NAVAL POSTGRADUATE SCHOOL
MONTEREY, CALIFORNIA

THESIS

THE EFFECTS OF 1985 DEFENSE POLICY ON THE DEFENSE INFRASTRUCTURE OF TURKEY

by

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December, 1995

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REPORT DOCUMENTATION PAGE

Form Approved OMB No. 0704-0188

1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	December, 1995	Master's Thesis

4. TITLE AND SUBTITLE **THE EFFECTS OF 1985 DEFENSE POLICY ON THE DEFENSE INFRASTRUCTURE OF TURKEY**	5. FUNDING NUMBERS
6. AUTHOR(S) Murat Aksoy	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey CA 93943-5000	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.

12a. DISTRIBUTION/AVAILABILITY STATEMENT	12b. DISTRIBUTION CODE
Approved for public release; distribution is unlimited.	

13. ABSTRACT *(maximum 200 words)*

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14. SUBJECT TERMS Turkey, Defense Infrastructure, SSM, Joint Ventures, Technological Transfer.	15. NUMBER OF PAGES 90
	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	UL

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. 239-18 298-102

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THE EFFECTS OF 1985 DEFENSE POLICY ON THE DEFENSE INFRASTRUCTURE OF TURKEY

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B.S., Middle East Technical University, 1990

Submitted in partial fulfillment
of the requirements for the degree of

MASTER OF SCIENCE IN SYSTEMS MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL
December 1995

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ABSTRACT

Turkey established a new defense policy in 1985 designed to build an indigenous defense industrial infrastructure. The policy has been in effect for nearly ten years. This study examines the new defense policy to determine whether it has been effective in its stated purposes of modernizing the Turkish Armed Forces and developing of a civilian infrastructure to support the armed forces. The method used is a detailed survey of the armored combat vehicle project, the largest project currently managed by the government organization put in place with the policy. The study shows that the policy creates the desired infrastructure, but that the current economic conditions inside Turkey make it difficult for Turkey to remain with the policy due to the high initial investment cost.

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I. INTRODUCTION

A. BACKGROUND AND OVERVIEW

Events in recent history demonstrate that modern wars are based on advanced technology. Countries that lack a modern defense industry and advanced military technologies are not able to deter or effectively fight modern wars.

Turkey is in a politically volatile region of the world, thus it is important for Turkey to develop the industrial infrastructure to provide for its defense. Although Turkey has been at peace for more than seventy years, it is surrounded by armed conflicts and ethnic strife.

The end of the Cold War has reduced the importance of NATO to the United States; Western Europe no longer faces a Soviet threat. Consequently, the incentives for support from the United States and Western Europe for the Turkish Armed Forces are also reduced. A robust, self-reliant defense industry is even more important because the U.S. and Western Europe's defense budgets are declining and their transfer of military aid to Turkey is also declining.

Turkey has faced difficulties with embargos imposed due to foreign policy decisions made by Turkey in its own defense. The United States embargo after the Turkish Peace Operation in Cyprus in 1974 and the recent German embargo that froze military grants to Turkey in March of this year because of the Turkish operations in Northern Iraq against the Marxist Kurdistan Workers' Party (PKK) terrorists are examples of the international pressures as a result of Turkey's security behavior.

The effects of these embargos on Turkey's defense highlight the inadequacy of Turkey's current defense infrastructure. This factor, the lack of natural resources, and the needs of the Turkish Armed Forces that have accumulated over the last several decades have led Turkey to establish a new defense policy.[1]

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[1] Vahit Erdem, "Constituting a Defence Industry Infrastructure.", *NATO'S Sixteen Nations*, No. 4 (1993), 90-95.

The purpose of this study is to determine how successful the new government policy for the development of a domestic defense infrastructure has been in regard to transfers of technology to the civilian industrial sector in Turkey.

1. New Defense Policy

In 1985, Turkey established a new policy designed to increase its domestic defense industry infrastructure. Up until that time, Turkey's domestic production of defense material was performed only by publicly owned manufacturers.

The new policy was designed to liberalize the manufacture of defense material by allowing civilian concerns inside Turkey and foreign manufacturers to provide defense material for the Turkish Armed Forces. The Turkish government has established this policy so that the modernization of the armed forces will produce a transfer of technology to domestic manufacturers and provide a less expensive means in terms of foreign currency reserves to modernize the Turkish Armed Forces.

To implement this policy, in 1985 Turkey established The Undersecretariat for Defence Industry (SSM)[2] and dedicated special taxes to pay for the modernization of the Turkish Armed Forces.

2. Turkey's Defense Industrial Strategy

The Undersecretariat for Defence Industry was established to implement the new policy and perform the following functions:[3]

- To develop modern defense industries capable of catering to the modernization needs of Turkish Armed Forces.
- Acquire and disseminate maximum amount of technology to Turkish industrial infrastructure.
- Identify and make optimum use of existing capabilities and capacities.
- Promote innovative and export oriented joint ventures and national consortiums.
- Patronize defense oriented Research and Development (R&D) programs to accelerate technological and scientific advancement.

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[2] Savunma Sanayii Müsteşarlığı - Undersecretariat for Defense Industries (SSM)

[3] *Undersecretariat For Defence Industries,* Savunma Sanayii Müsteşarlığı (Ankara: SSM, 1991).

- Coordinate export and off-set matters related to defense industries.

This thesis primarily addresses the first two functions of the SSM: developing a modern defense capability focussing on the modernization of the Turkish Armed Forces and transferring the maximum amount of technology to the Turkish industrial infrastructure.

3. Technological Transfer

Foreign companies are reluctant to transfer their latest military technologies because of the shrinking market for weapons technology and a fear of creating their own competition for that market. In order to cope with the reluctance to transfer technology and encourage foreign investment, Turkey prefers to use the joint venture approach to gain technological expertise. An additional advantage of this arrangement is that the foreign companies risk capital in Turkey and the cost to the Turkish economy is lower.

Beginning in 1986, contracts have been awarded and joint ventures established with foreign companies to produce advanced weapon systems that are urgently needed by the Turkish Armed Forces.

Recently, Turkey has produced several advanced weapon systems as joint projects with local companies and foreign arms manufacturers. To accomplish this, it was necessary for Turkey to overcome many challenges. Some of these challenges are, local financing, the absence of the required technological base, implementation of quality control and NATO standards, and arms embargoes related to technological transfer and political action by other countries. While carrying out this new defense policy, Turkey has strived to utilize its limited resources in the most efficient manner and maximize the return on those resources, with a further goal of acquiring the technological base for both its defense industries and its domestic economy.

B. METHODOLOGY

The method of this thesis is to survey Turkey's current defense industries to determine if the change in policy has been effective in creating the infrastructure necessary to support the armed forces. The second question is to determine if this infrastructure has resulted in transfers of the technological base to the civilian sector of Turkey's economy.

1. Turkish Armed Forces Requirements

The Turkish Armed Forces determine their requirements based on Turkey's geopolitical position in the world. To outline the needs driving the modernization effort for Turkish Armed Forces, it is necessary to survey the unrest in Turkey's region and its geopolitical position. Turkey lies in a region of the world which lately has become the focus of world attention. Bosnia is at the top of the agenda for the United States and NATO, Azerbaijan has faded from the news but there still is ethnic unrest in both Armenia and Azerbaijan. After the Gulf War, Northern Iraq has been virtually without any government and the two groups of Kurds that control the region are at war with each other. The Commonwealth of Independent States are individually still trying to establish stable governments. Turkey has a long running disagreement with the world community over the issue of the Turkish Cypriots. Recently, Turkey has come in conflict with Greece over Greece's international territorial water claims.

Requests for defense equipment are made through the Under Secretary of Defence Industries by the armed forces. Because the requests are received from the armed forces, it is unnecessary to consider whether a particular project meets the needs of the Turkish Armed Forces. However, other criteria for a successful project must be examined to determine whether Turkey's new policy is successful.

2. Criteria for Measuring the Success of Turkey's New Policy

To answer the research question in this thesis, the author examines in detail the armored combat vehicle, a one and a half billion dollar project currently managed by the Undersecretariat for Defense Industry. This project was chosen as an example of the type of project Turkey wishes to pursue to improve the domestic defense infrastructure. For this project the following questions will be answered. Whether the Turkish manufacturer or a supporting manufacturer:

- has acquired technology and management capabilities?
- has acquired new markets?
- has acquired a permanent industrial base?
- has reduced the cost of equipping and maintaining Turkey's Armed Forces?

- has maximized the use of existing capabilities? [4]

To answers these questions for the armored combat vehicle project, an analysis of the project and the technologies acquired through the project will be made in Chapter IV.

C. ORGANIZATION OF THE STUDY

This chapter has given an introduction and the methodology to be used to answer how successful the new defense policy of Turkey in the transfer of management techniques and technical expertise to the Turkish industrial infrastructure. Chapter II outlines the reasons that Turkey needs to develop a domestic defense industry infrastructure. Chapter III surveys the current strategies for the development of the Turkish defense industry and some of the current joint ventures undertaken by Turkey to modernize its armed forces. Chapter IV is a detailed analysis of the armored fighting vehicle project and its contribution to the defense and civilian industries infrastructure. Chapter V is a summary of the results of the thesis and a brief conclusion about the effectiveness of the policy.

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[4] *Undersecretariat For Defence Industries,* Savunma Sanayii Müsteşarlığı (Ankara: SSM, 1991).

II. FACTORS AFFECTING TURKEY'S DEFENSE POLICY

A. INTRODUCTION

In order to answer the research questions presented in this thesis, whether Turkey's new defense infrastructure policy is effective, it is necessary to know what factors drive Turkish foreign policy and defense policies.

The guiding principle of Turkish foreign policy is embodied in Atatürk's motto of "Peace at Home, Peace in the World."[5] The basic tenets of Turkish defense policy as outlined by Nevzat Ayaz (former minister of National Defense):

- To take the necessary steps to maintain peace in Turkey and the world.
- To make all national means available to diffuse international tension and establish a legitimate and lasting peace.
- To preserve the independence and integrity of the nation and maintain the indivisibility of the country.
- To take all preventative measures to avoid war.
- To take part in the collective defense systems and carry out the responsibilities entrusted to it in this context.[6]

Within these principles, Turkey's foreign policy and relations are conducted based on mutual friendship, respect for territorial integrity, non-interference in the domestic affairs of other nations, and the balancing of mutual interests between itself and others. Turkey maintains that arguments and disagreements between nations should be resolved by means of negotiation.[7] But Turkey exists in a less than ideal world and although Turkey has peaceful aspirations, it cannot remain indifferent to external events.

Turkey's decision to modernize the armed forces and develop its defense industry infrastructure are based on obligations resulting from Turkey's geographical position and a

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5 Nevzat Ayaz, "Deterrent Shield - Turkish Security and Defence Policy and Its Defence Industry," *NATO'S Sixteen Nations*, No 4 (1993): 19.

6 Ibid. 19.

7 "International Relations" (Internet http://home.imc.net/turkey/politics.htm), Foundation for Middle East and Balkan Studies (OBIV), (Istanbul: June 1994).

need to improve its domestic economy. Resources are limited and must be used in the most efficient way. Turkey believes that by producing more defense material domestically or through joint ventures, the effects of the demands imposed by modernization on the domestic economy can be reduced.

This chapter is divided into three parts. The first part is an introduction, the second part covers the unrest in the area surrounding Turkey and the disputes that Turkey has with its neighbors. The final section addresses the economic issues associated with the new defense policy.

B. GEO-STRATEGIC POSITION

Turkey is located between the continents of Asia and Europe and borders the Arab states of the Middle East. Turkey's position led directly to its membership in NATO in 1952. Up until the end of the Cold War, Turkey was considered a major land barrier to the Soviet ambitions in the Persian Gulf. Now, Turkey is even more important to NATO because it is located between areas of unrest in both Europe and the Middle East.[8] Turkey is surrounded by a great deal of instability and faced with security challenges of great complexity from diverse sources. Turkey must maintain credible armed forces able to meet its security needs.[9]

1. Regional Military Forces

Table 1 shows the defense expenditures for the nations in the region of Turkey. It can be seen that Turkey's defense expenditures as both a function of its population (Armed Forces personnel/1,000 citizens) and in terms of its gross national product (defense expenditures/GNP) is modest for the region. Turkey's intent with the increase of its defense expenditures is not to enlarge its military but to restructure and modernize the Armed Forces of Turkey. The Army of Turkey intends to decrease its size and produce a smaller more capable and more mobile force better fitted to the needs of Turkey in the post-Cold War

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[8] Mark Stenhous, "Turkey" *in Jane's NATO Handbook,* 4th Edition, ed. Bruce George (Coulsdon, Surrey: 1991), 316.

[9] Dogan Güres, "For Justice and Civilization - The Strategic Involvement of Turkey and Restructuring of the Turkish Armed Forces," *NATO'S Sixteen Nations*, No. 4 (1993): 16.

period. The Turkish Air Force is following a program of replacing its older generation aircraft with F-16's by the year 2000. The Navy's plans are to retire old destroyers and submarines. In their place, the Navy plans to construct guided missile frigates, fast patrol boats, and newer designed submarines.[10]

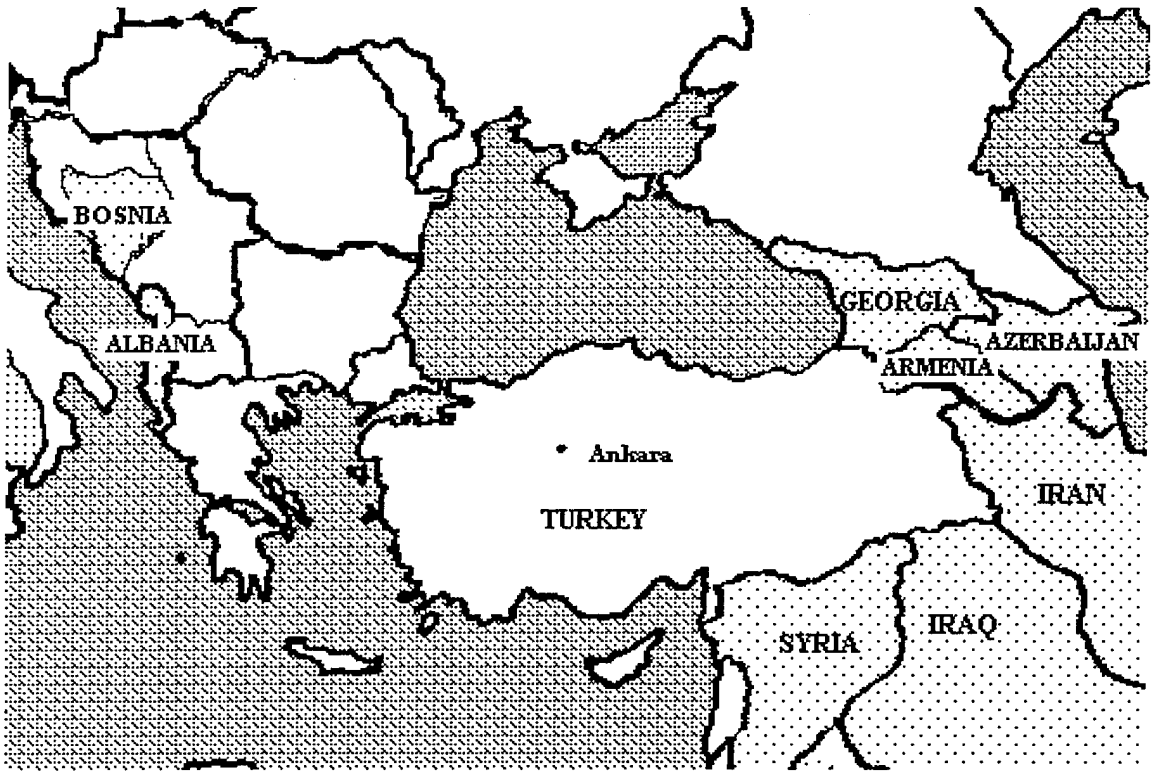

Figure 1. Turkey and Regional Instabilities.

2. NATO

Turkey has been a full member of NATO since 1952. With the collapse of the Soviet Union, the Warsaw Pact and the unification of Germany, the center of NATO's concerns have moved south to the Balkans. The collapse of the Soviet Union has also allowed long suppressed conflicts and ethnic divisions to arise in the new states that were formed. Surrounded by this unrest, Turkey, a democratic secular state which has common ideals

[10] Ibid. 16.

shared with both the NATO alliance and with the new countries that have been formed in Central Asia and the Caucasus. Turkey is a stabilizing influence in a region of unrest. Turkey has common historical and linguistic ties to the countries in the Caucasus region and Central Asia. As a consequence of these events, Turkey is even more important to NATO now than it was in the East-West conflict of the Cold War. This can be seen in Turkey's central role in the Gulf War and its deployment of troops to Bosnia.

Country	Population (in Millions)	Armed Forces Per 1000 People	% Military Expenditures of Gross National Product
Turkey	60.9	11.3	5.8
Iran	62.0	8.5	3.5
Iraq	19.2*	21.2	20[11]
Greece	10.5	20.3	5.5
Russia	149.0	15.1	14.6
Syria	14.3	28.5	14.6+
Ukraine	51.8	9.8	NA

1993 Data[12]
+1990 Data was the last year reported.

Table 1. Defense Expenditures

Even though the Soviet Union has collapsed, Russia remains a very powerful country with overwhelming military capabilities in the southern region of NATO. Unlike some of the other NATO allies in the southern region of the Mediterranean, Turkey has always seen

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[11] Stockholm International Peace Research Institute, *SIPRI Yearbook 1992, World Armaments and Disarmament* (Oxford University Press 1992), 265.

[12] U.S. Arms Control and Disarmament Agency, *World Military Expenditures and Arms Transfers 1992-1993*, (Washington, D.C.: GPO, 1993).

the Russian threat as real and for Turkey a historical reality. Turkey's Armed Forces are the second largest armed forces in the NATO alliance.[13]

3. Regional Instabilities

a. Armenia and Azerbaijan

On the eastern border of Turkey, before the breakup of the Soviet Union, Armenia and Azerbaijan were in conflict. Armenia has a majority Christian population and lays claim to an area of Azerbaijan. In 1988 Soviet Government troops imposed order between the two republics, but after the breakup of the Soviet Union both republics were again at war with each other. Additionally, Turkey views Armenia's claims on so-called Turkish Armenia with some alarm. This war between Azerbaijan and Armenia is also a cause of tension with Iran. The Iranian Government fears that Turkish influence in the region (Iranian Azeris who make up twenty-five percent of Iran's population) could encourage a succession from Iran. This area is very volatile and Russian assistance to the Armenians is clearly helping the Armenians win the war. In September 1993, Turkey threatened direct military intervention if any new Armenian offenses were launched against Nakhichevan enclave in Armenia.[14]

This region, after the collapse of the Soviet Empire, has emerging long suppressed nationalist movements which are still very much in flux. Turkey finds itself in the position of attempting to remain neutral in past grievances for which the parties for historical reasons believe Turkey has some responsibility. For example, Turkey should have the same economic relationship with Armenia that it has with Georgia, but because there exists a minority in Armenia that links Turkey to a time when it was the Ottoman Empire, Turkey finds itself in the position of protecting a minority in Armenia at the great strategic risk of antagonizing the Russians who are the supporters of the Armenians. In fact, Russian Army Chief of Staff, General Shaposhnikov has warned that if Turkey enters the region

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[13] Graham E. Fuller, Ian O. Lesser, Paul B. Henze, and J. F. Brown, *Turkey's New Geopolitics from the Balkans to Western China.* (Boulder: Westview Press, 1993), 112-113.

[14] James Wyllie, "Country Briefing Turkey," *Jane's Defence Weekly* (September 16, 1995): 26.

militarily, the conflict could turn into a Third World War.[15] This scenario has similarities to the 1914 incidents in the Balkans leading to the First World War.

Figure 2. Armenia, Azerbaijan and Georgia.

b. Balkans

A lack of a firm western response in the Bosnia and Herzegovina situation in what use to be Yugoslavia and the Serbs and Croats ethnic cleansing has led the Muslim world to believe that Europe and the West are passively permitting the liquidation of the last Muslim outpost in Europe. The inaction by the European Community seems to shift responsibility for the Bosnian Muslim toward Turkey. Turkey is supplied 1,500 troops for the protection forces in Bosnia. Turkey is also a member of NATO and a participant in any

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[15] Fuller, et. al., *Turkey's New Geopolitics*, 78.

questions of NATO's reaction in the Balkans. The Turkish and Iranian diplomatic rivalry is very much affected by the actions of NATO and the UN in Bosnia. The Turkey's diplomatic overtures in Central Asia and competition with Iran for influence in that region, could lead Turkey to take strong actions to protect the Bosnian Muslims.[16]

c. Kurds

The Gulf War has amplified the Kurdish problem in the region of Eastern Turkey, Iran, and Iraq. These groups are not the PKK. These groups are a result of Saddam Hussein's brutal actions against the Kurd people in northern Iraq. With Iraq's loss of control in the region, and some autonomy for these groups in northern Iraq, there could be a political movement to establish independent Kurdish state. This is viewed by Turkey with a great deal of alarm. Turkey before the Gulf War, had been in the process of liberalizing its laws and recognizing the Kurdish culture. Turkey is also embarked on a program to improve the economic level for its very poor populace in southeastern Turkey. The PKK is taking advantage of the general unrest and the natural human sympathy for the plights of the Kurds in northern Iraq with typical terrorist tactics that communist insurgencies have practiced throughout the world in the last fifty years. These tactics have one thing in common they are always used when the insurgency cannot muster the local support for their cause, and instead seek publicity and compel support from simple people who have to be more worried about their survival than either their ethnic background or political condition.[17]

Turkey intends to improve the standard of living in southeastern Turkey and has invested over 32 billion dollars in water projects to improve farming and agriculture. Although Turkey is one of the seven agriculturally self-sufficient nations in the world, this project's main thrust is to improve the division of resources between western and eastern Turkey. These projects have strained relations with Syria and Iraq.[18]

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[16] Ibid. 76; 153.

[17] Fuller, et al., *Turkey's New Geopolitics,* 46.

[18] "Separatis Terror: Menace of the Post Cold-War Period, A Case Study of the PKK in Turkey," (Internet http://home.imc.net/turkey/politics.htm), Foundation for Middle East and Balkan Studies (OBIV), (Istanbul: June 1994).

Although Turkey has offered to negotiate with Syria over issues involving the diversion of water from the Tigris and Euphrates Rivers, media reports suggest that instead Syria has opted to support the PKK. Recent activity by the PKK coinciding with the completion of the Birecik Dam on the Euphrates River, lends credence to the media reports.[19]

d. Commonwealth of Independent States (CIS)

To the north of Turkey, what use to be the Soviet Union is now the Commonwealth of Independent States. The CIS members currently suffer significant economic and political disadvantages as compared to Western Europe. The Russian federation, the largest member of the CIS consists of twenty-one autonomous republics with a common military force. All of these nations and the Russian federation have common problems. From the viewpoint of destabilizing factors the two most important problems are first, conservative forces that wish to return to the glory days of the Soviet Union and second, these states are still involved in a struggle for supremacy of the parliamentary body versus the executive body of the government. Additionally, the form that Russian nationalism will take has yet made itself known. Russia is the largest military power in the region and still possesses a very effective military force. The direction that Russian nationalism takes is very important to Turkey and has been so historically.[20]

4. Disputes With Neighboring Countries

a. Rivalry Between Turkey and Greece

Despite a common membership in NATO, Turkey and Greece have been rivals in the Aegean Sea for many years. In June 1995, Greece announced its intention to extend its territorial waters to twelve miles in accordance with the 1982 Law of the Sea Treaty. Turkey is not a party to the treaty and believes that if the Greek Government enforces the twelve mile limit, it would be a violation of international law and be an intrusion into areas considered by Turkey to be high seas and international air space. This action would severely limit Turkish access to the Aegean Sea and obstruct the sea lanes leading to the

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[19] Ibid.

[20] Dogan Güres, "Turkey's Defence Policy: The Role of the Armed Forces and Strategy, Concepts and Capabilities," *RUSI Journal,* 138, no. 3 (June 1993): 1-7.

Black Sea. Turkey does not question the Greek sovereignty of the Aegean Islands near the coast of Turkey.[21] Access to the Black Sea and Greek boundaries were established by the Treaty of Lausanne 1923.[22] Figure 3 and 4 illustrate the disagreement.[23] Figure 3 depicts a six mile territorial limit and Figure 4 depicts a twelve-mile territorial limit which would remove all international sea routes through the Aegean Sea.

Figure 3. Aegean Sea with Six Mile Territorial Waters.[24]

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[21] Dogan Güres, "For Justice and Civilization - The Strategic Involvement of Turkey and Restructuring of the Turkish Armed Forces," *NATO'S Sixteen Nations*, No. 4 (1993): 10-16.

[22] Paul M. Pitman III, ed., *Turkey, A Country Study,* 4th edition (Washington, D.C.: U.S. GPO, 1988), 48.

[23] Ibid. 161

[24] Tozun Bahcheli, *Greek-Turkish Relations Since 1955* (Boulder, Westview Press, 1990), 160.

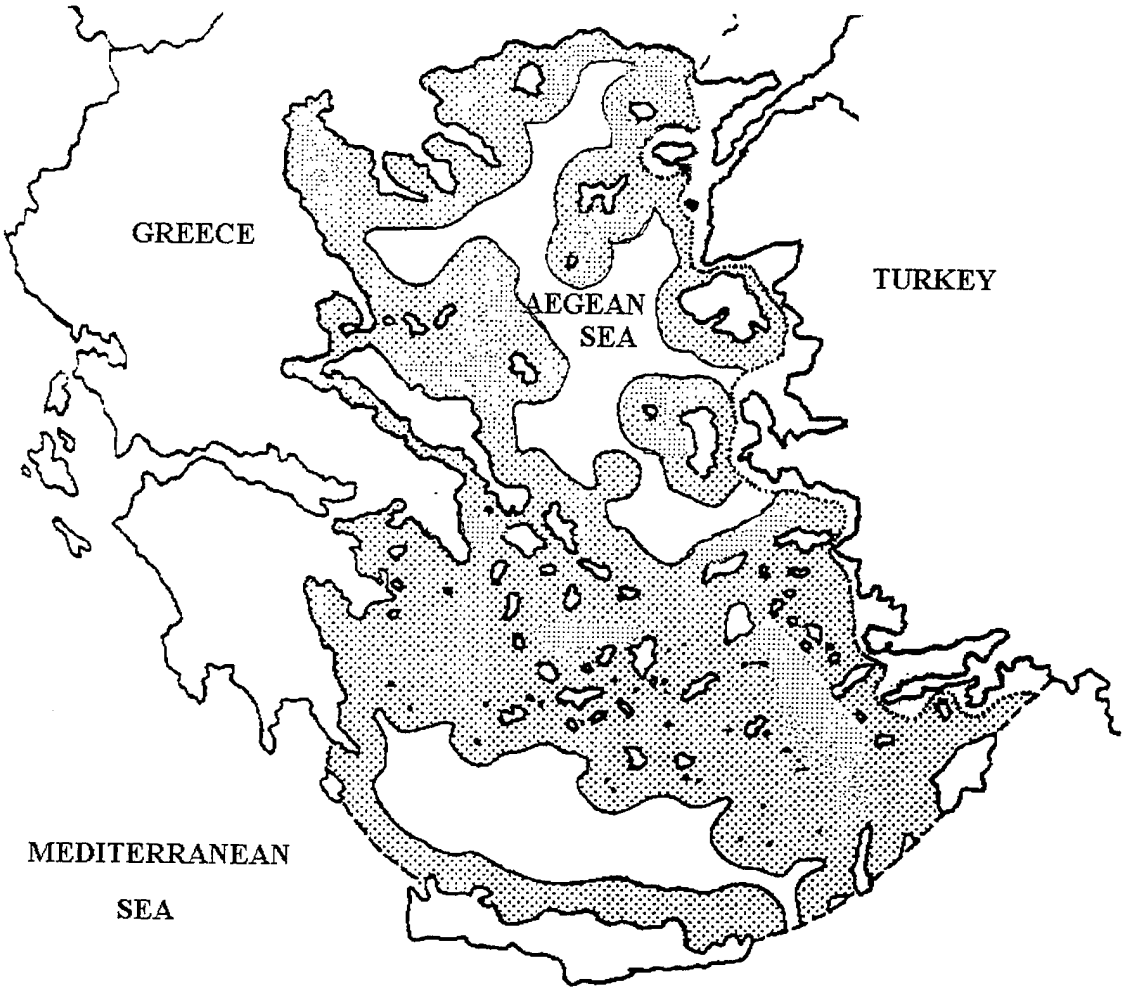

Figure 4. Aegean Sea with Twelve Mile Territorial Waters.

There is also friction between Greece and Turkey over Cyprus. Cyprus has been divided since 1974 as a result of a Turkish Peace Operation to prevent a military coup from realizing its aim to annex Cyprus for another country. Turkey was a guarantor of the London Treaties of 1959 and 1960 and because of inaction of the international community to protect the Turkish Cypriot community, Turkey felt obligated to act unilaterally to prevent the probable extermination of the Turkish Cypriots. Since 1974, the Turkish and Greek

Communities of Cyprus have been living peacefully in their respective territories.[25] The Republic of Cyprus and the Turkish Republic of Northern Cyprus both enjoy a higher standard of living than mainland Greece or Turkey. In fact, if the problems in Cyprus were settled, Cyprus would be a prime candidate for European Community (EC) membership.[26]

Turkish and Greek interests are in conflict in the Balkans. Turkey has 1,500 troops serving with United Nations protection forces in Bosnia. Greek sympathies are with the Orthodox Serbs and the Greek Government has not been diligent in maintaining the UN economic embargo on Serbia.[27]

Turkey also feels some responsibility for the Muslim population of Albania. Relations between Greece and Albania have taken a down turn since the end of the Cold War with the Greek expulsion of Albanian workers.[28]

b. Iran

Turkey's relations with Iran have been complicated by the situation in Armenia and Azerbaijan. Turkey and Iran are engaged in a rivalry for influence in Central Asia. With the independence of Azerbaijan, the Iranian Azeris, who speak a Turkic dialect which is virtually identical to the language spoken in Azerbaijan and nearly identical to the Turkish of modern Turkey, have long been an integral part of Iranian society. Now, with the independence of Azerbaijan, the Iranians fear that the Azeris will wish to form a union with Azerbaijan. This Iranian fear that twenty-five percent of their population will wish to join in a union with Azerbaijan has created a competition between Turkey and Iran for influence in the region. Turkey was the first state to recognize Azerbaijan's independence in 1991. The current government of Azerbaijan and Turkey are on close terms diplomatically. The Iranian Government would like to have more influence in the region both culturally and

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[25] Güres, "For Justice and Civilization," 14.

[26] Fuller, *Turkey's New Geopolitics,* 113.

[27] Wyllie, "Country Briefing Turkey," 25.

[28] Ibid. 25.

diplomatically because of its fears that there will be internal unrest inside Iran if Azerbaijan successfully adopts its pan-Turkish policies.[29]

c. Georgia

In Georgia, a Civil War with the Muslim province of Abkhazia has been brought to an end with the support of Russian troops. This again brings Russian forces in contact with the borders of Turkey.[30] Georgia's land links to Turkey have become a route for private enterprise. Georgia purchases of Turkish goods have reached 15 million dollars per year and Turkey is increasing the electricity that it exports to Georgia. However, ethnic strife within Georgia, which is a majority Christian country, has negative effects within Turkey and threatens one of the most potentially important economic partnerships in the Black Sea.[31]

d. Iraq

In March of 1995, the Turkish Army launched an operation into northern Iraq against the Marxist Kurdistan Workers' Party (PKK). This group has been responsible for terrorist attacks in southeastern Turkey. The operation lasted approximately six weeks and destroyed the PKK's infrastructure and supply chain in northern Iraq. At the end of the Gulf War, Turkey as other members of the coalition, participated in "Operation Provide Comfort" which was intended to shield Iraqi Kurds from the retaliation of Saddam Hussein. Turkey fully supports Iraq's territorial integrity, but because the two groups of Iraqi Kurds are in a power struggle with each other, there is no restraint on PKK activities in northern Iraq.[32] Turkey has withdrawn its troops and reinforced its border areas in an attempt to prevent the PKK terrorism on Turkish territory. This is considered by Turkey no more than a defense of its own borders and no different an action than many countries have been forced to take in their own defense.

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[29] Fuller, *Turkey's New Geopolitics,* 82-85.

[30] Wyllie, "Country Briefing Turkey," 26.

[31] Fuller, *Turkey's New Geopolitics,* 80-81.

[32] Wyllie, "Country Briefing Turkey," 29.

Turkey does not wish to see an independent Kurdish state formed in northern Iraq because it believes it would destabilize the region.[33]

e. Syria

Turkey has three issues with Syria. The first is that Syria provides asylum for the PKK. Up until 1993, the PKK leader, Abdullah Ocalan, actually had his headquarters in Damascus. Although Syria expelled him, in actual practice, the PKK still enjoys Syrian asylum. Syria allows this in order to pressure Turkey on the second issue which is the Turkish control of the water flow of the Euphrates River. The completion of the Ataturk dam which controls the water flow of the Euphrates is part of a project to irrigate 1.7 million hectares of land in southeast Turkey. This dam is expected to provide economic improvement in one of the poorest regions of Turkey. It is related to the PKK problem because this region is inhabited by fifty percent of the Turkish Kurdish population. The third difference with Damascus is over the decision of the French mandate in 1939 to cede the Province of Hatay to Turkey long before Syrian independence in 1946.[34]

C. ECONOMIC

1. Government Budgeting

With the collapse of the Soviet Union, the incentive to provide military aid to Turkey has decreased. The governments of the United States and Western Europe have decreased their direct military aid. In fiscal year of 1994, the aid to Turkey from the United States was $405 million dollars and it decreased to $364 million dollars in 1995. In 1995, the Congress of the United States withheld ten percent of the military aid because of concerns over human rights in Turkey. The reality of the $405 million dollars in aid is that $325 million of it was dedicated to one program, the F-16. In 1995 that left only $3 million dollars in direct aid for Turkey to purchase military systems. The United States has also changed its aid from the direct supply of equipment to aid which is purchased inside the United States. Although this

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[33] "Separatis Terror"

[34] Wyllie, "Country Briefing Turkey," 29

appears to be in the United States budget as foreign aid, in fact, it is money that is spent in the United States and does not assist Turkey in its purchases of defense equipment. Another method the United States has used to save money is to guarantee loans for the purchase of equipment in the United States. Turkey must of course acquire the loan and pay interest as any individual or country would. Although this is counted as foreign aid, it's identical to any individual borrowing money against future income. Turkey's economy at the current time, is experiencing more than a seventy percent inflation rate. It is very risky for Turkey to borrow money with the current economic conditions of the domestic economy.

2. Acquiring Technology

The modernization of the Turkish Armed Forces through joint projects with technologically capable foreign companies, will result in the transfer of leading edge technologies to the private Turkish companies involved in the production of military equipment. Of course, most leading edge military technologies have difficulty finding a place in the civilian market. However, the base technologies and manufacturing methods for this equipment will find its way into civilian markets and will enable Turkish companies to compete better both domestically and in world trade.[35]

An infrastructure which can support and manufacture high level technologies will allow Turkey to provide for more independent decisions both in domestic matters and in international relations. For example, with the collapse of the Soviet Union, many liberal Western European nations no longer feel the pressure of a threat from the Soviet Empire or will be threatened by the unrest in the area of the world that surrounds Turkey. Sources of supply in those countries could be interrupted because domestic politics have become more important to the countries leadership than the countries international alliances. Because the source of supply is from that Western European nation, Turkey's policies would be driven by the domestic politics of that country instead of the needs of Turkey. For example, the recent decision by the German Government to stop arms flow to Turkey because domestic

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[35] Ayaz, "Deterrent Shield," 23.

elements in Germany accused the Turkish Government of using German manufactured weapons in its operation in Iraqi territory to defend itself against the PKK.

3. Economic Benefits from the New Defense Policy

Turkey intends, by the turn of the century, to be a fully industrialized country at a level similar to the Western European nations. To accomplish this, the defense sector of Turkey's economy must contribute technology and manufacturing capabilities to the civilian economy.

a. Providing Employment

Currently, many highly educated Turkish engineers and scientists are forced to seek employment in foreign countries. One reason for this is that Turkey's manufacturing and research infrastructure does not provide work. Employment in the technological industries operates very similar to the banking industry. Engineers and scientists who reach a certain point in their careers, generally leave the company they are employed by and start their own companies and hire other engineers and scientists. This has a pyramid effect, the more employed engineers and scientists in the infrastructure, the more employment that there will be available to engineers and scientists in the infrastructure.

b. Industrialization

The defense industry requires many technologies for the leading edge equipment used by the Turkish Armed Forces. These technologies require support industries as suppliers to the primary manufacturer. These support industries can also support civilian industry in Turkey. The support industries are more likely to lead to the development of a civilian industrial infrastructure than the primary manufacturer of the defense system. In Figure 5 is an illustration of the projected and current support requirements for Turkey's aircraft manufacturing sector.[36] It is displayed as a function of a number of people employed in support of each aircraft manufacturer.

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[36] 1991 Sanayi Kongresi

c. Research and Development

In the initial stages of a project before an engineering design is complete, high technology companies provide research and development funds to universities. In the final stages of a product some manufacturers will use a university to test and evaluate the design of the equipment. This infrastructure is very important to the development of an independent defense sector for Turkey.

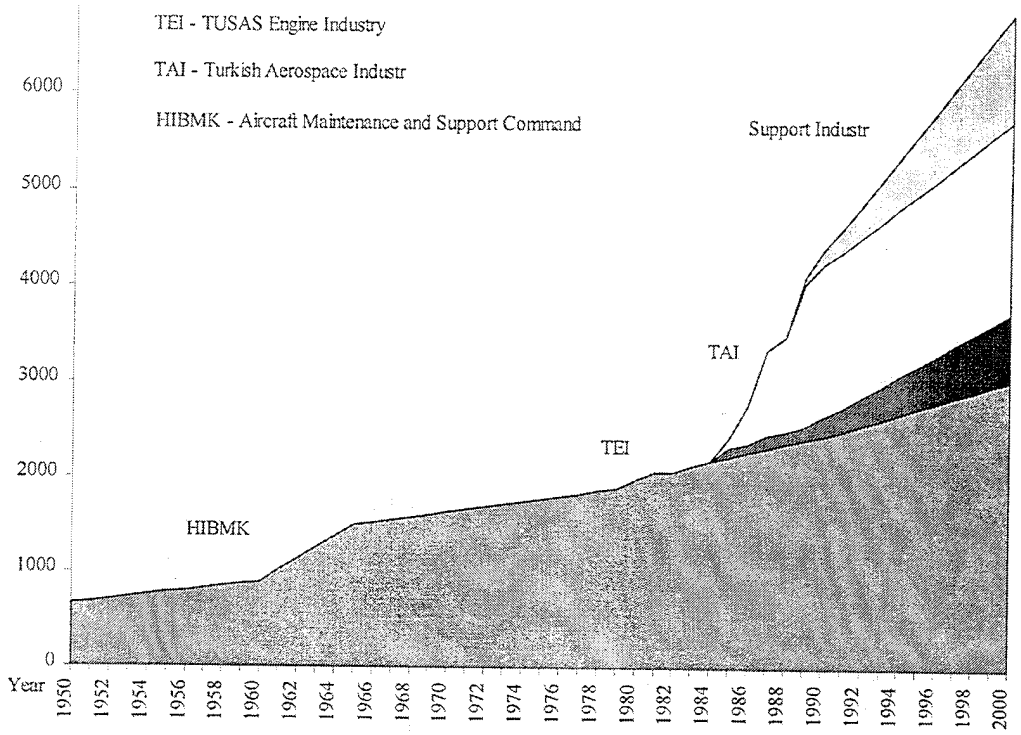

Figure 5. Employment in the Aircraft Industry of Turkey.

d. Development of Modern Quality Control Techniques

The local production of high technology military equipment will require Turkey to acquire the quality control techniques currently used in the United States and Western Europe. Turkey's domestic industry needs these techniques to remain competitive in world trade.

e. Development of New Management Techniques

New management techniques are more efficient and produce a more efficient workforce. The production of very technical equipment requires a very well educated workforce rather than the normal Turkish workforce which is hired to perform repetitive tasks requiring little training. The management of highly trained personnel emphasizes techniques that leave as much of the production operation as possible in the hands of the workers. Generally, the structure for these operations only meets the minimum required communication links in order to achieve the production of the equipment. This management method is designed to achieve maximum innovation and loyalty from the production worker. The time when just the ability to produce a product guaranteed the ability to sell it somewhere in the world, is long past. In order for the product to be used, it must be of very high quality or have some innovative feature that makes it unique in the world.

f. Raising Competitiveness of Turkish Industry in International Markets

In order to be competitive in the world requires more than just a low labor rate. It requires high quality production, unique products, and the lowest possible production cost. Labor is not the most important factor in production costs. It is only the most important factor in low technology manufacture. In the high technology engineering, the cost of design and research is much higher than the final production cost.

D. SUMMARY

Turkey must modernize its military forces to meet the real threats in its unstable region of the world. The economic situation of Turkey dictates that as much of these modernization capital as possible be spent inside Turkey. As any frugal consumer, Turkey also requires that it receive the maximum benefit from the technology acquired with the purchase of this military equipment. Maximum benefit in terms of civilian industry is increased employment, new world markets, and raise the quality of manufacturing inside Turkey. The simplest means of offsetting the cost of modernization would be for Turkey to enter the business of producing weapons for other countries. The long term difficulty of this,

is that other countries also realize that their defense costs should be spent internally and the market for arms is decreasing. Additionally, the countries in the world that produce arms (United States, Russia and Western Europe) are busily decreasing the size of their armed forces, and their own arms manufacturers are also in competition for the world arms market.

III. TURKISH DEFENSE ACQUISITION STRATEGY

A. INTRODUCTION

The last chapter discussed the factors driving Turkey's new defense policy. This chapter examines the implementation of the new policy. To implement its new defense policy, it was necessary for the government of Turkey to establish a new organization. The Undersecretariat for Defense Industry was established with Public Law 3238 (Appendix) in 1985 and is responsible for the direction, control and financing of the modernization of the Turkish Armed Forces. The Undersecretariat for Defense has also been tasked with the privatization of the Turkish defense industries and programs to encourage private industry to support Turkey's defense infrastructure. Turkey levied a special tax in addition to the normal government budgeting functions for the modernization of the armed forces. The first part of this chapter discusses the functioning of the Undersecretariat for Defense Industries and the challenges that Turkey must overcome in order to develop a robust defense infrastructure. This section discusses Turkish strategy for the development of its defense infrastructure. The final portion of the chapter discusses the current and ongoing defense projects administered by the Undersecretariat under the new defense policy.

B. UNDERSECRETARIAT FOR DEFENSE INDUSTRIES (SSM)

SSM is responsible for all contracting related to investments in Turkey's defense infrastructure and the reorganization of the existing industrial base to support the modernization of policies of Turkey. Additionally, SSM prioritizes projects in relation to the needs of the Turkish Armed Forces and the resources available from the government and the special tax levied to support modernization. SSM is responsible for monitoring defense contracts to ensure that the terms are met. Article 10 of the Public Law that established the Undersecretariat sets the organization's responsibilities as follows:

- Implement the decisions taken by the Executive Committee.

- Award contracts on orders for procurement programs to be established annually on the basis of projects.
- Re-organize and integrate the existing national industry so as to satisfy defense industry requirements, encourage new enterprises and channel them according to the integration and requirements, seek possibilities for foreign capital and technology contribution, guide enterprises and make plans for state participation in this respect.
- Determine procurement programs and funding models by taking into consideration the funding sources.
- Make plans for production, at private and public organizations, of modern weapons, material and equipment required.
- Support, when necessary; private, public or compound investments provided that they are export oriented.
- Make researches and develop material and equipment for modern weapons, produce prototypes; make advance payments; regulate long term orders and other financial and economic incentives.
- Make contracts covering the conditions of the purchase to be made in the up-coming years in accordance with the specifications, and technical and financial issues considering specifications and standards to be determined by the Ministry of National Defense.
- Co-ordinate off-set and the export of defense industry products.
- Award credit from the Fund or get credit loan from local and foreign sources and, when necessary, set up companies with domestic and foreign capital, and participate as such.
- Control as to whether or not the goods produced are in conformity with contract terms, and whether or not the quality assurance and contract terms are fulfilled.
- Assist in resolving the problems encountered in the implementation of the contract between the private and public parties concerned.[37]

1. Decisionmaking Organization

The Defense Industries Supreme Coordination Board is chaired by the Prime Minister and consists of the Armed Forces Chief of Staff, cabinet members and the commander of each armed services, and is responsible for policy, planning and the coordination of

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[37] Law Concerning Defense Industry, Law No: 3238 Legislation Date: 7.11.1985, Republic of Turkey, Ministry of National Defense Undersecretariat for Defense Industry, (Ankara, 1993), 6.

decisions related to National Defense. This board provides coordination of all government activities related to defense industries and sets the overall policies of the government in the purchase and production of defense equipment. (Figure 5)

The Defense Industries Executive Committee makes the final decision on all projects related to defense. The Chairman of the committee is the Prime Minister and the committee is made up of the Minister of National Defense and the Chief of the General Staff. (Figure 6)

The Undersecretary for Defense Industry is tasked from the defense industries executive committee and the Minister of National Defense with the priorities and requirements of the Turkish Armed Forces. This tasking is a result of policy decisions made by the defense industry supreme coordination board, the armed forces and the civilian government. In Figure 6 there is a diagram of the organization of the Undersecretariat For Defense and relevant decision making boards.

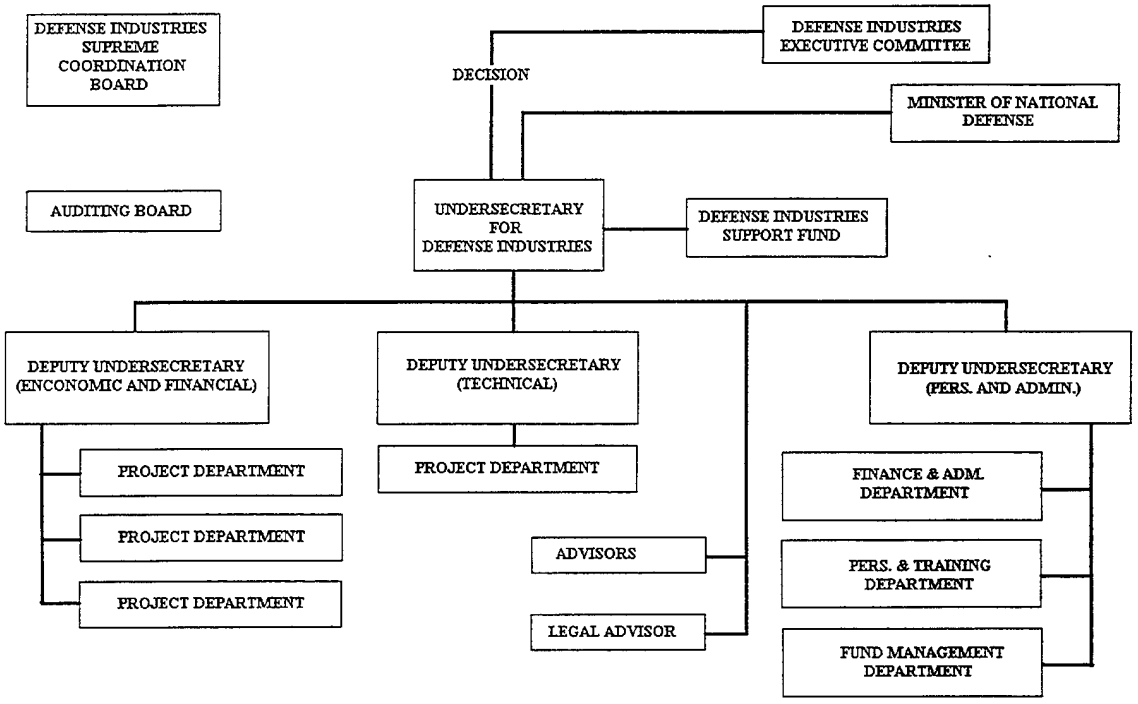

Figure 6. Organization of Committees and SSM.

2. Financing

The financial resources to accomplish the defense industry development policies are provided through a special "Defense Industrial Support Fund" managed by SSM and the Defense Industries Executive Committee. The primary sources of revenue for the fund:

- Annual appropriations from The National Budget.
- Levies and surcharges on the state monopoly products.
- Revenues from National Lottery, joint bets.
- Portion of the gasoline sales tax.
- Withholdings from income and corporate taxes.
- Revenues from the assets owned by the fund.
- Revenues from paid military service.
- Donations.[38]

3. Acquisition Process for Defense Projects

The acquisition of defense equipment begins when the Turkish General Staff identifies a requirement for a weapon system. This requirement is added to the Strategic Objective Plan (SOP) for the modernization, operational readiness and logistics support for the Turkish Armed Forces. The General Staff explicitly defines the technical and tactical requirements for the required system. The Minister of National Defense, cognizance of policy established in the Defense Industry Supreme Coordination Board, and the Undersecretariat for Defense Industries recommends procurement of the system to the Defense Industries Executive Committee.

The Executive Committee is responsible for the final procurement decision and determining whether the weapon system will be procured domestically or from a foreign source. Additionally, the Executive Committee determines whether the procurement will be

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[38] Constituting A Defense Industry Infrastructure

from a foreign company or whether an investment will be made in Turkey's defense infrastructure.

The Executive Committee tasks the Undersecretariat for Defense Industries with the acquisition. The Undersecretary establishes a project group to prepare a request for proposals and solicits participation from manufacturers. SSM's project team evaluates the proposals to see if they meet the requirements originally made by the General Staff. Proposals are also evaluated for the following:

- Technology transfer.
- Offers for research and development activities in plants and facilities to be established in Turkey.
- Amount of local content.
- Net flow of foreign currency abroad.
- Provides opportunity for sales to third countries.
- NATO quality standards.
- Personnel training.
- Provisions for financing and credit.
- High employment potential.

If the proposal is for an existing system, the system is also tested and evaluated for conformity to the requirements of the General Staff.

The proposals are prioritized by how closely they meet the requirements of the General Staff and the evaluation criteria. The Executive Committee then makes a decision as to which proposal to accept and whether to negotiate a contract.

If a contract is accepted, the Undersecretariat establishes a project group to administer and monitor the contract. (Figure 7)

C. CHANNELS FOR TECHNOLOGICAL TRANSFER

Transfer of technology does not automatically take place when equipment is purchased or even when equipment is assembled in the receiving country. Turkey has found

it necessary to ensure a transfer manufacturing capability and technology by the use of offsets when contracting for military equipment.

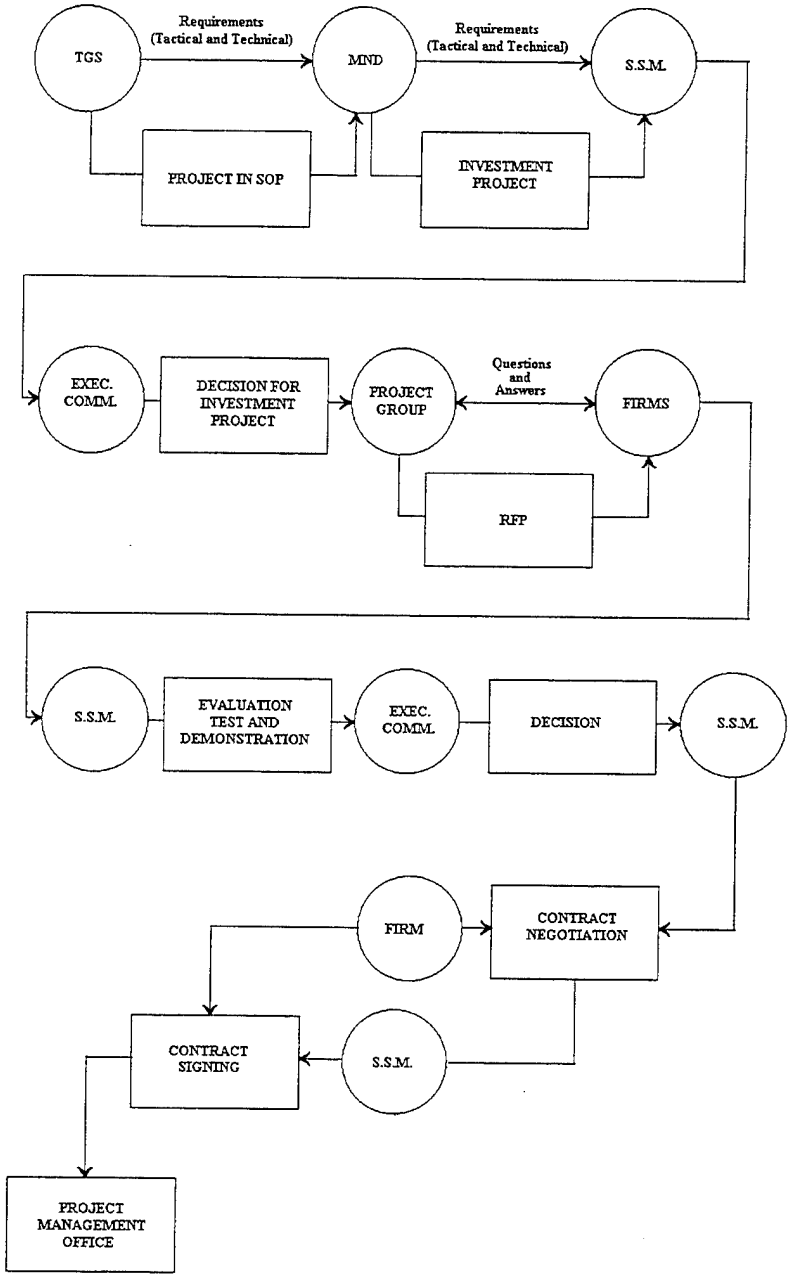

Figure 7. Acquisition Process.

1. Offsets

Offsets are defined as an exchange between a government and a manufacturer in compensation to the government for the purchase of the equipment from the manufacturer. Offsets are "indirect offsets" when they are not related to the purchased equipment. Offsets are "direct offsets" when they are related to the government purchase. Turkey uses both direct and indirect offsets to accomplish its goals of developing domestic defense infrastructure. Table 2 lists some of the current projects administered by SSM and the direct and indirect offsets to Turkey in U.S. dollars, for the life of the project.[39]

Project	Direct Offset (U.S. Dollars)	Indirect Offset (U.S. Dollars)
Armored Combat Vehicle Project	332,000,000	248,000,000
F-16 Electronic Warfare Systems Project	0	225,000,000
HF/SSB Radios Project	34,340,000	119,935,000
Basic Training Aircraft Project	0	3,000,000
Command-Control-Communication (C^3) Systems	25,000,000	0
Mobile Radar Project	23,180,000	40,000,000
Light Transport Aircraft Project	342,200,000	135,000,000
ACV Cupola	6,474,000	19,422,000
ACV Engine	31,000,000	17,904,000
LTA Engine	41,000,000	14,200,000
AH-1W Super Cobra	0	19,000,000
Wheeled Armored Vehicles for the Security Department	13,147,951	13,147,951
Wheeled Armored Vehicles (small type) for the Security Department	905,160	905,160
Peace Onyx-II F-16 Engine	133,700,000	256,200,000
General Purpose Helicopter Project	246,000,000	246,000,000
F-16 RLG INS	3,700,000	9,700,000
ACV Gun/Turret	29,142,084	29,142,084
ACV Night Vision Systems	22,000,000	5,800,000
Cougar Helicopter	67,500	94,500,000

Table 2. Direct and Indirect Offset Commitments.

In order to lessen the cost and burden of the defense industry on the economy offset programs are strongly encouraged. Therefore, Turkey has set strict offset policies for the

[39] Various unpublished sources from SSM.

programs. These policies are published as "Off-Set Guidelines" by the SSM. The Off-Set Guidelines establishes rules for every facet of the defense programs. Under the 1992 policy:

- Offsets must account for at least 30 percent of the value of any project negotiated by SSM and the Ministry of National Defense. Additionally, when part of a project is imported, offsets must account for at least 50 percent.
- In the case of co-production in Turkey, at least 50 percent of the offset must be a direct offset. Submission of an offset proposal implies an unconditional acceptance of the guidelines.

The policy specifies the manner in which Turkey will credit companies with meeting their offset obligations. SSM will assign different values to a company's indirect offsets based on a variety of factors, including type of investment, the length of time the investment is made, and whether Turkey will be able to export products as a result of the investment.

a. Joint Ventures

A joint venture is a direct offset and joint ownership of the manufacturing capability for a defense product. This may also include joint ownership of the intellectual material and basic research for the development of the project. Turkey only enters into joint ventures when the manufacturing plant is built in Turkey and provides an offset of employment and the manufacturing capability to produce other products locally.

b. Co-production

Co-production is a direct offset where the domestic manufacturer receives a license to produce a defense product. The license may enable the manufacturer to export the product to a third country or may limit the exports to a list of eligible customers. The product may be in production in both the licensing country and in Turkey.

c. Local Content

Turkey bases the requirements for local content on the level of technology being transferred. If the manufacturing technology can be immediately acquired domestically, then Turkey requires that there be a high percentage of local content. However, if the technology being transferred is a leading edge technology which will require some time

to produce an infrastructure inside Turkey, then the percentage of local content is set to a lower figure. Table 3 shows the local content of some current projects.[40]

Project	Project Cost (Million $)	Local Content	
		First Program Year	Final Program Year
Armored Combat Vehicle Project	881.5	14%	73%
F-16 Electronic Warfare Systems Project	325.0		14%
HF/SSB Radios Project	163.2	18.6%	51.8%
Basic Training Aircraft Project	17.0		$ 4.49 Million
Command-Control-Communication (C^3) Systems	163.1		$ 45.1 Million
Mobile Radar Project	150.5		$ 34.6 Million
Light Transport Aircraft Project	550.0		$ 85.1 Million
ACV Cupola	33.2		$ 11.6 Million
ACV Engine	145.7		58%

Table 3. Targeted Local Content.

2. Research and Development

Fourteen research and development projects related to the defense industry have been awarded for a total of 30 million U.S. dollars to Turkish universities (See Table 4),[41] research institutes and some private sector establishments. Research and development performed in Turkey's research and development establishment provides both employment for Turkish scientists and engineers and creates an innovative sector to support defense and civilian production. In order for Turkey to realize returns from the export of military equipment, Turkey must produce innovative and market timely products to compete with the large manufacturers of Western Europe and the United States.

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[40] Various unpublished sources from SSM.

[41] Various unpublished sources from SSM.

3. Summary

Turkey prefers the joint venture method of offsets because there is a higher likelihood that technology and manufacturing techniques will be transferred to the defense and civilian sectors of Turkey's economy.

Project	Research Organization	Cost
PRC/VRC 9600 Series Frequency Hopping Radio Development	ASELSAN Inc.	$ 2,100,000
PCTE Portable Common Test Equipment	STFA SAVRONIK Inc.	$ 419,400
Unmanned Aerial Vehicle UAV-XI	TAI Inc.	$ 828,500
Liquid Fuel RAMJET Engine Development	METU Middle East Technical University	$ 242,000+176 MTL
Composit Armored Production	ITU Istanbul Technical University	$ 765,000+170 MTL
Silicon Carbide Based Ceramic Material Production	METU	$ 530,000+476 MTL
Software and Hardware Development for National Defense Systems	BU Bosporus University	$ 1,070,000+137 MTL
Milimetric Wave Electronic Warfare	METU	$ 1,059,463+403 MTL
Semiconductor Technologies Research Center	BILKENT University	$ 3,100,000
Short and Medium Range Rockets Technologies Development	TUBITAK/SAGE	$ 2,598,000+2,600 MTL
Uzun Ufuk (1st phase)	TUBITAK/MAM	$ 500,000+3,500 MTL
Guided Rocket Development Infrastructure (GUFTAG)	ROKETSAN Inc.	$ 1,850,000
Uzun Ufuk (2nd phase)	ITUV/SAM	$ 1,850,000

* Table as of 1993

Table 4. Research and Development Funding.

D. ECONOMIC FACTORS

Some of the factors that affect Turkey's ability to increase the defense and civilian industrial infrastructure are economic. These factors restrict the growth of Turkey's economy and limit the foreign exchange that Turkey may invest in modernization.

1. Switching to Liberal Economy

The major change in the economic policy of Turkey, since the beginning of 1980s has been to reduce the role of the government in economic and commercial activities and to confine the government to infrastructure investments. In order to achieve this goal, the necessary measures have been taken to encourage and support the private entrepreneurs; trade restrictions, exchange and price controls have been abandoned; and perhaps more importantly, the inflow of foreign capital has been made easier as well as the outflow of Turkish capital by Turkish investors. The idea underlying all these measures is to gradually transform the economic structure which had been based on government leadership into fully market oriented economy where free enterprise and competition are the essential forces driving the economy.

Turkey had a government controlled economy until the end of 1985. Turkish private industry was not able to enter the defense field as well as the other government monopolies. Additionally, large publicly owned companies were suffering financial difficulties and required new investments to remain viable. Investment in these companies by foreigners had been either prohibited or strictly regulated. To overcome this problem, the government established a liberalized policy. This policy was directed at creating a more modern defense industry in Turkey. The primary method was by allowing the Turkish private sector to collaborate with foreign manufacturers, and acquire technology, management know-how and capital.

2. Inflation

Turkey has invested heavily in the development of Eastern Turkey with dams and powerplants (GAP)[42]. This has led to inflation on the order of 70-80 percent. Additionally, high inflation in Turkey is caused by the State Economic Enterprises (SEE) which have at times required subsidies of up to 13 percent of the national budget.

Although internally the effects of the inflation are reduced with the usual tools, price freezes, money restrictions and the freezing of wages or pay raises, the exchange rate for the

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[42] Güneydoğu Anadolu Projesi - Southeastern Anatolia Project

Turkish lira shows the full effects of inflation. This prevents Turkey from borrowing money in the international markets. (See Figure 8)[43]

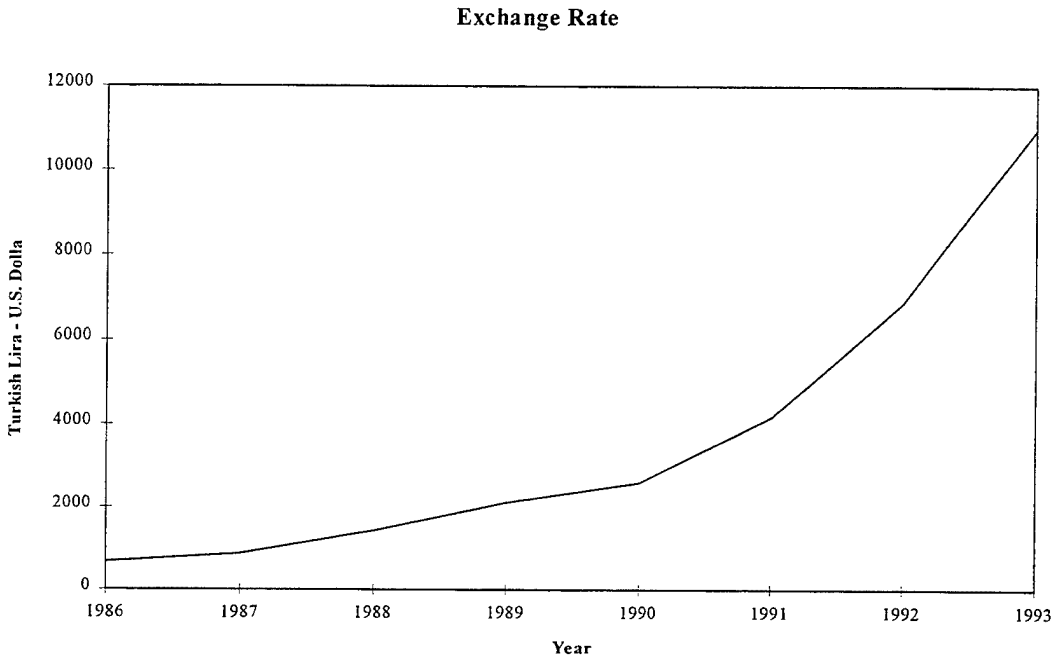

Figure 8. Exchange Rate Turkish Lira to U.S. Dollar.

The Defense Industry Support Fund (DISF) has been particularly hard hit by the effects of Turkey's inflation. In the last few years the DISF has experienced large deficits primarily due to the high inflation. Recently, the National Assembly redesigned the tax source for the fund so that it would parallel inflation better. Additionally, the Turkish Armed Forces are not compelled to acquire weapons through the SSM and this accounts for large expenditures of foreign exchange reserves for the purchase of defense equipment. Ninety percent of this expenditure is in U.S. dollars and represents a severe drain on the Turkish economy.

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[43] OECD, *OECD Economic Surveys of Turkey 1993-1994*, Organization for Economic Co-operation and Development, 1994, 130.

3. International Arms Trade

The easiest method in the 1980s to realize a return on the investment in defense industries was to sell arms to Iraq and Iran. This was demonstrated by the Western European countries in the 1980s. The 1980s left the impression that it was possible for a country to support its defense establishment by producing weapons for the international market. This is in contrast to the normal purpose before that time of using the arms trade to support allies and gain influence in other countries. The realities of today's world, are that there is a shrinking market for arms and the United States and Western Europe are competing fiercely for that market. With these conditions in mind, it is unlikely that developing countries will gain any significant percentage of the international market for arms and must, instead, rely on the technological and management techniques gained in the civilian sector by production in its defense sector.

In order for Turkey to support the modernization of the armed forces, it is necessary for the defense industry to export and bring foreign exchange into Turkey. In the paragraph above, it can be seen that it is difficult for Turkey to compete with the large Western European and United States manufacturers. Therefore, Turkey is following a policy of joint ventures with these large companies. There are two advantages to a joint venture in this context, first, the large firm is not a competitor but a partner in the operation. Second, more subtle, is that when the system goes out of production, Turkey may be able to act as a source of supply for spare parts and maintenance for equipment that is no longer supported by the large firm.

E. TECHNICAL FACTORS

Turkey is an industrialized country with an industrial and service sectors making up approximately 75 percent of the economy. However, this industrial base does not support the new defense technologies that Turkey wishes to acquire.

1. Quality Control

NATO military equipment must be produced to specifications outlined in the Allied Quality Assurance Publications (AQAP).[44] Building equipment to these specifications, will require the supporting industries inside Turkey to upgrade their quality control to meet the NATO standards. This will have the side effect of improving the quality of manufactured equipment for both the domestic and international markets. Even though most weapon systems are limited production runs and will not represent the normal production of the supporting manufacture, the manufacturer will still have established a quality control operation in the manufacturing plant that will be carried over to the normal production. An additional factor driving this process, is the requirements for a certain percentage of local content in a joint venture. The joint venture company is compelled to train the supporting manufacturers to bring them up to meeting the NATO specification. In some contracts, in order to meet the local content requirements the manufacturer has provided to the subcontractor, personnel, special tools and financing to enable the subcontractor to fulfill the contract.

NATO/MIL Specifications	Description
AQAP-1	NATO Requirements For An Industrial Quality Control System
AQAP-4	NATO Inspection System Requirements For Industry
AQAP-9	NATO Basic Inspection Requirements For The Industry
MIL-Q-9858	Quality System Requirements
MIL-I-45208	Inspection System Requirements
MIL-STD-499	Engineering Management
MIL-STD-1528	Manufacturing Management

Table 5. Important NATO and MIL Specifications.

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[44] TMMOB Makina Mühendisleri Odasi, *1991 Sanayi Kongresi: Savunma Sanayii Sektör Raporu*, (Ankara: November 1991).

2. Technical Infrastructure

The requirements to produce even what may be considered a simple or insignificant component of equipment can become very intricate and involve many technologies. For example, to join two pieces of aluminum together requires the engineer to understand the specifications for the joint and the procedure he will need to certify that the joint is properly made. It also requires a technician who is skilled at welding the joints, another technician who is skilled at building the jigs to align the joints, and another technician who is skilled at x-raying and testing the joints. The technology required is helium oxide welding which requires its own support structure of qualified people to test containers for the oxygen and helium, refill bottles, and repair the helium arc equipment. Interwoven in all of this, are numerous support people who must know where to buy the components involved in the manufacture, and in the equipment used to manufacture the weld.

To build a robust infrastructure for defense manufacturing, Turkey must develop an infrastructure of people, equipment and small businesses to support the operations like the one described in the preceding paragraph. Up until this time, most manufacturing in Turkey has been done with the idea that everything needed for production would have to be provided for by the manufacturer. This method of manufacture produced self-sufficient industries but these industries were less efficient and tended to retard the development of supporting manufacturers.

3. Scale of Manufacture and Amortizing Costs

Defense equipment is usually manufactured in limited quantities. One of the factors that contributes to the high cost of defense equipment is that the research and development cost for the equipment must be paid for with the production run. Additionally, even after equipment is designed it is sometimes not economically feasible for the manufacturer of the supporting equipment to manufacture that equipment. If a small manufacturer must tool up for a limited run, the cost of tooling up will also have to be amortized over his production run. Even in the United States unique parts for unique equipment sometimes exceeds the economic cost of completely replacing the original equipment.

For the small manufacturers used to support in joint ventures, the purpose of the limited production run is to gain management techniques, manufacturing capability, and experience that can be moved to the civilian sector of the economy.

F. JOINT VENTURES

SSM has managed approximately four and one half billion U.S. dollars in projects for the Turkish Armed Forces. These include more than twenty joint ventures. Some of which are outlined in the following paragraphs.

1. Armored Combat Vehicle (ACV)

This is the first project awarded by SSM. The project was to produce 1698 armored vehicles in four configurations for the Turkish Armed Forces. The project is a joint venture between FMC of the United States and NUROL of Turkey. The first deliveries from the Turkish facility were made in 1991. The total project cost was 880 million dollars in 1986 dollars. Contracts awarded for manufacture in Turkey for sub-components of the vehicle include the engine and transmission, a Turkish designed cupola for the vehicle, a gun turret for replacing the original designed turret, and a night vision system, manufactured in Turkey in conjunction with Texas Instruments.[45]

2. F-16 Electronic Warfare Systems Project

This project was contracted in 1989 to produce 122 active and 160 passive units of the ALQ-178 (V3) electronic warfare set for the Turkish Air Force. The project is a joint venture between Loral of the United States and Kavala of Turkey. The project has delivered 101 passive and 74 active systems. The total cost of the project is 325 million dollars.[46]

3. HF/SSB Radios Project

This project was contracted in 1989 to produce 2,936 jamming-resistant and frequency-hopping radios. The project is a joint venture between Marconi of the United

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[45] Ministry of National Defence Undersecretariat For Defence Industries, *Turkish Defence Industry Products Catalogue,* (Ankara: 1995) 11-14.

[46] Ibid. 125

Kingdom and three Turkish companies: Has, Cihan and Elit. The project has delivered 1,390 radios to the Turkish Armed Forces. The total cost of the project is 163.2 million dollars.[47]

4. Basic Training Aircraft

This project was to produce thirty-four SF-260D basic training aircraft in Turkey with the purchase of six initial aircraft from Agusta of Italy. This is a co-production contract between Agusta of Italy and TAI of Turkey, a 51 percent publicly owned company with the majority of the remaining stock owned by Lockheed of the United States The project was completed in June 1995 with a delivery of forty aircraft to the Turkish Armed Forces. The total cost of the project was 17 million dollars.[48]

5. Mobile Radar Complex Project

This project was to produce fourteen long range 3D search radars and eighteen command, control and communication (C^3) systems. The production is under two separate contracts, the first between Tekfen of Turkey and Thomson-CSF of France and AYESAS of Turkey a joint venture to produce the 3D radar and the second between Aydin Corporation of the United States and AYMET the Turkish subsidiary to produce the C^3 system. Seven units of the long range radar have been delivered to the Turkish Armed Forces, four produced in France and three in Turkey. The total cost of the project is 313.5 million dollars.

The software for the integration of the C^3 system and the 3D radar is being developed by Unysis of the United States and is currently undergoing testing for acceptance.[49]

6. Light Transport Aircraft Project

This project was contracted in 1990 to co-produce 52 CN-235 transport aircraft. It is a joint project between CASA of Spain and TAI of Turkey. The contract has produced twenty-one aircraft for the Turkish Armed Forces. The total cost of the project was 550 million dollars. Currently there is an ongoing project for the improvement of the Inertial Navigation System of the delivered aircraft.[50]

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[47] Ibid. 55

[48] Ibid. 115

[49] Ibid. 127

[50] Ibid. 114

G. SUMMARY

This chapter has covered the implementation of the new defense policy and the government organization SSM that was established by the Turkish National Assembly with the goals of improving the domestic defense infrastructure. In Section F, this chapter has outlined briefly some of the projects managed by SSM.

In recent months, Turkey has postponed other planned projects, notably the co-production of the Blackhawk helicopter. This is brought on by economic factors inside Turkey and immediate requirements by the Turkish Armed Forces. This is not a policy change, but simply an economic decision. It is initially less expensive to purchase equipment than to manufacture it, but in the long run, Turkey needs the defense industrial infrastructure to not only manufacture equipment but to maintain it in operation.

Of the six projects outlined, the armored combat vehicle demonstrates the goals of SSM for the transfer of technology and the increase the domestic defense infrastructure. In the next chapter, the author will analyze the armored combat vehicle project for its effectiveness in transferring technology and know-how to the civilian manufacturing sector.

IV. ANALYSIS OF THE NEW POLICY

A. INTRODUCTION

This chapter analyzes one project, the armored combat vehicle. This joint venture will be used to answer the research question: how successful is the new government defense policy been in regard to the transfer of technology to the civilian industrial section of Turkey?

There are a number of reasons for selecting this project for analysis:

- This is the first project undertaken by SSM. Because the project has been managed by SSM since 1986, it has a significant history for analysis.
- This is the largest project managed by SSM in financial terms and represents the largest investment by Turkey in the new defense policy.
- This project has evolved over time from an operation involving one company and one contract administered by SSM to a manufacturing operation involving many supporting companies and many contracts.
- This project has the highest local content commitment of the projects administered by SSM.

This chapter begins with a brief history of the armored combat vehicle project and a description of the joint venture projects for producing the vehicle. The following sections of the chapter will answers the questions that indicate whether the policy is successful as outlined in first chapter. Turkey:

- has acquired technology and management capabilities?
- has acquired new markets?
- has acquired a permanent industrial base?
- has reduced the cost of equipping and maintaining Turkey's Armed Forces?
- has maximized the use of existing capabilities?

The final section will be a summary of the results of the analysis.

B. ARMORED COMBAT VEHICLE PROJECT

The project began in 1988 when SSM awarded a contract jointly to FMC of the United States and NUROL of Turkey. The contract was for a joint venture company (FNSS) to produce 1698 armored vehicles of four types. The four types of vehicles were the armored infantry fighting vehicle (AIFV), the advanced armored personnel carrier (AAPC), the armored mortar vehicle (AMV), and the armored tow vehicle (ATV).

A manufacturing plant was built in Golbasi-Ankara, Turkey and the first deliveries from the plant were realized in 1991. Over time, the contract has been modified with production of the engine/transmission, the cupolas, the gun and turrets, and the night vision system being supplied by other joint ventures instead of the original contractor. In 1991, during the Gulf War, Switzerland announced an embargo of the 25 mm cannon used in production of the AIFV version which led to a modification and an alternate source for the vehicle's cannon. Additionally, the AAPC version was modified to protect the gunner under combat conditions. In order to meet the requirements of the Turkish Army, the original design of a 265 HP engine was replaced with a 300 HP engine, this upgrade required a modification to the transmission and led to redesign of the steering system. The night vision system for the vehicles was also upgraded.

To date, 1027 vehicles have been produced by FNSS and 663 vehicles have been delivered to the Turkish Armed Forces. The primary reason for the difference between produced and delivered is that subsystem deliveries from subcontractors are not coordinated with the scheduled deliveries to the Turkish Armed Forces.

C. LOCAL CONTENT

Local content requirements in a contract guarantee that a targeted percentage of the product will be produced in Turkey. The purpose of local content requirements is to ensure that the defense infrastructure in Turkey will receive the technology and capabilities needed to support the manufacturing of, in this case, the armored fighting vehicle. These requirements should result in a permanent manufacturing base.

1. Acquired Technology and Management Capabilities

Local content ensures that the support industries acquire the capabilities needed to produce components and subcomponents of the vehicle to NATO specifications. The contracts require the manufacturer of the vehicle to ensure that a certain percentage of the equipment is manufactured inside Turkey. This has led to the manufacturer recruiting subcontractors and even on occasion training and capitalizing them to meet the requirements of the contract.

The realities of modern manufacturing are that a manufacturer becomes as specialized as possible to ensure an efficient operation. To build a defense infrastructure, Turkey must construct a pyramid of supporting companies to support a major defense project. In the case of this project, FNSS is supported by 86 independent subcontractors. A large percentage of these companies came into existence with this project. Because these companies are civilian companies, Turkey would expect that they would find a market for their acquired expertise in both the defense and civilian economy. The companies that existed prior to the contract have received expertise relating to quality control and building higher quality components. Figure 9 shows the technological areas in which the support companies have expertise.[51]

2. Local Content Targets

SSM monitors the local content of the contracts that it administers. This is an ongoing process and SSM compiles statistics on a monthly basis. These statistics develop three figures. The first number developed is the components that are supplied from Turkey to fulfil in the case of the fighting vehicle contract the 73 percent local content target. The second number compiled represents components that are expected to be produced in Turkey in the near future. The third number represents components which SSM believes cannot be produced in Turkey at this time. Figure 10 shows the numbers of components in the armored fighting vehicle project used in meeting the 73 percent target.[52]

Over time, the number of components that make up the vehicle has increased due to modifications and the nature of sourcing material locally. When material is purchased

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[51] Various unpublished sources from SSM.

[52] Ibid.

locally, the subcontractor may supply only a subset of the original component with other portions of the component supplied by other subcontractors.

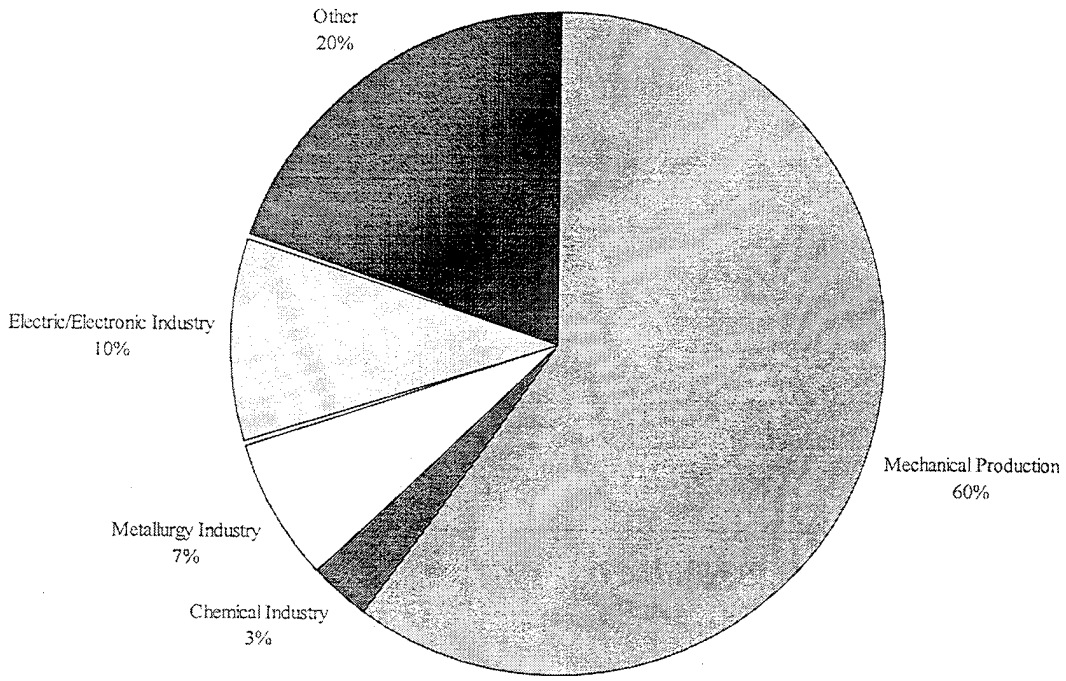

Figure 9. Technological Expertise of Support Companies.

Components which are expected to be supplied in the near future are components which are in prototype or awaiting certification for meeting the specifications. Components which are in the category of not possible at this time, are components that need either licensing for manufacture or require raw material or parts from outside Turkey. SSM coordinates with the manufacturer and actively attempts to find methods to reduce the quantity of parts in the category of "not possible at this time."

3. Current Local Content

The components that currently meet the local content requirements of the contract can be classified into three categories:

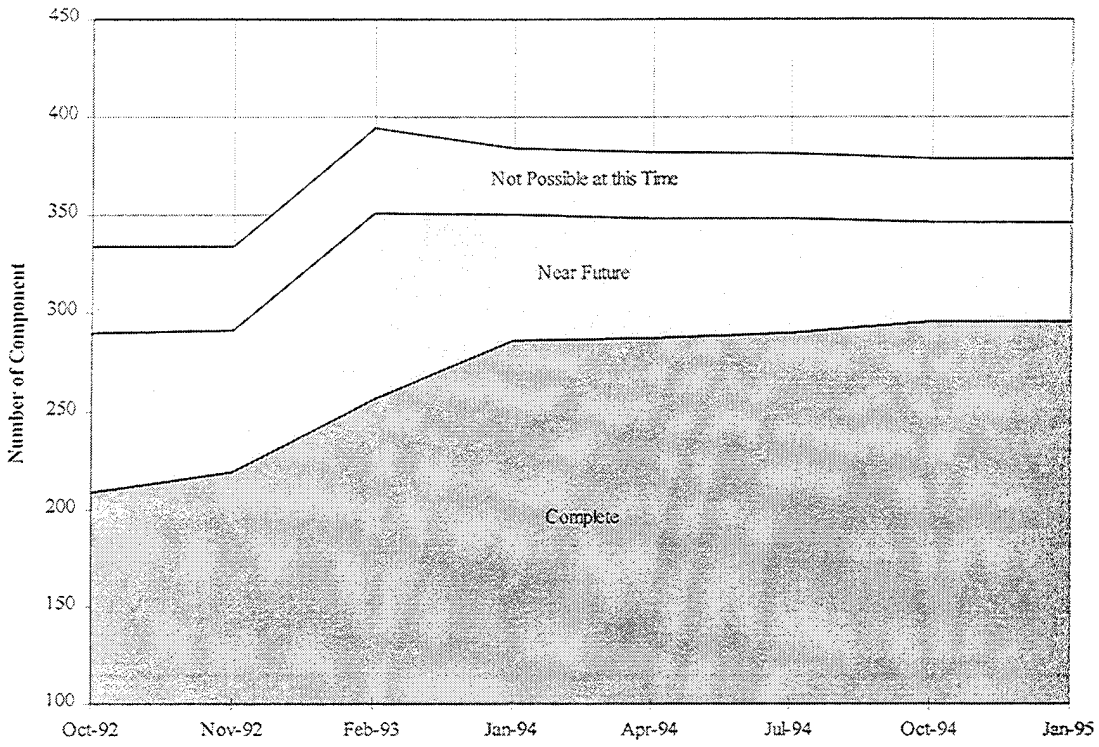

Figure 10. Components Used in Meeting the 73% Requirement.

- Subcontractor manufactured components - these are components which are manufactured by a subcontractor from material and documentation supplied by FNSS. An example would be machine shop subcontracted to machine armor plate used in the manufacture of the armored combat vehicle.
- Subcontractor supply components - these are components which are manufactured by the subcontractor or components that are supplied locally. An example of this would be Kale Inc. who produces the water cooling radiators used in the vehicle. This category also includes standard parts which are readily available from the civilian sector.
- FNSS manufactured components - these are components produced locally by FNSS.

Figure 11 shows the breakdown of locally produced components that make up the 73 percent requirement that are currently being produced in Turkey.[53] Currently, 78 percent of the

[53] Various unpublished sources from SSM.

required has been met for local content and this makes up approximately 60 percent of the components used in the vehicle.

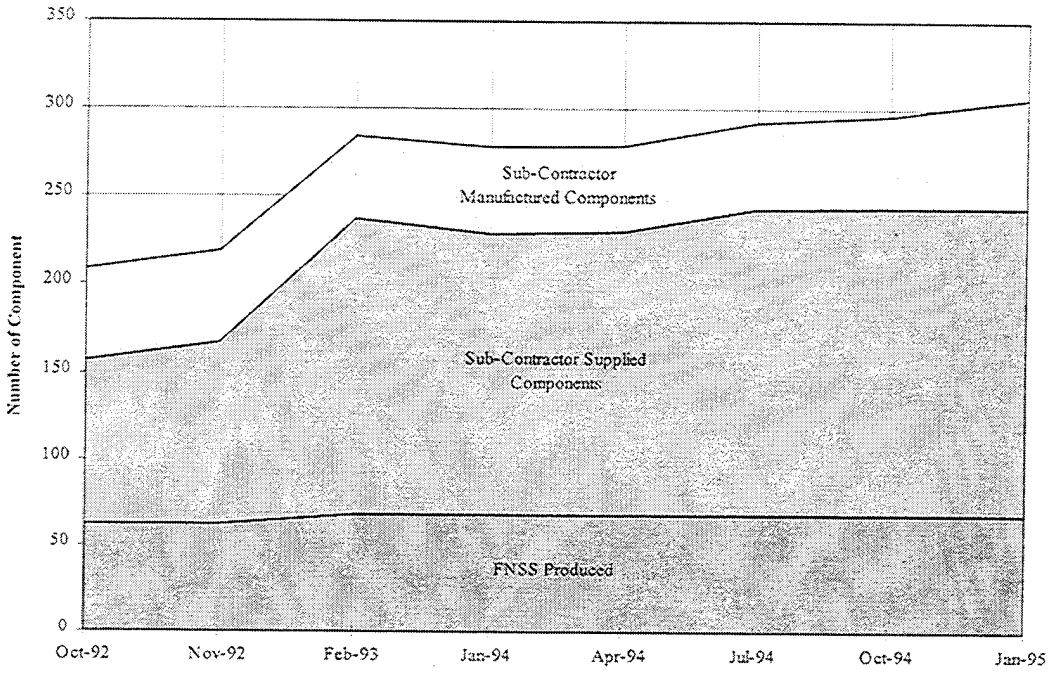

Figure 11. Locally Produced Components.

4. Sources of Material

The local content requirement for the vehicle is for components that amount to 73 percent of the vehicle at the end of the contract. From an economic view, it would be better for the raw material that makes up these components to also be obtained in Turkey. In fact, at the end of production about 50 percent of the material used in production will be manufactured in Turkey.

Material for manufacturer is imported from outside of Turkey for one of two reasons. Either the material cannot be produced currently in Turkey or it is not feasible to produce that material because of the small numbers of vehicles do not economically justify the creation of an industry to support their manufacturer. These kinds of economics are a problem for all military production. Generally, the production of military equipment is of small numbers by

the standards of the civilian economy and the artificial nature of the manufacture's customer (government) does not generate a self-sustaining economically viable company.

Figure 12 depicts the ratio of imported material to locally supplied material used to manufacture the vehicle.[54] The production units are shown from 300 units in 1991 to 900 units at the beginning of 1995. As more units were produced, local content raised from approximately 60 major components to over 200.

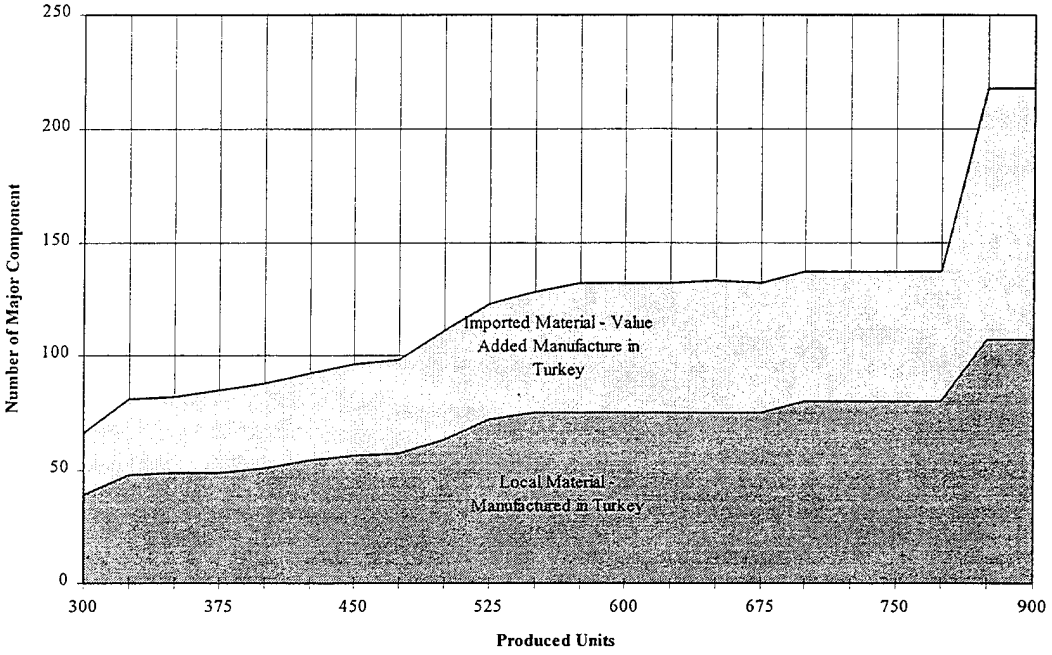

Figure 12. Imported Material/Local Material.

D. NEW MARKETS

The production of the armored combat vehicles and modifications that were developed in Turkey has led to opportunities in export markets. An example and the most sophisticated is to replace a similar turret on a Korean infantry fighting vehicle. Additionally,

[54] Various unpublished sources from SSM.

FNSS has developed extensive modification for the M-113. This development was a directly result of the need for a larger engine in the armored combat vehicle.

1. Defense Market

a. M113 Upgrade

The armored combat vehicle shares 60 percent of its parts with the American made M-113. The M-113 is very common and found in many areas in the world. Recently, FNSS has actively marketed its modifications and upgrades in North Africa and the Middle East. FNSS will probably be able to market the higher horse power engine upgrade of the vehicle. This modification to the M-113 is supported by many of the subcontractors of FNSS and indicates that the armored combat vehicle project has produced a viable defense infrastructure able to acquire new markets and enough innovation to compete in the world's arms market. Table 6 shows the subcontractors and the modifications to the M-113 that were designed and developed in Turkey.[55]

With this upgrade to the M-113, Turkey may be able to find a market for upgrading and refurnishing the M-113. The M-113 is out of production in the United States. The American producer is supported by the General Dynamics Service Company but has indicated that this support will end sometime in the late 1990s. There are approximately 8000 M-113s in the Mediterranean and Middle East region which could provide a market for Turkish defense industry. Figure 13 shows the location of the M-113s most likely to provide a source of foreign currency to the Turkish defense industry. [56]

b. Special Configurations of the Armored Combat Vehicle

FNSS produces three special configurations of the armored combat vehicle intended solely for export. These are: armored mortar vehicle model II and model III, and the armored infantry fighting vehicle Model II. To date, FNSS has not found a market for

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[55] Ministry of National Defence Undersecretariat For Defence Industries, *Turkish Defence Industry Products Catalogue* 248.

[56] The International Institute for Strategic Studies, *The Military Balance 1993-1994,* Brassley 1993, 60-131.

these vehicles. This is an extremely competitive market with very large manufacturers competing for a decreasing market. Additionally, Turkey's natural market in the Middle East is experiencing economic difficulties as the result of expenditures during the Gulf War.

2. Civilian Market

It is obvious that FNSS is unlikely to find a civilian market for the armored combat vehicle; however, many of the subcontractors to FNSS are producing products which do not have strictly military application. These supporting companies constitute the actual defense infrastructure produced by the new defense policy.

Subcontractor	Modification
FNSS, TURSAV	208 HP engine and transmission are dismantled and a new 300 HP Detroit Diesel engine with Allison cross drive transmission is installed.
FNSS, KALE	Cooling system is modified according to new power pack, the original grill is modified in order to accommodate new radiator and fan.
FNSS, ARMASAN, PARSAN, JANTAS	The vehicle is equipped with improved suspension system with new torsion bar, rod arms, shock absorbers and idler group. The defective road wheels, sprockets, final drives and track shoes are replaced with the new ones. These improvements in the suspension system provides more ground clearance and increased safety of the crew and survivability of the vehicle.
FNSS	The fuel cell inside the vehicle is dismantled. Two external fuel cells are assembled at the rear of the vehicle. The fuel system is changed accordingly, leading to increased safety of the crew and survivability of the vehicle.
FNSS, ASELSAN, TEPAS	ACV equivalent NBC system, heater, trim vane, ramp door, grenade launchers, electric and communication system, periscopes and bilge pumps are installed to the vehicle.
FNSS	Mounting provisions that accommodate for different types of bolt-on-armor (add-on-armor) plates are prepared.
FNSS	During upgrading, the vehicle is stripped down to the bare hull and subjected to radiographic inspection of all major weldings. The cracks observed at final drive and idler pad areas are repaired prior to above modification work.

Table 6. M-113 Upgrade.

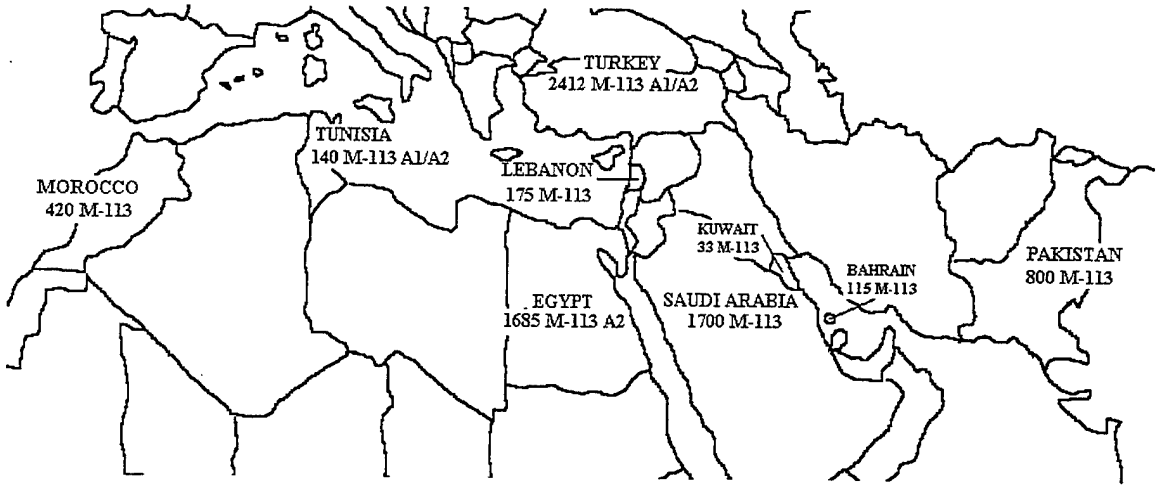

Figure 13. M-113 Upgrade Market.

a. Engine and Transmission for Armored Vehicles

TURSAV makes the engine and transmission for the M-113 upgrade and for the armored fighting vehicles. These engines are licensed from Detroit Diesel and the transmission is licensed from GE-Allison. The engines and transmissions have application in large trucks and construction equipment. This is a large company and has its own pyramid of supporting subcontractors to produce state of the art engine and transmission.

b. Armored Vehicle Cable Harness System

SGS-Profilo is an electronics producer that produces the cable harness for the armored vehicles. Similar technology can be used in telecommunication and vehicles.

c. Radiators for Land Vehicles

KALE makes radiators for the armored combat vehicle and produces many kinds of heat exchangers for air, water and oil systems for locomotives, electric generators, industrial and construction machinery and agricultural machinery in addition to military equipment.

d. Fasteners

FTC BESTAS makes military specification quality fasteners for both the aerospace industry and the civilian sector of the Turkish industry. This firm was established in 1993 to support not only the armored fighting vehicle project, but also the F-16 and light transport aircraft.

e. Bilge Pumps

TEPAS makes electrical motors, bilge pumps and fans for both the civilian and military market. This company produces bilge pumps and ventilation fans for the M-113 and the armored combat vehicle.

f. Torsion Bars

PARSAN does steel forging and machining. They produce the torsion bars that were induction hardened for use in the suspension system for the armored combat vehicle.

g. Road Wheels

JANTAS makes road wheels for military and civilian heavy vehicles. They produce the wheels for the armored combat vehicle and from this experience, they developed wheels for the M-113.

h. Engine and Transmission Parts

PMS makes spare parts. They make parts for the armored combat vehicle's engine and transmission they also, produce the carriers (drive gear) for the M-113. PMS also produces some parts for the aviation industry.

i. Manufacturing Services

IMTES provides welding expertise, parts for the electronics industry, does certified training, and consulting for the defense industry and supporting companies.

This list of companies does not include many manufacturers who support the production of the vehicle. There are a total of 86 companies involved in the vehicle's production. Most of these companies are involved in the project because they are small companies who can economically provide support. A policy of FNSS is to use small

manufacturers whose scale of production matches the scale of FNSS production of the armored combat vehicle.

E. COST

The establishment of a manufacturing operation is initially very expensive. Additionally, the nature of government funding where the year to year budgetary authority is subject to political pressures, makes it difficult for a country to pursue the joint venture route. The fact that Turkey has done this, indicates that Turkey wishes to receive a return on this policy and that this is not a bureaucratic decision of the government but a policy pursued by both government and legislature.

1. Offsets

This project includes both direct and indirect offsets. The direct offsets are valued at 332 million dollars and the indirect offsets are valued at 246 million dollars with a local content requirement of 73 percent. The engine transmission has a 31 million dollar direct offset and a 20 million dollar indirect offset with a 65 percent local content requirement. Additionally, Texas instrument provided a direct offset of 22 million dollars and an indirect offset of 6 million dollars for the night vision system with a 47.5 percent local content requirement. France's Giat industries has commitments of a direct offset of 116 million and indirect offsets of 29 million for the gun and turrets used on the armored infantry fighting vehicle version with a 35 percent local content requirement.[57]

Most of the indirect offsets have been realized, however, market conditions for this type of vehicle has made it difficult for Turkey to receive the direct offsets. These offsets reduce the cost of building the vehicles but in order for Turkey to gain the direct offsets, the market conditions for the armored vehicle would have to improve.

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[57] Lale Sariibrahimoglu, "Country Briefing Turkey," *Jane's Defence Weekly*, 11 June 1994, 29.

2. Life Cycle Cost

It would be less expensive for Turkey to purchase a similar vehicle directly than the method Turkey has chosen as a joint venture. However, the life cycle cost for the armored combat vehicle would be greater because all support and parts would have to come from the manufacturer of the replacement vehicle. This would use foreign exchange to support a defense operation expected to last at least twenty years.

The initial procurement cost for the vehicle is misleading. The support costs for military equipment is much higher than the procurement cost. For example, the initial procurement cost for the engine was approximately $30,000, but over the lifetime of the vehicle in the author's experience, the engine would be completely replaced three to six times depending upon how the vehicle is used. Using figures from a similar United States vehicle and taking into account the most common failures on this class of combat vehicles, the engine accounts for approximately ten percent of the cost for parts and labor.[58] Assuming that the engine is replaced three times in the twenty years projected life, then ten percent of the cost of the most common failures would be $90,000. Using this interpretation Figure 14 depicts the cost for the most common failures compared against the procurement cost of the vehicle. It can be seen in the figure just the maintenance and labor on the major components of the vehicle exceed the procurement cost.

As surprising as this might be, these support costs do not include: depot support costs, operating costs, personnel support and training costs, transportation costs, organizational and intermediate maintenance costs, the costs for installations, and other less identifiable costs which must all be budgeted in order to support the operation of the vehicle over its twenty year life.[59]

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[58] B. S. Dhillon, *Life Cycle Costing: Techniques, Models and Applications* (New York: Gordon and Breach Science Publishers, 1989), 255.

[59] Ibid. p. 48.

F. TECHNOLOGY

The real technology gained from the production of the armored combat vehicle is the integration of systems using system engineering concepts. Almost any technology can be purchased as knowledge from some exporting country in the world. However, a real technology transfer takes place when the importing country gains experience in using the technology in a real engineering project. This project produced engineers, technicians and managers who have the experience that can be adopted to new projects.

This project requires the supporting companies to produce at higher quality standards than is normally the case for a civilian Turkish company. In 1991 there were seven companies applying AQAP standards in manufacturing in all of Turkey. Today, there are more than thirteen companies that meet the standards working with FNSS.

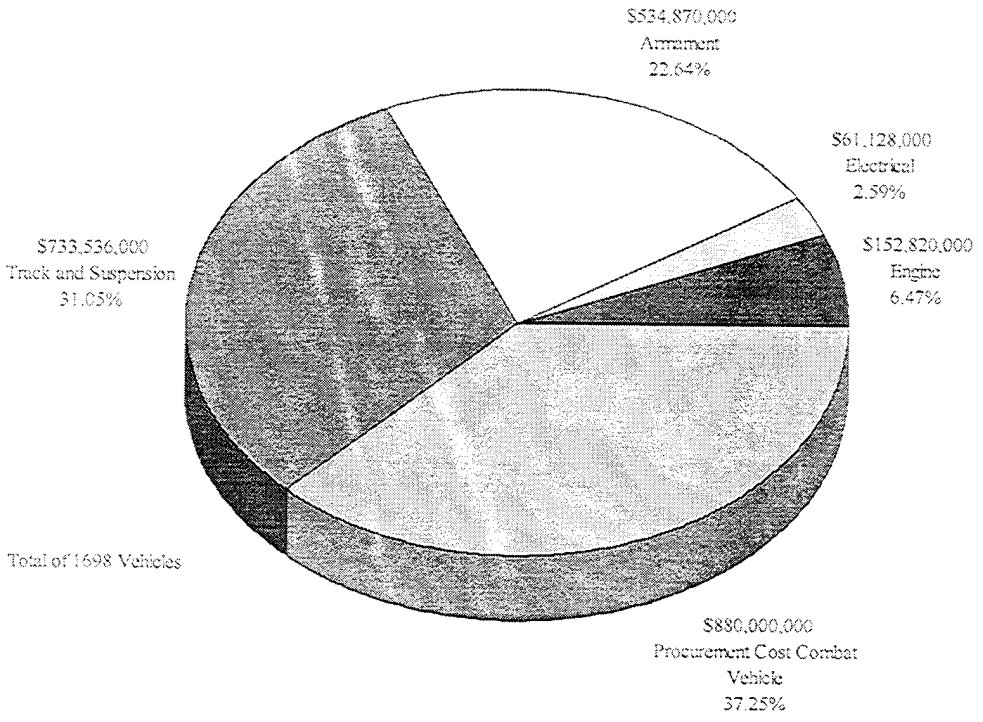

Figure 14. Maintenance and Labor Cost of the Major Components (20 Years).

System integration is not the normal manufacturing method in Turkey where large government owned companies produced a product from raw material to final assembly with few supporting manufacturers. The management of the subcontractors and delivery schedules is also a management method gained in this project. Currently, it is more likely that a civilian manufacturer will be at the leading edge of technology than a military equipment manufacturer. With the end of the Cold War, the large budgets for research and development in military technology are disappearing in every country. Therefore, the supporting manufacturers in the project are the most important creation for building a domestic defense infrastructure in Turkey.

G. SUMMARY

This chapter has been a detailed survey of the armored combat vehicle project. In the first section there was a brief history of the project. The next sections covered various aspects of the project related to Turkey's new defense policy.

The requirement that seems to accomplish the most towards a successful policy, is local content. This is a direct offset and provided for in all contracts administered by SSM. The local content provisions force the Turkish company to build a permanent infrastructure by requiring FNSS to recruit and train, if necessary, support companies to meet the local content requirements. Normally, FNSS will recruit an existing company in this process because the cost of establishing a new company and its equipment is very high. This ensures that existing capabilities inside Turkey is used to the maximum extent possible.

Another direct offset is the licensing of Turkey to sell various technologies to third countries. Currently, Turkey has an agreement with Malaysia to provide turrets to replace an existing turret on a similar vehicle made in Korea. The most exciting possibility is for FNSS and its subcontractors to compete in the market for the upgrade of M-113s in the region of North Africa and the Middle East. Additionally, the subcontractors involved in this project are likely to survive in the civilian market and in fact, many of them, view this project as a minor portion of their business. They are involved in other defense projects and actively

seeking civilian and foreign markets. This is made possible by the upgrade in their quality of production and experience in a major contract.

The most important technology gained is in management experience by both FNSS and the subcontractor. Turkish engineers, technicians, and managers have participated in a major project to produce the vehicle and develop modifications for the M-113. This experience will be used in Turkey on other projects. As pointed out in Chapter II, engineers and scientists will leave FNSS and start their own companies. In the case of this project, that process has already begun.

The initial purchase price of a piece of military equipment is misleading. A piece of equipment like the armored combat vehicle will be used over a twenty year period. The actual cost of operating and repairing this equipment is more likely to be higher than its purchase price. With permanent manufacturing capabilities at FNSS and its subcontractors, the major modifications and overhaul of the vehicle will take place inside Turkey with the advantage of using less foreign exchange and the additional advantage that the high inflation in Turkey will not have the effect of making the repair of the vehicle anymore expensive or less expensive than similar equipment maintained in Turkey.

There are much more advanced projects administered by SSM but the armored combat vehicle project has been in place longer, and uses the largest part of budget. The other projects result in technological transfer to Turkey but it is difficult to see how these projects will transfer this technology to the civilian sector. For example, the F-16 project can only be considered a technological transfer and job opportunity. There is no civilian market for supersonic aircraft and the size of the aircraft and technologies involved do not meet any civilian need. Additionally, very large civilian manufacturers have basically control of the aircraft market, even the EC must combine its resources to compete in this market.

V. CONCLUSION: FINDINGS AND RECOMMENDATIONS

The first chapter examines the background and presents an overview of the SSM organization and the new defense policy established by Turkey. Chapter II discusses the reasons for the needed upgrade and modernization of the Turkish Armed Forces. Chapter II also covers the current economic factors that affect the new defense policy. Chapter III gives a detailed description of the new defense policy, SSM and the implementation of the policy. Chapter III also includes a brief survey of the current projects that are managed by SSM. Chapter IV includes a detailed look at the longest running project at SSM, the armored combat vehicle.

A. FINDINGS

This study has led the author to the following conclusions:

- Turkey has decided to modernize its armed forces. Over the past decades, the armed forces equipment has become outdated and to be an effective military force, in a modern conflict, the equipment must be upgraded.
- The new defense policy is effective in building a manufacturing infrastructure in Turkey but economic considerations and the immediate needs of the armed forces have recently resulted in Turkey reequipping its armed forces from direct foreign purchase. Although this option is the least costly initially, in the long run this will be the more expensive method.
- The new defense policy is a long-range method of providing Turkey with an independent defense industrial capability. In the long run, this method will also be less costly.
- Because the world market for arms is shrinking, it is not possible for Turkey to receive any significant income from the sale of arms made in Turkey. Turkey does not have large manufacturers to compete with European and American firms. Some of the direct offsets in these contracts are in fact worthless in such a competitive market.

B. RECOMMENDATIONS

In view of the conclusions above, the author makes the following recommendations:

- This new policy is very good for Turkey in the long run. It should be promoted in

those terms, immediate cost savings are not possible while an initial investment is taking place. Many years down the road with a robust industrial infrastructure, Turkey would be able to pursue a more independent foreign policy, be competitive in world trade, and have the excess capacity needed to do basic research and development of leading edge products.

- This sort of policy should be planned in infinite detail. Some of the companies involved are very small, yet in time, may well be very important to the resulting infrastructure. Without a detailed goal, some of the fruits of the policy may simply disappear for lack of attention. To have a detailed plan, Turkey must have an effective data collection system to both create the plan and monitor results. This policy must be continually modified to achieve the best results.
- Turkey should pursue a policy which will lead to the export of its defense industry product. It should offer very liberal terms on loans to other countries to enable them to purchase Turkish defense material. Even though this may not be a profit making policy, it will lead to a more permanent industrial base and may lead to a market in the region of Turkey. This is a very similar procedure followed by the major arms producers in the world. For example, the United States will provide guarantees on loans to foreign governments in order to sell American-made arms.

The key to this policy is the transfer of skills and techniques to the civilian sector. The civilian sector operates much more efficiently than the defense industry. Additionally, this will establish permanent industries supported by the consumers of Turkey and not by difficult to acquire foreign exchange and taxes. For example, in the recent news a critical component of the F-22 fighter radar system (monolithic integrated circuit) which costs $8000 when it was exclusively used in the production of the fighter was incorporated in a commercial product to warn school bus drivers of unseen children. This brought the price of the component down to $2000. It lowered the price of the F-22 radar system from $16 million dollars to $4 million dollars. This not only demonstrates the cost involved and scale of production, but it also demonstrates that defense production is not a profit making sector of any economy.[60]

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[60] Pat Cooper, "TRP Setback Fails to Slow Dual-Use Drive", *Defense News* (May 1, 1995): 10

APPENDIX

REPUBLIC OF TURKEY
Ministry of National Defence
Undersecretariat for Defence Industry

LAW CONCERNING DEFENCE INDUSTRY
Law No: 3238 Legislation Date: 7.11.1985
(Revised version by Law No: 3704)

Ankara - 1993

LAW CONCERNING ESTABLISHMENT OF DEFENCE INDUSTRY DEVELOPMENT AND SUPPORT ADMINISTRATION AND AMENDMENTS IN TWO ARTICLES OF LAW NO. 3670 OF 11 JULY 1939 REGARDING ESTABLISHMENT OF THE NATIONAL LOTTERY, AND ONE ARTICLE OF LAW NO: 3065 OF 25 OCTOBER 1984 REGARDING VALUE ADDED TAX.

Law No. 3238
7.11.1985

Legislation Date :

Official Gazette : 13.11.1989-18927

Law Revising Law No. 3238

Law No: 3704
20.3.1991

Legislation Date:

Official Gazette : 24.3.1991-20824

Objective

ARTICLE 1.- The objective of this Law is to constitute a basis for the development of a modern defense industry and to modernise the Turkish Armed Forces.

Definitions

ARTICLE 2. - Definitions used in this law refer to the following:

Board : Defence Industry High Co-ordination Board.
Committee : Defence Industry Executive Committee.
Fund : Defence Industry Support Fund.
Undersecretariat : Undersecretariat for Defence Industry (its Revised version in accordance with Law No:3704[1]

Defence Industry Supreme Co-ordination Board

[1] According to Article 3 of Law No: 3704 dated 20.3.1991; the "Defence Industry Development and Support Administration", the "President of the Defence Industry Development and support Administration" and the "Administration" Sub-Articles as were employed in Law No.3238 dated 7.11.1985, have respectively been changed to the "Undersecretariat for Defense Industry", the "Undersecretary for Defence Industry" and the "Undersecretariat".

ARTICLE 3.- The Defence Industry Supreme Coordination Board, under the Chairmanship of the Prime Minister, is comprised of the Chief of General Staff, Minister of State for Economic Affairs, Minister of National Defence, Minister of Foreign Affairs, Minister of Finance and Customs, Minister of Industry and Commerce, Force Commanders, General Commander of the Gendarmerie, Undersecretary to the Prime Ministry, Undersecretary of the State Planning Organisation and Undersecretary of the Treasury and Foreign Trade.

The Board shall convene at least twice a year upon call by the Prime Minister.

Functions of the Board

ARTICLE 4. - The functions of the Board are as follows:

a) Plan and co-ordinate the overall strategy in line with the Council of Ministers approval and, issue regulatory directives.

b) Determine the manner of procurement of weapon systems, material and equipment to be procured through the Fund in conformity with the Strategic Target Plan set out by the Turkish General Staff.

Defense Industry Executive Committee

ARTICLE 5.- Defense Industry Executive Committee, under the chairmanship of the Prime Minister, is composed of the Chief of General Staff and the Minister of National Defence.

The Committee shall convene upon call by the Prime Minister. The Undersecretary for Defence Industry shall act as the Secretary of the Committee.

Functions of the Committee

ARTICLE 6.- The functions of the Committee are as follows:

a) Take decisions in line with the overall strategy and principles of the Supreme Coordination Board set up to promote the defense industry,
b) Take decisions in accordance with the Strategic Target Plan regarding the domestic production and if necessary the out of country procurement of modern weapons, material and equipment for the Turkish Armed Forces,
c) Seek possibilities, provide guidance and follow up plans for the public and private sector to establish production facilities with the contribution of foreign capital and technology to produce defense oriented goods; when necessary, take decisions in principle for State participation in the foundation of such facilities,
d) Issue instructions to the Undersecretariat for Defence Industry concerning research,

development, prototype production, advance payments, long term orders and other financial and economic incentives for modern weapons, material and equipment to be obtained,
e) Take decisions on the export of defense industry goods and off-set trade and mutual commercial activities,
f) Undertake co-ordination activities between organisations concerned in defense industry,
g) Determine the principles in which the Fund is to be utilised.

Undersecretariat for Defence Industry

ARTICLE 7.- The Undersecretariat for Defence Industry has been established as an organisation attached to the Ministry of National Defence and possesses a legal personality. (Revised version in accordance with Article 1 of Law No:3704.)

Except for Department Heads who will be appointed upon the Undersecretary's recommendation or approval of Minister of National Defence, the Undersecretariat shall employ personnel in accordance with the Statutory Decree No. 2451 dated 23.4.1981 with the approval of the Undersecretary. The Undersecretary can delegate this authority to his subordinate. (Revised version in accordance with Article 1 of Law No:3704)

Personnel Regime

ARTICLE 8.- The personnel of the Undersecretariat is subject to the provisions of Civil Servants Law No.657 dated 14.7.1965.

Contractual personnel [2]can be employed provided that their status and the status of the office Physician is assigned in accordance with Article 59 of the Civil Servants Law No.657 dated 14.7.1965. The said personnel, if they so desire, may be linked to the Pension Fund of the Republic of Turkey. In this context, those persons who are retired and are employed under contract may continue to receive their pensions. (Revised version in accordance with Article 2 of Law No:3704)

Contractual personnel with expertise or special schooling may be employed by the Undersecretariat without being subject to the provisions of the Civil Servants Law No.657 dated 14.7.1965 thereof concerning the employment of personnel under contracts. The personnel to be employed in context of this Sub-Article provision shall be linked to or associated with the Pension Fund of the Republic of Turkey or with the Social Insurance Institution. (Supplementary Sub-Article in accordance with Article 2 of Law No:3704)

The number of personnel to be employed in conformity with Sub-Articles 2 and 3, the minimum and maximum levels of their salary and their financial rights shall be determined

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[2] Head of Department, Expert, Junior Expert, Legal Adviser, Attorney and Director of Sections (Expert).

in accordance with the contractual service principles issued by the Council of Ministers. (Supplementary SubArticle in accordance with Article 2 of Law No:3704)

The personnel of the Prime Ministry and other Government organisations may be employed on leave, without pay or under contractual status at the Undersecretariat. The offices and rights pertinent thereof and obligations of such persons shall remain reserved. Their leave periods shall be deemed to their actual service in their promotions and retirement, and those who have been entitled for promotion during their leave shall be promoted without requiring any additional process.

Budget

ARTICLE 9.- The budget of the Undersecretariat shall be made up of an amount which does not exceed two percent of the Fund. This amount may be increased by a maximum of 50 percent by the Council of Ministers.

The Responsibilities of the Undersecretariat

ARTICLE 10.- The responsibilities of the Undersecretariat are as follows:

a) Implement the decisions taken by the Executive Committee,
b) Award contracts on orders for procurement programs to be established annually on the basis of projects
c) Re-organise and integrate the existing national industry so as to satisfy defence industry requirements, encourage new enterprises and channel them according to the integration and requirements, seek possibilities for foreign capital and technology contribution, guide enterprises and make plans for state participation in this respect,
d) Determine procurement programs and funding models by taking into consideration the funding sources,
e) Make plans for production, at private and public organisations, of modern weapons, material and equipment required,
f) Support, when necessary; private, public or compound investments provided that they are export oriented,
g) Make researches and develop material and equipment for modern weapons, produce prototypes; make advance payments; regulate long term orders and other financial and economic incentives,
h) Make contracts covering the conditions of the purchase to be made in the up-coming years in accordance with the specifications, and technical and financial issues considering specifications and standards to be determined by the Ministry of National Defence.
i) Co-ordinate off-set and the export of defense industry products,
j) Award credit from the Fund or get credit loan from local and foreign sources and, when necessary, set up companies with domestic and foreign capital, and participate as such,
k) Control as to whether or not the goods produced are in conformity with contract terms,

and whether or not the quality assurance and contract terms are fulfilled,
1) Assist in resolving the problems encountered in the implementation of the contract between the private and public parties concerned,

Non Applicable Provisions and Precedence

ARTICLE 11.- The provisions of General Accounting Law No. 1050, State Tender Act No. 2886, and Supreme Accounting Court Law No. 832 shall not apply to activities and transactions anticipated by this law.

Preparation of the technical specifications and quality assurance services which are a requisite by the Undersecretariat shall be carried out by the Ministry of National Defence and the Force Commands on the basis of precedence.

Defense Industry Support Fund

ARTICLE 12.- The Defence Industry Support Fund has been established in order to realise the objective of this Law, at the disposal of the Central Bank of the Republic of Turkey and under control of the Undersecretariat.

The sources of the Fund are as follows:

a) Annual appropriations from the State Budget,

b) Amounts to be fixed at a maximum of 20 times by the Council of Ministers in multiples of 50 TL per package, bottle or similar container in sales of all types of alcoholic beverages (sparkling wine, vermouth and cinchona wine included; other types of wines and beer excluded) and alcohol; and in multiples of 10 TL per package, bottle or similar container in sales of cigarettes, cigars, pipe tobacco, rolling tobacco, snuff, leaf tobacco and similar tobacco products, beer and other types of wine. (However, the amount to be transferred to the Fund shall be considered as expense in computation of the income and corporate tax assessment.)[3]
c) Transfers to be made from the foundations established for supporting the Turkish Armed Forces,
d) Net revenue of the National Lottery. (Revised version in accordance with Article 48 of Statutory Decree No. 320)[4]
e) Entire share to be allocated in accordance with Law No. 1473 dated 25.8.1971, and the

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[3] The Council of Ministers has determined the said share to be 200 TL for alcoholic beverages of small bottles, 400 TL for large bottles and 40 TL per pack for domestically produced cigarettes and 120 TL per pack for imported cigarettes.

[4] According to Article 11 of Law No:3797, the Fund's share consists of the National Lottery Net Revenue, after a 5% National Olympic Committee Participation Fee is subtracted from the latter.

entire proceeds obtained from all kinds of pari-mutuels or the amounts to be computed from these proceeds on a rate to be determined by the Council of Ministers,[5]
f) Transfers to be made on amounts determined by the Council of Ministers from funds established
by laws (tax laws excluded),
g) The rate to be determined by the Council of Ministers out of the Fuel Consumption Tax revenue. (Revised version in accordance with Article 14 of Law No. 3571)[6]
h) The share of the Fund paid by income and corporate tax payers and obligors computed out of income and corporate tax sum and its ratio thereof shall be determined and allocated. (Revised version in accordance with Article 23 of Law No:3824)[7]
i) Allocations for modern weapons, material and equipment in the Budget of the Ministry of National Defence,
j) Amount to be allotted to the Housing Development Fund and Defence Industry Support Fund by the Council of Ministers from the collections at a maximum rate of 50 percent of gross proceeds out of fortune games operated under permission in accordance with Article 19 of Law of Incentives to Tourism No: 2634, dated 12.3.1992. (However, the amounts paid to the Fund through this article shall be considered as expense in computation of income and corporate tax rateable value.)
k) Revenue to be obtained from assets of the Fund,
l) Revenue to be obtained from the military service compensation fees pursuant to Article 10 of the Military Service Law No. 1111,
m) Donations and aids.
The revenues obtained from sales of real estate belonging to the Ministry of National Defence whose service use is no longer required. (Supplementary Sub-Article in accordance with Law No: 3357 dated 15.4.1987)

The principle guidelines with regard to making use the entire or a portion of the arrears of the Fund outside the Central Bank of the republic of Turkey is determined by the Council of Ministers. (Supplementary Sub-Article in accordance with Article 10 of Law No:3291 dated 28.5.1986)[8]

The Prime Minister is empowered upon the proposal of the minister who is in charge of the Undersecretariat for Treasury and Foreign Trade, to make transfers among funds which have

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5 In accordance with the Council of Ministers' Decree No: 86/10912 dated 8.8.1986, %10 of the horse race pari-mutuel revenues, %7.2 of the Spor-Toto and %14.4 of Spor-Loto revenues are allocated as the Fund share.

6 In accordance with the Council of Ministers' Decree No:92/3664 dated 16.10.1992, the Fund's share has been determined to be %7.9.

7 In accordance with the Council of Ministers' Decree No: 92/3900 dated 19.12.1992, the said share has been determined to be t5 of the tax computed as Income & Corporate Tax.

8 The Council of Ministers,with Decree No:86/11104 dated 15.10.1986, has rendered possible the profitable use of arrears of the Fund through purchase of government and treasury bonds and by depositing it into a public bank.

been established by various Laws and Decrees. The Prime Minister may delegate this authority in part or entirely to the Minister in charge of the Undersecretariat for the Treasury and Foreign Trade. (Article 11 of Law No:3291 dated 28.5.1986)

No share shall be allotted, pursuant to Law No. 2380, to municipalities and local governments from the revenues collected and paid to Defence Industry Support Fund by public organisations which are included in the General Budget.

Liability, Declaration, Time and Place of Payment

ARTICLE 13.-

1. The parties liable for the payment to the Fund due to delivery of products listed at subparagraph b of Article 12 of this Law are the local manufacturers and importers who produce or import those products.

Payments to be made in this manner shall be declared in a Supplementary Tax Return Form in accordance with the provisions of the Value Added Tax Law No. 3065¢

Exemptions indicated in the Value Added Tax Law No. 3065 shall be valid also for implementation of this subparagraph.

2. The share allocated through Law No. 1473 dated 25.8.1971, and the whole or a portion of the amount computed that is to be obtained from all sorts of pari-mutuels, is to be collected from legal or real entities who organise the said parimutuels along with the sum obtained out of ticket sales. Ensuing the collection process, the amount belonging to the Fund shall be declared along with Value Added Tax returns of the related month to the tax office and paid concurrently.

3. (This Sub-Article was abrogated in accordance with Sub-Article 16/6 of Law No:3571) According to Article 6 of Law No: 3571, the amount to be collected from the liable parties of the Fuel Consumption Tax and transferred to the Fund in accordance with the Council of Ministers' decision in context of the Fuel Consumption Tax to be assessed, shall be declared and paid concurrently to the respective tax office ensuing the sales of the the organization in question up until the end of the following month.

4. The amount to be collected in accordance with the decision of the Council of Ministers at a maximum rate of 50 percent of the gross proceeds of fortune games permitted under article 19 of the Law of Tourism Incentives No. 2634 dated 12.3.1982, shall be declared and paid concurrently by the real or legal entities who operate those establishments, along with their Value Added Tax returns to their tax offices.

5. (This Sub-Article was abrogated in accordance with Sub-Article 26/e of Law No:3824)

Revenue collected by the tax and accounting offices for the Fund is to be transferred to the Fund's Account at the Central Bank of the Republic of Turkey no later than the end of the month succeeding the month in which the said collection has been made.

Exemptions

ARTICLE 14.-

1. The Undersecretariat and the Fund established under the responsibility of the Undersecretariat are exempt from:
a) Corporate Tax.
b) Inheritance and Succession Tax for grants and donations.
c) Stamp Duty for all transactions.
d) Banking and Insurance Transaction Tax on the interest of loans granted.
2. The provisions of previously existing laws and regulations regarding exemptions on taxes, dues and fees applicable for:
a) The shares of Foundations in various firms,
b) General Directorate of Defence Ordnance Enterprises and its affiliation, shall continue to apply after they are transferred to the Undersecretariat and the Fund of which it is responsible (excluding those to be established anew.)

Implementation of Laws No. 213 and 6183

ARTICLE 15.- The Tax Regulations Law and the Collection Procedures Law for Public Claims shall apply for the amount to be computed and charged on taxpayers due to be transferred into the Fund.

ARTICLE 16. The 2nd paragraph of Article 60 of the Value Added Tax Law No. 3665 has been amended as follows.

(The additional tax assessment is composed of factors comprising of the Value Added Tax base. Nevertheless, the amount to be transferred to the Fund is not assessed.)

Auditing
ARTICLE 17.- All kinds of transactions of the Undersecretariat and the Fund shall be audited by a board comprised of one member from each of the Prime Ministry, the Ministry of National Defence and the Ministry of Finance and Customs appointed for two years.

ARTICLE 18.- The net revenue obtained from the Lottery as such is to be deposited to the Fund's account at the Central Bank of the Republic of Turkey before transferred to the Treasury by the National Lottery Administration at the end of each fiscal year by deducting current expenditures, investments and reserve requirements right after the previous year's balance sheet has become definite. (Revised version in accordance with article 48 of

Statutory Decree No 320 dated 6.6.1989)_

State Property Status

ARTICLE 19.- Offences committed against properties and all kinds of assets of the Undersecretariat and the Fund thereof shall be considered as offenses committed against State property. The Turkish Penal Code shall apply to those offenses. No movable property and real estate of the Undersecretariat and of the Fund may be seized.

Expropriation

ARTICLE 20.- Establishments with the objective to produce weapons and munitions whose more than 51% of its share is owned by the Undersecretariat and the Fund shall enjoy the provisions of the laws and regulations pertinent to expropriation with regard to such activities.

PROVISIONAL ARTICLE 1.- Movables and real estate of the General Directorate of Defence Ordnance Enterprises has been transferred to the Undersecretariat with all of its equipment, budget and personnel without necessitating any transaction.

PROVISIONAL ARTICLE 2.- Shares of the Foundations established for supporting the Turkish Armed Forces may be transferred to the Fund.

PROVISIONAL ARTICLE 3.- The transfer actions foreseen in Provisional Article 1 and 2 shall be accomplished within six months. The existing practice shall continue until the transfer actions are complete. The transfer actions and all revenues resulting from this transfer shall be exempt from all taxes, dues and fees.

SUPPLEMENTARY PROVISIONAL ARTICLES:

Supplementary Provisional Article 1.The status of the personnel which has been altered in accordance with this statutory decree shall be appointed to their new position without any additional action. (Law No:3704)

Supplementary Provisional Article 2.- All kinds of movables and real estate, assets and liabilities of the Defence Industry Development and Support Administration has been transferred along with its budget and personnel to the Undersecretariat without necessitating any transaction.

Date of Enforcement

ARTICLE 21.- This Law shall come into force on the date of its publication.

Implementation

ARTICLE 22.- Provisions of this Law shall be implemented by the Council of Ministers.

LIST SHOWING THE AMENDMENTS AND STATUTORY DECREE SUPPLEMENTS BROUGHT TO LAW NO: 3238

Act No	Date of Implementation	Date	No. of Off.Gazette Published:
3291	28.5.1986	3.6.1986	No. 19126
3346	2.4.1987	9.4.1987	No. 19426
3357	15.4.1987	28.4.1987	No. 19444
Sta.Dec. 310	14.1.1988	5.2.1988	No. 19716
Sta.Dec. 320	6.6.1988	6.6.1988	No.
3571	14. 6.1989	2.6.1989	No.
Sta.Dec. 390	30.10.1989	2.11.1989	No.
3704	20.3.1991	24.3.1991	No.
3796	30.4.1992	5.5.1992	No.
3824	25.6.1992	11.7.1992	No.

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