1980s. In contrast to Taiwan's congested social environment and expensive labour costs, the good living conditions, low wage rates, full diplomatic ties, excellent infrastructure and high standard of education were other factors that lured ROC investors to South Africa.

In the meantime, an important official guideline was adopted by the leadership of the ROC government during the 189<sup>th</sup> meeting of Central Standing Committee of the Kuomintang, the ROC's ruling party, held on October 22<sup>nd</sup>, 1980, shortly after P.W. Botha's visit to the ROC but before the visit of the then ROC Foreign Minister, Fu-sung Chu, to South Africa. Chu was designated to present a report entitled "the Iran-Iraq Conflicts and the Official Visit of P.W. Botha to the ROC" in the course of the meeting.<sup>47</sup> After considerable deliberations, a guideline was adopted by the meeting which was presided by the then ROC Premier Sun Yun-suan to intensify economic co-operation, procurement of minerals such as uranium, coal, iron ore and energy-related products such as steel, copper and aluminium from South Africa. During the meeting, Sun made it very clear that the ultimate goal of ROC-RSA ties was to take advantage of South Africa's minerals, energy resources and metal products to promote the ROC's economic development.<sup>48</sup> In accordance with the spirit of the said guideline, the domestic policies of the RSA such as apartheid, the homelands, democracy and human rights were not the concern of the ROC government.<sup>49</sup> From the ROC government's perspective, relations with South Africa were seen as important in the context of two aspects: first, diplomatically, the RSA was the largest and economically most significant of the 30 countries that maintained diplomatic relations with the ROC rather than the PRC; and second, economically, the two economies were complementary, and the RSA was in a position to provide the ROC industrialists with natural resources, bulk commodities, raw

materials, cheap labour and a potential market. Therefore, a resolution was made to deepen ROC–RSA economic co-operation.<sup>50</sup>

Conforming to the above-mentioned guideline, although the ROC entrepreneurs had associated themselves with the decentralisation policy of the South African government by investing or relocating their industries to the homelands, the ROC government, however, neither officially recognised the legitimacy of the homeland governments nor gave them political support.<sup>51</sup> The investments flowing into the homelands were an act of economy made by Taiwanese companies which had nothing to do with the ROC government. According to the research done by Geoffrey Roger Woods, a former Ph.D. student of Ohio University, who completed his dissertation on “Taiwanese Investment in the homelands of South Africa”, the investment of Taiwanese manufacturing industries in South Africa was simply due to the fact that “by the early 1980s, the interests of the South African state and small scale Taiwanese capital coincided,” and that “the South African government wished to attract investment into the homelands as part of its restructuring, and Taiwanese investors were attracted to the South African homelands in their search for cheap labour necessary to maintain profitability in certain highly competitive sectors of the world economy.”<sup>52</sup> For these reasons, many of the so-called “twilight industries” in Taiwan, such as footwear, clothing and textile plants, started to relocate to South Africa during the 1980s.<sup>53</sup>

The industrial relocation process began from 1980 when the ROC government commenced to restructure and move away from the low-cost, labour intensive industries to high-tech enterprises by announcing the Ten Year Textile Industry Revitalization Plan. In addition to the momentum of the ROC government's policy of economic structural change, the ROC domestic situation also contributed to the outflow of capital and enterprises to other countries. In the 1980s, the ROC's problematic domestic situation was characterised by a rising foreign exchange rate, escalating labour costs, the threat of protectionism, Third World competition and the degradation of the environment.<sup>54</sup> These domestic factors further pushed the ROC industrialists to

relocate their factories and investments to South Africa as the optimum site for low cost, labour-intensive productions.

ROC investments poured into South Africa at a steady rate during the 1980s. In 1985, there were 35 ROC companies operating in the homelands. By the end of 1987, the ROC investments in South Africa amounted to USA\$100 million, and the number of ROC firms in the homelands had increased to 80. One year later, this figure rose to 120.<sup>55</sup> By 1989, ROC investors had transferred USA\$300 million to South Africa and ROC firms had created 40,000 industrial jobs. It was estimated that half of all new factory employment created in the homelands under the decentralisation policy of the 1980s was from ROC factories.<sup>56</sup> By 1991, the number of factories further increased to 250.<sup>57</sup>

From April to June 1996, the Embassy of the Republic of China in Pretoria instructed the three Consulates-General in Cape Town, Durban and Johannesburg to jointly conduct a census to find out the exact total number of ROC factories in South Africa. According to the census report, which was released on July 25th, 1996, an estimated amount of USA\$1.5 billion (R6.45 billion at the 1996 exchange rate) had been invested in South Africa by ROC businessmen and this had created over 41,240 jobs. In 1996, the RSA's total Chinese population, including South Africans of Chinese descent, was 27,515 persons. Of this, 13,176 had come from Taiwan. In total, there were 620 ROC firms in South Africa.<sup>58</sup>

These firms, by the nature of their operations, can be divided into two sectors: the industrial sector and the commercial/service sector. In the industrial sector, there were 280 ROC factories, employing 36,224 people, of which 32,690 workers were Africans. As compared with 285 factories in 1993, there was a slight decrease during 1993-1994. The decrease was due to variety of factors, including increased factory automation to the adverse effect of corruption in customs, political uncertainty and labour militancy. In the five years between 1991 and 1996, approximately 50 factories shut down or moved elsewhere, but about the same number of new, more sophisticated factories took their

place. However, growth in the commercial and service sectors among South African residents from the ROC more than made up the value, if not the drop in employment, in the manufacturing sector. In 1996, there were 340 businesses operated by ROC businessmen, including among others, banking, ocean freight, import-export and wholesale distribution. These companies employed approximately 5,012 people of which 2,694 are Africans. By 1996, taken as a whole, these businesses owned by the Taiwanese had an annual turnover of R8.54 billion. Annually, they imported goods worth R1,700 million and exported R682 million worth of products, earning precious foreign exchange for South Africa. As the low export figure shows, their economic activity was, and still is, largely inward-looking, instead of using South Africa as an export base for the rest of the continent.<sup>59</sup> Two-thirds of these factories are involved in the labour-intensive clothing, garment manufacturing and textile sector. According to the 1996 census, the breakdown of the 280 factories in the industrial sector is shown as Table 7.

In terms of geographic distribution, most of these factories have been concentrated in industrial parks in the former homeland areas, because of the South African government's decentralisation policy. According to the 1996 census, Newcastle had 48, followed by Botshabelo (37), Ladysmith (26), Ciskei (20) (13 of which in Dimbaza), Isithebe (19), Johannesburg (16), Thaba Nchu (14), KwaNdebele (13), Durban and Bloemfontein (11 each), Transkei (10) (7 of which in Umtata), Babalegi and Kimberly (6 each), Ga-rankuwa, Harrismith and Mgwase (5 each), Venda and East London (3 each) as well as Pretoria and Pietersburg (2 each).<sup>60</sup> The rest were, and are, scattered around various locations in South Africa. If divided by province, KwaZulu-Natal plays host to 40% of them, no doubt this is due to the fact that Durban is the port of entry for raw materials and that the Taiwanese are accustomed to the warm and humid climate there.

On a whole, most of the Taiwanese-owned factories are in the traditionally lower-tech manufacturing industry and are located in rural areas where unemployment is high. However, the ROC high-tech investors also have a presence in the RSA. The Acer

group has its Africa regional office in Johannesburg. In addition, the RSA Mustek group, invested by a ROC national, C.C. Kan, produces locally the well-known Mecer computer brand in Midrand. In 1998, Mustek supplied and held 15.7% of the South African PC market, and for the first two quarters of 1999, its local market share was extended from 20% to 22.2%. In the past decade, Mustek has grown significantly. Its annual sales increased from R20 million in 1987 to R1.3 billion in 1999.<sup>61</sup>

In the commercial and service sectors, most of the 340 companies deal with the import and export of both raw materials and finished products. (Table 8 shows the breakdown according to the 1996 census). Based on the 1996 census figures, by far the largest concentration of these commercial and service establishments were in Gauteng, totalling 197, of which 169 are in Johannesburg. KwaZulu-Natal accounted for 61, with 34 companies in Durban and 20 in Newcastle. The Western Cape had 30, 29 of which are in Cape Town. Twenty-one of these companies were based in the Free State, 15 of them in Bloemfontein, while there were 11 in the Northern Province, 8 in Mpumalanga, 7 in the Eastern Cape, 4 in the Northwest and only one in the Northern Cape.<sup>62</sup>

In the clothing and textile sector, there are 44 Taiwanese factories making knitted or embroidered sweaters scattered across the former homelands areas. All depend on the ROC-based Derlon Spinning (Pty) Ltd. to supply polyester yarn, dyed to their specifications, as raw material. The Derlon Group, which consists of Derlon Dyeing (Pty) Ltd., Derlon Twisting (Pty) Ltd. and Sunlit Fashions (Pty) Ltd., employs 1,000 workers in Ladysmith who work in two shifts. The company has reached an agreement with the South African Clothing and Textile Workers Union (SACTWU) and enjoys peaceful labour relations. This should set an example to other Taiwanese manufacturers. Another 44 factories are engaged in producing garments other than sweaters, aimed mainly at the export market.<sup>63</sup>

Most investors are small to medium enterprises, and the owners usually run the businesses themselves. Only the Bank of Taiwan (SA) Ltd. is a subsidiary of the state-owned Bank of Taiwan of the ROC. According to the United Kingdom magazine, The

Banker, which lists the world's top 1,000 banks, the Bank of Taiwan ranks 107th in the world. The Standard Bank rates 185th. In 1996, the Bank of Taiwan (SA) Ltd.'s loan portfolio consisted of USA\$110 million and R64 million, a total of R537 million.<sup>64</sup>

ROC entrepreneurs who started to invest in South Africa from the early 1980s have made a meaningful contribution to the economic development of South Africa. They have partly alleviated the job creation needs of the former homelands areas, and the economically peripheral parts of the country. However, by defying the international economic sanctions and investing in the homelands, the ROC was perceived by the trade unions and the ANC as according tacit support to the homelands and racial policies of the South African government. The leadership of South Africa's trade unions also accused some of the ROC investors of exploitation of cheap labour, misuse of incentives, paying low wages and poor labour standards. Some members of SACTWU, the Congress of South African Trade Unions (COSATU), the South African Communist Party (SACP) and the ANC thus detested the ROC. In the eyes of many in the government of National Unity (1994-1996), in particular the pro-Beijing faction, the ROC was regarded as having supported the South African apartheid government.<sup>65</sup> In contrast with the PRC's support for the liberation movement, the ROC's open dealings with the previous National Party government acted against the ROC's efforts to maintain diplomatic ties with the new South African government. An invisible pressure was constantly exerted on former president, Nelson Mandela, to correct the perceived historical injustice.<sup>66</sup>

#### **4.6 AIR AND SEA LINKS**

In 1979, during the ROC–RSA Ministerial Conference on Economic and Technical Co-operation, both sides agreed that an aviation agreement should be drafted to establish a direct weekly flight between the two countries. In March 1980, when the ROC Prime Minister, Sun Yun-suan, paid an official visit to South Africa, six bilateral agreements were signed. These agreements included the ROC–RSA Bilateral Air Service

Agreement, the Agreement between the government of the ROC and the government of the RSA for the Reciprocal Treatment of Navigation, and the Agreement on Mutual Exemption from Income Tax pertaining to Navigation and Aviation. The ROC–RSA Bilateral Air Services Agreement was amended on November 15th, 1991.<sup>67</sup>

On the basis of the Bilateral Air Services Agreement, South African Airways (SAA) began a weekly round-trip flight between Johannesburg and Taipei in November 1980, and increased its direct flights to twice a week from November 1987 until December 5th, 1996 when the ROC Minister of Foreign Affairs, John Hsiao-yen Chang announced the suspension of the said agreement. In accordance with the Air Services Agreement, SAA and China Airlines were South Africa's and the ROC's designated carriers. The agreed upon route was Johannesburg, Mauritius, Hong Kong, Taipei. The air traffic rights between Hong Kong and Taipei were negotiated with the UK, as Hong Kong was still a British colony at the time.<sup>68</sup> Apart from SAA, the ROC's China Airlines also introduced its own direct weekly flight between Taipei and Johannesburg during 1991-1996. All together, the two airlines had three flights a week between the two countries. These two airlines not only provided a regular direct passenger flight for tourists, business people and visitors between Johannesburg and Taipei, but also carried mail, freight and business goods. The first South African Airways (SAA) flight departed from Johannesburg on Monday, November 3<sup>rd</sup>, 1980 at 8:05 am and touched down at Taipei in the morning of November 4<sup>th</sup>, 1980 at 5:35 am. The return flight left Taipei on the same date at 8:10 am and arrived at Jan Smuts Airport in Johannesburg at 6:30 pm.<sup>69</sup> This was an epoch-making event. Although the two countries are geographically far apart, the ROC–RSA direct air service had brought the two states much closer. The direct air-links served to facilitate the development of air transportation, the exchange of visits and tourism. This, in turn, further strengthened economic, cultural and other relations. The direct air service made it possible for business people of the two countries to save travelling time and facilitated emergency supplies, in particular electronic components, computer parts and software. As the direct flight made it possible for ROC visitors and tourists to avoid the hassle of transiting in a third countries, it boosted ROC investment, South African tourism, the travel industry and the

development of the South African electronics and computer industries from the 1980s until December 1996, when the SAA direct flight to Taipei was suspended.<sup>70</sup>

Due to the three direct flights a week between Taipei and Johannesburg, the number of tourists from the ROC to South Africa increased. The state-funded South African Tourist Corporation (Satour) set up a branch office in Taipei in the late 1980s. South Africans visiting the ROC increased from 1583 in 1980, to 4254 in 1982 and to 5490 in 1986.<sup>71</sup> Many tourists were attracted by South Africa's richly endowed natural beauty, in particular the country's magnificent wild animal and plant life. In 1994, 28,868 tourists from the ROC visited South Africa while 6698 South Africans visited the ROC. In 1996, the number of ROC tourists to South Africa grew to 35,142. However, after the change of ROC–RSA relations in 1998, the number of tourists to each country declined considerably. The number of tourists from the ROC decreased from 35,142 in 1996 to 18,412 in 1997 and 18,591 in 1998 while the number of South African visitors to the ROC dropped from 6,698 in 1994 to 4,000 in 1997 and 3,500 in 1998.<sup>72</sup> This decrease is largely due to South Africa's rampant crime, economic recession, the Asian financial crisis, and the suspension of direct flights between Taipei and Johannesburg.

South Africa's commercial shipping company, the South African Marine Corporation Limited (Safmarine), started its regular service to the Far East including Taiwan in 1967.<sup>73</sup> But real co-operation in the shipping field swung into action as from 1980. As described above, the ROC had signed the Agreement for the Reciprocal Treatment of Navigation with South Africa in March 1980. This paved the way for the further expansion of shipping links between the ROC and the RSA. During the 1980s, in addition to Safmarine, three Taiwanese companies entered the shipping business to vie for the increasing shipping demands. These were Nantai Shipping Lines, Uniglory Marine Corporation and Kien Hung Shipping SA (Pty) Ltd. Uniglory Marine Corporation is a subsidiary of the Evergreen Group, which owns the largest container fleet in the world and has twelve ships on this route. Uniglory's associate company, Green Africa Shipping (Pty) Ltd., operates container yards in Durban and Johannesburg, a fleet of trailer trucks, and acts as a customs broker for its clients.<sup>74</sup>

With the afore-said shipping companies competing for shipping requirements, the trade between the ROC and the RSA was well served. Their vessels regularly called at ROC seaports such as Keelung and Kaohsiung and South African ports such as Durban and Cape Town. The Safmarine ships were mainly equipped to handle all kinds of dry bulk cargo and fruit as well as other perishable export trade, whereas the three ROC companies catered for general containerised cargo. While these four shipping companies were in operation, the ROC investors were able to reduce the capital and operating costs, and the regular shipping service helped to draw closer links between the two geographically distant countries.<sup>75</sup>

Competition in shipping between Taiwan and South Africa was so keen that it greatly benefited the end-consumer and the bilateral trade of the two countries. When Nantai Shipping Line first introduced a regular service between Keelung and Durban in 1982, the charge for transporting a standard 20-ft container was between USA\$ 1,800 and USA\$ 2,000. By the middle of the 1980s, the three shipping companies had a total of 26 vessels plying between Taiwan and South Africa, some of which went on to Latin America after stopping at Cape Town. There was a ship leaving Taiwan every other day, the voyage took only three weeks, and the freight charge had dropped to just USA\$ 1,000. Just in terms of empty containers, these three lines maintained about 7,000 containers in South Africa worth about R90 million.<sup>76</sup>

However, after the severance of diplomatic relations, Nantai Shipping Lines and Kien Hung Shipping experienced great difficulties in floating through the changes in the political and economic environments. The economic recession in South Africa and the Asian financial meltdown of 1997-1998 also impacted adversely on their profits. Subsequently, Nantai Shipping terminated its shipping operations between the ROC and the RSA from September 1999. Nevertheless, Uniglory Marine Corporation, Kien Hung Shipping and Safmarine are still operating at present.

#### **4.7 BANKING AND THE ROC'S FINANCIAL ASSISTANCE TO THE RSA**

In order to facilitate trade and financial co-operation, the ROC and the RSA set up banking branch offices in each other's countries. In 1989, Standard Bank of South Africa established a branch in Taipei to promote business investments. In April 1992, the ROC's state-owned Bank of Taiwan opened its branch office in Rosebank, Johannesburg to assist Taiwanese investors and to provide loans to the RSA's parastatal corporates. These two banks' branch offices in the respective capitals have not been affected by the severance of diplomatic relations and are still operating actively at the present moment. The branch office of the Bank of Taiwan has sustained itself with over 30% growth each year since its establishment and ranks 25th amongst the RSA's fifty banks. The Bank of Taiwan is a significant purchaser of RSA government bonds and, in conjunction with other international banks, has participated in financing several RSA parastatal projects for Eskom, Telkom, Transnet, the Industrial Development Corporation and Durban harbour. Since 1992, the Bank of Taiwan has loaned approximately USA\$300 million to various South African enterprises.<sup>77</sup>

The provision of a fixed rate re-lending facility was made available to the RSA's financial institutions by the ROC's Export-Import Bank of China. At the ROC-RSA Ministerial Meeting in 1980, the ROC announced that it was to open a line of credit to banking institutions at fixed interest rates to encourage the export of capital goods to the RSA.

It was recorded that during the period from 30 September 1982 to November 1982 alone, the Export-Import Bank of China extended a total amount of USA\$7 million credit line under its fixed rate re-lending facility to South Africa's commercial banks. USA\$1.5 million was provided to the French Bank of South Africa, USA\$2 million to Barclays National Bank, USA\$1 million to the Trust Bank of Africa Ltd., USA\$500,000 to Nedbank Ltd., and USA\$2 million to the Standard Bank of South Africa for re-lending to the clients of these banks. This included end-users and dealers to assist in their

purchase of non-project-related capital goods produced in the Republic of China with an aggregate gross purchase price less than USA\$1 million per transaction.<sup>78</sup>

A similar provision of low-interest credit facility was also made available by the RSA to the ROC through the International Commercial Bank of China (ICBC) for the importation of South African products. Nevertheless, as the ROC importers were mostly self-sufficient, the credit facilities provided by Nedbank to the amount of USA\$10 million and by Standard Bank to the amount of USA\$5 million were rarely used. However, the ICBC once utilised USA\$7,440,000 under the refinancing facility provided by Nedbank.<sup>79</sup> Apart from the above-mentioned low-interest trade credit facilities, the ROC also provided grants and loans to the RSA.

The ROC's aid programmes, which were rendered to assist the RSA's Reconstruction and Development Programme (RDP), were implemented as from 1994. Before 1994, except for the pursuit of bilateral technical co-operation on an equal footing, the ROC did not provide any aid or grants to the RSA since there was no need to do so at the time.

However, after the formation of the new South African government in May 1994, there was a need for the RSA to solicit the ROC's financial and economic assistance to implement the RDP during the transitional period from the eradication of apartheid to the building of an integrated non-racial democracy. The RDP was more pressing than the readjustment of South Africa's diplomatic relations with the Two Chinas. Under such circumstances, it was clear that the new South Africa needed the ROC, more than the PRC, in reconstruction and development. From the ROC government's viewpoint, this was a unique situation: the ROC could play a positive role in supporting South Africa so as to safeguard the ROC's diplomatic ties with the RSA. South Africa was considered the jewel in the ROC's diplomatic crown,<sup>80</sup> the relatively most important regional power among its 31 diplomatic allies. That the ROC sought to support the new South Africa was reflected by the remarks made by the Ambassador to the RSA, I-cheng Loh, on October 27th, 1995 at the Potchefstroom Banquet Hall. He said:

Before last year's general election, before the forming of the government of National Unity, my government was already thinking of identifying the specific fields in which we have special experience and expertise, which the other countries because of their size and tradition may not be very good at, but which the new South Africa could use, and in which we may contribute, to help South Africa on her way towards reconstruction and development.<sup>81</sup>

To retain her diplomatic ties with the largest country on her diplomatic list, at the time of the presidential inauguration in 1994, the ROC pledged a package of USA\$131 million (equivalent to approximately R700 million) in aid to South Africa's RDP.<sup>82</sup> Most of the ROC's pledges of aid materialised into actual projects which progressed reasonably well until November 1996 when the RSA announced that the country was to switch recognition to the PRC. The promised aid package was mostly delivered during the period from the beginning of 1995 to the end of November 1996.

In the first year of the GNU, provisions were made by the ROC government to assist the South African government with the following development aid projects:

- USA\$40 million (equivalent to R146.4 million at the time) for a Vocational Training Centre (VTC) in South Africa (January 1995)
- R1.38 million for the training of small-scale vegetable farmers (March 1995)
- R4.798 million for training programmes for South African nationals to undergo various types of technical training.
- Other RDP related programmes in the form of grants.<sup>83</sup>

To tally up, during the first year of the GNU, the actual delivery of ROC support for the RDP, including grants in aid, concessional loans, commercial loans and technical training, amounted to approximately R566 million.<sup>84</sup> The ROC aid package covered a wide range of programmes, including the vocational training centre project, retired soldiers settlement project, the small, medium and micro enterprises' (SMMEs) credit

guarantee fund, the agricultural co-operation project, the social forestry project, land reform assistance, entrepreneurial internship project, bursary programmes, technical training programmes, the women's development banking project, the educational reform project, training of South African fishermen and vegetable farmers, the dispatch of ROC agricultural specialists and interest subsidies to ROC investors. However, the ROC's development aid programmes focused mainly on four areas: vocational training, the development of small, medium and micro businesses (SMME), technical training and the development of small farms.<sup>85</sup>

The ROC's assistance in the establishment of the above-mentioned Vocational Training Centre (VTC) was intended for the stability of South Africa and partly for the demobilisation of the ANC's military wing, Umkhonto we Sizwe. Some of the returned exiles were old and short of skills. The idea of establishing a VTC originated with Mandela's visit to Taipei in July/August 1993 in his capacity as the leader of the ANC. Mandela was anxious to emulate the ROC's successful resettlement programme of its hundreds of thousands of retired military servicemen from mainland China over the last forty years. At Mandela's request, the then ROC President, Lee Teng-hui, agreed to help with Mandela's initiative. The VTC was established in the middle of 1995 at a 266ha complex near Atteridgeville, west of Pretoria. Its main objective was to provide training in various trade skills to retired or redundant army members, with emphasis on trades which were in demand under the RDP, and which gave the best promise for starting a business. The VTC aid project included overall planning, the design and construction of various workshops as well as the supply and installation of machinery and equipment. The VTC was to cover 31 training fields to accommodate 1500 people simultaneously and was to become fully operational by August 1997. Training began in May 1996 and the first phase covered seven training fields and accommodated 220 people. Sixty-six South African instructors were invited to the ROC for three-month training courses. The first group of 45 departed on January 15th, 1996 while 17 Taiwanese instructors came to South Africa to advise on operations and management.<sup>86</sup> The total cost of the Vocational Training project, including the establishment of the VTC was USA\$40 million.<sup>87</sup> By the November 1996 announcement of the change of

relationship, the first phase of this project was complete and the VTC had been established. But the second phase was terminated as from 1997.

As one of the leading countries in the field of Small, Medium and Micro Enterprises (SMMEs) development, the ROC undertook to share its experience and expertise in this area with South Africa in its quest for reconstruction and development. The support for SMMEs development in South Africa consisted of three parts: indirect loans, direct financing (grants) and training. Although by 1996, an institutional support framework for indirect loan facilities existed in South Africa – such as the Centre for Small Business Promotion (CSBP) and the National Small Business Council (NSBC), the state-owned Ntsika Enterprise Promotion Agency (Ntsika) and Khula Enterprise Finance (Khula) – none of them performed well. Khula's repayment default rate was about 40%. From the ROC government's perspective, it was in a better position to assist South Africa in adopting a strategy to create a conducive environment for SMMEs. Therefore, a proposition was made by the ROC government in August 1996 to provide USA\$30 million from the ROC Overseas Economic Co-operation Development Foundation to set up a national credit guarantee scheme for the development of South African SMMEs. In regard to SMME training, the ROC had planned to receive up to fifty people in Taiwan to attend courses on SMME development and financing in the initial stage. The number of the SMME training schemes was to be expanded to 1000 people per year at a later stage.<sup>88</sup>

As for direct financing, in 1996, the ROC government agreed to grant a total of USA\$10 million as financial support for the development of SMMEs. This was to be remitted to the RSA in four instalments from the 1997 fiscal year.<sup>89</sup> Nevertheless, this USA\$10 million grant had not been remitted to South Africa when President Mandela announced the ending of ROC–RSA diplomatic ties on November 27th, 1996. In response, the ROC government decided to suspend the implementation of this project as from December 1996.<sup>90</sup>

With regard to technical training, under ROC sponsorship, about 500 South Africans received technical training during the years 1994-1997 in a variety of fields, such as land reform, SMME development, taxation, agricultural development, foreign investment and precision scientific instruments. From January 1994 to June 1995, 96 South Africans received technical training in Taiwan. The peak period of the ROC training programme was during 1994-1996. The main purpose of the ROC's aid programmes was to support the South African government's RDP.<sup>91</sup>

From the ROC's perspective, it was in a position to assist South Africa in solving its serious unemployment problem by adopting a two-dimensional economic development strategy. In industry and commerce, the ROC government proposed the development of SMMEs. In agriculture, the focus was on creating self-supporting small farms. With a view to realising this objective, a two-pronged agricultural aid programme was carried out by the ROC government as from 1994. The first part involved the setting up of a wide range of agricultural training programmes for South African agricultural specialists, farm advisors and extension workers either in Taiwan or in South Africa's agricultural institutions such as the Boskop Training Centre in Potchefstroom and the Lowveld Agricultural College in Nelspruit. In 1993, the former Embassy of the Republic of China entered into an agreement with the RSA's Department of Agriculture to share equally the R10 million cost of a training project aimed at teaching South African black women the basic skills of vegetable farming. Under this training programme, by 1998, 16 community-based agricultural projects were implemented in various provinces. Another feature of the ROC agricultural aid programme was the provision of capital and funding for the development of small farms. In November 1993, the ROC's Chiao Tung Bank signed an agreement with the Development Bank of Southern Africa, providing it with a loan of USA\$15.482 million (equivalent to R56 million) for agricultural development. The terms were 3.5% per annum, a five years grace period and another twenty years to repay.<sup>92</sup>

From 1994 to 1997, the ROC endowed the RSA with a total of R700 million in aid grants. Most of these aid grants, except technical training and fishermen's training,

were based on government-to-government relations and politically-driven projects. In terms of loans, during the five year period from 1993 to 1998, the ROC government had given, mainly through its Bank of Taiwan, loans of over USA\$200 million (equivalent to R1,200 million) to the Industrial Development Corporation (IDC) and the parastatal enterprises of the RSA, such as Transnet, Portnet, SAA, Eskom and Telkom.<sup>93</sup> These loans were mainly for the improvement of South Africa's infrastructure and its economic development. These loans included USA\$20 million for SAA, USA\$30 million for the SMME Development Fund, R70 million for Macsteel and USA\$30 million to Transnet for upgrading the facilities at the Durban port. Other loans included USA\$30 million (R105 million) to Eskom for its rural electrification project, R305 million for the IDC, loans for the rural telephone project, the small farms' loan, and the economic/social development projects' loan.<sup>94</sup>

Besides these loans, USA\$15.482 million was provided to the Development Bank of Southern Africa by another ROC bank, the Chiao Tung Bank, in November 1994 for the small farm development. The interest of the loan was set at only 3.5% per annum with a grace period of five years.<sup>95</sup> The difference in interest from Taiwan's normal interest rate is paid by the ROC Ministry of Foreign Affairs.<sup>96</sup>

Furthermore, the ROC government pledged to lend USA\$500 million to be deposited as part of the South African Reserve Bank's foreign exchange reserves. At the same time, the ROC made the following financial commitments to support South Africa:

- USA\$15 million for general agricultural development
- USA\$5 million for forest cultivation
- USA\$8 million for economic co-operation schemes
- USA\$3 million for land reform
- USA\$2 million for the establishment of the Women's Bank
- USA\$0.5 million for student's scholarships
- USA\$0.5 million for youths to start small businesses
- USA\$0.36 million for rice technicians' training
- USA\$1 million for South Africa's fisheries development.<sup>97</sup>

Some of these pledges had already been paid out to the South African government in the form of grants or loans before the end of 1997. Others had been partly given to the RSA such as the USA\$5 million for forest cultivation among which USA\$4 million was remitted prior to the termination of ROC–RSA diplomatic relations. But some grants had not been paid out pending the signing of the final bilateral agreements.<sup>98</sup>

In addition to the above-mentioned loans, two important projects were under negotiation at when the derecognition of the ROC was announced: the Mossgas petrochemical complex venture and the Mmabatho and Pilanesberg Airport projects. The Mossgas project, if implemented could inject billions of Rands into the South African economy and create work opportunities for 400,000 people.<sup>99</sup>

Most of the above aid programmes and these two projects under negotiation were suspended by the ROC government as from December 5th, 1996 after Mandela's announcement of the severance of ROC–RSA diplomatic ties. But the ROC's loans to the RSA parastatals continued because the transaction of commercial loans, if not concessional loans, is market-driven and has little to do with government-to-government relations.<sup>100</sup>

#### **4.8 CO-OPERATION ON FISHERIES**

The bilateral co-operation in the fishing industry was, and still is, an important facet of ROC–RSA economic relations. Cape Town is one of the major overseas operations and replenishment bases for ROC fishing vessels on the Atlantic and Indian Oceans. Each year, approximately 450 ROC fishing vessels dock at Cape Town harbour for provisions such as fuel, food and water as well as for repairs or to sell their catches.<sup>101</sup> The ROC fishing operational zones are very wide and reach from the high seas of the Atlantic Ocean as far as the Ivory Coast in the North, near Antarctica in the South and the Indian Ocean near the coastal waters of Somalia and Yemen. In 1998, the South

African government issued permits to 86 Japanese and 26 ROC fishing boats to fish off the South African coast. In 1999, the total number of permits issued to the ROC were reduced to 23, at the cost of USA\$12,600 (R75,600) each. The total annual catch limitations are 1760 tons of albacore and 50 tons with a by-catch extension of 40 tons of swordfish.<sup>102</sup> No hake, kingklip, wreckfish or patagonian toothfish may be caught or retained on board. As to other species of fish, the ROC annual catches of tuna, marlin and Atlantic sword fish are regulated by the International Commission for the Conservation of Atlantic Tunas (ICCAT), the Indian Ocean Tuna Commission (IOTC) and other related international conventions.<sup>103</sup> These catches are operated on the high seas of the Atlantic Ocean and the Indian Ocean, not in South African territorial waters or economic zones. ROC fishing vessels merely use Cape Town as their base of operations and for replenishments. The ROC fishing boats' total annual catches and expenses spent in Cape Town, including fishing licenses, repairs and replenishments are estimated at around R240 million per annum.<sup>104</sup> Most of the catches are sold in frozen form to Japanese agents in Cape Town. To enable the seamen of the ROC fishing fleet to have a secure place to rest, enjoy recreations, read Chinese newspapers and have proper Chinese meals, the ROC government, through the ROC Consulate-General in Cape Town, spent NT\$10 million (equivalent to R2.5 million) on December 1st, 1989 to rent and renovate a double storey building at Vanguard Road, Sturrock Dock, Port of Cape Town. The 24-year lease expires on November 30th, 2013. The ROC government undertook to pay annual rentals, repairs and renovations of the premises to the then South African Transport Services (later renamed Portnet).<sup>105</sup>

The bilateral co-operation on fisheries dates back to 1978. The ROC government concluded a bilateral Agreement on Mutual Fisheries Relations with South Africa on January 26th, 1978. This agreement is still maintained through the annual bilateral consultation meeting. The annual bilateral consultation meetings pertaining to fisheries co-operation were held in Cape Town on December 8th-9th, 1998 and December 9th-10th, 1999 respectively.<sup>106</sup> While the bilateral co-operation on fisheries is mutually beneficial to both the ROC and the RSA, this co-operation works more in the ROC's favour economically. In order to address this imbalance and reciprocate the RSA, in

1997 the ROC government undertook to train 27 South African fishermen in Taiwan. The cost of this training, as well as the flights, accommodation and meals of the said fishermen came to a total of NT\$2.4 million which was covered by the ROC government.<sup>107</sup>

After the severance of diplomatic relations with the RSA, the ROC government decided to downsize its presence in South Africa from four Missions (Pretoria, Johannesburg, Cape Town and Durban) to three (Pretoria, Johannesburg and Cape Town). It was decided to close the Taipei Liaison Office in Durban (formerly the ROC Consulate-General in Durban) in September 1998 rather than the mission in Cape Town, Johannesburg or Pretoria. This was mainly due to the fact that Pretoria is South Africa's administrative capital, Johannesburg is the hub of South Africa and has the largest Taiwanese community and Cape Town is relatively more important than Durban because of the parliament and the fisheries.

#### **4.9 SUMMARY**

The economic and financial ties between the ROC and the RSA were forged during 1976 to 1997. Historically, the development of the economic ties between the ROC and the RSA can be divided into four phases:

Phase One (1948-1971): Before 1971 the economic contact between the two countries was minimal. During this period there was no need for the ROC and the RSA to cooperate with each other. The ROC relied on the USA for economic and diplomatic survival and its major foreign policy objective was to keep its seat in the United Nations Security Council, while South Africa was dependent on the major Western powers as its trading partners and sources of investment.

Phase Two (1971-1994): After the ROC was ousted from the UN in 1971, and South Africa became more isolated in the 1970s, the two countries started to strengthen the

ROC–RSA political and economic partnership. During this period both countries needed each other. As the two economies were basically complementary and both countries experienced common international isolation before 1994, a strong relationship developed between the ROC and the RSA. Each country considered the other as a strategic partner in the common endeavour of economic development. Throughout the 1980s, the economic co-operations deepened. South Africa supplied the ROC with minerals, raw material products and marine resources, while the ROC, in turn, provided capital, investments, manufactured goods and technical co-operation for South Africa. The ROC's investments focused mainly on the rural homelands and in the border areas. The broad-based economic co-operations reflected the convergence of the national interests of the two countries during 1971-1994. The relationship of this historical phase was mutually beneficial in terms of economic interests, but politically the ROC alienated the black majority in South Africa, which eventually boomeranged against the ROC's efforts to maintain its diplomatic ties with the RSA after 1994.<sup>108</sup>

Phase Three (1994-1997): After 1994, South Africa emerged from international isolation to become a regional power and a normal democracy. International economic sanctions had been lifted. Liberated from apartheid, South Africa regained its normal position in the world. Despite its domestic development demands, South Africa's foreign policy once again reverted back to the traditional focus on the West, in particular the European Union (EU) and the USA as well as the African continent. Under these circumstances, the issue of relations with the PRC and the ROC became a sensitive and awkward matter. The RSA did not really need the ROC as in the past. The national interests of the RSA and the ROC started to diverge as from 1994. To keep the jewel in its diplomatic crown, the ROC tried desperately to retain its diplomatic links with South Africa at all costs. As analysed above, various forms of assistance were accorded to South Africa. During this historical phase (1994-1997), due to diplomatic issues, the ROC needed the RSA more than the other way round.

Phase Four (1998 to date): When the South African government started to establish full diplomatic ties with the PRC and to derecognise the ROC as from January 1st, 1998,

the balance of power changed. The ROC lost its most cherished diplomatic ally. The days of special diplomatic/political consideration were over. South Africa had become just one of the countries which maintained de facto substantive relations with the ROC. The RSA's trade with the ROC represents only 0.8% of the ROC's total annual trade, while South Africa's trade with the ROC constitutes about 2.9% of the RSA's total annual trade.<sup>109</sup> The ROC's investment in South Africa is only 0.25% of its total foreign exchange reserves but 0.8% of all foreign investment in South Africa, while the RSA has no investment in the ROC.<sup>110</sup> Therefore, South Africa is not that important to the ROC in terms of the ROC's overall economic relations. It is important to note that, as from the 1990s, the ROC's entrepreneurs have gradually shifted their focus and interest from the RSA to mainland China due to the PRC's low labour costs, relatively better security situation, similar culture and language, and in particular its banning of any real organised trade union. The Chinese mainland has become the hotspot for Taiwanese investment. By the latter half of the 1990s, Taiwanese businesses had invested over US\$20 billion in the Chinese mainland, as compared to the US\$1.5 billion worth of investments in the RSA.<sup>111</sup> How the RSA can continue to attract ROC direct investment in the future will be a great challenge and a serious task for the South African government.

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## CHAPTER V

### THE DEVELOPMENT OF ROC–RSA NUCLEAR CO-OPERATION, 1976–1990

#### 5.1 INTRODUCTION

There was widespread speculation that South Africa may have collaborated with Israel and the ROC in the development of nuclear weapons during the 1970s-1980s.<sup>1</sup> From time to time, international concern was raised in the UN General Assembly regarding the alleged clandestine co-operation in the development of nuclear technology. This allegation was strongly denied by the relevant governments. The international community was even more mystified when F.W. de Klerk dramatically disclosed in Parliament on March 24<sup>th</sup>, 1993 that six powerful nuclear devices had been manufactured by South Africa, but that they had been subsequently destroyed.<sup>2</sup> Despite some efforts made to interpret this unsubstantiated allegation, the truth has not been fully unfolded and no official evidence has been produced to back up the allegation. As a non-nuclear weapon country, why would the ROC consider developing its nuclear co-operation with the RSA? What were the motives? What did the ROC and the RSA actually achieve in their secret collaboration? In what circumstances were these co-operative projects implemented? Was the bilateral nuclear co-operation simply for peaceful purpose? Was there ever any attempt at testing nuclear bombs? What effects did the nuclear co-operation have on the economic development of the two countries? These questions are still shrouded in mystery.

The objective of this chapter is to give insight into the nature of ROC–RSA nuclear co-operation during the 1970s-1980s. The specifics of the nuclear ties between South Africa and Israel, if any, are not the subject of this study. The scope of this chapter is confined to the ROC's nuclear co-operation with the RSA from the establishment of ROC–RSA diplomatic relations in 1976 to the beginning of South Africa's political transformation in 1990. The content of this chapter is divided into four parts:

The first part looks into the short history of the ROC's energy crisis, the rise of its nuclear industry and its demand for cheap nuclear fuel to sustain its economic growth. The second part focuses on the attractiveness of South Africa as a source of supply of nuclear fuel to meet the ROC's demand for the enriched uranium and the development of the nuclear industry in South Africa. The third is devoted to the study of the nature of ROC–RSA nuclear co-operation, its achievements and consequences. While the fourth part explores the termination of the bilateral nuclear co-operation and its impact on the respective country's economic development and national security.

## **5.2 THE ROC'S QUEST FOR NUCLEAR ENERGY**

In the post-war epoch, although the ROC government had successfully transformed itself from being an agricultural backwater to an industrial powerhouse, it was vulnerable to an energy shortage. The ROC lacks any significant source of oil, natural gas or fuel. As a small island-country, the rivers are short and therefore the hydropower is insufficient to meet the increasing energy needs, while its coal and natural gas reserves are also scarce. The ROC's energy vulnerability was compounded by the growth of its population, the development of energy-intensive industries and the shift of focus of its economy. This had further exacerbated the shortage of energy resources. Therefore, while the ROC is in the quest of rapid industrialisation and export expansion, it is dependent on international energy supplies to sustain its expanding industries.<sup>3</sup>

Before the ROC government's relocation from mainland China to Taiwan in 1949, the population on the island of Taiwan was about six million. In the 1940s, Taiwan's economy was mainly based on agriculture and its industrial development was rudimentary. Therefore, her energy requirements were minimal and the supply of electricity was sufficient for Taiwan during the period prior to 1949. However, with the influx of about 1.6 million mainland Chinese into Taiwan during 1945-1949 and the subsequent 3.3% high population growth rate during the 1950s-1960s, Taiwan's total

population rose from 6 million in 1945 to over 8 million in 1951, and further increased to 11 million in 1961, 15 million in 1971, and 18 million in 1981.<sup>4</sup>

Under the pressure of population increment and the shortage of natural resources, the ROC government began the process of industrialisation with export-oriented light industry in the 1950s-1960s, and gradually shifted to more energy-intensive high-tech industries, the petrochemical sector, manufacturing and heavy industries in the 1970s and the 1980s. The expansion of industry, in particular the development of heavy industries such as shipbuilding and steel mills, had led to the increasing energy supply needs. The capacity of the electricity-generating power installation system was not sufficient to meet the demands for more electricity. To produce more energy supply, the ROC had to import more crude oil from the Persian Gulf countries. Total imports of crude oil in 1976 were as high as twelve million kilolitres. Therefore, throughout the 1970s, the ROC became more and more reliant on imported oil from the Middle East. Oil was not only a prime source of energy, but also a primary material input for various manufactured products. In 1973–1974, oil imports accounted for 10.3% of the ROC's total imports by value, and in 1979, it leapt to 14.7%. By 1980, oil imports further increased to 20.6%.<sup>5</sup> These figures showed that the ROC was heavily dependent on imported oil as a major source of energy in the 1970s-1980s.

As already indicated in the previous chapter, the oil supply and oil price were volatile during the oil crises of the 1970s. The abrupt rise in oil prices severely affected the ROC. As a result of the oil crises, the ROC's economic growth and its efforts of restructuring its economy were under threat.<sup>6</sup> In order to disentangle itself from the awkward dependence on the volatile oil import, the ROC government deemed it imperative to find other alternative sources of energy. Attempts were made by the ROC to diversify its procurement from different energy-producing countries, which were in a position to supply alternative energy to the ROC, so as to ensure the stability of the energy supply and to sustain its economic growth. Under these circumstances, the ROC government's strategy was to seek coal and nuclear power as alternative energy

resources. Deeply shocked by the OPEC oil coercion and the subsequent USA switch of recognition to the PRC, ROC planners feared that one day the USA might impose a nuclear fuel embargo upon the ROC if the national interests of the USA and the ROC became divergent. To reduce the ROC's reliance on the USA and OPEC, as well as to ensure the economic supply of energy for the future, the ROC government considered the like-minded anti-Communist South Africa, with rich deposits of coal and uranium, as a secure supplier of alternative energy to the ROC.<sup>7</sup>

In brief, it was the ROC's seeking of an alternative supply of energy and its strategy of diversification that led the ROC to develop its nuclear industry and coal energy production. To meet the increasing demand for electricity, three nuclear plants were built and eighteen coal-fired-thermal power stations were constructed in the ROC since the latter half of the 1970s. The first nuclear plant was officially commissioned in 1979 and the second one was completed in 1981. These two nuclear power stations are situated in the north of Taiwan to supply electricity to the metropolis of Taipei, the capital of the ROC, and the third nuclear power plant is located in the south of the island to provide electricity for the city of Kaohsiung, one of the important industrial centres and the biggest sea port of the ROC.<sup>8</sup>

The ROC government's motivation to search for nuclear energy was clearly explained by Chen-hsing Yen, the then Chairman of the Atomic Energy Council (AEC) of the ROC Executive Yuan (Cabinet):

The expense and the insecurity that go with dependence on imported fuel were underlined for Taiwan by the recent boycott and price-hike of oil by the OPEC nations. The need to seek alternate sources of energy both for economic and national security reasons was made very plain. With her ambitious plans for an industrial future and her limited supply of natural resources, Taiwan made the decision to turn to nuclear energy as a power source.<sup>9</sup>

### **5.3 THE ROC'S ENERGY STRATEGY AND THE ATTRACTIVENESS OF THE RSA TO THE ROC**

In order to meet its increasingly pressing energy needs, a blueprint (guideline) of the ROC's energy strategy and future economic development policy was formulated by the leadership of the ROC government during the 189<sup>th</sup> meeting of Central Standing Committee of the Kuomintang (KMT), the ROC's ruling party, held on October 22<sup>nd</sup>, 1980. The said meeting was presided over by the ROC Premier, Sun Yun-suan. According to the resolution of this meeting, the ROC should take advantage of South Africa's abundant minerals, energy resources and metal products to diversify the ROC's energy imports and to pursue the economic development of the ROC. Furthermore, despite the possible political risks and unfavourable implications, the ROC government was resolved to strengthen ROC–RSA economic co-operation and to step up its procurement of minerals such as uranium, coal, iron ore and energy-related products such as steel, copper and aluminium from South Africa. The RSA was viewed by the ROC leadership as an important energy supplier and economic strategic partner during the 1980s in its blueprint for further economic development and the diversification of energy imports. The decision was made on account of the ROC's new economic strategy and the following considerations:<sup>10</sup>

Firstly, the underlying consideration was the factor of energy resources and the ROC's new strategy of industrial development directed towards high-tech and energy-saving industries since 1980. Given the shortage of energy resources and the impacts of world oil crises on the overall economy of the ROC, the policy for the development of the ROC industries was to phase out those of energy-consuming industries and to develop energy-saving enterprises. In line with this policy, the development of heavy industries and petro-chemical industries were to be discontinued in the ROC. The ROC government encouraged the labour intensive light industry and energy-consuming industries to be relocated to or established in countries where energy resources and manpower were sufficient. This was why the ROC set up a huge fertiliser production

factory in Saudi Arabia and many labour-intensive industries started to relocate to South Africa and other countries as from the 1980s.<sup>11</sup>

Secondly, South Africa was well suited for the diversification of the ROC's energy imports due to South Africa's endowment with abundance of minerals and commodities such as coal, uranium, steel, aluminium, copper, zinc which can be easily converted and utilised by the ROC's industries. Therefore, the RSA was viewed an ideal strategic economic partner.<sup>12</sup>

Thirdly, owing to the availability of abundant easily mined coal, South Africa's electricity cost was much cheaper than the ROC's. For instance, in the ROC, the cost for coal which was ready to be used for power generation was USA\$50.00 per ton (including the cost of shipping, storage and expenses of the construction of special pier for coal off-loading). But in the RSA, it cost merely USA\$8-00 per ton. Consequently, the strategy adopted by the ROC leadership was to invest in countries producing raw materials and to enhance bilateral co-operation with mineral, or oil-rich countries, such as South Africa and Saudi Arabia to develop and explore energy resources. In the meantime, the decisions were also made to purchase the energy-related manufactured products from South Africa. By doing so, it was envisaged that the energy consumption in the ROC could be reduced and the continued industrial development would be sustainable.<sup>13</sup>

Driven by the economic need and the above-mentioned considerations, the ROC government began to assess the feasibility of the nuclear energy co-operation with the RSA from the year of 1979 shortly after the second oil crisis.

#### **5.4 THE DEVELOPMENT OF THE ROC NUCLEAR INDUSTRY**

The earliest history of the ROC's attempts to produce atomic bombs dated back to 1945. Deeply impressed by the devastating effects of the implosion of the two atomic bombs dropped on Japan by the USA over Hiroshima on August 6<sup>th</sup>, 1945 and over



Nagasaki three days later, Chiang Kai-shek was eager to tap into nuclear secrets to produce an atomic bomb while he was still in control of mainland China, shortly after the end of the Second World War. The purpose was to boost the prestige of China, which was considered as one of the “Big Five” at the time. To obtain sufficient nuclear technology, he assigned three pre-eminent Chinese scientists to be in charge of the development of nuclear fission at Chungking in 1945, and five Chinese physicists were selected and sent by Chiang to the USA in 1946 to conduct their research on the developments of atomic bombs. It was only when these five physicists arrived in the USA that they realised that the Americans had no intention of sharing their nuclear technology with the ROC physicists. The ROC's early endeavour in developing its own nuclear weapons was thus dashed.<sup>14</sup>

But Chiang Kai-shek's aspiration to possess an atomic bomb never ceased in spite of the fact that he was defeated by the Chinese Communists in the civil war. As soon as he re-established himself in Taiwan, Chiang Kai-shek was constantly intrigued by the massive explosion power of nuclear fission devices. He consulted the physicists on the issue. However, most of the ROC physicists were against developing nuclear weapons, and the Americans strongly opposed his plan. The real stumbling block was that the ROC could not obtain fission materials without the consent of the USA and that the ROC itself had no nuclear resources. As a small island country, the ROC's nuclear activities and testing of nuclear devices could not escape the USA's detection and surveillance. Moreover, the production and supply of enriched uranium were under the control of the USA. The ROC had no uranium enrichment plant either. These were the unfavourable factors that prevented Chiang Kai-shek from realising his dream.<sup>15</sup>

Furthermore, the ROC's shortage of energy resources also constrained the ROC government to opt for nuclear technological development for peaceful purposes. In order to meet its electricity needs, it was necessary for the ROC to phase in nuclear power stations from the 1970s as a back-up to coal-fired, oil-generated and hydro power stations. Mindful of the sensitivity of nuclear non-proliferation and the importance of acquiring the technical ability to produce its own nuclear weapons, Chiang Kai-shek

decided to adopt a two-pronged approach. On the one hand, he placed all of the ROC nuclear activities under international safeguard so as to have rights and privileges to share nuclear technology and uranium resources with the USA and to develop and build nuclear power stations. On the other hand, he launched the ROC's nuclear research and development programme in the middle of the 1950s.<sup>16</sup>

To co-ordinate nuclear research and development, the Atomic Energy Council (AEC) of the ROC Executive Yuan (Cabinet) was established in the early 1950s to serve as a special governmental agency responsible for the planning and policy formulation of nuclear energy research and the development of nuclear-related projects in the ROC. In 1956, the first Atomic Science Research Institute was founded in National Tsing Hua University, near the city of Hsinchu, in the northern part of Taiwan. In order to develop nuclear physics and engineering, the first test was conducted and the first research nuclear reactor installed in the said university, and the laboratory was provided with the necessary apparatus and equipment. Most of the graduates of the Department of Nuclear Physics of Tsing Hua University and the Atomic Science Research Institute, and the ROC senior nuclear scientists and physicists went to the USA and the UK for further training and advanced studies. In particular, they went to the Massachusetts Institute of Technology (MIT), USA, to study nuclear fuel management or the United Kingdom Atomic Energy Association (UKAEA) in England to study advanced nuclear safety in the 1960s. Professional on-the-job training in regard to nuclear fuel design, nuclear power generation and management, and nuclear reactor technology was also provided by various Western companies such as General Electricity (G.E.), and Westinghouse.<sup>17</sup>

For ordinary scientific research and development, the National Science Council (NSC) was created in the late 1950s to oversee academic and scientific research in the universities and other academic research institutes. The NSC appropriated approximately USA\$46.7 million annually for the management of the Hsinchu Science-based Industrial Park. This industrial park turned out to be a great success, and it has been commonly called "Taiwan's Silicon Valley". For commercial and industry-oriented

scientific advancement, the ROC Ministry of Economic Affairs (MOEA) also promoted technology-intensive and industry applied research. The Industrial Technology Research Institute (ITRI) was founded by the MOEA to serve this purpose with special emphasis on electronic and information technology research.<sup>18</sup>

For the development of military weaponry and national defence technology including nuclear and missile research and development for the military, the Ministry of National Defence set up and funded the Chungshan Institute of Science and Technology (CIST) to conduct the research and development on military science-technology projects such as the testing of missiles and the design of various weaponry and fighter jets. The NSC, Hsinchu Science-based Industrial Park and ITRI are non-nuclear research and development institutes. But these institutes worked hand-in-hand with the afore-said nuclear agencies such as the AEC and CIST to further the advancement of science and technology.

The ROC government has spent huge amounts of capital from the budgets of the above-mentioned various governmental agencies to develop scientific expertise and to cultivate the relevant experts and scientists, so as to develop advanced technology and produce high-tech products in the increasingly competitive world market. As a result of the focus of the ROC government on the research and development of technology and science, as well as its efforts in education and economic developments, the ROC has produced a number of experienced scientists and physicists. Many of them have studied in the USA and other industrialised countries and have had three years of research experience outside the classroom. By 1994, the number in the research work force in the ROC exceeded 92 000. Among them, 55 000 persons held B.Sc., MSc., or Ph.D. degrees.<sup>19</sup>

Although both the AEC and the NSC had its own Chairman, the minister responsible for the overall development of science and technology including nuclear industry was K.T. Li, a graduate of Cambridge, who was well-known for his efficiency and his knowledge in nuclear physics and economic development. Nevertheless, apart from the AEC, the

main organisation that implemented ROC–RSA nuclear collaboration projects was Taiwan Power Company (Taipower). The AEC was merely responsible for nuclear development, planning and policy formulation. The actual implementation of ROC–RSA nuclear co-operation programme was carried out by Taipower. It was Taipower and the AEC which teamed up with the Uranium Enrichment Corporation of South Africa Limited (Ucor) and Atomic Energy Board (AEB) to develop the nuclear industry in the RSA.<sup>20</sup>

Taipower is a state corporation, but nominally, it is under the monitoring and supervision of the Commission of National Corporations of the Ministry of Economic Affairs (MOEA) of the ROC. However, in fact, Taipower is a semi-independent state corporation. The main function of Taipower was to develop, generate, supply and market electric power for the entire area of Taiwan. Taipower is solely responsible for all of the function of energy procurement and distribution, and owns and operates 37 hydropower, 18 thermal and three nuclear plants. These three nuclear power stations which housed six nuclear units generated 24.5% of the ROC's total electrical output in 1994.<sup>21</sup> Taipower's nuclear power research programme dates back to 1953.

On December 8<sup>th</sup>, 1953, the President of the USA, Dwight D. Eisenhower, addressed the General Assembly of the UN on the subject of atoms for peace. This speech became known as “President Eisenhower’s Atoms for Peace Initiative” which in turn, led to the First International Conference on the Peaceful Uses of Atomic Energy in Geneva in 1955. Agreements were soon reached by the major powers to set up an international agency to regulate the peaceful uses of nuclear energy and to inspect the related nuclear facilities, so that the enriched uranium would not be used for military weapons. It was through Eisenhower’s “Atoms for Peace Initiative” that the International Atomic Energy Agency (IAEA) was officially formed in 1957 in Vienna to control nuclear materials and equipment, and to ensure their peaceful utilisation throughout the world.<sup>22</sup>

In dire need of cheap and clean energy sources other than oil and coal for the increasing energy consumption resulting from expansion of its industries and economy in Taiwan, the ROC government saw the advent of President Eisenhower’s “Atoms for

Peace Initiative” as a godsend opportunity to alleviate the ROC’s energy problem. In view of the limits of oil, coal and gas as explained earlier, it seemed to the ROC government that nuclear power would be the answer to the scarcity of its existing energy resources and growing energy demands. By associating with Eisenhower’s “Atoms for Peace Initiative”, the ROC government believed that the ROC would be able to share the know-how and fissionable materials for the generation of electric power and various subsidiary uses of radioactivity in agriculture, medicine and other fields.

As the ROC was still one of the UN Security Council’s permanent members during the 1950s and maintained close diplomatic relations with the USA, it had a bilateral agreement with the USA to participate in Eisenhower’s “Atoms for Peace Programme”. In response to the said “Atoms for Peace Initiative”, the ROC government designated Taipower to establish an Atomic Power Study Committee within the company of Taipower, and under this committee, an Atomic Power Department was formed in 1955 to proceed with the research and development of the nuclear power programme. In 1956, when the Statute Conference of the International Atomic Energy Agency (IAEA) was open to all members of the UN, the ROC became one of the more than 60 member states of the IAEA. From the first session of the IAEA, which was held in Vienna in October 1957, the ROC routinely sent its delegation to attend the IAEA General Conferences until the ROC’s withdrawal from the UN in 1971. But even though the ROC was no longer an official member state of the UN and the IAEA after 1971, the agreement which the ROC concluded with the IAEA was still binding, and the ROC undertook to abide by the regulations of the IAEA. Therefore, the ROC’s nuclear power plants were still subject to the international safeguards inspection system of the IAEA. In conforming to this system and to the spirit of President Eisenhower’s “Atoms for Peace Initiative”, the ROC was able to share nuclear information and technology with the USA from the 1950s onwards. There was close co-operation between the ROC and the USA. The USA assisted the ROC in building three nuclear power plants and signed a long-term contract with the ROC to supply enriched uranium and nuclear reactors to the ROC for the production of nuclear power. The two countries also engaged in a

programme of the exchange and training of the ROC scientists and experts in the related fields since the 1950s.<sup>23</sup>

By 1964, anticipating that the ROC's electricity consumption would double in every 5-6 year period, Taipower decided to build nuclear power plants. The experts of the IAEA and the USA were invited to visit the ROC to identify suitable sites for the construction of nuclear power stations on the island in 1964. But the construction of the ROC's first nuclear power station in Chinshan, a coastal area near Taipei, started only in November 1969. The first nuclear reactor began to operate in 1977 and the second nuclear reactor functioned as from December 1978. The first nuclear power station, which housed the above-mentioned two nuclear reactors, was officially commissioned in 1979.<sup>24</sup> In the wake of the first world oil crisis of 1973, the ROC government hastened to build two more nuclear power stations. Construction of the ROC's second nuclear power plant commenced in November 1974 and was completed in June 1982. The third nuclear power station was under construction as from May 1978 and finished in January 1985.<sup>25</sup>

In addition to the said three nuclear power stations, which had been built before 1985, Taipower was planning to build three more nuclear power plants at a later stage. The plan for building the fourth nuclear power station was submitted to and approved by the ROC cabinet in May 1980. The construction site was chosen at the area of Gung-Liao in the north of Taiwan. The land had been procured and prepared for the construction during 1981-82.

But on April 26<sup>th</sup>, 1986, one of the nuclear reactors at Chernobyl, near Kiev in the Ukraine, blew up. The Chernobyl calamity caused not only casualties, fallout and long-term effects over a vast area in the Ukraine, but also a great fear and anxiety in the minds of the Taiwanese general public. The fear was not groundless in view of the fact that these nuclear power stations which the ROC government built or intended to construct are all very close to the densely populated metropolis of Taipei, Keelung, Kaohsiung and other scenic residential coastal areas. As a result of the Chernobyl

disaster, the conservationist groups, the Democratic Progressive Party and the local people near the construction sites, were provided with enormous support from the general public to lobby the ROC Legislative Yuan (Parliament) to block the construction of the fourth nuclear power station from 1986 onwards.<sup>26</sup> Although the then ruling party of the ROC, the Kuomintang, forced the issue through the Parliament during the budgetary debate of July 12<sup>th</sup>, 1994, the local residents still strongly objected to the construction of new nuclear power stations. So far, this contentious issue is far from being settled. Ever since 1986, the ROC government has been faced with the dilemma of putting up with increasing electricity shortage or pushing its way through the strong objection to build more nuclear power stations.<sup>27</sup>

In the process of developing its own nuclear industry, the ROC, with its industrial technique and possession of nuclear reactors, has secured the necessary capability and the technical skills to make nuclear bombs since the mid-1970s. Despite the sophisticated safeguards inspection system of the IAEA, the ROC scientists and nuclear physicists could have covertly converted some of its nuclear facilities to weapons grade production, or diverted a portion of highly-enriched uranium from civil to military use without great difficulty if the ROC leadership wished to do so. However, Chiang Kai-shek died from a heart attack on April 5<sup>th</sup>, 1975. The new leader of the ROC government, namely Chiang Ching-kuo, the son of Chiang Kai-shek, chose not to pursue the development of atomic bombs, and he terminated the ROC nuclear weapons research and development programme due to the above-mentioned unfavourable factors and American pressure, despite the ROC's attainment of technology to produce nuclear bombs.<sup>28</sup>

The ROC's capability to produce nuclear weapons was confirmed by Chiang Ching-kuo, the then Premier of the ROC. On September 17<sup>th</sup>, 1975, five months after the death of his father, Chiang Ching-kuo was questioned by the reporters of the United Press International (UPI) about whether or not the ROC intended to make nuclear bombs or not. He solemnly declared that "The ROC does have the technical ability to make its

own nuclear weapons, but it will never proceed to develop atomic bombs or nuclear weapons.”<sup>29</sup>

This statement was the earliest report that the ROC was capable of producing its own atomic bomb, although it did not intend to do so. Chiang’s landmark statement clearly indicated that the ROC’s nuclear programme was for peaceful purposes, not for the making of nuclear weapons. This was the official policy of the ROC’s nuclear industry, despite the growing pressure on the ROC government to work on nuclear weapons production to counter the PRC’s nuclear testings. The said statement was mainly aimed at assuring the USA and the IAEA that the ROC was merely interested in the peaceful applications of nuclear power. The statement was made against a background of increasing diplomatic difficulties experienced by the ROC after its expulsion from the UN and the death of the President of the ROC. The world community was also deeply concerned about the possibility of nuclear proliferation because of the explosion of a nuclear device in 1974 in India.<sup>30</sup> Chiang’s clarification had soothed American apprehensions to a certain extent.

But the USA government, in particular the Central Intelligence Agency (CIA), still kept the ROC under surveillance and monitored its nuclear research programme from time to time. In order to do so, the CIA had planted its secret agents in the senior hierarchy of the ROC government and Chungshan Institute of Science and Technology (CIST) which was responsible for the research and development of the ROC’s military weapons and defence industry. The most famous case in point was the infiltration of Colonel Chang Hsien-yi into the CIST. Colonel Chang was the Deputy Director of Nuclear Research Institute of the CIST. He had been bribed and recruited by the CIA to secretly monitor the ROC’s nuclear research programme for the USA for a long time. He escaped with confidential nuclear research files and related information to the USA in December 1987. At one stage, the CIA even attempted to recruit the ROC’s Deputy Minister of Foreign Affairs, H.K. Yang, to work for the agency. The CIA offered him a considerable payment that would be deposited in a Swiss bank account, a mansion in the USA and American citizenship in exchange for his secret service to the CIA. Yang, however,

declined to accept the CIA's offer.<sup>31</sup> Interestingly enough, H.K. Yang was assigned by the ROC government in 1979 as the Ambassador of the ROC to the RSA to enforce the most sensitive ROC–RSA nuclear co-operation programme during 1979-1989. The CIA was prevented from knowing the true picture.

However, the ROC continued to be an observant non-nuclear weapon country despite American suspicion and speculation. The reasons why the ROC remained in the state of a non-nuclear weapon country were twofold. In the first place, although the ROC had enough scientific expertise and knowledge in engineering to build a nuclear device for bomb testing, it was the political decision of the ROC government that was essential in deciding the direction of its nuclear research and development. The ROC leadership had gradually realised that the problems of the ROC and its relations with the PRC were basically political, not military. The possession of a nuclear weapon in the final analysis would not necessarily solve the problems of the two Chinas which were the consequence of the political and economic differences between the Kuomintang (the Nationalist Party) (KMT) and the Chinese Communist Party (CCP). It was believed that the two Chinas could only be unified through peaceful political negotiations, not by bloody military means. In line with this point of view, the late President of the ROC, Chiang Kai-shek, had addressed his compatriots in his New Year's message of January 1<sup>st</sup>, 1967 indicating that "The important questions before us today are no longer how the military counter-attack on the mainland will be victorious or at what time the traitorous Mao bandits will be killed... rather, it is to point out that in the present anti-Mao war, political means are even more important."<sup>32</sup>

This message clearly reflected that the ROC leadership perfectly understood that the ROC's problems were political, rather than military. Therefore, there was no need for the ROC to possess nuclear bombs. Emotionally and morally, the ROC could not use nuclear bombs to attack the Chinese civilians residing in the mainland because they are ethnically the same Han Chinese descendants. Moreover, many high-ranking generals and officials of the ROC government who came over to Taiwan with Chiang Kai-shek still have relatives in mainland China.<sup>33</sup>

Secondly, the survival of the ROC was largely dependent on the continued prosperity of its economy, not on its military might or international diplomatic recognition of its legitimacy. In order to sustain its economic growth and to solve the problem of its lack of energy resources as analysed earlier, it was essential for the ROC to have access to nuclear energy and fissile material for the peaceful uses of electricity. The production of nuclear bombs would not only cause further escalation of a deadly arms race in East Asia, but also provoke the USA and Japan to impose sanctions against the ROC. The detonation of nuclear bombs might boost the prestige of the ROC in the world community, but the international outrage and economic sanctions following the nuclear tests would be much more detrimental to the export-oriented island country and its economy. After weighing the consequence, the ROC government decided to relinquish the manufacture of nuclear weapons, for the sake of the larger benefit of economic prosperity. Instead of developing nuclear bombs, it chose to support nuclear non-proliferation.<sup>34</sup>

In short, it was the economic reality that compelled the ROC to be a non-nuclear weapon state. Under the constant pressure and surveillance of the USA, it would not be possible for the ROC to acquire nuclear technology, equipment and fissile material unless the ROC was prepared to either accept the USA demands for full scope safeguards or to accede to the Nuclear Non-Proliferation Treaty (NPT). The pressure was so strong that the ROC was left with no choice but to sign the 1968 Nuclear Non-Proliferation Treaty. The ROC deposited its instruments of ratification of the NPT on January 1<sup>st</sup>, 1970. The ROC thus became a party to the NPT, the international instrument devised by the USA to contain nuclear proliferation. As a signatory state of the NPT, the ROC had to adhere to the statutory regulations of the NPT.

The NPT stipulated that the nuclear weapons signatory powers should not transfer nuclear weapons or supply weapons technology to any non-nuclear weapons state, and that non-nuclear weapons states may not receive nuclear weapons. Non-nuclear weapons signatory states were also required to accept the International Atomic

Energy's system (or an equivalent system) to ensure that their non-military nuclear facilities and materials would not be used for military purposes.<sup>35</sup>

Although the ROC was bound by the provisions of Article I and Article II of the NPT which prohibited the ROC from supplying, receiving, transferring or manufacturing nuclear weapons or other nuclear explosive devices, all parties to the NPT were entitled to participate in the fullest possible exchange of scientific information and to co-operate with other countries for the further development of the applications of atomic energy for peaceful purposes. This was in accordance with the stipulation of Article IV Clause 1, "Nothing in this Treaty shall be interpreted as affecting the inalienable right of all the Parties to the Treaty to develop research, production and use of nuclear energy for peaceful purposes without discrimination and in conformity with articles I and II of this Treaty."<sup>36</sup> Therefore, legally speaking, the ROC did have the right to co-operate with the RSA in the nuclear field, so long as the co-operation was for peaceful purposes. But while the tide of the international anti-Apartheid hostility mounted in the 1980s, why did the ROC government risk offending world public opinion to step up the ROC–RSA nuclear co-operation programme? What was the ROC up to? Why did the two countries band together?

Besides the factors of the ROC's shortage of energy resources and its economic strategy of diversification of energy imports as explained above, the explanation also lies in the ROC's fear of world power politics, its pursuit of safeguarding its national security and the RSA's isolation with respect to its nuclear relations with the major Western countries from 1977 to 1990. As already discussed, by 1978, the USA was ready to normalise its relations with the PRC and abandon its official ties with Taipei. In December 1978, the then USA President Carter announced that the USA had decided to establish full diplomatic relations with the PRC and to derecognise the ROC with effect from January 1<sup>st</sup>, 1979. The Mutual Defense Treaty between the USA and the ROC would be abrogated, but other treaties and agreements would remain in effect.<sup>37</sup>

As a result of the break-up of ROC-USA diplomatic links and the termination of the ROC–USA Mutual Defense Treaty, the ROC’s national security was in jeopardy. The security concern was reflected by Chiang Ching-kuo’s official statement, which was issued at a press conference in December 1978. Chiang pointed out:

The Sino-USA Mutual Defense Treaty signed in 1954 was designed to be a vital link in the chain of collective defense system of free countries in the West Pacific. The situation in this region has not changed. It is still unstable and insecure. The threat of invasion and subversion by Communist forces to the free nations of Asia, particular after the fall of Vietnam, is even more serious than before. Hence, the USA unilateral action to terminate the Sino-USA Mutual Defense Treaty will further destabilise this region and might create a new crisis of war.<sup>38</sup>

In addition to the feeling that its security was threatened, the ROC government and people also feared that in its new strategic planning, the USA might use the ROC as a pawn in the China game. There were particular concerns that the USA might either sacrifice the ROC’s interests to accommodate the PRC on the American international geopolitical chessboard, or twist the ROC’s arms to succumb to the traps of the PRC’s unification and “one country, two systems”. Moreover, there was the probability that the PRC might outmanoeuvre the USA to harm the ROC’s survival.<sup>39</sup>

The loss of trust in USA credibility was another factor contributing to the ROC’s nuclear co-operation with the RSA. Feeling slighted by the Carter administration, the ROC leadership could no longer fully trust the USA, and the downgrading of ROC–USA ties had further led the ROC government to doubt the USA’s commitment to protect the ROC from an invasion by the Chinese communists. From the ROC leadership’s perspective, because of the USA’s apparent lack of concern for the ROC’s feelings, the USA government might consider the ROC to be expendable. The USA government’s lack of consultation with the ROC and the indifference of the Carter administration to the ROC’s strategic importance had deeply hurt the psyche of the ROC leadership. As a

result of the damage caused by the USA's shifting of recognition towards Beijing, there was a growing desire on the part of the ROC government to search for a new strategic ally and to restore the ROC's dignity. To safeguard the country's national security and to counter the PRC's threat against the ROC, the ROC government felt the need to take definite steps to control its own destiny.<sup>40</sup>

Knowing that the USA's normalisation of relations with the PRC was inevitable, the preservation of the ROC's security and survival had become the common strategic concern of the ROC government and its opposition movement. The leadership of the ROC, such as Chiang Kai-shek and his son Chiang Ching-kuo, called for self-reliance. The slogan of the ROC government was that "In the face of changes in the political and diplomatic situation, we must combine perseverance with calmness to tide over the crisis and to man the helm for ourselves and assure our own success."<sup>41</sup>

Under the circumstances, the ROC was very keen on co-operating with South Africa to assist the RSA in its production of enriched uranium so as to ensure the diversification of uranium supply to the ROC.

## **5.5 THE ESTABLISHMENT OF URANIUM AND NUCLEAR INDUSTRIES IN THE RSA**

South Africa has long been known as one of the major producers of gold and uranium in the Western World. To a large extent, South African uranium is largely a by-product of the gold-mining industry as the gold reefs usually contain uranium. Uranium deposits are typified by lower-grade sedimentary deposits, which are found in various areas, particularly in the Witwatersrand Basin, the northern Transvaal, the southern Karoo and the northern Cape.<sup>42</sup>

According to the evaluation made by the RSA's Atomic Energy Board (AEB) in 1981, approximately 98% of South Africa's uranium was produced from the quartz pebble

conglomerate of the Witwatersrand Basin as a by-product or co-product of gold. The remainder came from outside the Witwatersrand Basin, including the Phalaborwa carbonatite deposit (a by-product of copper), the uraniferous coal deposits of the northern Transvaal, the sandstone occurrences in the southern Karoo, and the surficial deposits of the northern Cape.<sup>43</sup> South Africa's uranium deposits are so abundant that South Africa ranked second in world uranium reserves, and that throughout the period of the 1970s and 1980s, it was the second largest producer in world uranium production, accounting for approximately 20 percent of the Western World's uranium exports.<sup>44</sup> The afore-mentioned uranium deposits, however, did not include the well-known Rössing uranium mine in SWA/Namibia which was still under South African rule before Namibian independence on March 21<sup>st</sup>, 1990. If we combine South Africa's deposits with those in SWA/Namibia, South Africa was actually the most important uranium source in the world prior to 1990.

The importance of South Africa's uranium resources was not fully appreciated by the Western powers until the end of the Second World War, when the USA and Britain were searching for uranium to manufacture atomic bombs. In 1945, the two governments assigned G.W. Bain and C F. Davidson, two top uranium specialists, to visit the Union of South Africa. A systematic investigation was conducted to survey the potentialities of uranium deposits in South Africa. This combined survey concluded that "Present evidence appears to indicate that the Rand [Witwatersrand] may be one of the largest low-grade uranium fields in the world."<sup>45</sup>

In order to co-ordinate the development and research projects relating to uranium, the Prime Minister of the Union of South Africa, Jan Smuts, appointed a Uranium Research Committee in February 1946. The said Committee, in conjunction with the government Metallurgical Laboratory (GML), made concerted efforts to find the most economical method of uranium extraction from the gold ores. In the meantime, both Smuts and later the National Party realised that legislation had to be introduced to control uranium and nuclear energy development. Towards the end of 1947, the United Party government started to draft a comprehensive Uranium Bill to regulate the related

activities. However, the prospective legislation was never introduced to Parliament by the United Party due to the general election held in May 1948 and its subsequent loss of power. It was the National Party government that enacted the Atomic Energy Act soon after it came to power in 1948. The Atomic Energy Act (Act No. 35 of 1948) came into force on January 1<sup>st</sup>, 1949.<sup>46</sup>

Based on this Act, the Atomic Energy Board (AEB) was established in 1948. The AEB's function was primarily to handle research and development in respect of nuclear materials and techniques. Apart from the AEB, the Council for Science and Industrial Research (CSIR) and some universities were also involved with nuclear research. But the final negotiations of sales contracts of extract uranium in concentrate form were handled by the Nuclear Fuels Corporation of South Africa (Pty) Ltd.<sup>47</sup> In 1959 the Atomic Energy Act was amended to provide for the establishment of a nuclear research and development programme at Pelindaba under the control of the AEB. In 1970, the Uranium Enrichment Corporation of South Africa Limited (Ucor) was established by the Uranium Enrichment Act (Act 33 of 1970) and construction of a pilot plant at Pelindaba, the Ucor site, commenced in the same year. The main purpose for the setting up of the said pilot plant was to test a novel uranium enrichment process.<sup>48</sup>

To integrate the various nuclear research institutions, a new Nuclear Energy Act (Act 92 of 1982) was introduced in 1982 to bring all the nuclear research and development activities in South Africa funded by the State under the control of the Atomic Energy Corporation of South Africa Limited (AEC). The newly-established Nuclear Development Corporation of SA (Pty) Ltd. (Nucor – previously the AEB) and the Ucor were to be subsidiary companies of the AEC. With effect from July 1<sup>st</sup>, 1985 the activities of Nucor and Ucor were integrated and incorporated into the AEC under the control of a single Board of Directors with an Executive Chairman in terms of the Nuclear Energy Act of 1982 which superseded all previous legislation regarding nuclear energy in South Africa. The restructuring of all nuclear research and development organisation was thus completed by 1985.<sup>49</sup>

The prevention of nuclear proliferation and the control of the availability of fissionable materials were the essential policy of the major powers in the post-war era. These nuclear countries such as the USA, the Soviet Union, Britain, France and the PRC aimed to monopolise the possession of nuclear weapons and to safeguard international security. The 1968 Nuclear Non-Proliferation Treaty (NPT) and the systems of safeguards administered by the International Atomic Energy Agency (IAEA) constituted initial steps in a long-term effort to restrain nuclear proliferation.<sup>50</sup>

To prevent South Africa from making nuclear bombs, international safeguard measures were also imposed on South Africa. Although South Africa was the second largest producer of uranium in the Western World with the second-largest proven reserves, South Africa was restrained from developing its own enrichment process and acquiring the technology of making both nuclear fuel fabrication and nuclear weapons. South Africa was merely allowed to play a key role in the provision of the raw material – uranium. South Africa was discouraged and prevented from becoming a self-sufficient nuclear country and would have to be dependent on the USA for a supply of enriched uranium unless the RSA started its own independent nuclear enrichment.<sup>51</sup>

Despite the existence of friendly co-operation between South Africa and the major Western powers such as the USA, the UK and West Germany in the nuclear field from 1945 to the 1960s, these major Western powers had no intention to assist South Africa in developing an independent nuclear enrichment programme without any safeguards at all. It was feared that with the unsafeguarded enrichment plant, South Africa might be able to manufacture nuclear weapons. This would be detrimental to the strategic interest of the West. Therefore, most of the Western nuclear co-operation projects with South Africa were confined to the exploration, prospecting, and production of uranium. In other words, the West considered South Africa simply as a leading uranium producer and “protégé of the nuclear arms race.”<sup>52</sup>

In order to ensure that South Africa would not violate nuclear proliferation and export its uranium to undesirable, rogue countries or resale and divert enriched uranium and

fissile materials to third parties, highly restrictive conditions were attached to the enriched uranium supplied by the Western countries to South Africa. Apart from these safeguard conditions imposed by the Western uranium suppliers, South Africa's marketing of uranium was also controlled by the Combined Development Agency (CDA), a joint USA and British uranium procurement organisation during the period from the 1950s to the mid-1960s. During that period the CDA was the sole buyer of South African uranium oxide and the price was fixed for a ten-year period. Most of the loans and capital investments in South Africa's uranium production came from the USA and the UK.<sup>53</sup>

The West's monopoly of the world's nuclear raw materials changed only after the mid-1960s when an overproduction of uranium occurred in Australia, Canada, the USA and other countries. As a result of overproduction of world uranium, the demand for South Africa's uranium declined and the CDA gradually phased out its orders of procurement of uranium for military purpose from South Africa in the mid-1960s. During the period from the mid-1960s to the early 1970s, the uranium prices became stagnant. From the 1970s to 1989 the market for natural uranium fluctuated considerably. The number of mines producing uranium in South Africa decreased from twenty-nine at the peak of military contracts during the 1950s to eight in 1975.<sup>54</sup>

These facts reflect that during the 1950s to the 1960s, South Africa's uranium industry was the monopoly of the USA–UK, and that South Africa's role was confined by the Anglo-American CDA to provide the raw material of uranium to the USA and the UK. With the passage of time, the South African government became dissatisfied with the restricted role as a mere uranium producer.<sup>55</sup>

It was apparent that from the mid-1960s onwards, South Africa's uranium mining industry was at a crossroads. It needed not only to divert its uranium market to other parts of the world, but also to sell its uranium in enriched form so as to get better prices than unprocessed uranium oxide. If the commercial production of enriched uranium could succeed, it would serve many purposes for South Africa. In the first place, as

compared with natural uranium oxide, the exported enriched uranium fetched far higher prices and the enriched uranium could be further used to produce radioisotopes. From the economic point of view, the added value of the enriched uranium was much higher than natural uranium. With the country's abundance of uranium, it was necessary for South Africa to pursue uranium enrichment and to surpass the role of a mere uranium producer. It was estimated that the production of radioisotopes could increase the foreign trade value of the enriched uranium up to forty times the normal selling price.<sup>56</sup>

Secondly, from the vantage point of electrical needs, following the industrial development in South Africa, nation-wide electrical demands were increasing. To meet this need, the construction of nuclear power stations would be inevitable. As early as 1954, related assessments and cost evaluations had been made in South Africa. In May 1971, Eskom decided to build the Koeberg nuclear power station to generate electricity for the Cape region. In order for South Africa to be self-sufficient in providing nuclear fuel for the reactors of the future nuclear power stations, there was a need to produce its own enriched uranium.<sup>57</sup>

Thirdly, the development of enriched uranium, in particular the weapon-grade highly enriched uranium (HEU), would eventually enable South Africa to produce atomic bombs. From strategic considerations, the possession of nuclear weapons seemed likely to earn prestige, influence and bargaining power for the RSA and to bolster its security, by using atomic bombs as a deterrent in the event of the worst scenario. Besides, it would demonstrate its technical ability and enhance the self-confidence of the white minority government and its international status.<sup>58</sup>

The strategic motivation should be understood from the historical context of the increasing international isolation of the South African government after the 1960s and its fear of the lack of security in the 1970s–1980s. The RSA's international position was rapidly deteriorating at the time. Pretoria was deeply worried by the increasing international isolation and encirclement by hostile African countries, as well as by Soviet

expansionist threats.<sup>59</sup> The above-mentioned factors were the main motivations for South Africa to create its own nuclear industry and to produce enriched uranium.

The establishment of the South African uranium and nuclear industries, as discussed in the preceding pages, dated back to the years after the end of the Second World War. At first, the USA and the UK were its main partners. Prior to the early 1970s, the South African uranium and nuclear industries were closely linked to the West. From the end of the Second World War to the year 1977 when the Carter administration took office, notwithstanding the mounting anti-South African pressure in the United Nations, there were friendly and co-operative relations in the nuclear field between South Africa, the USA, the United Kingdom (UK) and West Germany. During this period, South Africa provided the USA and the UK with huge amounts of uranium. These uranium supplies were vital to the Western military nuclear programme. As the most important country in the region of Africa in terms of the production of uranium and the advancement of technology of atomic energy, South Africa was one of the seven countries invited by the USA to participate in the initial discussions and drafting of a statute regarding the establishment of the International Atomic Energy Agency (IAEA) in Vienna. South Africa was even accorded with a permanent seat on the Board of Governors of the IAEA.<sup>60</sup>

In 1957, South Africa entered into a bilateral inter-government agreement with the USA regarding the civil uses of atomic energy. This agreement was subsequently renewed with few amendments in 1962 and extended to the year 2007. According to the agreement, highly-enriched nuclear fuel would be supplied to the RSA on a lease basis as ordered. Despite the growing international criticism of the RSA after the Sharpeville massacre of 1960, the RSA–USA nuclear co-operation continued throughout the 1960s. This was exemplified by the provision of the first research reactor – SAFARI I (SAFARI was the abbreviation for South African Fundamental Atomic Reactor Installation) --to South Africa from the USA in 1965.<sup>61</sup>

Similar cordial nuclear collaboration existed between South Africa and the UK in the 1950s and the beginning of the 1960s. The UK purchased uranium from the huge Rössing mine in South West Africa. West Germany also had considerable nuclear co-operations with South Africa in particular in the fields of exchange of visits of leading nuclear scientists and comparative studies of German enrichment technology developed at Karlsruhe.<sup>62</sup>

However, as from the latter half of the 1960s, South Africa's nuclear relations with the West deteriorated, and the RSA's position on the international nuclear hierarchy began to decline. This was partially due to the RSA's unpopular Apartheid policies and the rising anti-Apartheid protests in the West, especially in the USA and the UK. The South African government's strong security measures to clamp down on internal militant black nationalism in the 1960s and the 1970s had heightened international hostility and "the negative international political attitude towards South Africa."<sup>63</sup> The tension was further intensified by Pretoria's refusal to sign the Final Act to become a party to the 1968 Non-Proliferation Treaty (NPT) and also by the increasing mistrust existing between the RSA and the USA. The NPT was an international mechanism devised by the USA in collaboration with the USSR to inhibit the spread of nuclear weapons. By refraining from becoming a party to the NPT, it was tantamount to sending a clear indication to the international community that the RSA intended to develop nuclear weapons. This meant that the RSA was not obligated to place its nuclear facilities, material and enriched uranium or plutonium under the control of the international safeguards system. The USA was rather annoyed by Pretoria's defiance. Consequently, there was concern and suspicion that the nuclear fuel supplied by the USA could possibly be channelled into the production of nuclear weapons by the RSA.<sup>64</sup>

By the early 1970s, as the anti-South African lobby was exerting pressure on the USA government, the political tide in the USA began to turn against the USA–RSA nuclear co-operation. Accordingly, the USA government became extremely cautious and refused to co-operate with the RSA in developing an advanced enrichment process.<sup>65</sup> In 1977, the Carter administration came to power in lieu of the Republican Nixon-Ford

administrations. The advent of President Carter's Democratic administration had brought significant impacts on the USA international relations with the RSA and the ROC respectively. With the appointment of many black Americans and human rights protagonists like Andrew Young in the Carter administration, the USA government was heading towards confrontation with South Africa rather than co-operation.

As the anti-Apartheid movement and calls for sanctions against the RSA were gaining momentum throughout the USA, the United States started to take concrete measures to prohibit the export of nuclear equipment, component parts, and technology to South Africa. The USA State Department refused to grant an export licence for the delivery of enriched uranium for the Koeberg power station which was ordered by Eskom in accordance with its 1974 contract with the USA Department of Energy. The application made by General Electric Co. to the USA government for the export of \$2 billion worth of nuclear reactors for the Koeberg power station was cancelled. The USA government even dissuaded other countries from supplying enriched uranium to South Africa. By the end of 1977, the USA-RSA Nuclear Co-operation Agreement was "a dead letter and the United States had reneged on its commitments, e.g. to supply Safari I with enriched fuel."<sup>66</sup>

South Africa's relations with the USA and other leading Western countries had rapidly deteriorated to such an extent that "it became steadily more difficult for any South African scientist even distantly connected with South Africa's nuclear programme to secure a visa to visit a United States nuclear institution or installation."<sup>67</sup> The adverse political climate also led the RSA's nuclear relations with the UK and West Germany to decline to a very low ebb. By the 1970s, British nuclear scientists ceased to visit South Africa, and by late 1976, "the river of West German/South African nuclear co-operation had become little more than a bed of sand."<sup>68</sup> For the USA-ROC relations, a similar trend was in the making. The Carter administration was tilting away from the ROC and toward the PRC. Carter was determined to recognise Beijing and poised to end the official USA relationship with Taipei.

## **5.6 THE IMPLEMENTATION OF ROC–RSA NUCLEAR CO-OPERATION**

The nuclear co-operation between the ROC and the RSA started in 1980 after the official visit made by the then Premier of the ROC, Sun Yun-suan, in March 1980 to South Africa and the return visit of P. W. Botha to Taiwan in October 1980. It ended in September 1989 when F. W. de Klerk was elected as President of the RSA.

The scope of activities of the ROC's nuclear co-operation with the RSA was mainly focused on the sharing of nuclear technology and expertise; the exchange of visits of leading nuclear scientists; the development of a commercial enrichment plant at Pelindaba to export enriched nuclear fuel on an industrial scale; the seconding of the ROC's nuclear experts to assist Ucor in the nuclear programme; the supply of nuclear equipment and material by one party to another; and the participation of the ROC in the financing of the projected construction of the Z-Plant.<sup>69</sup> The objective for the ROC's collaboration with the RSA in the 1980s to develop uranium was, as already mentioned, to ensure and diversify its sources of supply of nuclear fuel and to "turn to nuclear energy as a power source."<sup>70</sup>

Although the ROC did sign a long-term fuel supply contract with the USA for its first three nuclear power stations, it was merely for a power capacity up to 7500MW, and the fuel supply for the planned Stations No.4, 5 and 6 was not secured. Therefore, the ROC saw a real need to diversify its sources of supply of enriched uranium. To ensure the stability of fuel provision and the prevention of a disruption of nuclear fuel supply arising from external political interference and its increasing diplomatic isolation, the ROC contemplated stockpiling enriched uranium against future demands through the conclusion of a long-term supply contract with South Africa. To this end, the ROC signed a six-year contract to purchase 4000 tons of uranium from the RSA in 1980. In exchange for the supply of uranium, the ROC agreed to provide technological expertise, spare parts and funding for South Africa's nuclear energy programme, and scientists from Taiwan were sent to South Africa to work on the production of enriched uranium.<sup>71</sup>

As far as the RSA was concerned, the tide of events from late 1976 turned against her as the international nuclear sanctions against South Africa were accelerated. The Western powers reneged on their respective nuclear commitments to South Africa, and all transfers of fissionable material and equipment that could be used for developing the capability of producing nuclear arms were terminated. The General Assembly of the UN called upon member states to stop their purchases of uranium from South Africa and Namibia. It also requested the IAEA to refrain from providing any nuclear facility to South Africa, and to inspect all nuclear installations and facilities of the RSA. However, the P. W. Botha administration refused to accede to the Nuclear Non-Proliferation Treaty (NPT). To cope with the heightening international nuclear sanctions against South Africa, the RSA turned to the ROC for assistance in terms of nuclear technology, spare parts, manpower and financing for a semi-commercial uranium enrichment plant. This would produce nuclear fuel for the Koeberg power plant, which was planned to be commissioned in 1985 and for export to markets including the ROC.<sup>72</sup>

From the above description, it can be seen that the bilateral nuclear co-operation between the ROC and the RSA did not purport to the building of nuclear weapons. The ROC–RSA nuclear endeavours were primarily for the purpose of the development of nuclear energy development. This conclusion is based on the available documents of the ROC official archives.<sup>73</sup>

There were, however, contrary reports, which speculated that the main purpose for the ROC, Israel and South Africa to band together in a “Nuclear-triangle” was to make atomic bombs. It has been alleged that Taiwanese nuclear scientists were working in South Africa on the production of weapons-grade uranium, and that Israel was also assisting South Africa with nuclear technology.<sup>74</sup> Since the “triangular relationship” between South Africa, Israel and the ROC falls outside the scope of this study, the nature of the “triangular nuclear contacts” will not be considered in this dissertation. But due to the following factors, it is unlikely that the ROC’s nuclear interactions with the RSA during the 1980s were centred upon the development of atomic bombs as speculated by the various reports:

Firstly, the ROC–RSA nuclear co-operation projects officially commenced from 1980. By the year 1979, one year before the start of the ROC–RSA nuclear joint endeavour, South Africa had already completed its first fully assembled nuclear device, which was designed for a fully instrumented underground test. The Action Committee appointed by P. W. Botha in July 1979 recommended the making of six additional nuclear devices totalling seven all together. Armscor, the South African arms manufacturing corporation, was designated by the said Action Committee to develop and manufacture these nuclear devices as from July 1979.<sup>75</sup> In view of the fact that this ROC–RSA nuclear energy co-operation programme actually commenced after 1980 when South Africa already possessed its own atomic bomb, and the joint nuclear co-operation was conducted through the AEB and Ucor, not with Armscor, it is apparent that the nuclear co-operation between the two countries was primarily conducted in the field of nuclear fuel and supply for “research and development on the peaceful application of nuclear energy”, as stated by the Joint Memorandum of Understanding between the ROC and the RSA in 1980.<sup>76</sup>

Secondly, as pointed out earlier, the ROC’s nuclear development programme was under strict international safeguards and its progress was constantly monitored by the secret agents of the CIA planted among the ROC nuclear scientists. Therefore, it was almost impossible for the ROC to divert its peaceful nuclear energy project to an independent nuclear-weapons’ programme without being detected and stopped by the USA who feared that the manufacturing of atomic bombs by the ROC would destabilise the strategic balance in East Asia.<sup>77</sup>

Thirdly, as described in the preceding part of this chapter, the ROC’s new president, Chiang Ching-kuo, had decided not to pursue the making of atomic bombs because of his realisation of the fact that the conflict between the ROC and the PRC across the Taiwan Straits concerned political ideology more than military annihilation. For the ROC government, the people on Mainland China are the same Chinese people. They can not use nuclear weapons against their brothers and sisters. This factor inhibited the

ROC government from developing nuclear weapons. Moreover, the PRC had indirectly warned the ROC through the media in Hong Kong that the PRC would attack the ROC by military force if the ROC declared the independence of Taiwan from China, sought foreign intervention, or ventured to make atomic bombs.<sup>78</sup> Under these circumstances, although the ROC was in a position to develop nuclear weapons and it had the nuclear capacity to do so, the above-said factors and the legal binding of the Non-Proliferation Treaty (NPT) discouraged the ROC from the pursuit of an independent military nuclear venture.

The Chairman of the AEC of the ROC, Chen-hsing Yen, elaborated that:

Since the Republic of China has no aggressive designs on any other country, there would be no need for offensive atomic weapons. Even in the event of civil war, there are no circumstances under which we would consider using nuclear weapons for massive destruction, Therefore, there is no motivation to embark on a nuclear weapons' programme. Moreover, any such attempt would immediately jeopardize our real programme of nuclear development for peace upon which we have already lavished so much of our intellectual concentration, our economic resources and our time and devotion.<sup>79</sup>

This was a revelation to various speculations of the real motivation and objective of the ROC's nuclear co-operation with South Africa.

The ROC's nuclear collaboration with the RSA took its origins from the contact made between the AEC of the ROC and the AEB of the RSA in November 1979. During the period from November 25<sup>th</sup> to December 1<sup>st</sup>, 1979, the president of the AEB, J. W. L. de Villiers, paid a visit to Taiwan to evaluate the progress of the ROC in the nuclear field and the prospect of future nuclear energy co-operation. Discussions were held with the leadership of AEC and K.T. Li, the ROC Minister of State in charge of technology and science, but nothing concrete came out of the visit. Nevertheless, this was the first

nuclear contact that was officially recorded in the TLO archives. Throughout the visit De Villiers was convinced that the ROC was in a position to assist South Africa to develop its nuclear industry. He was however slightly worried that the USA might eventually intervene and disrupt the ROC nuclear co-operation with the RSA in accordance with the safeguard clause of the NPT and the USA–ROC mutual agreement on the supply of nuclear fuel.<sup>80</sup> The trip paved the way for further exchange of visits by high-ranking officials and the nuclear scientists of the two countries.

In March 1980, Sun Yun-suan, the then Premier of the ROC, led a delegation of 55 persons including K.T. Li, the then Minister without Portfolio in charge of science, technology and nuclear energy development, to pay an official visit to South Africa. The visit was intended to foster bilateral co-operation in the areas of diplomacy, military, economy, trade, navigation, shipping, aviation, science, technology and nuclear energy. For reasons of strategic importance and national security, South Africa's uranium industry was one of the priority aspects for the ROC delegation to explore. In order to assess the capacity of South Africa's uranium enrichment process and the possibility of signing an agreement to buy uranium from the RSA on a long-term basis, the ROC government also assigned the Chairman of the Board of Directors of Taipower, Chen Lan-kao, and the Vice Minister of the ROC Ministry of Economic Affairs, Wang Yi-ting, together with Minister of State, K.T. Li, and Ambassador H. K. Yang to accompany Premier Sun on his visit to the uranium enrichment pilot plant at Pelindaba on March 14<sup>th</sup>, 1980. They were warmly received by A.J.A. Roux, Chairman of Ucor, at Pelindaba, and briefed on the uranium enrichment process used by the Ucor pilot plant there and the constraints to expand the pilot plant to an economically viable production plant capable of meeting South Africa's needs and exports in the course of time. Some members of the delegation visited the uranium production site. The two sides held discussions with regard to the question of nuclear co-operation and the procurement of uranium. They exchanged views on the operational condition of the Pelindaba uranium enrichment plant, the prospective quantity and price of enriched products for export, the terms of foreign investment and co-operation in respect of the general situation of the supply of natural uranium to the ROC, and the peaceful application of nuclear energy for

electricity. The discussion also touched upon the past experience and future prospects of South Africa's nuclear co-operation with France. Apart from these issues, considerable time was spent on discussing the extensive application of irradiation for the preservation of the freshness of flowers and food, and antiseptics of medical and pharmaceutical products.<sup>81</sup>

The attitude of the two sides was recorded to be so "sincere and candid" that both parties concluded that nuclear co-operation between the ROC and the RSA would be strategically important to the self-sufficiency of energy and to the nuclear strategies of the two governments in the face of international isolation.<sup>82</sup> Arising out of their discussions, a contract for the procurement of 4080 tons of uranium worth 400 million US dollars was signed on March 14<sup>th</sup>, 1980 by Taipower and the Nuclear Fuels Corporation of South Africa (Pty) Ltd. (NUFCOR). NUFCOR was responsible for the negotiation of sales contracts of uranium on behalf of various South African mining companies, to provide uranium for the nuclear power plants in Taiwan for the duration of 1984-1990.<sup>83</sup> In addition to the purchase contract to buy uranium for Taipower, the ROC government was interested in entering into an official agreement on collaboration in the field of uranium enrichment between the two countries. Although the ROC delegation and the representatives of Ucor had expressed their mutual interest in the conversion of uranium concentrates to uranium hexafluoride and its enrichment to a level required for fuel elements used in nuclear power plants (light water reactors) during the meeting of March 14<sup>th</sup>, 1980 at Pelindaba, the conclusions of the said meeting and the envisaged details of the ROC–RSA nuclear co-operation programme still needed to be drawn up in an official agreement which could be presented to the other government for its concurrence. In order to initiate the nuclear co-operation programme, K.T. Li, the ROC Minister of State, decided to stay in Pretoria to draft a memorandum pertaining to ROC–RSA nuclear co-operation. Consequently, the first document entitled "Draft Memorandum on Possible Collaboration between the Republic of China and the Republic of South Africa in the Fields of Conversion and Enrichment of Uranium" was written by K.T. Li. In the said memorandum, the main matters raised and the most important conclusions reached at the meeting of March 14<sup>th</sup>, 1980 at Pelindaba were

summarised, and the objective and the need for a joint feasibility study also clearly stated. Having completed the memorandum, Li arranged a subsequent meeting with the AEB (SA) and Ucor on the morning of March 21<sup>st</sup>, 1980, and after further discussion, the draft memorandum was accepted by the representatives of the two sides as a basis for the ROC–RSA nuclear co-operation. At the end of the meeting, this memorandum was signed by Li, the ROC Minister of State, and A.J.A. Roux, Chairman of Ucor (SA).<sup>84</sup> This memorandum thus became the first working document which ushered in the new era of ROC–RSA nuclear co-operation.

The ROC's nuclear relations with the RSA, however, were economic in nature, rather than for political and military reasons. The ROC's military and its research and development institute, Chungshan Institute of Science and Technology (CIST), were not involved in the nuclear co-operation programme. The nuclear energy co-operation between the ROC and the RSA was a pragmatically based joint venture. The common predicament and complementary interests had led the two governments to recognise that although these two countries were operating in totally different regional and political environments, the combined effort in pooling their natural and human resources could become quite substantial and beneficial to the development of their nuclear energy programmes. Economically, South Africa's abundant and cheap mineral industries complemented the ROC's plenitude of well-educated skilled labour, advanced machine tools, and internationally leading production of consumer electronics. The ROC had talented nuclear physicists and a rather advanced nuclear-science and technology base, but it lacked indigenous uranium enrichment plants, reprocessing facilities and raw resources of uranium. As a complement to the ROC's need, South Africa was in the process of building a commercial-scale uranium enrichment plant. The endeavour involved immense research and development and production costs. The launch of the nuclear energy programme by the South African nuclear authorities on their own would be a fairly expensive task in terms of capital input, marketing of enriched uranium, and overall technological sophistication. Therefore, the RSA needed a friendly country with similar ideology affinities and pariah status, like the ROC, to participate in the South African nuclear-energy programme.

Strategically, there were valid considerations for the two countries to go nuclear and proceed with the joint venture. Both governments adopted the tactics of deterrence-by-uncertainty and strategic ambiguity. Both countries would neither confirm nor deny whether they acquired nuclear weapon capability to scare their potential enemies. In order not to arouse unwanted hostility and domestic and international opposition to this endeavour, the nuclear co-operation programme between the ROC and the RSA was classified by both governments as “top secret”. The officials handling the programme were senior officials or the chief of the diplomatic mission. On the ROC side, all correspondence was handled by Wei-jen Hu, the then Political Counsellor of the ROC Embassy in Pretoria, or the then ROC Ambassador H. K. Yang, himself, through coded telex communication or official dispatches marked “top secret.”<sup>85</sup>

To safeguard the confidentiality of the nuclear co-operation programme, a secrecy clause was included in the memorandum:

In view of the sensitive nature of the subject discussed in this memorandum, both parties agree to keep these discussions and any subsequent developments secret until it is mutually agreed otherwise.<sup>86</sup>

Other sensitive co-operative projects in the ROC–RSA relationship such as military, security and intelligence co-operations were conducted mostly quietly and covertly. Despite the close collaboration of the two governments during the 1980s, no press release was issued because the media of the West and South Africa were perceived by the ROC government to be dominated by the liberal establishment which was ideologically unfriendly to the ROC, a strong anti-Communist country.<sup>87</sup>

Although the South African nuclear research and development programme did achieve significant progress, and a pilot uranium enrichment plant (named the Y-project) which was set up by 1969 in Pelindaba near Pretoria had demonstrated that the Ucor enrichment process was workable, there were still some constraints on the RSA’s

nuclear industry. The first and foremost constraint concerned making its scale of production commercially economic and viable. In 1976, the construction of the Koeberg nuclear power station started and it was planned to become operational by 1982. The Koeberg power plant would need sufficient nuclear fuel elements, which were denied to South Africa due to international boycotts and sanctions. The pilot plant at Pelindaba was brought into full operation on March 4<sup>th</sup>, 1977. The Y-Plant started to produce its first highly enriched uranium (HEU) in January 1978. Encouraged by the success of the Ucor enrichment process, the South African government embarked on the third phase of its nuclear programme, namely the construction of a semi-commercial enrichment plant (the Z-project) in 1978 which was completed at the end of 1986. This enrichment plant was scheduled to start production in the mid-1980s with a total enrichment capacity of about 250 – 300 tons separative work per annum (t SW/a), which was sufficient for South Africa's domestic needs in the short term.<sup>88</sup>

However, the scale of production of the said plant was too small to be economic. The Chairman of the Atomic Energy Corporation of South Africa Ltd. (AEC) which replaced the previous AEB from 1982, namely J.W. de Villiers, frankly indicated the deficiency of the plant as follows:

The scale of production is, however, some ten times smaller than that accepted as the minimum economic scale. Consequently, the production processes are not commercially viable, but the challenge of reducing costs and, if justified, commissioning more economic processes has been accepted by the AEC and is being actively pursued.<sup>89</sup>

The enrichment capacity of South Africa's Z-project was indeed limited in comparison with other enrichment plants installed in the Western World, and even in the USSR, at the time. For instance, the enrichment capacity of DOE (the USA) was 27,300 t SW/a in 1982/3. In France, the Eurodif plant had a total capacity of 10,800 t SW/a; and a second plant of similar size (Coredit) was also to be completed in the mid-1980s. The USSR's total capacity was unknown, but it sold up to 3000 t SW/a to the Western World

alone during the same period. Even the Urenco organisation, a group of British, Dutch and German companies, had centrifuge enrichment plants with a total capacity of over 1000 t SW/a in operation in the UK and the Netherlands. The Urenco plants were planned to reach a total capacity of about 5000 t SW/a by 1995.<sup>90</sup>

From the above comparative figures, it was apparent that the minimum size for an enrichment production plant to be globally competitive and commercially viable should be about 1000 t SW/a. With a total capacity of only 250-300 t SW/a, South Africa's enrichment production plant would require considerable expansion, as was recommended by K.T. Li in the Memorandum of Nuclear Collaboration between the ROC and the RSA, dated March 21<sup>st</sup>, 1980.<sup>91</sup>

In order to proceed with the nuclear co-operation programme, the two governments officially approved the contents of the memorandum in July 1980, and the final version of the memorandum was signed in September 1980 by the Chairman of the Board of Directors of Taipower, Chen Lan-kao, and the Chairman of Ucor, A.J.A. Roux. In fact, earlier on, an Agreement for Co-operation Between the government of the Republic of China and the government of the Republic of South Africa on the Peaceful Uses of Nuclear Energy was secretly concluded in March 1980.<sup>92</sup> The memorandum was actually based on the spirit of the former agreement. The contents of the said agreement was basically similar to that of the memorandum, except the former specified the broader outline and perspective of the nuclear co-operation of the two countries as compared with the latter. The validity of the agreement was for a period of twenty (20) years, and either party had to give the other party twelve (12) months' written notice if it intended to terminate the said agreement.<sup>93</sup>

In accordance with Article III of the 1980 agreement, the aim of the ROC–RSA nuclear co-operation programme was simply for peaceful purposes only and not for the development of nuclear weapons. It clearly stated that:

Each Party shall ensure that the nuclear material, equipment and nuclear facilities obtained by it or by persons under its jurisdiction pursuant to this Agreement and any nuclear material used in or in conjunction with or derived from such nuclear material, equipment and nuclear facilities:

- (a) shall be used for peaceful purposes only and not for the production of nuclear weapons or any other nuclear explosive devices;
- (b) shall be subject to safeguards to be implemented by the International Atomic Energy Agency or equivalent safeguards as may be agreed upon by the parties;
- (c) shall not be transferred beyond its jurisdiction unless the prior approval of the supplying party has been obtained and arrangements have been made for the continued application of safeguards by the International Atomic Energy Agency or equivalent safeguards as may be agreed upon by the parties.<sup>94</sup>

The aim of ROC–RSA nuclear co-operation was to exchange the latest nuclear technology, equipment and to acquire the ROC’s financing, which would allow the RSA’s nuclear enrichment production to expand. What the RSA needed from the ROC was technical and logistic support, marketing and the provision of components and machine tools for the South African nuclear industry.

The prime object for the ROC–RSA joint operations was not for the purpose of making nuclear weapons, nor for sharing the secret of the unique South African uranium enrichment process. It was true that South Africa had invented its own method of enriching uranium, which could be used for making nuclear weapons. It was also true that South Africa had enough raw materials and planned to develop its own nuclear capability. Nevertheless, it was noteworthy that the South African uranium industry and its uranium enrichment industry were already so well advanced in the 1980s that the RSA did not need the ROC’s scientific know-how to produce atomic bombs or to upgrade the South African uranium enrichment process.<sup>95</sup>

Towards the end, the memorandum permitted the two countries to assist each other in the exchange of information and technological expertise pertaining to the development, design, construction and test of various specialised equipment; the elimination of plant problems; improvement of general efficiency; techniques of extracting uranium; as well as the storage of spent nuclear fuel; irradiation technology for food, agricultural products and packaging materials; and the use of radioisotopes for industry and medicine.<sup>96</sup>

As the construction of its first nuclear power station at Koeberg was due for completion in 1982, and the USA had refused to supply South Africa with nuclear fuel since 1978, South Africa was anxious to expedite its uranium enrichment co-operation programme with the ROC so as to meet the needs of the Koeberg power plant. The sense of urgency was further heightened by the scheduled running of the two reactors. Of the two reactors, one was planned to come into operation in June 1982 or at the latest, 1983, and the other was due in 1983. Therefore, it was imperative to either acquire from a third country or locally produce enough enriched fuel to load into the fuel rods of the reactors, otherwise the Koeberg nuclear power station would remain inoperable.<sup>97</sup>

To facilitate the implementation of ROC–RSA nuclear co-operation programme, a two-tier mechanism was established in 1980 between Taipower and Ucor, allowing the two to liaise and carry out nuclear collaboration. The two-tier mechanism included a Supervisory Committee and a Working Group. Each country set up its own Supervisory Committee and Working Group to liaise with their counterparts from the other country. The Supervisory Committee of each country comprised three senior chiefs of respective nuclear institutes or the director of the board of directors. The three members of the RSA's Supervisory Committee were A.J.A. Roux, Chairman of Ucor; W.L. Grant, Managing Director of Ucor; and J.J. Kitshoff, Former Chairman of Industrial Development Corp. and the Director of Ucor. The members of the Ucor Working Group, their names and number of persons changed from time to time according to the need of the ongoing projects.<sup>98</sup> At a certain stage in August 1980, there were twenty-four South African senior scientists and nuclear physicists personnel involved in the ROC–RSA joint working programme at Pelindaba. Many Ucor nuclear engineers and physicists,

including those from Ucor's enrichment operations, conversion plant and design division took part in the co-operation programme.<sup>99</sup>

The ROC Supervisory Committee was led by Chen Lan-kao (also known as L. K. Chen), Chairman (President) of Taipower. The ROC Working Group included Lan Cheng, Vice President of Taipower; Pei-chun Liu, Director of the Atomic Power Department, Taipower; C.T. Hsu, Deputy Director of Atomic Power, Taipower; Ci-peng Chien, Director, Institute of Nuclear Energy Research (INER); Yih-de Chuang, Chief, Hot laboratory, INER; and Nein-nan Hsu, Assistant Scientist of the INER.<sup>100</sup>

With the two-tier mechanism and agreed memorandum in place, the two governments launched the ROC–RSA nuclear co-operation programme from 1980 to 1987. During the period of nearly one decade of nuclear joint venture between the ROC and the RSA, the bilateral nuclear ties were greatly expanded, and considerable progress was achieved in terms of the strengthening of the nuclear capabilities of the two countries. The delegations of the Supervisory Committees and the Working Groups of the two countries started to visit the nuclear research institutions of the other country frequently as from 1980. The first meeting of the Supervisory Committees of the two countries was held in October 1980 in Pretoria. The second meeting of the Supervisory Committees took place in Taipei in April 1981. The third meeting was organised by Ucor in its Board Room during November 9<sup>th</sup>–10<sup>th</sup>, 1982. The members of the ROC Supervisory Committee visited UF6 Conversion Plant, MZ Plant, compress test facility, Production Plant including chemical cleaning, production hall and service basement.<sup>101</sup>

The exchange of visits of the Supervisory Committees and Working Groups of the two countries were conducted in secret. In order to prevent the CIA from finding out about the ongoing nuclear co-operation and to hide the joint endeavour beneath a veneer of commercial interactions, a visit to South African mines was usually included in the itinerary of the ROC delegation. For example, the real intent and purpose of the visit of the ROC Supervisory Committee during November 7<sup>th</sup>–12<sup>th</sup>, 1982 was to attend the Third Meeting of Bi-national Supervisory Committees on Nuclear Co-operation held at

Ucor. To make this trip look like a commercial procurement mission, Ucor arranged that the ROC delegation tour the Gold Mine Museum near Johannesburg after the Supervisory Committees' meeting on November 10<sup>th</sup>, 1982 and the Premier Diamond Mine on November 11<sup>th</sup>, 1982.<sup>102</sup>

From 1982 onwards, the meetings of Supervisory Committees were held alternately in Taipei and Pretoria to review the progress of the nuclear co-operation on a regular basis. The real groundwork for building ROC–RSA nuclear links was laid by the bi-national Working Groups. It was through the contacts of physicists that the exchange of information (mainly unclassified) and the supply of nuclear components and equipment were effected.

The first batch of six nuclear experts which comprised the ROC Working Group was dispatched by the ROC government to work at Pelindaba together with twenty-four designated South African counterparts in various nuclear fields during the period from August 20<sup>th</sup>-September 12<sup>th</sup>, 1980 soon after the draft memorandum of nuclear collaboration was signed. The ROC Working Group was invited to assess many aspects of Ucor's Z-project, including its Z1 site, building layout, surface treatment, project management, detail design, procurement, assembly, erection, safety, design, nuclear licensing, pollution control, feed, product and waste plant management, services reticulation, the main process components (e.g. compressors, heat exchangers and valves), compressor blade forging and machining, and the practical cascade and theoretical aspects of cascade.<sup>103</sup>

The purpose of the subsequent visits of the RSA Working Group to the ROC was to seek further assistance from the ROC in the above aspects. Apart from the afore-said job description, the ROC Working Group was also entrusted with the task of reviewing the cost and feasibility of the Z-project and presenting an economic evaluation to the ROC Advisory Committee.<sup>104</sup>

As a matter of fact, in the meeting held in Taipei on August 18<sup>th</sup>, 1980 before the ROC Working Group's departure for South Africa, the Group was briefed by K.T. Li, concerning their mission. They were instructed to co-operate fully with their South African counterparts, but they should avoid causing international misunderstanding. Li told them very frankly that the main objective for the ROC in collaborating with RSA in nuclear industry was to ensure the diversification of the ROC's uranium supply. Li made known that the ROC had no intention to obtain the secret know-how of South Africa's unique uranium enrichment process, and that the two sides had reached a tacit understanding that no sensitive or highly confidential technology would be transferred, excepting the exchange of unclassified information and technology. Therefore, the members of the ROC Working Group were specifically directed not to pry into South Africa's well-guarded secret nuclear extraction process.<sup>105</sup>

Stringent measures were also taken by Ucor to keep the ROC scientists from learning the secret of South Africa's nuclear weapons' programme and technological expertise of processing uranium. When the ROC nuclear physicists were working in South Africa, they were subjected to the signing of a declaration of secrecy. They were not allowed to talk about their work or even mention their visit to Pelindaba. For security reasons, the members of the ROC Working Group travelled to South Africa in two or three batches, under the guise of coal purchasers, holiday-makers or Taipower personnel visiting Eskom, the South African electricity company.<sup>106</sup> In so doing, the CIA and the international media were prevented from learning about the ROC–RSA secret joint endeavour. But the closely-guarded secrecy also gave rise to various wild claims ranging from the South Africa–Israeli–Taiwan trio banding together to make and test nuclear bombs, to their sharing of uranium enrichment secrets.<sup>107</sup> As far as the nuclear collaboration between the ROC and the RSA is concerned, these speculations are misleading.

To strengthen nuclear relations between the two countries, the RSA, on a reciprocal basis, also sent its Working Group and various high-level officials to the ROC during the 1980s. In addition to P.W. Botha's official visit to the ROC in October 1980, the most

notable visits made by high-ranking officials in charge of the RSA's nuclear development programme were those of F. W. de Klerk, the then Minister of Mineral and Energy Affairs, and A.J.A. Roux, Chairman of Ucor.<sup>108</sup> De Klerk, visited the ROC from January 5<sup>th</sup> to 10<sup>th</sup>, 1981. During his sojourn in Taiwan, he visited the ROC's two nuclear power plants (Nuclear Plant I in Chin-shan and Nuclear Plant II in Wan-li) near Taipei, and discussed matters of common interest with his counterpart, K. S. Chang, the ROC Minister of Economic Affairs, and F. S. Chu, Minister of Foreign Affairs, respectively. The bilateral discussions were mainly focussed on energy co-operation and the RSA's export of minerals to the ROC. It should be noted that in the ROC, mineral and energy matters including nuclear power plants are the jurisdiction of the Ministry of Economic Affairs (MOEA). Taipower Co., which operates the nuclear power stations, is subordinate to the MOEA.<sup>109</sup>

In addition, De Klerk visited various industries in Taiwan including China Steel Corporation, China Shipbuilding Corporation and Taiwan Aluminium Corporation in Kaohsiung, the largest sea port in the south of Taiwan. Premier Sun and President Chiang Ching-kuo received him. Before his departure, he addressed the ROC industrialists and politicians on the significance of South African minerals and energy resources in the future relationship between the two countries. As a result of his visit, apart from the strengthening of ROC–RSA nuclear energy collaboration, the two governments further agreed to explore and expand the two countries' co-operation in the fields of minerals and energy resources. The following were included:

1. The RSA agreed in principle to supply four million tons of coal per annum to the ROC for 1981-85 and ten millions tons of coal per annum from 1986 to 1996.
2. The two governments had agreed to assess the feasibility of ROC–RSA joint ventures in establishing an aluminium smelter plant, copper refinery and zinc refinery, and increasing silicon production and exploration of other rare metallic minerals.<sup>110</sup>

The above-mentioned commitment to provide the ROC with South African minerals and the previous six-year contract for the procurement of 4000 tons of uranium, signed in 1980 by the ROC and the RSA, confirmed that South Africa had become one of the important suppliers of strategic minerals and energy resources to the ROC. In exchange for South Africa's supply of strategic minerals and energy resources, the ROC was willing to let the RSA utilise the former's relatively advanced manufacturing industry and skilled labour, and provide financing to support the latter's nuclear enrichment industry.

With a view to studying the situation of the ROC's nuclear industry and the potential of nuclear co-operation between the two countries, A.J.A. Roux, Chairman of Ucor, paid a visit to Taipei during April 8<sup>th</sup>-15<sup>th</sup>, 1981. He was well received by S.L. Chien, Chairman of the ROC Atomic Energy Council (AEC). He was deeply impressed by the progress of ROC's nuclear industry and its advanced manufacturing industry as well. Therefore, he was firmly resolved to enhance the bilateral nuclear co-operation between the two countries. As he was the highly respected founder and father of the RSA's nuclear research and development, his favourable response and strong support for the launching of the ROC-RSA nuclear collaboration helped to create an atmosphere conducive to the endeavour. The joint venture was largely due to his recommendation and proposals.<sup>111</sup>

After Roux's return to Pretoria, a Ucor team of the Working Group led by S.W. Liebenberg, the Manager of Precision Manufacture of Ucor, was sent to the ROC Institute of Nuclear Energy Research in Lung-Tang in August 1982 to seek the provision of various components, heavy electrical motors, aluminium or steel flange forging, the adjustable core of the module, valve components and other specified equipment from the ROC for the expansion of Ucor's enrichment plant. A number of ROC industries were visited and most of them were willing to participate in such a challenging programme. The ROC industry was thus involved in the nuclear co-operation programme to supply specified equipment and components as requested by Ucor for its Z-plant extension project.<sup>112</sup>

During the period from 1980-1987, the nuclear co-operation between the ROC and the RSA continued, the related agreement was enforced and the nuclear scientists and engineers of the two countries worked closely together to accomplish the establishment of the Z-plant for uranium enrichment. With the construction of the Z-plant, South Africa had become one of the few countries in the Western World, which had not only the technology of uranium enrichment, but also the uranium resources and enrichment facilities.

The success of the South African nuclear industry was so apparent that in September 1987, the AEC started to deliver its first locally-enriched four uranium fuel elements, which were produced by the pilot plant, to Koeberg nuclear power station. The semi-commercial Z-Enrichment Plant was commissioned in 1988 and began to produce enriched uranium at a rate that could meet the needs of Koeberg nuclear power station. By 1989, the said semi-commercial enrichment plant proved to be functioning well. Notwithstanding the relatively high cost of production as compared with the USA, it successfully manufactured nuclear fuel, which was delivered to ESKOM in 1989 and loaded into the Koeberg No. 2 nuclear reactor in March 1990. According to the evaluation made by J.W.L. de Villiers, South Africa's ability to handle the complete front end of the fuel cycle was "an exceptional achievement."<sup>113</sup>

The remarkable accomplishments were, of course, mainly the result of the long-term strategic planning, strenuous undertaking and unwavering efforts made by the South African government, the AEC (previously the AEB before 1982), Ucor and those South African nuclear scientists and engineers who were associated with the nuclear development programme, in particular A.J.A. Roux, J.W.L. de Villiers and W. L. Grant who had the determination and vision to pursue South Africa's energy self-sufficiency and independent nuclear capability. It was A.J.A. Roux, former President of AEB and Chairman of Ucor, who launched South Africa's nuclear research and development programme in 1959 and it was he who befriended the ROC and initiated the nuclear joint venture of the two countries. The year 1985 witnessed the imminent end of an era

of close ROC–RSA nuclear collaboration when Roux passed away on April 22<sup>nd</sup> of that year.

To be fair, the support and assistance rendered by the ROC to the RSA in the development of South Africa's nuclear industry, to a certain extent, did have some significant consequences. At a time of international sanctions and embargoes against the RSA, it was the ROC that provided necessary equipment and technical assistance to the RSA. At a time of stringency with regard to financial resources, it was the ROC that had shown great understanding of the needs of the RSA and willingness to purchase South Africa's uranium. On the logistic and technological side, the ROC placed its expertise, technology, skilled labour and manufacturing industry at the disposal of the South African nuclear industry. In the course of the construction of the Z-plant, the RSA received a wide range of assistance from the ROC.<sup>114</sup>

At the initial stage of the development, the ROC's assistance comprised a joint investigation into the geological suitability of the site, the selection of the site, the preparation of preliminary plant layout, the plant design, cost estimation, a feasibility study, the assessment of the required components and equipment, the adoption of cascade flow diagrams and piping connections, and the elimination of inefficiency factors of the said plant. In the intermediate stage, the ROC participated in the manufacturing of basic components and equipment, which were required for the construction of the RSA's semi-commercial uranium enrichment plant. As pointed out in the previous paragraphs, the ROC provided some of the electrical and conventional equipment and various components required by Ucor. Usually, the ROC industries manufactured the necessary equipment and components ordered by the RSA for the extension of the Z-plant in accordance with detail specifications and drawings. A number of the ROC industries were involved in the nuclear co-operation programme.<sup>115</sup>

From June 1982 to 1986, the ROC supplied a wide range of items to the RSA including electrical and mechanical equipment, and process gas wetted components. But the process control computer systems and programmable logical controllers which were

imported by the RSA for the development of the South African nuclear industry had nothing to do with the ROC. According to the ROC's official records, it was the Reagan administration that authorised the sale of the Control Data Corporation's Cyber 170/750 Computer to the South African CSIR in 1981. With this computer, the RSA could not only design small nuclear weapons, but also build atomic bombs without the need for a test. The reason the Reagan administration gave its consent to the sale of the American-made computer to the RSA was its desire for a South African settlement on the issue of Namibia.<sup>116</sup> This again indicated that the ROC had no direct link with the RSA's nuclear military weapons' programme. The ROC's co-operation with the RSA was mainly concerned with nuclear energy development, not the making of atomic bombs.

All of the expenses pertaining to the activities of the ROC Working Group and nuclear experts in implementing the nuclear co-operation programme in the RSA were borne by the ROC government. Apart from the project spending, the most important financial contribution made by the ROC to the development of the South African nuclear industry was the financing of the projected expansion of the uranium enrichment plant by way of payments in advance of deliveries of uranium coincident with the construction programme, and loan capital to cover pro rata costs of the add-on plant.<sup>117</sup> The exact amount of the financial advancement and loan is not known. The ROC's financial support had made it possible for the embattled South African uranium industry to proceed with its expansion project. The ROC therefore played a meaningful part in the expansion of the RSA's nuclear enrichment production.

## **5.7 THE TERMINATION OF ROC-RSA NUCLEAR CO-OPERATION**

Although the nuclear collaboration between the ROC and the RSA, as described above, was intended only for the peaceful use of nuclear energy, the USA government was deeply concerned that the so-called "peaceful" nuclear co-operation between the two nations could well be used as a pretext for nuclear weapons production. The enriched

uranium might be converted for making atomic bombs. The ROC and the RSA's development of nuclear weapons would surely not only lead to international nuclear proliferation and regional conflicts, but also complicate the USA's strategic relations with the PRC and black Africa during the Cold War. The ROC government's repeated insistence of "recovering mainland China" and the RSA's refusal to sign the Nuclear Non-proliferation Treaty (NPT) gave the CIA some ground to suspect that the ROC and the RSA banded together, with the assistance of the third partner, Israel, to manufacture "a relatively small-scale tactical nuclear weapon."<sup>118</sup> The discovery of two nuclear test shafts in the Kalahari desert by American and Soviet reconnaissance satellites in August 1977 and the flash detected by an American Vela satellite over the southern Atlantic Ocean in September 1979 had further heightened the USA's suspicion that the ROC and the RSA had worked together to produce nuclear weapons. The CIA believed that the flash was most likely a nuclear explosion.<sup>119</sup>

De Villiers later confirmed in 1993 that the site constructed in the Kalahari Desert was used for the testing of South Africa's nuclear weapons or nuclear explosive devices. According to De Villiers's revelation, the nuclear test site was built for a "cold test" – that is, one without HEU, carried out in order to check the device's non-nuclear components, logistics and instrumentation.<sup>120</sup> The discovery of the nuclear test site in the Kalahari Desert caused vehement international protest. As a result of the international outcry, Pretoria subsequently abandoned the site.<sup>121</sup>

As to the flash over the southern Atlantic Ocean, the true story has not been publicised yet. Was the flash really a nuclear bomb test? Who was responsible? These questions remain to be answered by other scholars who have access to the relevant documents. But one thing is certain: the ROC was not involved with the flash which occurred in September 1979 as the ROC only started to enter into the bilateral nuclear energy co-operation agreement with the RSA in 1980. It was unlikely that one year before the commencement of the ROC–RSA nuclear co-operation agreement, the ROC had helped the RSA to build a nuclear bomb or nuclear explosive device. The test of a nuclear bomb required a sufficient range of bombers capable of carrying the bomb and

transporting relevant sophisticated delivery systems. The ROC had none of these facilities and its participation in the afore-mentioned flash was, geographically, impossible. However, there is a possibility that a third country such as Israel might have collaborated with South Africa in testing nuclear bombs over the southern Atlantic Ocean in 1979. The Israeli–South African military co-operation relationship commenced much earlier than the ROC–RSA co-operative links. The relations between South Africa and Israel reached a peak in April 1976, when the RSA Prime Minister, B. J. Vorster, visited Israel.<sup>122</sup>

As the USA was deeply alarmed by the erection of the nuclear test site in the Kalahari and the subsequent flash over the southern Atlantic Ocean, those countries with nuclear capability or on the threshold of becoming nuclear powers, in particular South Africa and the ROC, were closely watched by the CIA. The CIA was extremely anxious to find out the nature of the ROC–RSA nuclear co-operation despite the strictest secrecy of the operation of the two countries.<sup>123</sup>

In order to uncover the nature of the nuclear collaboration between the ROC and the RSA, the CIA had undertaken a surprising range of actions in an attempt to find out these two countries' nuclear secrets. In the ROC, the wife of the Chief of the Mission of the CIA served as the English language “tutor” of the then ROC President, Chiang Ching-kuo. The ROC's nuclear research and development programme was also kept under constant surveillance. The CIA recruited the ROC's senior nuclear scientists and high-ranking officials as its secret agents and planted them in the senior hierarchy of the ROC nuclear research institutes such as Chungshan Institute of Science and Technology (CIST) since the 1960s. The CIA even tried to bribe certain senior officials to spy on all the activities of the ROC government.<sup>124</sup> In December 1987, Colonel Chang Hsien-yi, a CIA spy infiltrated the CIST, got hold of the confidential nuclear research files and escaped to the USA. The secret of the ROC's nuclear development programme and the country's nuclear links with the RSA were exposed.<sup>125</sup>

In the wake of the exposure of the ROC's nuclear research and development programme, tremendous political pressure was imposed upon the ROC to terminate its nuclear co-operation with the RSA and its nuclear links with other European countries, such as France. The USA demanded that the ROC shut down the nuclear programme or face a cut-off of American assistance, including the sale of nuclear technology for the ROC's nuclear power plants. The USA strictly regulated the provision of nuclear fuel-elements and enriched uranium for the ROC nuclear power stations. All of the used highly enriched uranium had to be returned to the USA after it had cooled down. Even more importantly, the USA threatened to withdraw support from the ROC if it persisted in contributing towards nuclear proliferation. Following the American intervention, the CIST reactor was sealed by the USA and the research facilities rigorously checked from time to time. The USA undertook the supply of enriched uranium to the ROC at a USA-government subsidised price which was comparatively cheaper than that of South Africa's enriched uranium. Under such difficult circumstances, it was almost impossible for the ROC to continue its nuclear collaboration with the RSA.<sup>126</sup> Therefore, the ROC's source of enriched uranium was virtually narrowed to the USA, and the programme was curtailed thereafter. The American intervention had led the ROC government to gradually disengage itself from the nuclear co-operation with the RSA after 1988.<sup>127</sup>

Although the CIA could not penetrate and detect the real nature of Pretoria's nuclear development, the South African enthusiasm for ROC–RSA nuclear co-operation also gradually dissipated after the death of Roux in 1985. The Z-plant was completed at the end of 1986. The enrichment process launched by Ucor was a success. In the eyes of the South African authorities, the success was mainly the RSA's own achievement.<sup>128</sup> The ROC, with its small-scale economy and acute international isolation, was not that important. As the era of P. W. Botha was drawing to a close, ROC–RSA nuclear ties were shifting.

The advent of F.W. de Klerk's presidency in September 1989 heralded the end of ROC–RSA nuclear co-operation. After his assumption of office, the world witnessed the collapse of the Soviet Union, the independence of Namibia and, following the

withdrawal of 50,000 Cuban soldiers, the establishment of relative peace in the Southern African region. The RSA government realised that the nuclear deterrent was no longer necessary. In fact, signing the NPT would be advantageous to South Africa, especially in the development of relations with other African countries. The problems the RSA faced were of a political, not military nature, and nuclear weapons and an ambiguous strategy by no means provided the solution. Therefore, in November 1989, De Klerk approved the recommendation made by an Expert Committee to terminate the RSA's nuclear programme, and the decision was also made to dismantle the six nuclear devices which had been fully assembled.<sup>129</sup> The nuclear co-operation between the ROC and the RSA thus came to an end. A new era of political reform and transition dawned in the RSA as from the beginning of 1990.

## **5.8 SUMMARY**

The nuclear energy co-operation programme between the ROC and the RSA commenced in March 1980 and came to a close in 1989. The ROC's main objective was to ensure and diversify its sources of supply of nuclear fuel for the needs of its three nuclear power stations.<sup>130</sup> For the RSA, the aim of the co-operation was primarily to seek the ROC's support in the supply of mechanical components and equipment, financing for the procurement of uranium through advance payments, the exchange of technology and visits, as well as the provision of logistic/technical assistance for the construction of a commercial uranium enrichment plant at Pelindaba.<sup>131</sup>

The nuclear co-operation was not concerned with the military weapons' programme. South Africa did not need the ROC's assistance in the development of nuclear weapons due to the fact that long before the commencement of ROC–RSA nuclear co-operation, the RSA had already built a nuclear test site in the Kalahari Desert in 1977 and developed its first atomic bomb in 1979, one year prior to the start of the ROC–RSA nuclear relationship.<sup>132</sup>

Although the co-operation was commercial and logistical in nature, the ROC played a significant role in the establishment and expansion of the RSA's nuclear enrichment production. With the ROC's support, the RSA's nuclear research base and enrichment foundation had been firmly established. The RSA completed the construction of the semi-commercial uranium enrichment plant (code-named the Z-plant) at the end of 1986, and the plant became operational in 1988. South Africa had become one of the few countries in the Western World, which not only has abundant uranium resources, but also its own enrichment plant to meet the need of Koeberg nuclear power plant. This was a remarkable achievement.

The journey of the ROC–RSA nuclear joint venture, however, did not last long. The high tide period was from 1980 to 1985 while Roux was still alive. From the year 1985, the co-operation lost its momentum. In 1987, the CIA exposed the ROC's nuclear programme. Under USA pressure and intervention, the interactions of the ROC–RSA nuclear co-operation dissipated as from 1988. The nuclear links were officially terminated towards the end of 1989 when De Klerk came to power and embarked on the road of political reform to normalise the RSA's international relations.

Although the ROC did not go nuclear overtly and the ROC–RSA nuclear co-operation was not geared towards the production of nuclear weapons, the USA was concerned that the ROC's nuclear programme, if not carefully supervised, posed a risk of nuclear proliferation and could cause open war between the PRC and the ROC. In spite of the fact that the ROC's nuclear fuel-cycle programme was aimed at the generation of electrical power, the ROC scientists, however, were able to extract weapons-grade plutonium from the nuclear fuel. The USA feared that the ROC would provoke a military confrontation with the PRC.<sup>133</sup>

In essence, the ROC's nuclear co-operation with the RSA was part of its "survival strategies" during the most difficult times of the 1980s when its main patron, the USA, was preoccupied with the Soviet threat and strengthening USA–PRC strategic co-operation.<sup>134</sup> There were dual purposes for the ROC's nuclear co-operation with the

RSA . The ROC's main objective – the development of nuclear energy for the peaceful use of its expanding industry – has already been analysed.<sup>135</sup> Besides this objective, the ROC wanted nuclear capability, which would be used as a deterrent. It is believed that “this [was] a purposeful effort to create speculation concerning Taiwan’s potential as a nuclear power.”<sup>136</sup> The ROC saw its progress in the nuclear programme and potential to build atomic bombs as “a means to counter a military threat from the mainland.”<sup>137</sup> It seems that the ROC tried to quietly move closer to the nuclear threshold through the ROC–RSA nuclear co-operation programme. By doing so, it was apparent that, as the USA’s commitment to the ROC was vague, its nuclear potential and its purposeful strategy of keeping its nuclear intentions ambiguous were intended to make the PRC leaders think twice should they attempt to invade the island.<sup>138</sup> If the USA had not intervened in 1987 to stop the ROC’s nuclear research programme, the joint achievements of the RSA’s nuclear technology and its enriched uranium, together with the ROC’s entrepreneurship, capital and organisational skills could have enabled both the ROC and the RSA to become countries in possession of nuclear weapons. To confirm this, near the end of 1987, the CIA’s secret agent eventually found out that as from 1974, Taiwanese scientists, most of them educated in the USA, were preparing to extract weapons-grade plutonium from the nuclear fuel of a research reactor supplied by Canada.<sup>139</sup> They were also busy “working on the design of a ballistic missile that could deliver a warhead against mainland [the PRC’s] targets.”<sup>141</sup> It was only after the USA demanded that Taiwan “shut down the nuclear programme or face a cut-off of American assistance, including sales of nuclear technology for Taiwan’s electric power industry” that the nuclear programme was curtailed.<sup>141</sup> However, the ROC’s research base and the team of nuclear physicists still exist.<sup>142</sup>

## FOOTNOTES

### CHAPTER V

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