International Journal of Advanced Biotechnology and Research (IJBR)
ISSN 0976-2612, Online ISSN 2278–599X,
Vol-8, Issue-4, 2017, pp1230-1235
http://www.bipublication.com

Research Article

Cost-benefit evaluation plan CHANDAB PAKDASHT water spreading station in Tehran Province

Habibollah Mahdavivafa

Department of Watershed Research,
Agricultural and Natural Resources Research Center of Province Tehran .
Agricultural Research,Education and Extension Organization(AREEO)Tehr*an. Iran*
hmahdavi2000@gmail.com

ABSTRACT:
One of the strategies to increase water levels in aquifers recharge groundwater and prevent damages caused by the flood is seasonal flooding of broadcast stations groundwater recharge in the second half of the 80 multiple projects throughout the country as one of the main themes of the targets has been implemented.in this regard, Tehran Province plans to build research stations and extension education Chandab conty Pakdasht water spreading and implementation activities began in late 1986 began.in this study tries to analyze and evaluate investment by the government investigated and cost benefits of its implementation is monitored and evaluated.Economic evaluation of aquifer with views of econometrics during the constructional and operational plans, including mechanical and biological operations during the useful life and maintenance costs, along with benefits such as the rate of water extraction and groundwater recharge andthe reduced estimate damages caused by seasonal flooding, improve the environment, etc. is desirable.the useful life of the project is 25 years old.Economic evaluation of water spreading station using current methods of economic analysis and cost-benefit estimates have been obtained.Despite the problems emerged due to the recent drought and its effects on water meet the cost-benefit results obtained with 10% discount rate provides a figure of about 1.08.This figure shows that investment costs for protection of soil and water resources, including aquifer management activities had a positive aspect from an economic perspective.Although the social and economic importance of the villages downstream of the aquifer has been obtained satisfactory results.

Keywords: econometrics, aquifer, costs-benefit, station CHANDAB ,Tehran province.

INTRODUCTION:

Thread artificial recharge of ground water in arid regions of Iran in the past has been considered and the construction of dams on rivers to flood diversion on consecutive plains and farm land was being accomplished (Ministry of Energy.1995:12)Flood broadcast stations for optimum use of surface water and groundwater levels, reducing damages caused by seasonal flooding, improve and vegetation of the area and Moving towards sustainable development of natural resources as a strategy for protection of soil and water resources in the agenda.Economic evaluation of the implementation of flood broadcast stations may be the most important issue that the costs and economic benefits of this type of activity made it clear and Or usefulness of any costs within predetermined targets, the player is considered flood.One of the strategies to increase water levels in aquifers recharge groundwater and prevent damages caused by the flood is seasonal flooding of broadcast stations groundwater recharge in the second half of the 80 multiple projects throughout the country as one of the main themes of the targets has been implemented.in this regard, Tehran Province plans to build research stations and extension education Chandab city Pakdasht water spreading and implementation activities began in late 1986 began.in this study tries to analyze

and evaluate investment by the government investigated and cost benefits of its implementation is monitored and evaluated.Economic evaluation of aquifer with views of econometrics during the constructional and operational plans, including mechanical and biological operations during the useful life and maintenance costs, along with benefits such as the rate of water extraction and groundwater recharge andthe reduced estimate damages caused by seasonal flooding, improve the environment, etc.

Background research: BAKHTIYAR.A.1998- Your plan entitled *"Socio-economic Assessment flood spreading project Grbaygan"* have provided. Calculations of the cost-benefit ratio B / C = 20 is shown. which indicate that water spreading, low-cost method of great efficiency . With increasing groundwater, the acreage of crops in the region increased from dry land to irrigated cropping pattern has changed. and rural life of one conventional dairy farms have changed the status of agriculture and employment has increased. Increased income level and its value has gained ground(BAKHTIYAR,A.1998:6).

BANIASADI,M.1995- In his study entitled *"Effects of small water aquifer management plan of Bam on socio-economic status of residents of small water*" has. With the implementation of 500 hectares under cultivation has increased. Project in the region has caused many villages to work station area. also in the area of migration are quite tangible projects has decreased (BANIASADI,M.1995:4).

-KHOBFEKR,H.1999.In his study to evaluate the *"economic, social and technological watershed management activities in Sistan and Baluchestan»* Watershed's satisfaction with the activities carried out as one of the most important indicators is considered00% of people who give their consent to the general plan of activities (watershed) have announced. Of these, 9.68% satisfaction very high, 20% high satisfaction, 7% are moderately satisfied and only 1.1% have expressed satisfaction with their loss. 99% of people's participation in watershed management activities it deemed necessary because the benefit of thepeople of these activities have enumerated(KHOBFEKR,H.1999:7).

-SABERI,A.1998-Your plan entitled*" Economic benefits of forecasting the effects offlood spreading in Ghusheh of Semnan*"using the cost-benefit analysis method and related data, the cost / benefit ratio1.17% has been calculated for ten years of useful life of the flood spreading project, which in terms of the benefits of broadcasting Flood is significant(SABERI,A.1998). With regard to the definition of watershed, which is: the management and operation of a coordinated, integrated and regulated natural resources, human and economic agriculture from a watershed. Provided that the main waters of the watershed, namely its water and soil resources, are fully preserved and have no negative effect andthe concept of aquifer, which is: A method for irrigation to expand water on the surface of the earth to help increase the growth of natural plants or the storage of water on the earth, which can be returned to agriculture through digging wells or gutters (Byzv.1987:14).In this regard, aquifer activities were started at the CHANDAB aquifer station in the cuonty of Pakdasht, Tehran province.

MATERIALS AND METHODS:

Location and characteristics of the watershed Chandab: Chandab water spreading station in the extreme East Pakdasht city in Tehran province of longitude 51 degrees 55 minutes and longitude 35 degrees 24 minutes North in East Tehran, Garmsar city Pakdasht located in the north central axis.The station in an area of 3000 hectares located on the alluvial fan of sediment. From the aquifer until the beginning of Tehran, 50 km to 31 km is the city Pakdasht. The maximum height of 2620 m and a minimum height Chandab basin at the outlet is 980 meters above sea level.Basin average elevation of 1488 meters and And average precipitation of 187 mm per year and average annual variable 250 mm, the minimum average temperature of 2 ° C and maximum average temperature 1.26 ° C.restricted deposits are good permeability of the aquifer and the average slope is 5%.Thus

Chandab aquifer region in terms of climate is arid zones and the subject of a great many restrictions on aquifer project has planted vegetation (Hosseni.1990:31). Station construction work for research, education and extension Chandab started in 1986 and for one year mechanical operations (construction of hydrophilic channels expansion, and construction of water channels Srdhnhha, gates and biological operations include planting seedlings of fruit and Garymar, seeding and hill-dropping and nursery construction) continued .area of study the number of wells to an average depth of 100 meters and spans 7 discharge of 25 liters per second and the level of agricultural land and orchards as a permanent form of water use area is 700 hectares(Khalilpuor1991.2:21).

Figure 1- Location of the station for the flood spreading of CHANDAB PAKDASHTin the southeastern province of province Tehran

Figure 2- Starting dewatering at the flood spreading station of CHANDAB PAKDASHT

Activities carried out in water spreading station Chandab Pakdasht:

Mechanical operation: Water spreading structures with 299000Cubic meters of earthwork, construction of water intake content 3900 cubic meters, stabilization of 600 cubic meters, 330 gates from materials such as gabion, gunny, used truck tires and stone mortar building.Thus, Table (1) mechanical operation carried out in the water spreading station Chandab specified.

Table (1) mechanical and biological activities in the aquifer Chandab

row	Explanation of operations	amount	unit
1	The contet of earthwork	299072	cubic meter
2	The tota contet l of openings are flooded	3984	cubic meter
3	Following the total contet e of construction in the rive	600	cubic meter
4	The contet of construction work for gates	2800	cubic meter
5	Construction of office building	300	Square meters
6	Landscaping	5000	Square meters
7	Construction of the Wall	300	Square meters
8	Construction of deep wells	1	ring
9	Construction of greenhouses	250	Square meters
10	Construction of meteorological stations	250	Square meters
11	Access Road	12	kilomer
12	Planting seedlings	113109	tree

Source:(Mahdavivafa.H.2003:28)

Objectives of flood spreading station:

- Controlling rapid, low cost, economical and floods, coupled with reduced flood damage.
- Coarse alluvium rangelands become unusable land.
- Creation of green spaces in the heart of the semiarid and creating planting forests.
- The development of research activities, education and promotion for students.
- Socio-economic development in flood spreading

Biological operation :

In years 1985-88 in the spreading area of 113 000 trees planted various trees that contains one of the design goals was to improve the environmental situation and vegetation of the area.due to the erosion of sand formations such as marl, sandstone, limestone, Knglvmrah thousand valleys, rocks, silt and other sediment from rivers and streams adjacent Chandab is very high and this has created limitations for biological treatment(khalilpour.1990-1:23). most of the seedlings planted in the region for various reasons have been referred to some of these factors:

- Improper management of irrigation in the area
- Problem budget.
- Insistence on demanding plant species
- Type of plant species and intolerance to climatic conditions
- Sedimentation
- Tree planting and tree planting in inappropriate locations and failure to comply with the.

RESULTS:

Economic evaluation plans for flood spreading the decline in profit at the expense Cost Ratio B / C - Benefit is appropriate that we use for agricultural projects(Moris.1994:41).Economic cost-benefit analysis of the cost benefit ratio is assessed with the capital cost benefits. Thus estimation method using a significant amount of interest in a cost-benefit analysis of groundwater recharge benefits and prevent flood damage is anticipated.Thus estimation method using a significant amount of interest in a cost-benefit analysis of groundwater recharge benefits and prevent flood damage is anticipated (Mizakhani.1983:31).

Benefits:

-The water:

On the basis of the information contained of 6 million cubic meters, about 48% or accidental flooding of 9.2 million cubic meters of water to the aquifer digit Chandab is fed, while we know the cost of water produced from this method compared to costs of other modes with a lot of water loss , power, running costs, and so on (Khlilpour1991:28).Years 1987-90 each year about 2.1 million cubic meters of the total volume average intake of groundwater supply has been Chandab of which an average of 56/0 million cubic meters of water per year to the region's ground water holesand In estimating the benefits of implementing the water spreading station is one of the most important benefits is the amount of water fed by the current ratebased on 10% discount rate for the useful life of the aquifer is calculated using economic analysis (TAHER.I995:45).

Table 2 - Estimated feed water in the aquifer Chandab

* This year's flood has occurred.

YEARS	The total contant volume of dehydration (m^3)	Estimated fed water (m^3)	Fed water content
1986-87	47545	28527	60
1987-88	- *	-	-
1988-89	393549	222633	57
1989-90	2523694	673916	27
1990-91	2628549	1456845	55
TOTAL	**60670792**	**2889818**	**48**

Source:(Khlilpour1991-1:32)

-Reduce flood damage:

One of the special interests of reducing damages caused by seasonal flooding in areas downstream villages aquifer is Chandab.in addition to this threat, rural housing, facilities and roads, including craters river bridge on Tehran, Garmsar the damage inflicted on them had made relationship-driven, based on a 25-year return period floods are estimated.The sum of the damage (damage to farms, rural housing, facilities, roads) in this period amounted to 860000USD$ (Kjalilpor.1991-1:28)

-Job creation:

The creation of three permanent employment on the economic value of the aquifer is estimated that during the life of the project.

-Forest vegetation planting:

Since environmentally appropriate conditions prevailed in the region and thus the survival of planted seedlings 1.3 percent on the supply of water spreading, interest income is negligible.

Economic evaluation of cost-benefit in flood spreading Chandab using available data to estimate the cost of benefits based on a discount rate of 10% by the year 1996 (period of useful life of 25 years) provided.Thus, based on economic analysis methods in Table (3) Chandab is estimated benefit-cost water spreading stationThus, based on economic analysis method.

row	Description of benefits and costs	cost	benefit
1	construction costs, maintenance and repair water spreading station includes mechanical operation, biological, human resources, facilities, equipment and activities carried out	556000	
2	The benefits of the aquifer		220000
3	The benefits of reducing flood damage		360000
4	Job opportunities to exploit the benefits of last year		24200
5	The benefits of planting wars		800
Total		**556000**	**606000**

Table (3) Estimation of interests - economic evaluation of the cost of water spreading station Chandab (USD$)
Source:(Mahdavivafa.H.2003:39)

According to current prices is estimated at 606000(USD $) extractionThus, based on cost-benefit analysis of economic cost-benefit analysis of the data in the above table during the useful life of water spreading station for 25 years is estimated ChandabDue to the characteristics of the natural environment appears to be significant water spreading station.according to the useful life of 25-year-old water spreading station Chandab total actual expenditure during the constructionand over the years of utilization is calculated as the present value of costs is obtained.

DISCUSSION AND CONCLUSIONS:

Since the direct effects of groundwater recharge and flood control projects positively evaluated bythe comtent of expenditure made by the studies and the amount of costs and estimated earnings on this basisCost-benefit calculation is as follows:

$Benefit\ int\ year = Bt$

$cost\ in\ year\ t = Ct$

$years = n$

$Discount\ rate = I$

$$Benefit\text{-}Cost\ ratio = \frac{606000}{556000} = 1.08$$

Construction on the water spreading station seems to be in terms of reducing damages caused by seasonal flooding and aquifer had good success.therefore, based on estimates of the cost of implementation and maintenance of the project during its useful life is over 556000(USD$).And the amount of benefits due to current prices is 606000(USD $).And cost-benefit analysis (Cost-benfit Aualysis of the data obtained during the 25-year present value. Soil and water conservation projects at issue is merely a business plan is not based on the profitability looks good.The plan is to pave the

way to sustainable development in arid and semi-arid as it was, so investment in these projects because it promotes the conservation of soil and water resources will need more attention.Although the benefit is negligible benefit as it may be inefficient in some areas due to specific geographical conditions is vital but its effects.

REFERENCES:

1. BAKHTIYAR,A.(1998)- Grbaygan socio-economic evaluation of flood spreading project. Natural Resources Research Center of Fars province.
2. BANI ASADI ,M.(1995)- Evaluate and study the impact of small water aquifer residents of Bam on socioeconomic status. Natural Resources Research Center of Kerman province.
3. -BYZV,J.(1987)- Artificial recharge of aquifers, , translated by Qolam Haidarpour Center, Tehran University Press.
4. -HOSSENI, M. (1991). Floodwater Chandab sediment control methods in Tehran, Natural Resources Research Center of Tehran Province.
5. -KHOBFEKR,H.(1999)- Economic, social and technical evaluation of watershed management activities in Sistan-Baluchestan province. Natural Resources and Bestial Affairs Researches Center of Sistan and Baluchestan.
6. -KHALILPOUR,A. (1991-1) study and evaluation of the biological function of Floodwater Chandab spreading station. Natural Resources Research Center of Tehran Province.
7. -KHALILPOUR, A (1991-2).Quantitative and qualitative study of Chandab flood water spreading station. Natural Resources Research Center of Tehran Province.
8. -TAHERI,SH.(1995).Economic evaluation of projects, publications of kaver.
9. -MAHDAVIVAFA,H.(2003). Socio-economic impacts of flood spreading station CHANDAB PAKDASHT from the viewpoint of downstream villagers. Natural Resources Research Center of Tehran Province.
10. -MORISS,C.(1994). Economic analysis, translation persian by Akbar Komijani, Tehran University Press.
11. -MIZAKHANI .R.(1993).Economic evaluation of watershed management plans, watershed management department. Department of Agriculture.
12. -MINSTRY OF ENERGY (1995). Bulletin of water resources, combining quick look at the artificial feeding studies, Issue 18, oct.
13. -SABERI.A.(1998)- Economic benefits of forecasting the effects of flood spreading in Ghusheh of Semnan .Natural Resources Research Center of semnan Province.
14. -Sheng Yi.(1997) Management Guide, translated persian by Ali Najafe nezhad, The Faculty of Agricultural Sciences and Natural Resources, Gorgan.