AN ASSESSMENT OF THE AL-ASSI DAM IMPACTS ON THE ECONOMIC DEVELOPMENT CYCLE OF THE NORTHERN REGION OF BEKA'A.

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HIYAM N. SUJUD

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BEIRUT UNIVERSITY COLLEGE
P.O. BOX 407 / 13- 5053
BEIRUT , LEBANON

APPROVAL OF RESEARCH TOPIC

CANDIDATE: HIYAM NAYEF SUJUD DATE: SEPTEMBER, 1994
DEGREE : MASTER OF SCIENCE IN BUSINESS MANAGEMENT
ADVISOR : Dr HUSSEIN HEJASE
TITLE OF RESEARCH TOPIC: AN ASSESSMENT OF THE AL-ASSI DAM IMPACTS ON THE ECONOMIC DEVELOPMENT CYCLE OF THE NORTHERN REGION OF BEKA'A.

The following professors nominated to serve as the advisors of the above candidate have approved her research work.

ADVISORS:

[redacted]

SIGNATURE

Dr. TAREK MIKDASHI
NAME

[redacted]

SIGNATURE

DEDICATION

To Those I Deeply Love
My Mother
My Father
My Brothers
My Sisters

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Chapter one

Introduction

The prospect of dams projects as one of the principle paths to economic growth has called increasing attention to various manifestations of indicators of economic and technical cooperation among many countries (e.f. Fort Peck (USA), Oahe (USA), Carrison (USA), Nyreck (USA), Kieve (Okrania), High Dam (Egypt), ...). Accordingly, a great number of countries, primarily the new industrialized ones, have found an increasingly important niche: becoming supply sources to other less developed countries not only providing products but also supplying services and technologies.

In recent years, the shift in political and economic emphasis toward the Middle East has resulted in rapid economic development in this region and the establishment by Western organizations of local units to handle services for the Middle East.

So, "the construction of Nahr-El -Assi Dam " is an important topic to deal with.

1.2 Study Philosophy

The success of this study as delineated in (Ch3 : Methodology) depends on the accurate information that would be used. Methodology depends at large on

"Doing The Right Things" at all phases of the work. Thus, fulfilling the requirement of the research . In this respect efforts should be exercised to:

1- Continuously strive to maintain a competent research that can zestfully meet the challenges of the works.

2- Formulate a series of research questions and hypotheses that can add clarity to the statement of the problem.

3- Coordinate at all times with the concerned Water Authorities and all those engaged in the social, economic, and facilities planning.

1.3 Objectives Of The Study

The objectives of this study could be stated under two main headings :

1- Non-Hydrologic: Help in preparation of a plan useful in the rehabilitation of the existing water supply system.

2- Hydrologic: Help in the development of a realistic master plan for the management and development of water resources in Hermel region (all phases of hydrologic cycle, social, economic, environmental, institutional,...) to improve the social and economic conditions of the people.

1.4 Objectives Of The Al-Assi (Orentes) Dam Plan

The following broad objectives are set for the Orentes Dam Plan. These objectives are subject to refinement as they proceed in implementation.

1- Satisfy the Muhafazat Al Bekaa as well as a great part of Syria (Al- Kussair, Humos) with electricity.

2- Satisfy Hermel society's various needs with the right quantity and quality of water.

3- protection of the water resources from depletion.

4- Developing economic and social aspects of Hermel society.

In achieving these objectives, the following guidelines should be adhered :

1- The implementers shall base the plan as much as practicable on self help and local initiative.

2- The plan shall be research oriented rather than crisis respondent.

3- The right balance should be found between modern technology and the realities of the region under study.

4- Care and diligence should be exercised not to allow the objectives cause tension in the maximization process because of the various degrees to which persons are benefited.

1.5 The Study Area

The study area extends over one caza of Muhafazat Al Bekaa namely the caza of Hermel. It covers some 885 square kilometers or approximately 9% of the entire area of Lebanon.

It is bounded from the East and the North by Syria, the caza of Baalbeck from the South and the caza of Kesserwan, Jubeil, Batroun, Becharre,Tripoli and Akkar from the West.

The caza encompasses some 50 villages with the town of Hermel as the administrative seat of caza. It has an existing population of close to 300,000 persons and cultivated land of 20,000 dunums* in Hermel town. one of Lebanon's two major rivers, the Al-Assi (Orentes), orginates from the study area.

The caza is under the Jurisdiction of one water supply authority namely the Baalbeck-Hermel Water Board.

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* **1 dunum is equivalent to 1000 m^2**

1.6 Background Information

1- The fragile character of the Lebanese administration has since independence time and specially as of 1975 been a hindrance for any comprehensive long-term infrastructure planning. The water sector was no exclusion. This however should not underestimate the tremendous and untiring efforts which were invested by the concerned public authorities, international agencies such as **FAO, UNESCO*** and individual initiatives for providing a reasonable uninterrupted and safe water supply for domestic, agriculture, industrial, and hydro-power usages.

2- In an effort to modernize and provide a comprehensive short, medium, and long term planning for the water sector, the Council for Development and Reconstruction has embarked on a country wide water sector studies similar to the one which was undertaken in 1980-1982 for the national Waste Management Plan but this time at water boards level. The Baalbeck-Hermel water management and development plan being only one of a series of such studies.

3- Lebanon's classical estimate of the annual hydrological water balance reads as follows:

Total annual average volume of precipitation	9,700 million (M) m^3
Loss by evapotranspiration	4,900 M m^3
Over land flow (streams and rivers)	4,000 M m^3
Exploitable ground water flow	600 M m^3
Unexploitable ground water	200 M m^3

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* **FAO: The United Nation And Agricultural Organization.**

UNESCO: United Nations Educational, Scientific, And Cultural Organization.

While the actual annual water usage is estimated as follows:

Total consumption	600 M m^3
Domestic	125 M m^3
Irrigation	425 M m^3
Industrial	50 M m^3

Hydro-power on the other hand utilizes some 2,000 M m^3 of water.

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Source: Water Management & Development Plan Technical & Financial Proposal For Engineering Services. May, 1987.

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4- Some 600 kms of main water transmission lines and 300 kms of main irrigation channels presently serve the Baalbeck-Hermel area. The system in general is old and requires urgent rehabilitation. Some sections date back to the twenties. The system includes water tanks, pumps station and chlorination facilities. No major projects have been implemented for the last 20 years[1] .

[1] **Water Management & Development Plan Technical & Financial Proposal For Engineering Services. May, 1987.**

5- The sources of water are the springs and the wells. The major ones are the following:

- springs: Ras El Ain, Sbat Ed Delbeh, El Loujouj, Yammouneh, Al Kamar, Echchamali, Eine Ech Chaab, Laboueh, Ash Chagour, Ras-Al-Mal, Orghouch.
- Wells: Yammouneh, Ras Baalbeck, Khoder, Talia, Zabboud, Quasrham.

Hundreds of minor public and private wells are scattered over the entire Baalbeck-Hermel area. Some are active & others have dried out.

6- There exist at present some 18,000 hectares of irrigated land of which 40% are irrigated from ground water and 60% from surface water.

7- The Bekaa valley is Lebanon's most fertile plain where most of the agricultural activities take place.

Constructing & implementing of the Al-Assi Dam has impacts on the economic development cycle of the Northern region of bekaa.

The main objectives, therefore, is to assess this statement and to investigate the:

1- The economic and social factors that are most likely to be associated with aiding and hindering the successful implementation of this Dam project, and

2- Whether the Lebanese government is following a realistic plan in developing the agricultural sector in the Northern sector of the Bekaa valley.

To fulfill the requirements of the research, Chapter two introduces the historical and development of the Lebanese economy; It defines and explains the main problems facing the Lebanese agriculture sector. It also focuses on eradication of illicit crops and rehabilitation of the agriculture sector in Hermel caza by showing the importance of Nahr Al-Assi Dam project as an incentive to promote legal farming. Chapter three describes the methodology and field of work involved. The results of the study are reviewed in Chapter four. The last chapter states the research findings and conclusion.

Chapter Two

THE PROJECT ECONOMIC BACKGROUND

Introduction.

The El-Assi project can be better evaluated if we describe first the dimension of the economic problem facing the Lebanese economy.

2.1 Structure Of The Lebanese Economy.

The Lebanese economy is predominantly an economy of trade and services. The proportion of the total national product which arises in the goods producing sectors, namely, agriculture and industry, does not, as a rule, exceed 25 %. Almost two thirds of the national product, therefore, arises in the form of services, with trade accounting for about 33% of the total national income. Perhaps there is no other country in the world where the ratio of services to goods is as high as it is in Lebanon.

This peculiar economic structure mainly derives from the pattern of resources with which nature has endowed the country. With respect to agricultural land, nature has not been very generous. The country has no wide valleys or expansive plains. The bulk of agricultural income emanates from land productivity which has been greatly improved by irrigation, terracing or both. While deficient in natural resources basic to the production of goods, the country has other natural endowments conducive to the promotion of services. Outstanding among these are the country's geographical location, its mild pleasant climate, and its variety of altitudes within compact area.

The climatic and topographic conditions have given the country almost a monopolistic position in the Near East for the cultivation of a wide variety of fruits ranging from bananas and citrus on the coast, to olives, grapes and figs on the middle height, and apples, pears, and peaches on the upper levels.

However, Lebanon's greatest economic advantage lies not in its natural but in its human resources. The imigration of inhabitants have kept them in contact with developed civilizations. This outgoing disposition made easy, an early contact with modern Europe which gave Lebanon a lead in the adoption of Western education and led thus to a higher level of education, greater skill and more versatility among the population than can be found in other parts of the region.

In agriculture, however, one cannot help observing the use of more advanced techniques than what normally characterizes the region as a whole. There is a certain degree of specialization in agriculture; the greater part of agricultural income arising from fruits and certain industrial and leguminous crops which commands higher prices than cereals but requires greater skills and a larger amount of capital.

The importance of agriculture to the national economy is not properly reflected in the share of national income generated by agricultural production. Although not more than one tenth of the national income is attributable to agriculture, at least 40% of the population depend on it as a main source of their livelihood. Further significance of agriculture for the Lebanese economy is to be discerned in the fields of industry and foreign trade. A substantial portion of industrial input comes from domestic agriculture and over 33% of total exports consist of agricultural products.

2.2 Weaknesses In The Lebanese Economy.

The main weakness in the Lebanese economy lies in the precariousness of the principal source of income, namely trade and services. Through export of services,the country provides the necessary means for financing vitally needed imports in the form of major fed teems like wheat, rice, and meat, and productive capital like fertilizers, vehicles of transport, and machinery of all kinds[2].

Another weakness of the Lebanese economy lies in the narrowness of the domestic market; the domestic market is limited by the small number of population as compared with other countries in the region. This limitation is a great handicap to the growth of industry, because of the inability of industry to resort to large scale production. This handicap limits the capacity of industry to expand and to absorb surplus labor from agriculture resulting thus in rural underemployment.

Likewise, the export market suffers from a high degree of rigidity. The difficulty of expanding the export market is caused mainly by the high costs in agriculture and industry. In agriculture, high costs are mainly due to the paucity of land which forces people to resort to expansive mountainous and rocky cultivation.

2.3 The Agricultural Sector In Lebanon

2.3.1 General.

The total area of Lebanon is around 1023,000 hectares. An estimated of 225,000 hectares, or 22% are currently under cultivation. Around 75,000 of the cultivable area are under permanent irrigation, while the remaining area (150,000 hectares) is rain fed[3].

Agriculture is not the dominant source of livelihood in Lebanon unlike the other countries of the Middle East. National income generated in the agricultural

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[2] **Mediterranean Development Project Country Study: Lebanon July, 1959.**

[3] **Arzouni, Khalil & Malik, Hassan, El Wafi Fi Geography. Seventh Part, 1992.**

sector constitutes, as already noted , only about 10% of the aggregate national income, though agricultural commodities constitute the principal export items. Employment in agriculture accounts for about 11% of the total employment. It is evident that the value added per worker in agriculture sector is significantly lower than in the other sectors. But it is important to note that quite a few among these engaged in agriculture have supplementary sources of livelihood[4].

The interesting feature of the Lebanese agriculture is the predominance of fruits and vegetable cultivation and relative importance of cereals and industrial crops.

The Lebanese agriculture is the weakest among other Lebanese economic sectors, mostly is not efficient, and almost is rain fed, and has suffered from the general state of insecurity which has prevailed in the rural areas and the consequent neglect of crops. Add to that the increasingly serious flow of labor from the rural areas to the cities or to the neighboring Arab countries for more profitable jobs, thus causing a rise in the cost of agricultural labor due to the rarity of workers[5]. Despite this fact, the agriculture sector has witnessed now an observable development specially in Bikaa by the means of using new farming techniques and the development of greenhouses.

2.3.2 Self Sufficiency Ratios.

From 1930, there is no formal estimation to the Lebanese population number, but the number is estimated according to governmental and regional organizations. According to the economic committee of West Asia that follows the United Nation, the Lebanese population number is 3 millions. Thus, the population

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[4] **Ibid, p. 282.**

[5] **Arzouni, Khalil and Malik, Hassan, El Wafi Fi Geography. Seventh Part, 1992.**

is estimated to increase at an annual rate of 2.2% or 70,000 persons/year. The United Nation Food

And Agriculture Organization (FAO) shows that agriculture production in Lebanon is decreasing at an annual rate of 2%. Thus, it means that Lebanon's self-sufficiency ratio is falling 4.3% every year.

2.3.3 Crops Production

Despite its limited agricultural area, Lebanon's climatic conditions and diversified topography made it suitable for growing a variety of crops such as fruits, vegetables, citrus, cereals, pulses, tobacco, olives, etc. Even diversity of agricultural crops are produced, Lebanon continues to be dependent on imports of cereals, livestock products and other types of agricultural products[6].

1. Cereal.

Its cultivated area is decreased and its production is not sufficient despite the encouragement of the Lebanese government and the construction of the department of cereals. Thus, many severe constraints are acting against an increase in cereal crops :

- Increase in fruits and vegetable crops
- The high domestic cost and the easy import with acceptable prices
- The internal immigration from villages to cities.

Its cultivated areas are centered into Bikaa, Akkar, and the South of Lebanon. The most important kinds are shown in table (1) in term of production in thousands of tons annually.

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[6] **Mediterranean Development Project Country Study: Lebanon, July 1959.**

TABLE (1). Production Of Cereals In Thousands Of Tonns Annually*.

	(000's) tons / year
Wheat	15 to 20
Barley	6
Corn	3 to 4

* Arzouni, Khalil and Malik, Hassan. El Wafi Fi Geograghy. Seventh Part, 1992.

2. Vegetables

Its cultivated area has increased highly during the last few years because of its highly demand and profit. Practically all vegetables are grown on irrigated land, often with double cropping. Its different kinds are : potatoes, tomatoes, onions, cabbage, lettuce, spinach, cucumber, melons, etc. The vegetables yearly production estimated to be about 500,000 tons/year. Thus, part of them has been exported outside the country. Only during winter, Lebanon imports its need of vegetables but the development of greenhouses decreases the import. Table(2),

provides us with details on the annually production of different kinds of vegetables.

TABLE (2). Annual Production Of Vegetables*.

	(1,000's) tons /year	Average
Sunflowers	2 to 3	2.5
Peanuts	4	4
Sugar can	80 to 100	90

* Arzouni, Khalil and Malik, Hassan. El Wafi Fi Geograghy.Seventh Part, 1992.

3. Fruits

Fruit trees of many kinds are grown in Lebanon occupying the first area position (70,000 hectares) and yielding about 800,000 tons annually. Fruits constitute the corner stone of the Lebanese agricultural productions. table (3) shows the annual production some fruits.

TABLE (3). Annual Production Of Fruits*.

	(1,000's) tons/year	average
citrus	350	350
apple	100 to 170	135
grapes	125 to 150	137.5
olives	30 to 90	60
bananas	20 to 30	25

-* Arzouni, Khalil and Malik, Hassan. El Wafi Fi Geography. Seventh Part,1992

As could be clearly seen from tables (1-3), Lebanon's two principle crops are fruits and vegetables.

2.4 Problems Facing The Lebanese Agriculture and The Agricultural Development Projects.

Lebanon's agricultural efforts to improve the agriculture sector have been limited in the last few years because of the damage in the agriculture as a result of the successive rounds of fighting in the country since 1975-76, and by a number of basic problems. Some of these problems are similar to the problems of most developing countries which includes:

2.4.1 Environmental Problems

1- The ratio of cultivated land to total area does not exceed 22% due to high cost of transferring the mountains into cultivated area, scanty rain

over seven months and its variety between years, and unregulated water supply[7].

2- Poor soil quality.

3- Exposing to a variety degree of temperature over the year (either very cold or very hot).

4- Topography of Lebanese rivers; they move into deep valleys which decrease the benefit of their water.

2.4.2 Economic And Population Problems.

1- Low rate of employment in agricultural sector arises because people are looking for better jobs and wage

2- Absence of some organizations(surplus in some agriculture and shortage in others).

3- Pressure of population (construction of buildings on cultivated areas).

4- Limitation of financial capital (investors invest into services and trade sectors to achieve immediate profit).

5- Marketing the agricultural production : this is a very big problem because the government and the chamber of commerce did not give the right attention to agriculture. There are individuals who established trading agriculture store to supply the local market and the Arab countries by the agricultural products to achieve the high profit, while the farmers are losing.. In addition to that, some agricultural traders take the production from farmers at low prices and sell it at a high prices. Because of thesebad situations, the agricultural sector is deteriorating.

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[7] **Ibid, P.279.**

6- Limitation of mechanization and using new farming techniques because of the small size of the average land holding. According to (FAO) 41% of farms are less than two hectares[8].

7- The general shortage and increasingly high cost of agricultural labor.

8- The rising cost of seeds, fertilizers, insecticides and other agricultural inputs.

9- The absence of the agricultural cooperatives which could offer long term credit with low interest and the few agricultural roads between villages and agricultural lands.

10- The high cost of power needed to irrigate cultivated areas.

These problems and limitations are very serious when viewed in the light of Lebanon's dependence on food imports.

Lebanon obviously cannot hope to be self-sufficient in food production, but its dependence on food imports could be limited through establishing a series of agricultural projects to expand the cultivated area, increase the intensity of land utilization, and raise agricultural productivity.

2.5 Hydrological Control Of Water In Lebanon

Lebanon is a country that receives rain estimated to be ten billion cubic meters over a year and therefore it can benefit of 1.5 billion cubic meters. So Lebanon has to depend on surface and ground water to irrigate the cultivated area[9].

Two inter-related factors have limited any substantial increase in agricultural production: a small cultivated area relative to the total area of the country and the

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[8] **Ibid, P.282.**

[9] **Water Management Development Plan. Tchnical & Financial Proposal For Engineering Services.**
May, 1987.

weakness in water planning and management that stems from the institutional shortcomings much more than from a lack of appropriate analytical techniques as indicated by studies conducted in this field in many developed and developing countries[10].

The studies show that it needs 3500 squared meters of cultivated area to provide a person with sufficient food while in Lebanon it is about 1,000 squared meters only.

Regulation water supply is extremely vital for the Lebanese economy with approximately 40% of total population supported by the agricultural sector; Aside from this, a large part of his growing industrial sector is centered around the processing and handling of agricultural produce.

2.5.1 Irrigation.

Under the climatic conditions of Lebanon -like most Mediterranean countries- irrigation is important, it counteracts the drought of the long rainless seasons and makes possible the growing of high income, summer or perennial crops in the place of winter grain, which is the main crop when the land is not irrigated.

Practically every source of water is now used to some extent for irrigation. Those springs that are so situated that the water can fairly easily brought to the land are utilized to their full potential during the summer months, and some diversions from streams are common. Consequently irrigation water is not supplied by rain but by the rivers, which constitute the basic pillars of the Lebanese agriculture. The impact of climatic conditions on Lebanon are so strong

[10] **Mediterranean Development Project Country Study: Lebanon, July 1959.**

that most vegetation is confined to the area lying along its rivers in an attempt to meet the irrigation "requirements of different crops". It is appropriate to give a brief idea about the nature of the Lebanese rivers specially those that have irrigation projects[11].

- The Litani project: Litani is the principal river of Lebanon. Its important irrigation projects are Kasmie, Bekaa valley, and Nabatiye.

- Nahr Abu Ali Basin project. This project combines irrigation development with power generation.

- Nahr El-Bared Basin project : water from Nahr El-Bared is presently used to irrigate a part of thecoastal plain land.

- Nahr Ibrahim Basin project: a considerable area of land in the mountainous area of the Nahr Ibrahim Basin is being irrigated.

-Nahr Damour Basin : the supply of water is not adequate for full irrigation especially in the drier years.

2.6 Prospects Of Improving Utilization Of Land And Wate Resources.

Because the principal weakness of the Lebanese economy, as has been pointed out, is its heavy reliance on the somewhat precarious economic activities of trade and services, the economy would be in need of substantial expansion in the production of goods for effecting a better degree of balance and stability. Expansion in the production of goods means the development of agriculture and industry. This development need not take place at the expense of trade and services or in any way retard their future progress. But it would require a more

[11] **Mediterranean Development Project Country Study: Lebanon, July 1959.**

vigorous program and greater coordination of public and private effort in developing agriculture and industry on a nation-wide scale.

Lebanese agriculture is somewhat unique in that it depends to a very high degree on land. The natural productivity of which has been greatly improved by liberal outlays of capital in the form of irrigation, terracing, and sometimes transport of soil. It is clear, therefore, that expansion of land resources in Lebanon can be affected mainly through extension of irrigation and terracing. Private initiative has succeeded in extending irrigation to such an extent that it has become very difficult to effect further advances short of resort of large schemes which are normally undertaken by the state. Work is already in progress on one such scheme on the Litani river. Preliminary studies are also available for major streams offering possibilities for development. The area which can be brought under irrigation as a result of all these schemes is estimated at 45,000 hectares[12].

The greater part of this area will fall in plains and valley lands. It will undoubtedly constitute the most valuable addition to the agricultural resources of Lebanon. In all probability priority of use of such land will be given to fruits and specialized vegetables. It may be advisable also that part of it be used for raising certain industrial forage crops like sugar beets.

Another natural resource connected with land and water and offering a fair possibility for development is fishing. Instead of being a fish exporter, Lebanon imports fish. Furthermore, the price of fish on the local market is rather high as compared to other kinds of meat. Studies have been made of the possibility of developing Lebanese fisheries. The conclusion of such studies seem to favor

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[12] **Ibid, Part III, P.7.**

national investment for the purpose of expanding and organizing Lebanese fishing and fish markets[13].

With the expansion of agriculture and fishing goes the possibility of expanding industry, particularly those industries which are based on raw materials produced in the country, or which rely mainly on the domestic market for the sale of their finished products.

Thus, such industries are to produce fertilizers. Its products can also be absorbed by the local market. A number of other industries can be introduced and may have a good chance of success. Some of the good industries are based on agricultural products or contribute to the promotion of agriculture, such as canning, the manufacturing of sprayers, pipe coupling, soda ash, fractional horse power motors farm, garden tools, and farm machinery.

2.7 Some Cardinal Points Of The Agricultural And Industrial Policy.

Many measures taken recently by the Lebanese government indicate both a desire and effort on the part of the government to bring about feasible and desirable developments in agriculture. The conclusions reached by this study first confirm the existence of a considerable potential for development in the use of land and water resources. Secondly, these conclusions point to some fundamental questions which need thorough consideration by the government in the formulation of a determined and well defined policy for agricultural development[14].

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[13] **Ibid, Part II, P. 6.**
[14] **Ibid, Part II, P.8.**

2.7.1 A Definite Irrigation Development Policy Is Needed to Establish The Magnitudes Of Investment And A Schedule for The Execution Of The Various Projects.

The water resources development being contemplated by Lebanon and including second phase of Litani, Nahr El Assi and ten smaller river basins involves a considerable amount of expenditure. Irrigation development in most of the Lebanese projects is correlated with generation of power. It happens that if Lebanon is to take full advantage of its water resources, the State will need to enlarge its organization that is to deal with further studies, planning, and execution of the works. Early consideration seems fully justified for the Nahr El Assi project which will irrigate 6,100 hectares of good land at construction cost totaling $188 million dollars in addition to $22 millions for the construction of El Assi hydro-electric power station[15]. The projects involving combined power and irrigation development might be studied so as to formulate soon a long-term program. The decisions needed concern not only the order and rate development but such questions as equitable distribution of costs; irrigation water charges including the desirability and extent of subsidizing irrigation and the objectives of such subsidy; need for low-cost power as a basis for industrial development, organization for maintenance, and operation of the completed projects.

2.7.2 The Manufacturing Fertilizers Should Be Viewed Not Only As A Promising Line Of Industrial Development But Also As A Means To Serve Agriculture With Lower- Cost Fertilizers.

Lebanon has made remarkable progress in the use of chemical fertilizers. The annual consumption increased rapidly in the last decade. The present consumption level would justify the establishment of an industry sufficiently large

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[15] **Dar El-Handasa, Nazih Taleb Consulting Engineers.**

as to ensure efficient operations. The manufacture of fertilizers might prove to be one of the most promising lines for industrial development as concluded by the Industrial Institute of Beirut[16]. It may also assumed that locally manufactured fertilizers will be offered to farmers at prices comparable to those paid by farmers in producer countries.

Low cost fertilizers will not only help the Lebanese farmers earn more from their use but will also encourage them to increase applications to the benefit of the natural economy.

2.8 Erradication Of Illicit Crops: Rehabilitation Of The Agriculture Sector In Hermel Caza.

2.8.1 The Cultivation Of Illicit Crops And Their Impact On The Region Of Hermel.

The cultivation of cannabis was first introduced by the merchants of Zahle into the areas around their city before the French mandate, which later forced them to move this crop to villages in remote Northern areas, namely Deir-Al-Ahmar and Btedhi.

The areas allotted to this crop soon grew, especially in the North-Western areas where resistance to the mandate during the 1920s met with support from the clans of the region[17].

Because development in the Baalbeck-Hermel area was marginal during the economic reform ara following independence, cannabis remained the choice crop, whereas any other crop entailed the tackling of many risks (i.e., climate, vicissitudes, unavailable or expensive agricultural inputs, and unprotected markets,

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[16] **Mediterranean Development Project Country Study: Lebanon, July 1959.**

[17] **1- El-Mousswi, Ali. Baalbeck-Hermel Region and Cannabis Cultivation.**
2- Green Plan. Report on The Project Of Replacing The Illicit Crops By Legal Economic Crops,1971.
3- Baroud, A. " File Of The 1970s, No. 6 on Hashish in Lebanon".

among others). As a result, the area planted with cannabis spread from around 2,000 hectares (ha) in 1929 to around 6,000 ha in the mid-1960s[18].

During the latter part of the 1960s, sunflower was introduced as an alternative to cannabis, and the 6,000 ha previously cultivated with the latter diminished to around 600 ha in 1971. The area of sunflower-growing lands increased from 800 ha in 1966 to 5,300 ha in 1971. Unfortunately, the decreasing purchasing power of the subsidized price for sunflower, the hectic bureaucratic processes involved in obtaining the crop from the farmers and paying them, along with the outbreak of the civil war in Lebanon and the opening of the borders between Egypt and Israel increased the demand for Lebanese hashish, encouraged the recultivation of cannabis. Under this new conditions cannabis cultivation reached its peak levels between 1985 and 1989. Cannabis cultivation covered an area approximately 15 to 20% of the total cultivated lands in the four district areas of the Bekaa except for Rachaya[19].

Thus, cannabis cultivation spread out from the 40 villages it had covered before the civil war, in the region of Baalbeck-Hermel, to almost all the villages in the Northern Bekaa after the war, and reached 16 villages in the district of Zahleh and Western Bekaa (Southern Bekaa).

Table (4) shows the area of cannabis and opium poppy cultivation in these 16 villages from 1986 to 1991. The area cultivated with illicit crops decreased from 1,800 ha of cannabis down to 700 ha; and Opium area decreased from 90 ha to 60 ha.

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[18] **Ibid, P.2.**
[19] **Ibid, P.3.**

Table (4) Areas planted with illicit crops and the number of growers in Zahleh and western Beka'a cazas, 1986 and 1991

Village	Cannabis (dunums)		Opium poppy (dunums)		In[a/]		Out[b/]	
	1986	1991	1986	1991	1986	1991	1986	1991
Ammeek	490	520	100	80	7	7	12	9
Ghaza	400	–	–	–	8	–	6	–
El-Mansura	1 500	850	25	–	18	12	3	–
El-Khuyara	180	–	–	–	–	–	–	–
El-Dakwa	250	–	–	–	–	–	–	–
Hosh El-Harimeh	800	350	2	25	1	11	6	–
Kub Elias	50	–	32	10	3	1	–	–
El-Marge	1 540	700	251	110	38	14	10	5
Bar Elias	2 950	1 500	270	–	28	–	16	–
Kaferzabad	578	170	32	–	35	–	–	2
El-Faour	5 440	1 100	–	5	185	5	–	–
Juwar El-Faour El-Dalhamieh	1 290	1 000	77	50	23	23	9	9
El-Dalhamieh	2 500	700	65	32	51	16	–	8
Ali El-Nahri	210	30	12.5	257	28	38	3	–
Riyak	300	70	25	25	17	3	2	–
Deir El-Ghazal	–	–	15	–	–	–	2	–
Total	18 478	6 990	906.5	594	442	130	69	33

Source: United Nations Economic and Social Commission for Western Asia.

a/ In: number of cultivators from the village.
b/ Out: number of cultivators from outside the village.

After this widespread cultivation of illicit crops and the saturation of the market with these products, especially in 1987 and 1988, profit started to decrease; Cannabis and opium poppy cultivation decreased also. According to the survey on the evolution of illicit crop cultivation performed on the villages of Baalbeck and Hermel, the area cannabis cultivation inside and outside the villages ebbed from 75,000 dunums in 1989 to 51,000 dunum in 1990 and then to 38,000 in 1991, witnessing a decrease of approximately 50%. These details are shown in table (5).

Table (5). Changes In Areas Planted With Illicit Crops, 1989-1991*

	1989	1990	1991
Cannabis	74,800	51,000	32,400
Opium poppy	33,120	20,725	19,650

* Source: United Nation Economic And Social Commission For Western Asia.

Integrative Islam, with its strong religious influence, and the individual and family aids offered as an incentive to convert from the cultivation played a major role in decreasing the area of illicit crop cultivation in the plains and hills of the Eastern mountain range. The people of these regions, as an alternative, returned to smuggling goods other than drugs to and from the Syrian Arab Republic.

As for the impact of cannabis and opium poppy cultivation on these regions that had been severely marginalized by the economy, they were prominent in the prosperity of the real estate market and in the construction and commercial sectors that grew with the standard living. Moreover, the "new rich" started to invest in technologically advanced irrigation projects that were competing with cannabis production, but once more inflation and the stagnation of the fruit and vegetable market compelled the owners, especially in the Ka'a plain (100 projects), to revert, in part, to cannabis cultivation and some to the establishment of rainfed vineyards and olives groves.

Although the profits from illicit crop cultivation were considerable (estimated at 4 billion Lebanese pound (LL.)[5] in 1991 for cannabis and at LL. 9 to 10 billion for opium poppy), they were not able to compensate for the government's total neglect of the region's infrastructure.

2.8.2 Status Of Electric Power And Domestic Water Supply In Baalbeck-Hermel Region.

According to the survey of the economic and social situations performed on 21 villages in the region of Baalbeck and Hermel in 1991-1992, there were 4,404 out of 11,124 families without electricity for more than six hours daily, and even the rest received it only 8 to 12 hours, while only 1,447 families could compensate for this shortage with privatly-owned generators table (6).This table is concerned only with Hermel region.

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[5] **LL 1,000 = $ 1.**

TABLE (6)

Status Of Electric Power In Hermel Caza, 1991-1992*

village	caza	families	weekly official supply 51-100 hours	private generator	sharing level gen.
El-Hermel	Hermel	1,500	84	150	-
El-Shawagher	Hermel	120	84	5	-
El-Zakba	Hermel	300	56	30	-
El-Kasser	Hermel	500	84	50	-
Al-Ka'a	Hermel	700	84	10	200
TOTAL		3120	392	245	200

* Source: United Nation Economic And Social Commission For Western Asia.

As for portable water, out of 1,124 families, more than half depend on the local network of artesian wells, 1124 families depend on traditional collection wells, and 2,560 families buy cisterns of water daily table (7).

TABLE (7) Source Of Domestic Water In Hermel Caza,1991-1992*.

village	caza	number of families	collection	buying	network
El-Hermel	Hermel	1,500	300		1,200
El-Shawegher	Hermel	120	120		
El-Zakba	Hermel	300	50	250	
El-Kasser	Hermel	500	500		
Al-Ka'a	Hermel	700			700
TOTAL		3120	970	250	700

*Source: United Nations Economic And Social Commission For Western Asia.

2.8.3 Factors Encouraging Cannabis Production.

Upon the absence of law and order and marketing facilities that have encouraged cannabis production, there were other encouraging factors. Such factors include the relatively low labor requirements needed for its

production.Thus, table (8) compares the cost and labor needed per dunum (1000 m2) of the following products: cannabis, wheat, tomato, potato[20].

TABLE (8): Comparison table 1991

product	cost/dunum	men-day / dunum	net return / dunum
Cannabis	$ 91,000	9	$ 69,000
Wheat	40,000	2	25,000
Tomato	180,000	27.5	70,000
Potato	359,000	7	16,000

The advantages of cannabis production were attractive to about 80% of the farmers. This is especially true for poorer farmers who normally produce other, less attractive crops whose prices are further depressed by dumped produce from external markets. The profits from hashish production did not escape the notice of the none-farming community and was not restricted to poor farmers or those with diminutive farms. Wage workers and professionals as well as farmers with large farms understood very well that money could be made in this field of production where competition from neighboring countries was virtually non-existent.
Table (9) shows the costs of production and the profits to be made from one dunum of cannabis.

[20] **Ibid, p.21**

2.8.4 Factors Encouraging Opium Poppy Production.

Half a century after the introduction of cannabis, opium poppy saw the light in Lebanon's agriculture. However, it was forced to wait for the collapse of the state security apparatus before it could become widespread in the Hermel region at the beginning of the 1980s. The presence of security forces in the warm plains of the Hermel prior to the war contributed to the delay in the appearance of opium poppy in these plains where the climate favors its production. The upper plains of the Hermel where cannabis is traditionally grown was found to be too cool for opium poppy production. The 1986-1987 opium poppy price of 400 dollars to 500 dollars per kg were an encouraging factor in the wide-spread of its production in the area[21]. Some 3,500 ha of opium poppy were planted in 1988-1989. This high prpduction depressed opium prices to an average of $100 to $160 per kg during 1989-1991. Although opium poppy planting began in the clans regions of Hermel, it later moved to the Baalbeck and Western Bekaa regions where wealthy farmers were capable of paying for the armed rent or protection.

Because opium poppy, unlike cannabis, is a winter crop, it was able to replace many important crops such as cereals, wheat, barley, apricot, and the winter potato crops.

Source in the Judicial Narcotrics[22] office estimated the area planted with opium poppy to be less than 500 ha in 1988. These areas, according to the same sources, expanded to 1,500 ha in 1991. The survey conducted for this study revealed that in 19991 some 2250 of the total 5,200 growers in the region were involved in opium poppy production. The same survey found that in some 21 villages involved in cannabis production, some 2,000 ha were estimated to be

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[21] **Ibid, p.22**

[22] **Economic & Social Comission For Western Asia Joint ESCWA/FAO Agriculture Division.**

allocated to this crop, 115 ha of these belonging to the 60 families interviewed for this study.

The flooding of the market and depressed opium poppy prices contributed to a halt in its spread to the Eastern Bekaa which fall under the control of religious convertatists. The entrenchment of opium poppy production in the area influenced consumption patterns. In some areas, opium poppy itself entered the consumption cycle and even became a source of addictions in some circles and villages. This contributed positively to the anti-drug campaigns organized by the religious communities.

In 1991, in a perimeter of one dunum, opium poppy production costs reached LL. 148,000 (54% of which comprised labor costs), and average reached LL. 325,000 table (10). No other crop was that profitable.

TABLE (10)

Expenses And Revenues Associated With One Dunum Of Opium Poppy*.

production costs	1991 prices (000'sLL.)
land rent	15
tilling	8
seed	1
fertilizers	10
pesticides	10
water for irrigation (4 items)	20
LABOR COSTS :	
weeding & interspersing(4 days)	16
planting, fertilizing & irrigation (1 day)	8
extraction of resin (15 days)	60
TOTAL PRODUCTION COST S	148
income from sale of 2.5 kg crude opium	500

PROFIT FROM ONE DUNUM	352

✪Source: United Nations Economic And Social Commissions For Western Asia.

2.8.5 The Importance Of Nahr-El-Assi Dam Project.

2.8.5-1 Incentives To Promote Legal Farming.

Restraining the growing of illicit crops requires profitable alternatives to farmers. To increase the profitability of agricultural enterprises in the Hermel region would demand action to overcome most of the obstacles against farmers. The construction of El-Assi (Orentes) dam would have to provide the proper incentives to attract legal farmers that should be assured of adequate water. Thus, because irrigation is a major problem constraining agricultural development, according to the surveyed farmers. They identified expensive fuel, maintenance of the pumping machines, lack of drained water, badly maintained draining systems, and the monopoly of drained water by more powerful neighbors as the main difficulties concerning irrigation[23].

2.8.5-2 Nahr-El-Assi Basin Project.

It is worth while to talk about Nahr-El-Assi dam project; the Nahr-El-Assi or Orentes river is an important river rising in the Bekaa of Lebanon near the ancient city of Baalbeck, flowing through Syria and Southern Turkey where it exists into the Mediterranean. The Lebanese part of the basin is estimated at 1870 square kilometers. The valley portion of this basin known also as the North Bekaa contains approximately 70,000 ha or some 35% of the Lebanese part of the basin. At the South Western of this area is the Yammouneh basin which is naturally a

[23] **United Nation Economic & Social Commission For Western Asia.**

closed basin. It is also planned for the future to pass the water stored in the Yammouneh basin to the Litani system to the South.

The irrigation development proposed in the project is based primarily on the utilization of the waters of El-Assi river after Ain Zarqa, which is the main source. The project proposes the irrigation of about 6,100 ha of which 2,000 ha in Hermel and the rest in the Ka'a village[24].

Tests and research have proved that topographic, geologic and hydrologic conditions the selected dam site are favorable for the construction of such type of dam.

1. Reservoir And Capacity

It involves the construction of a large dam with a gross capacity of 108 million cubic meters and 80 meters of height about 500 meters from the El-Assi bridge next to El-Shawagher. Its function is to organize and provide regulation for an annual irrigation.

Also, it involves the construction of Orentes dam hydro-electric power station about one kilometer from the dam with 75 meters of height. This station's output would reach 50 mega watt. The storage of water is obtained by the construction of daily transition of dam with capacity 2 million cubic meters to protect the share of Syria in a prominent way.

2. Cost Of The Project.

The estimated costs of the project are $ 210 million distributed as follows[25]:

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[24] **Dar El Handasa, Nazih Taleb Consulting Engineers.**
[25] **Ibid, p.3.**

-Construction of transition dam on Ain Zarqa	$ 3 million
-Irrigation of 6,100 ha	85
- Construction of large Orentes dam	100
- Construction of the Orentes dam hydro-electric power station and the transition dam after this station	22
TOTAL	$ 210 millions

Chapter Three
RESEARCH DESIGN AND METHODOLOGY.

3.1 The Basic Approach

A survey has been conducted with the intent of determining the attitudes of people whom are affected by the construction of Al-Assi Dam regarding the change in the economic and social life.

Moreover, the survey has also been conducted to see if the irrigation is the sole problem that agricultural sector is suffering from, and if the construction of Al-Assi Dam hydro-electric power station is an efficient way to develop the industrial sector in Hermel town as well as its suburbs.

3.2 Survey Design And Methodology

3.2.1 The Source Of Information.

To test the hypothesis, a field survey is conducted. This field survey covers many public agencies such as: the Ministry of Water and Electricity, the Litani Institution, and the Green Project Institution. Also, this study includes the point of view of people at different levels.

3.2.2 Sample And Data Collection

The target population of the field survey is composed of 115 subjects representing people living in Hermel caza (El-Fakiha, Ka'a, El-Jdaidah, Hermel and its suburbs).

The surveying tool used is a questionnaire including questions related to demographics, attitudes, and behavior of the subjects versus the project discussed in this study (see Appendix "A").

3.3 Preparation And Construction of The Questionnaire

3.3.1 Prerequisite Consideration For The Preparation of The Questionnaire.

While preparing the questionnaire, attention is directed toward some major issues. These are presented next:

1- To avoid negative reactions from the respondents, and to assure that information provided remains confidential, a letter of preface is introduced before the set of questions, to clarify the objectives of the survey, and to ensure the confidentiality of the information provided. Consequently no names need to be mentioned.

2- No confidential or parental questions have to be asked, in order not to cause any embarrassment or anxiety while answering.

3- The last question is left open ended in order to leave a room for the respondents to express their own opinions and to have personal analysis of what the researcher might have forgotten to mention in the survey.

4- The questionnaire is medium in size although it should have been longer and wider because of the scope of the issue discussed; However, because of the cultural barriers of the region of implementation attention is directed to the ease of use and the time allocated.

3.3.2 The Types Of Questions Used

In constructing the questionnaire, two types of question models are used:

1- The Likert-type Scale Items of "strongly agree" to "strongly disagree", giving a choice of only four responses by eliminating the middle response of "no opinion"

in order to avoid the tendency of the respondents of not answering. This type of questions is used in items (12, 13, 14, 18, 19, 20, 21, 22, 23, 25, 26, 33, 34, 35, 36, 37).

2- The Forced Choice Items consisting of objective (multiple choice) questions used to know the respondent's opinion about a certain issue or to know something about this status such as items (8, 9, 10, 11, 15, 16, 17, 24, 27, 28, 29, 30, 31, 32) of the questionnaire.

3.3.3 The Problems Obstructing The Distribution Of The Questionnaire.

The distribution of the questionnaire has forced one major problem which is the following:

Since mailing is too difficult in the study area, the Hermel caza, the distribution of questionnaires utilized follow-ups-reminder person. The follow-up person requests that the respondent returns the questionnaire because a 100 percent response rate is important for this survey's purposes. A follow-up sometimes requires a second questionnaire or serves a reminder for the respondent to fill out the questionnaire that was initially received.

Despite this fact, the respondents were helpful in general since the construction of Al-Assi Dam is the probable solution for their problems (economic, social, ...) from their point of view.

3.4 Analysis Of The Variables Of The Questionnaire

The questionnaire includes two types of variables: the personal background variables and the attitudinal variables.

3.4.1 The Background Variables

The selected background variables of the questionnaire are used to collect personal data about the respondents. This information is used for later classification

of the statistical results. The background variables may have an effect on the change (social, economic) receptivity of the respondents, and these are items 1-7 of the questionnaire which are:

1- Personal Status (item 1) This variable shows the marital status of the respondent (married, single, ...). And, in fact the married subjects, specially those who have children, tend to show us the number of families that are going to be affected by the Al-Assi Dam Project.

2- Sex (item 2) This variable has two categories (male & female). The male are usually more receptive to developmental orientation than females because females tend to be associated with traditional roles in the society.

3- Age (item 3) six categories of age are considered (18-25, 26-35, 36-45, 46-55, 66-75). The older the respondent, the more representative to experience.

4- Education (item 4) The educational level of the respondent is an important factor outlining the difference in their attitudes. Also, the field of specialization affects the attitudes and behavior of the respondents. For instance, those who are highly educated see things differently than ordinary people.

5- The present job (item 6) This variable shows if the respondent's specialization and his job go together.

6- Membership in an association (item 7) The respondent has to list all the professional, cultural, and social associations to which he belongs. Thus, reflects the role of agricultural cooperative in developing the agriculture sector if any, for example.

To analyze the statement of the problem, the following hypotheses are set in relation to the variables affecting the construction of the Al-Assi Dam:

1- To testify the various factors that are associated with the Al-Assi Dam construction in developing various economic sectors in Lebanon and specially in Hermel caza, many measures are stated: the level of satisfaction of Hermel's society

with irrigation needs of water, the development of economic as well as social aspects in Hermel, the role of government in developing the agriculture sector in Hermel caza, reaction to change, the availability of budgets, and the affected people attitudes towards some related ideas.

H1: The Nahr-AL-Assi's contribution to irrigation is enough presently.

H2: The affected people attitudes towards the Al-Assi Dam project is positive regarding both economic & social aspects (16, 17, 18, 19, 24, 25, 26, 33, 35).

H3: The Lebanese government is following a realistic plan in developing the agricultural sector in the Northern section of the Bekaa valley (items 12, 13, 14, 15, 21, 22, 23).

H4: Reaction of people toward technology is positive (items 36, 37)

H5: Budgets are available so people can execute different projects by themselves (items 27, 28, 29).

3.5 Analysis Of The Data Collected

The data collected will be classified and categorized according to the above stated variables. These variables and the answers of the questions are numerically coded and entered through the data base using the computer.

The entered data will be statistically interpreted and analyzed using the SPSS statistical computer package.

Chapter Four
RESEARCH FINDINGS.

4.1 General Overview.

After the methodology, design and tools used for analyzing the data collected for this study were presented. The main purpose of this chapter is to present the findings acquired and to analyze them. It is worth mentioning here that the two main hypotheses to be tested are listed as follow:

* The peoples' attitudes towards the Al-Assi Dam project is positive regarding both economic and social aspects.

* The Lebanese government is following a realistic plan in developing the agricultural sector in the Northern section of the Beka'a valley.

4.2 Profile of Respondents.

The respondents recorded in this study constituted 88% response rate, and the size of the sample was 105 subjects. The fields of the surveyed were presented by all levels. Due to missing data the questionnaire revealed that five cases should be neglected in the analysis, and this because some respondents might not have fully understood the questions; Therefore, they gave random responses or skipped questions. Thus, we ended up with 100 significant questionnaires.

With reference to the general characteristics of the 100 respondents, the descriptive statistics method was used here for measuring these

characteristics. Results showed that the majority of the respondents have three or more children. Table (4.1) shows that 36% of the subjects had more than one child and 39% had more than three children.

Table (4.1): Number of Children of Respondents.

nub. of children	frequency	percent	cumm %
No children	25	25	25
1 to 3	36	36	61
4 & above	39	39	100
total	100	100	

Table (4.2) presents the percentages of respondents' personal status. The 73% majority of the respondents were married.

Table (4.2): Marital Status of Respondents.

personal status	frequency	percent	cumm%
single	23	23	23
married	73	73	96
divorced	3	3	99
widowed	1	1	100
total	100	100	

Table (4.3) presents the percentages of respondents' gender. The 88% majority of the respondents were males and 12% were females.

Table (4.3): Respondents' Gender

gender	frequency	percentage	cumm%
male	88	88	88
female	12	12	94
total	100	100	

The age of the respondents ranged between 18 and 100. The majority (17%) of respondents are between 36 and 55 years old.

Table (4.4): Respondent's Age

age of respond.	frequency	percentage	cumm%
18-35	29	29	29
36-55	58	58	87
56-100	13	13	100
total	100	100	

Table (4.5) presents the percentage of respondents' current address. The 60% majority of the respondents were in Hermel and 40% were in other areas of Hermel caza.

Table (4.5): Respondent's Current Address.

current address	frequency	percentage	cumm%
Hermel	60	60	60
other areas	40	40	100
total	100	100	

Examining Table (4.6), one can conclude that the majority of the respondents had high school and below, in other words 56% of the respondents have high school level and below.

Table (4.6): Respondent's Education.

education level	frequency	percentage	cumm%
high school & below	56	56	56
somme college	14	14	70
college degree	19	19	89
advanced degree	11	11	100
total	100	100	

Table (4.7) showed that 61% of the respondents didn't belong to any institution (social, cultural, agricultural, and professional) and only 27% belonged to an institution.

Table(4.7): Professional Affiliation of Respondents.

no. of institution	frequency	%	cumm%
none	61	61	61
one	27	27	88
more than one	12	12	100
total	100	100	

Table (4.8) showed us that the majority 55% of the respondents agreed that the contribution of Nahr Al-Assi to irrigation up till now is very weak.

Table (4.8): Nahr Al-Assi's Current Contribution (opinion).

current contribution	frequency	percentage	cumm%
excellent	2	2	2
good	4	4	6
average	5	5	11
weak	34	34	45
very weak	55	55	100
total	100	100	

4.3 Regression Analysis:

To check the validity of the hypotheses stated to testify the peoples' opinions towaeds the Al-Assi dam construction in developing various economic sectors in Lebanon and especially in Hermel caza, the regression analysis was used to build regression equations that could depict the potential relationships between dependent variables and independent variables. The dependent variable is the variable whose variation is likely to be explained, and an independent variable is a variable used to explain the variation in the dependent variable. The intention, here, was to build several regression equations, taken Nahr Al-Assi's present contribution to irrigation, the Lebanese government and developing the agricultural sector, reaction of people towards technology, budgets and execution of different projects, preventive procedures followed, and suggested and applied viruses prevention methods as dependent variables and the other variables as independent variables.

4.3.1 Building a Regression Equation With the Dependent Variable X8.

The first step in developing the regression model was to examine the relationship between each independent variable and the dependent variables, and between each independent variable with other independent variables. The dependent variable was the contribution of Nahr Al-Assi to the irrigation project up till now (X8), and the independent variables (X10, X11, X13). The following result was found.

As could be noticed, there is a high correlation coefficient between the variables (sex and institution) that a respondent belongs to, and the dependent variable, the contribution of Nahr Al-Assi to the irrigation up till now (X8). The value of the correlation coefficient could also assist in assigning a relative importance to each independent factor in defining or explaining the variation in the dependent variable. By reading the coefficients of correlation between X8 and the other independent variables similar explanations can be determined. The result showed that X2 (sex) had the highest correlation coefficient among all the independent variables with X8, followed by X7, and so on. Thus, the independent variables could be ranked in the order of their importance as potential predictors of X8. Also, a stepwise regression analysis was used to build the regression equation through a forward selection of variables.

The first independent variable entered to the regression equation was X2. The regression output shows a significance level of 0.05. R^2 , the coefficient of determination shows how much the variations in the dependent variable could be explained by the independent variables included.

In step number 1, the regression function included X2. The regression output in step 1 resulted in a factor of determination, R^2=0.13647, which means that only 14% of the variation in X8 could be explained by the variation in X2. Although statistically not significant, yet qualitatively speaking, this has a great implication. The F ratio in the output, computed as sum of squares/mean square, is =12.54346. The significant is = 0.0000. In step number 2, the variable X7 was included. A list of these variables, their coefficients (beta), test statistic, T, and the T-significant are presented as follows:

Variable	Beta	T	Sig.T
X2	-.71869	-3.804	
.0002			
X7	-.26800	-2.903	
.0046			
(constant)	4.62056	46.340	.0000

The last step in the regression output, along with the information about the variable, coefficient just listed, helped in deriving a regression model equation as follows:

X8 = 4.62056 - .71869 X2 - .26800 X7

(.0000) (.0002) (.0046)

R^2= .20548 = 21%

F = 12.54346 **Sig. F** = .0000

1.A Significance of the Regression Equation.

R^2, the coefficient of determination is equal to 21%. This implies that only 21% of the variation in respondents' opinion about the contribution of Nahr Al-Assi to the irrigation project up till now could be explained by these two variables.

By using the analysis of variance, the usefulness of the regression equation tested using the F-distribution. From the output presented, **F**= 12.54346. Comparing the **Sig. F** value to the value used = .05, it could be concluded that there is a relationship between X8 and the two variables included in this equation. This results show that the regression model is a significant one.

1-B Significance of the Regression Coefficient.

The significance of the correlation coefficients could be derived from examining P-value of the T-statistic. This P-value listed above under sig.T. Taking into consideration that the level of significance (alpha) is = .05, then one would conclude that a statistically significant relationship exists between each of the included two variables (holding others constant) and the dependent variable X8.

1-C Interpretation of the Equation.

The interpretation of the equation is quite straight forward. As to X2, the value of b=.71869. This indicates that for each unit added number in males, the contribution of Nahr Al-Assi to the irrigation up till now will be decreased by .71869. The negative sign shows that as the number of females (respondents) increase their ability to give answer on such question decrease.

This could be attributed to the trend that agricultural work and related activities are more handled by males than by the females.

The same interpretation method could be applied to the variable X7. The negative beta coefficient for this variables suggests that the more the agricultural institutions the respondents have, the less the present contribution of Nahr Al-Assi will be. This could be attributed to the respondents' ability to evaluate as they belong to agricultural institutions.

4.3.2 Regression Analysis: Building a Model Relating the Independent Variable to the Dependent Variable X9.

The same steps that were followed in preceding section are applied here to derive a regression equation that will study the variations in respondents evaluation of the experience of dams construction in its contribution to irrigation and power generation.

The resulting equation includes two variables: X4 (current address)(age). A list of the variables, their beta coefficients, T-test and the Sig.T is presented below:

Variable	Beta	T	Sig.T
X4	- .30150	-2.370	
.0198			
X3	.24480	-2.361	
.0202			
(constant)	1.50202	13.089	.0000

Moreover, the final regression output was as follows:

Dependent variable...**X**9

Variables entered on step number 2 ... X3

Multiple R	.30294
R square	.09177
Adjusted R square	.07305
Standard Error	.64448

Analysis of Variance

	DF
Regression	2
Residual	97
F = 4.90081	Sig. F = .0094

The resulting equation, therefore, is:

X9 = 1.50202 - .30150 X4 + .24480 X3.

(.0000) (.0198) (.0202)

R^2= 09177 = 9%

F = 4.9008 Sig.F = .0094

The equation is significant F= 4.9008, and by comparing the significance F-value = .0094 to the level of significance, P-value = 0.05, it could be conducted that there is a relationship between X9 and the two variables

included in the equation. Moreover, R^2= 9%. This means that only 9% of the variations in the respondents evaluation of dams construction experience could be determined by the two variables. These results show that the regression model is a significant one. Thus, the significance of the correlation coefficients is also proved since the values of the sig.T value for the three independent variables is < the level of significance (alpha) = 0.05.

2.A Interpretation of Equation.

X4 (current address) has a negative coefficient indicating an indirect and a weak significant relationship with X9 (evaluation). This is expected since the evaluation of dams' construction experience is done by people who live away from the dam. Thus, they cannot evaluate the dams.

Concerning X3 (age), it has a positive coefficient with X9. This means that the older the respondent, the more his ability to evaluate the experience of dams construction. This could be attributed to the fact that as people get older, their knowledge and abilities to evaluate things increase.

4.3.3 Regression Analysis: Building a Model Relating the Independent Variable to the Dependent Variable X12.

A regression model is intended to be built to study the factors that are most likely to be associated with the Lebanese government's plan to organize the agricultural sector. This is important since as stated earlier, this factor is important if the government is following a realistic master plan in identifying the agricultural sector.

The regression equation that resulted here included four variables: X26 (demand for the construction of agro-industries in Hermel), X5 (educational level, field of specialization), X20 (relationship between the construction of Al-Assi dam and social and economic development in Hermel), X4 (current address). A list of the variables, their beta coefficients, T-test and sig.T is presented below:

Variable	Beta	T	Sig.T
X26	.39801	4.429	.0000
X5	.14080	3.573	.0006
X20	.28944	3.641	.0004
X4	-.16987	-2.015	.0467
(constant)	.34827	2.337	.0215

The equation comes to be as follows:

X12 = .34827 + .39801 X26 + .14080 X5 + .28944 X20 - .16987 X4

(.0215) (.0000) (.0006) (.0004) (.0467)

R^2= .44112 = 44%

F = 18.74562 Sig.F = .0000

R^2 = 44% indicating that 44% in the variations in the opinion of respondent towards the Lebanese government's duties in organizing the agricultural sector could be the function of the four variables. These results show that the regression model is a significant one. Moreover, the significance of the

correlation coefficient is also proved since the values of the sig.T for the four variables is < the level of significance (alpha) = 0.05.

3.A Interpretation of the Equation.

X26, has a positive coefficient indicating a direct and a strongly significant relationship with X12. This is expected since the construction of agro-industries is one of the ways that the Lebanese government can follow to develop the agricultural sector.

Concerning X5, which stands to the educational level and field of specialization of the respondent, it was again found that it has a positive coefficient with X12. This means that the lower the educational level, the more could be the concern with agricultural sector. This could be attributed to the fact that people with less than college degree, in general, are more capable of thinking about such situations, and developing service strategies that would pave the way towards more organizations of agricultural sector and better performance of government.

Non surprisingly, construction of Al-Assi Dam has a positive effect upon the respondents opinion towards the Lebanese State's duties in organizing the agricultural sector. Those who think that the economic and social development in Hermel is strongly dependent on the construction of the Al-Assi dam, they believe that the Lebanese government must organize the agricultural sector. This could be attributed to the fact that the hopes of people, long being ignored, about the government's doing for their benefit are very high.

As for X4 (current address), it has a negative relationship with X12. This means that the address of the respondents affects his concern about the Lebanese government's duties in developing the agricultural sector. Thus,

those who are living in Hermel are more concerned about that argument than those who are living in other areas. Moreover, the negative sign means that as the number of respondents living away from Hermel increase, their concern about the developing of the agricultural sector would decrease. This could be attributed to the fact that they are not going to be benefited directly from such such interference.

3.B Cross tabulation OF X12 by X30.

X30 (Ranks of various occupations)

Count

col pct X12:	0	1	2	3	4	row total
1	16	4	17	18	11	66
		100	60.7	72.0	52.4	66.0
72.7						
2	6		11	7	9	33
	27.3		39.3	28.0	42.9	33.0
4					1	1
					4.8	1.0
col. total:	22	4	28	25	21	
	22.0	4.0	28.0	25.0	21.0	

Chi-square	D.F	Significance	Min E.F	Cells with E.F<5
8.14004	8	0.4199	0.040	7 to 15 (46.7%)

As could be seen, the respondents who prefer public and profession, are mostly agree that the government must organize the agricultural sector.

Thus, this is not true. The result of the Chi-square, as could be noticed, showed complete insignificance being 0.4199 > 0.05 the level of significance, and with the number of cells having an estimated frequency < 5 to 46.7%. This again verified when using the regression analysis test. Thus, X30 was not of the variables entered into the regression equation.

4.3.4 Regression Analysis: Building a Model Relating the Independent Variables to the Dependent variable X11.

The same steps that were followed in building a regression model for equation X8 are applied here to derive a regression equation that will study the variations in respondents' opinions about the objective of Al-Assi Dam.

The resulting equation included two variables: X9 (evaluation of dams construction) and X1 (personal status). A list of variables, their beta coefficients, T-test and the sig.T is presented below:

Variable	Beta	T	sig.T
X9	-.15592	-3.273	.0015
X1	.16381	2.671	.0089
(constant)	3.02708	32.302	.0000

Moreover, the final regression output was as follows:

Dependent Variable... X11

Variable(s) entered on step number 2... X1

Multiple R	.41162
R square	.16943
Adjusted R square	.15231
Standard Error	.31570

Analysis of Variance

	DF
Regression	2
residual	97
F = 9.89397	SIG F = .0001

The resulting equation is therefore:

X11 = 3.02708 - .15592 X9 + .16381 X1

(.0000) (.0015) (.0089)

R^2= .16943 = 16%

F = 9.89397 sig.F = .0001

The equation is significant F=9.89397, and by comparing the significance F-value = .0001 to the level of significance, P-value = 0.05, it could be conducted that there is a relationship between X11 and the two variables included in this equation. Moreover, R^2= 16%. This means that only 16% of

the variations in the respondents' opinions about the objective that should be set for Al-Assi Dam could be the function of X2 and X1. Although statistically not significant, yet qualitatively speaking, this has a great implication. These results show that the regression model is a significant one. Moreover, the significance of the correlation coefficients is also proved since the values of the Sig.T for the two independent variables is < the level of significance (alpha) = 0.05.

4.a Interpretation of the Equation.

X9 has a negative coefficient indicating that the less successful, as the respondents' evaluation of dams come, the past contribution to irrigation and power generation, the more they are concerned about the future irrigation and power generation of Al-Assi dam. This could be attributed to the fact that people's past failure experience stressed them to look for success in the future.

Concerning X1, which stands for personal status, it has a positive coefficient with X11. This means that the higher the number of married respondents, the more they agree that the objective of the Al-Assi dam should be set for both irrigation and power generation together. This could be attributed to the fact that married people are more serious than others. Moreover, people are always looking for better future for their children. So, carrying out such projects would make them sure about higher standard living of their families.

These results were obtained from the procedure of using cross tabulation function of X11 by X1 (personal status) variable. The result is shown in the below table. A Calculation of the chi-square here also led to a similar result.

4.B Cross Tabulation: X11 by X1(personal status).

X1:	0	1	2	3	row total
1	3				3
	13.0				3.0
3	20	73	3	1	97
	87.0	100	100	100	97.0
col. total:	23	73	3	1	100
	23.0	73.0	3.0	100	100.0

Chi-square	DF	Significance	MinE.F	Cells with E.F<5
10.35410	3	.0158	.030	6 to 8 (75.0%)

In the Chi-square test of independence, the hypothesis that two variables are independent of each other is tested. If the probability which also known as the observed significance level is small enough (usually less than .05 or .01), the hypothesis that two variables are independent is rejected. In this case, the value of the Chi-square is 10.35410. The observed significance level, .0158 is < 0.05 implying that the two variables X11 and X1 are not independent to each other. Thus, the same result is verified using the regression analysis test.

As to the respondents' evaluation of the contribution of Al-Assi to irrigation up till now, a cross tabulation was prepared to trace the difference along the various respondents. The table below shows the results of this tabulation.

4.C Cross Tabulation: X11 by X9 (respondents' evaluation).

count

col pct X9:	1	2	3	5	row total
1	1	1		1	3
	1.5	3.3		100.0	3.0
3	64	29	4		97
	98.5	96.7	100.0		97.0
col. total:	65	4	4	1	100
	65.0	4.0	4.0	1.0	100.0

Chi-square	D.F	Significance	Min E.F	Cells with E.F<5
32.94564	3	0.0000	0.030	6 to 8 (75.0%)

As could be noticed, the respondents who revealed agreement with the successful of dams construction experience in its contribution to irrigation and power generation (93%) showed a higher concern about the irrigation and power generation objective of Nahr Al-Assi dam than others. The result of the Chi-square, as could be noticed, showed complete significance, with the value of the observed significance being 0.0000 < 0.05 the level of significance, and with the number of cells having an estimated frequency <5 to 75%. Again, this result is verified using the regression analysis test.

4.3.5 Regression Analysis: Building a Model Relating the Independent Variables to the Dependent Variable X13.

A regression model is intended to be built to study the factors that are most likely to be associated with the respondents' beliefs about the absence of

water projects constructed by the government. This is important if the Lebanese rural areas are to be developed.

The regression equation that resulted here included five variables X9 (evaluation), X5 (educational level and field of specialization), X4 (current address), X1 (personal status), X24 (opinion of an agricultural owner), A list of the variables, their beta coefficients, T-test and the Sig.T is presented below:

Variable	Beta	T	Sig.T
X9	.18159	2.598	.0109
X5	.10908	2.546	.0125
X4	- .22980	- .2.522	.0133
X1	- .22841	- .2.543	.0126
X24	.12640	2.366	.0200
(constant)	1.15709	7.478	.0000

Moreover the final regression output was as follow:

Dependent Variable... X13

Variable(s) entered on step number 5...X24

Multiple R	.48431
R square	.23456
Adjusted R square	.19384
Standard Error	.44975

Analysis of Variance

	DF
Regression	5
Residual	94
F = 5.76089	Sig.F = .0001

The resulting equation, therefore, is:

X13 = 1.15709 + .18159 X9 +.10908 X5 - .22980 X4 - .22841 X1 - .126640 X24

(.0000) (.01090 (.0125) (.0133) (.0126) (.0200)

R^2 = .23456 R^2 = 24%

F = 5.76089 Sig.F = .0001

The equation is significant. F=5.76089, and by comparing the significance F-value = 0.0001 to the level of significance, P-value = 0.05, it could be conducted that there is a relationship between X13 and the five variables

included in this equation. Moreover, R^2=24%. This means that only about 24% of the variations in respondents beliefs about the absence of water projects that constructed by the government could be determined by the five variables. These results show that the regression model is a significant one(qualitatively speaking). Moreover, the significance of correlation coefficients is also proved since the values of the Sig.T value for the five independent variables is < the level of significance(alpha) = 0.05.

5.a Interpretation of the Equation.

X9 has a positive coefficient indicating a direct and a strongly significant relationship with X13. This is expected since if the respondent has a positive attitude towards the evaluation of dams construction, the feasibility of applying the concern about slow progress in the Lebanese rural areas will be more. Thus, they will look for strategies and methods (irrigation projects) that will improve the progress in these areas.

Concerning X5, which stands for the educational level and field of specialization, it was again found that it has a positive coefficient with X13. This means that the less educated will just try to survive with what they have, that is, depending on wells and rain resources and therefore live with the government negligence of the projects in the past.

Non surprisingly X4, the current address, has a negative effect upon X13. All people are expected to contribute the low progress in the Lebanese rural areas and agricultural sector to the absence of the government intervention no matter where they are living. Also, the Hermel population have other means to substitute for the absence of government intervention.

In addition, X1, personal status, has a negative coefficient indicating an indirect and significant relationship with X13. The older the respondent is, the more likely to give exact opinions about the government intervention.

Thus, X24, which stands for a factor affecting attitude towards future development, it was found that it has a positive coefficient with X13. This means that the more the number of the respondents who are benefited from the Al-Assi dam, the more their beliefs that the absence of water projects, is one of the reasons that caused slow progress in Lebanese rural areas.

4.3.6 Regression Analysis: Building a Model Relating the Independent Variable to the Dependent Variable X15.

A regression model is intended to be built to study the factors that are most likely to be associated with the respondents' beliefs about the government intervention. This is important if the Lebanese towns, especially those used to produce illicit crops, are to be developed.

The regression equation that resulted here was very simple, yet a significant one. Only one variable was included in the equation, X12, the government intervention to organize the agricultural sector, and that was expected. The variable had the following beta coefficient, T, and Sig.T values.

Variable	Beta	T	Sig.T
X12	.19697	2.038	.0442
(constant)	.96212	6.805	.0000

The equation comes to be as follows:

X15 = .96212 + .19697 X12

(.0000) (..0442)

R^2= .04066 = 41%

F = 4.15348 Sig.F = .0442

R^2 = 41%, indicating that about 41% of the variations in respondents' beliefs about the government intervention to develop the Lebanese towns could be the function of X12. The value of the F ratio was calculated to be = 4.15348.

The value of Sig.F = .0442, which, is compared with the level of significance, P-value = 0.05, will indicate that X15 could be determined by 3the variable, X12, it was found that Sig.T = 0.0442 which if compared to the level of significance used (0.05) will lead to the conclusion that this variable is highly significant in determining or explaining variations in the dependent variable.

The resulting equation can be easily interpreted. Respondents who strongly agree that the government has to interfere to organize the agricultural sector are expected to see that the government intervention is necessary and urgent to develop the Lebanese towns, especially those used to produce illicit crops.

4.3.7 Regression Analysis: Building a Model Relating the Independent Variables to the Independent Variable X21 (the government intervention to organize the usage of the water by adopting scientific and most efficient ways).

The same steps that were followed in building a regression model equation for X8 are applied here to derive a regression that will study the variations in respondents' beliefs for government intervention.

The resulting equation included three variables: X23, the government's construction of hydro-electric power stations is vital for the development of

the industrial sector in Muhafazat Al-Beka'a, X15, the government intervention to develop the Lebanese towns, and X12, the government intervention to organize the agricultural sector. A list of variables, their beta coefficients, T-test and the Sig.T is present below:

Variable	Beta	T	Sig.T
X23	.37647	4.871	.0000
X15	.26535	3.799	.0003
X12	.17711	2.438	.0166
(constant)	.22451	1.630	.1064

Moreover, the final regression output was as follows:

Dependent Variable...X21

Variable(s) Entered on Step Number 3...X12

Multiple R	.63810
R Square	.40717
Adjusted R Square	.38865
Standard Error	.36011

Analysis of Variance

	DF
Regression	3
Residual	96
F = 21.9786	Sig.F = .0000

The resulting equation, therefore, is:

X21 = .22451 + .37647 X23 + .26535 X15 +.17711 X12

(.1064) (.0000) (.0003) (.0166)

R^2 = .40717 = 41%

F = 21.9786 Sig.F = .0000

The equation is significant. F = 21.9786, and by comparing the significance F-value = .0000 to the level of significance, P-value = 0.05, it

could be conducted that there is a relationship between X21 and the three variables included in this equation. Moreover, R^2=41%. This means that only about 41% of the variations in respondents' agreement about the intervention of government to organize the usage of water could be determined by the three variables. These results show that the regression model is a significant one. Moreover, the significance of the correlation coefficients is also proved since the values of the Sig.T value for the three independent variables is < the level of significance (alpha) = 0.05.

7-a Interpretation of the Equation.

X23 has a positive coefficient indicating a direct and strongly significant relationship with X21. This is expected since if the respondents strongly agree that the construction of hydro-electric power stations is vital, then his ability of agreement that the government must organize the usage of water will be more. This could be attributed to the need of applying a scientific and an efficient method to provide the Lebanese society's various needs for the right quantity and quality of water.

Concerning X15, which stands to the development of Lebanese towns, it was again found that it has a positive coefficient with X21. This means that

the more the agreement that the development of Lebanese towns in urgent, the more could be the agreement that the construction of hydro-electric power stations is vital for the development of the industrial sector. This could be attributed to the fact that the development of industrial sector is one of the ways through which the Lebanese towns could be developed.

None surprisingly, the respondents' agreement that the government's organization of the agricultural sector improve this sector has a positive effect upon **X**21. The respondent will look for strategies and methods that will improve the Lebanese economy. Knowing the fact that developing the agricultural sector as well as the industrial sector are very important to progress the economy as a whole.

4.3.8 Regression Analysis: Building a Model Relating the Independent Variables to the Dependent Variable X22 (Carrying on the Dams project is the most efficient way that help Lebanon to benefit from it's water sources).

A regression analysis was done to study the government intervention by carrying out the Dams project. Future development variable along with government intervention, respondent's opinion , respondent's belief and budget variables were included. The resulting equation was obtained:

X22= .59744+.29326 X19+.30238 **X**21-.11294 **X**14+.24557 **X**20-.17464 **X**29

(.0242) (.0005) (.0002) (.0047) (.0014) (.0195)

+.13572 **X**27

(.0247)

R^2= .51855= 52%

F = 16.69411 **Sig.F**= .0000

As could be noticed, six variables were included as variables determining the government intervention by constructing the Dams project is the most efficient way that may help Lebanon benefit from its water resources. $\mathbf{R}^2$= 52%, implying that 52% of the variation in respondents' agreements towards the government intervention can be explained by the six variables listed in the equation. F-value is=16.69411 which is not very high. **Sig.F**=0.0000 and it is much less than 0.05, the level of significance. This leads to the conclusion that the established equation is significant in determining the variations in x22. As to the significance of each of the individual variables, it was found that the values of **Sig.T** are < the level of significance used, 0.05. This means that all the independent variables are significant in building the equation.

8-A Interpretation of the Equation.

The interpretation of the equation here is straight forward. X19 has a positive Beta coefficient meaning that the future development of Lebanese economy is directly related to the government intervention. The objective of government intervention is to reach a good progress in the economy. Therefore, it comes natural to say that respondents' agreement about the government intervention will work towards future development.

X21 also has a positive Beta Coefficient. This means that the respondents agree that the government must organize the usage of water by adapting scientific and more efficient ways. Therefore stressing the needs to carry out the Dams project.

In addition X14 has a negative coefficient, indicating that the higher the respondents' agreement with irrigation using ground water, the less would be

their agreement level with carrying out Dams projects since they already full satisfied.

As for X20, it has a positive Beta coefficient. This means that the more the respondents' agreement that the social and economical development of Hermel is mainly related to the construction of Al-Assi dam, the more their agreement with the government's construction of the Dam.

X29 has a negative coefficient, indicating that the less the respondents' budget to use the ground water, the more their needs for government's carrying out the Dams projects to provide a less expensive substitute.

Finally, X27 has a positive Beta coefficient. This means that the more the needs for the construction of factories, the more the needs for the Dams projects. This is because construction of dams projects provide factories with electric power and other raw material (agro-industries).

4.3.9 Regression Analysis: Building a Model Relating the Independent Variables to the Dependent Variable X23 (government intervention to construct hydro-electric power stations is vital for the development of the industrial sector).

A regression analysis was done to know the factors that are most likely to be associated with the government intervention to develop the industrial sector by constructing hydro-electric power stations, especially in Muhafazat Al-Beka'a. Future development, government intervention, and attitude variables were included in the analysis. The resulting regression equation identified four variables as being determinants for the variation in X23. These are X19, X21, X26, and X9. The final regression output was as follows:

Dependent variable...X23	
Variable(s) on step number 4...X9	
Multiple R	.72919
R square	.53172
Adjusted r square	.51200
Standard error	.34928
Analysis of variance	DF
Regression	4
Residual	95
F=26.96747	Sig.F= .0000

The coefficients of the independent variables are the Beta values listed in the table below. As a result the equation is:

X23=.09879+.46693 X19+.30385 X21+.24992 X26-.10633 X9

(.5076) (.0000) (.0005) (.0018) (.0487)

Variable	Beta	T	Sig.T
X19	.46693	6.230	.0000
X21	.30385	3.577	.0005
X26	.24992	3.205	.0018
X9	-.10639	-1.996	.0487
Constant	.09879	.665	.5076

R^2= .53172= 53%

Concerning the significance of the equation it can be tested by looking at values of R^2, F-value and **Sig.F**. R^2, the coefficient of determination, has a value of .53172, implying that 53% of the variation in X23 can be explained by the four variables listed in the equation. F-value is = 26.96747 which is high. **Sig.F**=.0000 and it is much less than 0.05 the level of significance. This means that the established equation is significant in determining variations in X23. As to the significance of each of the individual variables, it was found that the value of **Sig.T** are < the level of significance used, 0.05. Thus, all the independent variables are significant in building the equation.

9-A <u>Interpretation of the Equation:</u>

The interpretation of the equation here is straightforward. X19 has a positive Beta coefficient meaning that the more the industrial sector would be developed in Hermel, the more the society would change. Thus, the construction of Al-Assi Dam would have a positive effect on social as well as on economic level.

X21, also has a positive Beta coefficient. This means that the more the respondents' agreement about the government intervention to organize the usage of water, the more their agreement that the hydro-electric power stations should be constructed for the development of the industrial sector.

X26 has a positive Beta coefficient, indicating that the higher the respondents' agreement with the potential demand for the construction of agro-industries, the higher would be their agreement level with the need for the construction of hydro-electric power stations for the development of industrial sector. As expected the development of the industrial sector would be reached through the construction of Dams and as a result, the construction of hydro-electric power stations.

Finally, X9 has a negative coefficient, indicating that the less the respondents' agreement with the success of Dams construction in its contribution to irrigation, the more their agreement level with the need for the construction of hydro-electric power station for the development of the industrial sector. This could be attributed to the fact that both irrigation as well as industrial sector need electric power. Thus, the costs of inputs (irrigation, electricity) required in both sectors would be less.

4.3.10 Regression Analysis: Building a Model Relating the Independent Variables to the Dependent variable X31 (government intervention).

A regression model is intended to be built to study the factors that are most likely to be associated with the respondents' beliefs about the duties of the State. The regression equation that resulted here was very simple, yet a weakly significant one. Only one variable was included in the equation, X0 (number of children) . The variable has the following Beta coefficient, **T**, and **Sig.T** values.

Variable	Beta	T	Sig.T
X0	-.39233	-2027	.0454
Constant	2.75725	10.279	.0000

The equation comes to be as follows:

.

X31= 2.75725-.39233X0

R^2= .04023 = 4%

F = 4.10737 Sig.F = 0.0454

R^2= .04023, implying that only 4% of the variation in the respondents' beliefs about the government's duties determined by the number of children the respondents have. Although statistically not significant, yet qualitatively speaking, this has an implication. The negative sign of the coefficient indicates that the less the number of respondents children, the more their agreement level with the government's duty to provide internal security. On the other hand, the more the respondents' number of children, the more their agreement level with the government's duty to seek development of society and economy. Thus, ensuring better future for their families.

4.3.11 Regression Analysis: Building a Model Relating the Independent Variables to the Dependent Variable X34 (Construction of agricultural schools and colleges).

The same steps that were followed in building a regression model equation for X8 are applied here to derive a regression equation that will study the variation in respondents' concern for the need of the construction of agricultural schools and colleges.

The resulting equation included three variables:
X12 (the government organization of agricultural sector), X2 (sex), and X33 (the respondents opinion about future job opportunities).
A list of the variables, their Beta coefficient, **T**-Test and the **Sig.T** is presented below:

Variable	Beta	**T**	**Sig.T**
X12	.36102	4.354	.0000
X2	.25802	2.517	.0135
X33	.15478	2.040	.0441
Constant	.69945	4.105	.0001

Moreover, the final regression output was as follows:

Dependent variable ...X34

Variable(s) entered on step number 3...X33

Multiple R .49552

R square .24554

Adjusted r square .22196

Standard error .44326

Analysis of variance

	DF
Regression	3
Residual	69

F=10.41418 Sig.F=.0000

The resulting equation, therefore, is:

X34= .69945+.36102 X12+.25802 X2+.15478 X33

(.0001) (.0000) (.0135) (.0441)

r^2= .24554 =25%

F = 10.41418 Sig.F= .0000

The equation is significant. F=10.41418, and by comparing the significance F-value = 0.0000 to the level of significance, P-value = 0.05, it could be conducted that there is a relationship between X34 and the three variables included in this equation. Moreover, R^2 = 25%, implying that only 25% of the variation in the respondents' beliefs about the construction of agricultural schools and colleges could be determined by the three variables. Although

statistically not significant, yet qualitatively speaking, this has a great implication.

11.A Interpretation of the Equation:

X12 has a positive coefficient indicating a direct and a strongly significant relationship with X34. This is expected since if the respondents strongly agree that the government must organize the agricultural sector, then the best approach is done by the government's construction of agricultural schools and colleges will be more.

Concerning X2(sex), it was again found that it has a positive coefficient with X34. This means that the higher the number of males , the more could be the concern with agricultural sector. This could be attributed to the fact that most of the people who are working the agricultural sector are males. Non surprisingly, job opportunities attitudes have a positive effect upon X34. Agricultural respondents will look for strategies and methods that will improve the agricultural sector.

Chapter Five
CONCLUSION AND RECOMMENDATIONS.

Looking at the statistical analysis of the responses, one main hypothesis is rejected, H3: the Lebanese government in following a realistic plan is developing the agricultural sector in the Northern section of the Beka'a valley. The other main hypothesis, H2: the affected people attitudes towards the Al-Assi Dam Project is positive regarding both economic and social aspects. In addition, the hypotheses, H1: the Nahr Al-Assi's contribution to irrigation is enough presently, and H5: budgets are available so people can execute different projects by themselves, are rejected.

In this research study, the importance of Al-Assi dam project was investigated. The results of this investigation provided an insight about the various aspects related to the construction of Al-Assi Dam. First, a critical finding was that most respondents had a notably positive attitude towards the construction of Al-Assi dam. Moreover, The present contribution to irrigation of Nahr Al-Assi measured by the number and the type of institutions that the respondents belong to is weak.

Considering the government intervention in developing the agricultural sector, one finds that the government rarely follows a realistic plan in tasks related to the development of the agricultural sector. Lack of positive beliefs about the government intervention to improve the agricultural sector is revealed clearly in respondents' beliefs about the nature of the Lebanese economy, since the majority agreed that the government must organize the agricultural sector. One point to mention is that respondents had a strong agreement that the absence of water projects, especially irrigation projects, is

one of the reasons that caused slow progress in the Lebanese rural areas and left most of the agricultural areas as it is rainfed.

To increase the validity of these results, the respondents' concern of the development of the Lebanese towns (X15) especially those used to produce illicit crops was considered. This is a relationship affecting towns and then the agricultural sector. It is believed that the agricultural sector is directly affected by the government intervention.

In order to understand factors affecting government interventions (X12, X13, X22, X23, X21, X34), two ways: multiple regression analysis and cross-tabulation methods revealed a significant relationship with educational levels, this is natural since as these levels increase, the ability to analyze and evaluate various matters and situations increases.

After analyzing the aspects related to the government intervention and the evaluation of Al-Assi's present contribution to irrigation, dependent variables, the purpose of this part is to examine the respondents' concern of future development which would change the structure of Hermel's society as well as its economy. In the regression analysis carried out on the dependent variable X19 and other variables, two variables X22 (gov. int.) and X23 (also gov. int.) had positive significant relationship which could be explained by saying that as the beliefs in the requirements of government intervention increase, the beliefs about the future development would increase.

Finally, from the sample surveyed, another significant relationship was found and that was the relationship between the way used for irrigation (X29, budgets and dependent variable) and the two variable X13 (gov. int.) and X22 (gov. int.). The relation is significant indicating that the less the availability of personal budgets, the more the respondents' agreement with the government intervention in order to execute different projects.

Moreover, the respondents found that the government intervention is a good strategy to organize the agricultural sector and develop the Lebanese economy.

Recommendations:

- Efforts should be exercised to meet the water supply reliability standards and the necessary objectives requirements determined.
- Legislation impact study is important since water laws and legislations organize and regulate the operations and finance of the water supply systems to obtain optimum results.
- Ensure that the water authorities and agencies in charge of the Water Management & Development Plan of the Baalbeck-Hermel region are organized , staffed, and managed in the most efficient manner.
- Design of personal recruitment and training programs which are consistent with the man power requirements of the Water Management & Development Plan to ensure that operation is secured in the future.
- Compaign to educate the public about dam benefits and the usefulness of such projects for better future.

Concerning the agricultural sector:

- Besides providing law and order and forbidding the growth of illicit crops, the government must provide the basic infrastructure needs to ensure market efficiency while controlling monopolies at the input and the output levels. An adequate policy must provide a successful interaction between the various agricultural agents and institutions (farmers, the ministry of agriculture, research institutions, cooperatives) with the rest of the economy and the national and industrial organizations (credit institutions, agro-industries, non-governmental organizations, international bodies).

- Study and research must be devoted to identify the most profitable crops and to develop applied technologies to reduce their inputs and maximize outputs. Also research is needed for the introduction of new crops adapted to grow well in the region as well as the choice of appropriate technologies.
- Given the various lack of banking credit to farmers, a policy priority should be to ensure capital at reasonable interest rates to efficient farmers through medium- and long-term financial institutions.
- Developing agriculture in the studied region should also address other market facilities concerning grading, packing, transportation, and storage, supervising standards of quality (especially in relation to food processing), and exportation. These facilities should be accessible to farmers at competitive prices.
- Furthermore, utmost attention should be devoted to ensuring the marketing of agricultural output while reducing the high levels of risk and uncertainty that face the farmers at present. This can be done through future contracts, development of agro-industries and export markets.
- Building agricultural schools an institutions in Lebanese towns.
- The manufacture of fertilizers in Lebanon should result in lowering their cost. This is an important point and must be fully considered by the government in determining its policies on the establishment of a fertilizer industry.
- Carrying out irrigation projects using the most efficient way that help Lebanon to benefit from its water sources.
- Developing tourism sector taking into consideration its importance as one of the principle sources of income in Hermel.

Finally, further research is recommended that will investigate factor, the possibility of developing Lebanese fisheries, which recommended by the respondents who seem to favor national investment for the purpose of expanding and organizing Lebanese fishing and fish markets, that are more likely to be associated with the various beliefs that respondents have about the benefits of the construction of the Al-Assi dam project. Also, to increase the number of respondents to reflect further beliefs about the dams projects, is recommended.

A special study about the construction of Nahr-Al-Assi Dam project and its effect on the society as well as the economy of the town, " Hermel ".

Dear Sir,

This survey is concerned with the feelings and attitudes you have towards the implications of social and economic impacts of the Al-Assi Dam in your town. Your household has been scientifically selected for participation so that the survey's response will be as representative as possible. Anyone within your household who desires to fillout the instrument can do so, so long as they are over the age of 18. All answers, as well as your personal identity will be kept completely ***ANONYMOUS***.

The information you provide will help me shape the future content of the Al-Assi Dam and carrying out my project in the best way.

Although the questionnaire may appear to be lengthy, it is quite simple and only takes about 15 minutes to complete.

We greatly appreciate your cooperation in this study and it is important to answer all the questions. If there is any comment, write it as a part of your answer on the last question.

Thank you again for your cooperation

Hiyam N. Sujud.

In the beginning, please give me some background information.

1- Personal status: ☐ single ☐ divorced ☐ widowed
... Number of children ☐ married

2- Sex: ☐ male ☐ female

3- Age: ☐ 18-25 years ☐ 26-35 ☐ 36-45
☐ 46-55 ☐ 56-65 ☐ 66-75

4-Current address .....

5- Educational level, field of specialization .....

6-Current job and its category.....

7-List,if possible, social,cultural, and professional associations you belong to

1- ..... 3-.....
2- ..... 4- .....

8- What is the contribution of Nahr Al-Assi to the irrigation project up till now ?

☐ excellent ☐ good ☐ average
☐ weak ☐ very weak

9- How do you evaluate the experience of dams construction in its contribution to irrigation and power generation ?

☐ successful ☐ somewhat successful

☐ undecided

10- In your opinion, what are the reasons behind the emigration of your town's people to various Lebanese cities or outside Lebanon ?

☐ political ☐ economical ☐ financial

☐ external ☐ economical & financial

11- Knowing the fact that the Nahr Al-Assi is one of the important rivers in Lebanon, what objective should be set for its dam ?

☐ irrigation ☐ power generation

☐ or both

12- The state has to organize the agricultural sector and limit the prices of commodities (especially fertilizers and other agricultural techniques) in order to cure the high cost of living and improve this sector.

☐ strongly agree ☐ agree

☐ strongly disagree ☐ disagree

13- The absence of water projects, especially irrigation projects, is one of the reasons that caused slow progress in the Lebanese rural areas and left most of the agricultural areas as it is rainfed ?

☐ strongly agree ☐ agree

☐ disagree ☐ strongly disagree

14- In your opinion, the irrigation using ground water would be better in the future than that of irrigation projects as dams ?

☐ strongly agree ☐ agree

☐ strongly disagree ☐ disagree

15- The development of the Lebanese towns, especially those used to produce illicit crops is

☐ urgent ☐ important ☐ not important

16- If you are a farmer, and your crops need irrigation, how would you evaluate the Nahr-Al-Assi Dam's share of irrigation to be in the future ?

☐ very sufficient ☐ sufficient ☐ insufficient

17- Do you think that your personal income after the Al-Assi Dam has been carried out would increase

☐ increase ☐ not change ☐ no opinion

18- Tourism is considered to be one of the principle sources of income in addition to agriculture in Hermel, especially in the absence of industries, do you think that the construction of Al-Assi Dam will help in the development of the tourism sector ?

☐ strongly agree ☐ agree

☐ strongly disagree ☐ disagree

19- The structure of Hermel's society would change as a result of Nahr-Al-Assi Dam construction; thus, opportunities would be available in all kinds of jobs

☐ strongly agree ☐ agree

☐ disagree ☐ strongly disagree

20- The social and economical development of Hermel is mainly related to the construction of the Al-Assi Dam, especially because agriculture is the principle source of income in this town

☐ strongly agree ☐ agree

☐ strongly disagree ☐ disagree

21- The Lebanese society's various needs for the right quantity and quality of water will increase in the future. Thus the State must organize the usage of water by adopting scientific and most efficient ways

☐ strongly agree ☐ agree

☐ disagree ☐ strongly disagree

22- Carrying out the dams projects is the most efficient way that help Lebanon to benefit from its water sources in satisfying the various needs-domestic, agriculture, industrial, and generation of power

☐ strongly agree ☐ agree

☐ disagree ☐ strongly disagree

23- The construction of hydro-electric power stations is vital for the development of the industrial sector in Muhafazat Al-Beka'a and especially in Hermel caza

☐ strongly agree ☐ agree

☐ disagree ☐ strongly disagree

24- If you are an owner of an agricultural land that is affected by the Al-Assi Dam project, then you are

☐ benefiting from the Al-Assi Dam ☐ somewhat benefiting

☐ not benefiting

25- Being a member in an agricultural society, do you think that the agricultural cooperatives are vital for the agriculture development ?

☐ strongly agree ☐ agree

☐ disagree ☐ strongly disagree

26- Since most of Hermel's agricultural products can be processed domestically such as food-canning firms, a potential demand for the construction of agro-industries is necessary

☐ strongly agree ☐ agree

☐ disagree ☐ strongly disagree

27- In case of availability of electric power, the construction of factories, needs a considerable amount of financial resources; So these financial resources are

☐ available ☐ somewhat available

☐ relying on industrial credit ☐ relying on the outside credit

28- Is your capital resource ..... to carry out drop irrigation project by yourself so that in this way you don't need to irrigate your crops anymore through the Al-Assi Dam ?

☐ enough ☐ somewhat enough ☐ not enough

29- If you are irrigating your agricultural crops by the ground water, and the Al-Assi Dam project has been carried out, then

☐ you will rely on the dam because of its less cost

☐ you will go on using ground water

☐ you will use the two preceding ways at the same time

30- Indicate your preference of the various occupations (1, 2, 3, 4):

☐ public employment ☐ business & services

☐ a profession ☐ agricultural work

☐ industrial work

31- In your opinion of priorities, the State must ... (1, 2, 3, 4) [1 the most important and 4 the least important among

☐ protect the country from the enemies ☐ provide internal security

☐provide people with services ☐seek development of society & economy

32- If you have a certificate in any level of education or you can do a certain work and you are out of work state

the level of education.....

field of specialization .....

33- After answering the preceding question do you think that carrying out the Al-Assi Dam Project will offer you a job ?

☐ strongly agree ☐ agree

☐ disagree ☐ strongly disagree

34- The development of agriculture in Hermel requires the construction of agricultural schools and colleges ?

☐ strongly agree ☐ agree

☐ disagree ☐ strongly disagree

35- After few years of the construction of Al-Assi Dam, Hermel's landowners and ordinary workers will gain the experience in many aspects (technical, economical, agricultural, .. and so on). Thus the cost will be reduced

☐ strongly agree ☐ agree

☐ disagree ☐ strongly disagree

36- It is known that any project no matter what its positive effects are, it has some negative effects either economical or social. Thus as a person from the town that does not know neither pollution nor noise, is this true

☐ strongly agree ☐ agree

☐ disagree ☐ strongly disagree

37- The technology has a significant effect on the society since it becomes profitable rather than a humanitarian society

☐ strongly agree ☐ agree

☐ disagree ☐ strongly disagree

38- At the end of this questionnaire, would you like to comment on any aspect of it or on any thing we have covered as well as on any thing we have missed ?

.....

.....

.....

أطروحة ماجستير

دراسة خاصة عن انشاء سد العاصـــــــــي
ومدى تأثيره الاجتماعي والاقتصادي في المنطقة

حضـــرة الاخ العزيـــــز . . .

هذا الكراس يتمحور حول رأيك نحو انشاء سد العاصي ليساعد على تفهم تأثيره الاقتصادي والاجتماعي على منطقتك بشكل خاص.

ان الحوار معك اختير خصيصا لمشاركتك الرأي حيث يمثل اكبر عدد ممكن من امثـــــالك.

ان أي فرد من أفراد عائلتك يمكن له ان يملأ هذا الكراس شرط ان يتجاوز عمـــــــره الثمانية عشرة.

ان أجوبتك في هذا الكراس ستبقى سرا محفوظا ، لن يطلع عليها أحد.

ان تزويدك لي بالمعلومات يستوجب منك الاجابة على هذه الاسئلة كلها وبصراحـــــة تامة لتساعدني على اتمام دراستي بالشكل المطلوب.

لا بد لي من الاشارة هنا الى ان الأسئلة تبدو طويلة ، غير انها بسيطة ولا تأخذ مـــن وقتك أكثر من خمسة عشرة دقيقة تقريبا.

انا شاكرة لك بمشاركتك الرأي وأرجـو منك الاجابة على كل الأسئلة واذا كان هنـــاك اي تعليق على اي موضوع ورد الرجاء تدوين ذلك في معرض اجابتك على آخر ســـؤال في هذا الكراس.

شكرا لك مرة ثانية على مساعدتك ،

هيـام سجـــد

في البداية أرجو اعطائي بعض البيانات الشخصية عنك .

١ــ الوضع الشخصي ...

☐ أعزب ☐ متزوج ☐ مطلق ☐ أرمل ☐ عدد الاولاد

٢ــ الجنـــس ...

☐ ذكر ☐ انثى

٣ــ العمـــر ...

☐ ١٨ــ٢٥ سنة ☐ ٢٦ــ٣٥ سنة ☐ ٣٦ــ٤٥ سنة

☐ ٤٦ــ٥٥ سنة ☐ ٥٦ــ٦٥ سنة ☐ ٦٦ــ٧٥ سنة

٤ــ عنوان السكن الحالي : _____

٥ــ التحصيل العلمي و مجال التخصص: _____

٦ــ الوظيفة او المهنة التي تشغلها الآن: _____

٧ــ الجمعيات او المؤسسات الاجتماعية و الثقافية والمهنية التي تنتمي اليهـــــا : (الرجاء سردها اذا امكن) :

١= _____ ٣= _____

٢= _____ ٤= _____

في هذه المجموعة من الاسئلة ارجو وضع اشارة امام الجواب الذى تراه مناسبا اكثر من غيره .

٨ــ ما هي مساهمة العاصي في مشـاريع الرّي حتى الآن ؟ ...

☐ حسنة ☐ جيدة ☐ مقبولة ☐ ضعيفـة ☐ ضعيفة جدا

٩ــ كيف تقيّم تجربة اقامة السدود لريّ الاراضي الزراعية و توليد الطاقة الكهربائية ؟ (كسـد القرعون مثلا)

☐ ناجحة ☐ ناجحة نسبيا ☐ غير مقـرر

١٠ــ برأيك ما هي الاسباب التي دفعـت ابناء منطقتك الى الهجرة الى المدينة او احدى الدول الاجنبية؟

☐ سياسية ☐ اقتصادية ☐ تمويلية ☐ خارجيـة

١١ــ العاصي من الأنهار المهمة ، حتى على مستوى المنطقة ، أيهما أفضل بالنسبة لمياه هذا النهر أن تستثمر في الريّ أم في انتاج الطاقة الكهربائية ، أم الاثنين معا ؟

☐ ريّ ☐ كهرباء ☐ ريّ و كهرباء

١٢ــ يجب على الدولة ان تنظم القطاع الزراعي و تحدد اسعار الحاجيات (خاصة الآلات و الادوات الزراعية) حتى تساعد على مكافحة الغلاء و تحسين هذا القطاع ...

☐ موافق بشدة ☐ موافق ☐ معارض ☐ معارض بشدة

١٣ــ من الاسباب التي حالت دون تنمية الريف اللبناني ، غياب المشاريع المائية خصوصا مشاريع الريّ ، و بقاء الزراعة في معظم المناطق زراعة بعلية ...

☐ موافق بشدة ☐ موافق ☐ معارض ☐ معارض بشدة

١٤ــ هل برأيك الاتجاه نحو استغلال الآبار الارتوازية بدلا من تنفيذ مشاريع الريّ الاساسية (كالسدود مثلا) مجدٍ في المستقبل ؟

☐ موافق بشدة ☐ موافق ☐ معارض ☐ معارض بشدة

١٥ــ ان انماء المناطق اللبنانية ، خاصة منها التي كانت تستعمل في زراعة المخدرات ...

☐ ضروري جدا ☐ ضروري ☐ غير ضروري

١٦ــ اذا كنت مزارعا و تعتمد زراعتك على الريّ ، كيف تقيّم مساهمة العاصي المستقبلية في ريّ أراضيك ؟

☐ كافية جدا ☐ كافية ☐ كافية الى حد ما ☐ غير كافية

١٧ــ هل تعتقد ان دخلك الفردي بعد تنفيذ مشروع العاصي .... ؟

☐ سيزداد ☐ يبقى على حاله ☐ غير مقرر

١٨ــ تعتبر السياحة من اهم الموارد الاقتصادية بعد الزراعة لابناء هذه المنطقة و خاصة ان المصانع مفقودة الى حد ما ، هل باعتقادك انشاء سد العاصي سيساعد على ازدهارها ؟

☐ موافق بشدة ☐ موافق ☐ معارض ☐ معارض بشدة

١٩ــ ان انشاء سد العاصي سيغير تركيبة المجتمع حيث تتوفر فرص العمل للكثيرين وفي مختلف المجالات (زراعة ، هندسة ، ميكانيك ، ... وغير ذلك)

☐ موافق بشدة ☐ موافق ☐ معارض ☐ معارض بشدة

٢٠ـ ان تحسين الوضع الاقتصادى والا جتماعي لمنطقة الهرمل مرتبط ارتباطا كلياً بانشاء سد العاصي وخاصة انها منطقة زراعية بالدرجة الاولى ...

☐ موافق بشدة ☐ موافق ☐ معارض ☐ معارض بشدة

٢١ـ ان حاجة المجتمع اللبناني للمياه للاستخدام اليومي ، للريّ ، اولانشاء المصانع ستزداد في المستقبل وهذا يستوجب الدولة بتنظيم استغلال المياه استغلالاً علميا ...

☐ موافق بشدة ☐ موافق ☐ معارض ☐ معارض بشدة

٢٢ـ ان أفضل وسيلة تمكن لبنان من استغلال ثرواته المائية هي اللجوء الى شبكة سدود لتفعيل المياه السطحية والافادة منها للريّ ومياه الشفة وتوليد الطاقة الكهربائية ...

☐ موافق بشدة ☐ موافق ☐ معارض ☐ معارض بشدة

٢٣ـ ان انشاء المحطات الكهربائية تلعب دورا هاما في نمو القطاع الصناعي في منطقة الهرمل خاصة والبقاع عامة

☐ موافق بشدة ☐ موافق ☐ معارض ☐ معارض بشدة

٢٤ـ ان كنت من المالكين ولديك اراضي زراعية هل يطالها مشروع العاصي وبذلك تكون ...

☐ مستفيد من انشاء السد ☐ مستفيد جزئيا ☐ غير مستفيد

٢٥ـ كفرد من مجتمع يعتمد على الزراعة بالدرجة الاولى هل برأيك ان التعاونيات الزراعية تساهم في تنمية القطاع الزراعي ؟

☐ موافق بشدة ☐ موافق ☐ معارض ☐ معارض بشدة

٢٦ـ باعتبار ان معظم الزراعات في هذه المنطقة من فواكهة او خضار يمكن تصنيعها وتعليبها محليا يستوجب انشاء المصانع

☐ موافق بشدة ☐ موافق ☐ معارض ☐ معارض بشدة

٢٧ـ ان انشاء المصانع في حال توفر الطاقة الكهربائية يتطلب ايضا رساميل ضخمة فهل تعتقد ؟

☐ ان هذه الرسامي متوفرة ☐ ان هذه الرساميل متوفرة جزئيا

☐ تعتمد على السلفة الصناعية ☐ تعتمد على المبادرة الخارجية

٢٨ـ هل امكانيتك المادية كافية لتنفيذ مشروع على حسابك الخاص كمشروع التنقيط مثلا وبذلك لا تكون بحاجة الى مساهمة الدولة في انشاء سد العاصي

☐ كافية ☐ كافية نسبيا ☐ غير كافية

٢٩ــ ان كنت تروى مزروعاتك عن طريق حفر الآبار الارتوازية و تم تنفيذ مشروع السد ...

☐ سوف تستمر بريها عن طريق الآبار

☐ ستعتمد على السد لريها لان ذلك أقل كلفة

☐ تعتمد على الطريقتين

٣٠ــ يختلف الناس في تقدير المناصب والاعمال المتنوعة. ضع رقم(١) الى جانب العمل الذى يعتبره الناس ارفع مقاما من غيره ، ورقم(٢) الى جانب العمل الذى يأتي في الدرجة الثانية و هكذا ...

☐ الوظيفة العامة ☐ العمل المهني الحر ☐ العمل في التجارة والخدمات

☐ العمل في الحقل الزراعي ☐ العمل الصناعي

٣١ــ في رأيك ان واجبات الدولة هي كالتالي (صفهم حسب الأهمية)

☐ حماية البلاد من الخارج ☐ المحافظة على الامن في الداخل

☐ تأمين الخدمات للمواطنين ☐ التنمية الاقتصادية والاجتماعية

☐ اشياء اخرى (حدد): _____

٣٢ــ ان كنت حائزا على شهادة في مجال ما او كانت لديك صنعة و لكنك لا تجد عملا أذكر...

☐ الشهادة

☐ الصنعة

٣٣ــ بعد الاجابة على السؤال السابق و في حال كنت لا تجد عملا ، فهل تعتقد ان مشروع السد سيوفر لك عملا

☐ موافق بشدة ☐ موافق ☐ معارض ☐ معارض بشدة

٣٤ــ ان تنمية الزراعة في هذه المنطقة يتطلب انشاء مدارس و معاهد زراعية حيث الحاجة اليها ..

☐ موافق بشدة ☐ موافق ☐ معارض ☐ معارض بشدة

٣٥ــ بعد انشاء السد بفترة من الزمن سوف يكتسب ابناء هذه المنطقة الخبرة (فنية ، زراعية ، اقتصادية . الخ) من المشرفين والعاملين على تنفيذه مما يساعد على تخفيض التكلفة...

☐ موافق بشدة ☐ موافق ☐ معارض ☐ معارض بشدة

٣٦ـ من المعروف ان اى مشروع ومهما كانت نتائجه ايجابية له بعض النتائج السلبية ان لم تكن اقتصادية كما هو الحال مع سد العاصي يمكن ان تكون اجتماعية فمثلا كفرد من منطقة لا تعرف الضجيج حيث لا مصانع فيها ولا تعرف وجوها غريبة لان الاسباب لمثل هذه الوجوه مفقودة تقريبا

☐ موافق بشدة ☐ موافق ☐ معارض ☐ معارض بشدة

٣٧ـ ان التكنولوجيا لها تأثيرها البارز على صعيد المجتمع حيث يصبح مجتمعا استغلاليا اكثر منه انسانيا وعلى صعيد البيئة حيث التلوث وما شابهها .

☐ موافق بشدة ☐ موافق ☐ معارض ☐ معارض بشدة

٣٨ـ وفي النهاية ، أتريد ان تعلق على أى ناحية من نواحي هذه الاسئلة او الاشياء التي عولجت وكذلك الاشياء التي لم تعرها انتباها ؟

_____

_____

_____