NEW YUSUFELİ (ARTVİN) AND THE DAM: ECONOMIC PROGRESS OR REGRESSION?

Eyüp ARTVİNLI¹, İhsan BULUT² and Niyazi KAYA³

Abstract

The aim of this study is to investigate the dam, settlement place of the New Yusufeli, and its results in the view of geographic perspective. The Yusufeli Dam and hydro-electric project is planned to be built on the Çoruh River Basin in the North East of Turkey. It would have a generating capacity of 540 MW. Estimated construction costs of the dam vary between $700 million and $838 million. Resettlement costs are estimated at a further $750 million. In addition, a minimum of $1.5 billion is estimated to be required for rebuilding the roads that will be flooded by the dam.

Serious concerns have been raised over the dam’s environmental, cultural, and socio-economic impacts. Eighteen towns and villages, including the town of Yusufeli, would be completely or partially submerged by the dam, displacing 15,000 people from their homes and indirectly affecting up to a further 15,000 people. No resettlement plan has yet been made public and consultation has been minimal. So, it is needed to evaluate its economic advantages / disadvantages again and sustainability of life for its people and environment in the view of geographic perspective.

Key words: Sustainability, geographic perspective, dams’ impact, Yusufeli, resettlement plan,

Introduction

“Do you know that “tomorrow” is such a nice remark?
It is a tempting word! But it is a scary expression for us, a devil!
Because of “tomorrow” fear, everyone wishes for his/her “yesterday” ”

These sensitive words were said by a villager in the novel of Tuncer (2000: 90) that express the feelings and future of people who had to move another place during building the Atatürk Dam on the Euphrates in the early 1990’s. It also brings out into the open invisible face of the constructing process of dams with the exception of help in producing electricity and irrigation.

The Yusufeli Dam and Hydroelectric Power Plant will be built as a part of the Development of the Çoruh River Basin, in accordance with the energy policies of Turkey. The Project site is located in the North East part of Turkey (Figure 1). 15,000 people will lose their homes as a result of the construction of the Yusufeli dam. It will be a rock fill dam with a height of 270m from the foundation. After water impounding, the dam will result in a reservoir of 33 km² surface area at high water level (at 710 m). It will be one of the parts of 10 hydroelectric projects in a series along the main river in a cascade style which were proposed on the main course of Çoruh River. Yusufeli Dam, if built, will be the second largest installed capacity in the Çoruh Basin after Deriner Dam that is located below of Yusufeli dam.

The Yusufeli Dam Project includes other alternatives projects to rescue Yusufeli town, many of villages and their people’s future lives by flood damage. It is needed to investigate and deal with all alternative projects to choose the best one for the region and its people. This study’s aim is research and analyzes the impacts, both direct and indirect, that a large dam might have on its local environment and population in a less developed region. It was

¹ Kütahya Nafi Gürnal Science High School / Kütahya, eartvinli@gmail.com
² Atatürk University, Department of Geography/Erzurum, ilhsanbulut@hotmail.com
³ Ankara Social Studies High School/Ankara, niyo75@yahoo.com
also intended with this study to assess the dam development in the context of sustainable development. In this context, it is very important to give a better position of Yusufeli town in order to see it as a developed city in the social, economic and cultural ways in point of view sustainable development. So this paper’s standpoint is to discuss whether it will be possible to found a better Yusufeli and to give a better life to its people in the future or not, not to say that building dams is good or bad.

![Figure 1. Location of Yusufeli Dam within the General Plan of the Çoruh River Development Projects. Source: Encon, 2006.](image)

The method of this study is based on field study to have primary sources and collect some data from the basin. We had the possibility to go to a field study that contains all reservoir area (includes visit to İşhan village, Yusufeli town, and Kılıçkaya town) in the region for research purposes in the summer of 2006 together with Prof. Dr. İhsan BULUT. In addition, secondary sources of data were used from various sources such as books, journals and the Internet.

**The Yusufeli Dam: Large, Small or No Dam**

Water is essential for the survival of mankind, not only in terms of drinking and hygiene, but also for ensuring agricultural production, industrial development, navigation, electricity generation and ecosystem conservation. Peoples’ lives have always heavily depended on water, which during the last few centuries has supported ever increasing human activities in the domestic, agricultural and industrial sector (Yen, 2003).

According to the International Commission on Large Dams (WCD, 2000), a large dam is 15 m or more high (from the foundation). High and large dams are constructed especially in the developing countries such as Egypt, China, Turkey and other Middle East countries in the recent years even though it is still a controversial issue at global as well as national levels. The important reason is its negative impacts in the local community and environment. For several decades, many displaced people have been suffering hardship in new places. So although they have many positive impacts, they also have many negative impacts on
people and their life (Yen, 2003; Adams, 2000). The effect of dams on the social, cultural and economical structure of the region is considerable. Especially the forcing of those whose settlement areas and lands remain under water to migrate, which negatively affects their psychology (Tahmiscioglu and et al, 2007: 763). The construction of large dams has led to the eviction of tens of millions of people worldwide (Lang, 2005).

On the other hand, Yusufeli is well connected to the rest of the region by main roads running along the river, enabling the surrounding villages to use Yusufeli town as their cultural, economic and political centre. Devecenzi and Pinderhughes (2003) argued that the building of large dams should be stopped. They emphasize that especially in developing countries the damage caused by large dams is much more than their benefits. They clarify their reasons below:

The negative social and ecological effects of large scale dam building far outweigh the positive attributes that they bring to society.

Instead, small dams should be built, where needed, in the control of those who should have it.

Local control of water systems is essential for feasible, equitable, and sustainable water resource development.

All decisions about water must be based on ecosystem and watershed-based management. Only through this method will the ecological limitations of watersheds and the damages that dams create be realized.

These decisions must be local in origin, as they directly affect the people that live in the watershed and the people that are receiving the water.

Having no vested interest in these local concerns, transnational corporations are instrumentally detrimental to the quality, cost and availability of water.

Yusufeli and its hinterland are split by hundreds of deep valleys. When the reservoir divides this region into hundreds of pieces, the socio-economical structure of the region will be completely damaged (See Figure 2). On the other hand, according to the map of The International Journal on Hydropower & Dams (2005), China, Japan, Turkey and Iran have the most dams which are higher than 60 meters. But similarly countries like the USA and Canada had only 2 dams which are higher than 60 m in 2005. It can be said that China and Japan are crowded countries and they have to build large dams. What can be said about Turkey? Is it imperative to build large and high dams to produce electricity in Turkey? Specifically the Yusufeli Project region has very productive but limited agricultural lands in the base of Çoruh River. It has almost an oasis appearance between the stony mountains (Photo.1.) Then, it is very important to investigate in order to find better ways to produce electricity for both the country and the people of future life in the region. In most of the Çoruh River Basin, people are engaged in organic agriculture.

On the other hand, the Yusufeli Dam region includes many secondary valleys where it can be very possible to found slope power plants. In this case, most of the productive lands of the basin will be able to be in use for the future. In addition, new reservoir situations will cause new lands which can be irrigated. These alternatives have not been discussed up to now. Both public opinion and local opinion include three or more dams instead of one Yusufeli dam. In fact, the structure of the basin is very useful to build dams because the hydropower of the river is high and narrow valleys allow building dams. But official authorities haven’t paid attention to other alternatives yet (Sever, 2004:161).

Resettlement of Yusufeli: Voluntary or Involuntary?

When dams are constructed in populated areas, many people are forced to relocate. The cost of moving is often placed upon the people being uprooted. This is extremely hard for poor, marginalized people to accomplish, and often leaves them poorer than before. This is especially true for small agricultural communities that, now forced into the urban settlements and its subsequent infrastructure, have no viable job skills in order to provide a living wage for themselves. Because of limits to space and resources, people are often forced to move long distances from their original homes. This, coupled with the hard transition into urban areas, often destroys traditional cultures (Devecenzi and Pinderhughes; 2003). The World
Commission on Dams estimates that worldwide, between 40 and 80 million people have been displaced by dam projects (WCD, 2000). Resettlement is the first among many challenges dam construction has to face (Yen, 2003).

Photo.1. Yusufeli town is located on the crossroads of Barhal and Ispir River.

Figure 2: Yusufeli Resettlement Area and Relocation Roads in Its Hinterland (Source: Encon, 2006b)

Turkey has had many problems about resettlement and compensation up to now (Gök, 2001; Ünal, 1998, Gök, Zaman, Altas, 2007; Bakirci, 1997). In this context, it has been seen that Yusufeli will also have a resettlement problem because at the beginning, local people were not told anything about their future. All plans were made to build a dam. Its social, cultural and economic impacts hadn’t been thought of at first. In these plans, the new location of the towns must not be worse than the previous place of the town. The people that may be adversely affected by the development intervention should be consulted, compensated for their losses, and assisted to rebuild their home and communities. Attention
to such matters is especially important when the affected people are poor and vulnerable, do not have the capacity to absorb such adverse impacts, and cannot remain productive without significant help (ADB, 1995). Otherwise people of the town will not be voluntary to the idea of resettlement.

The current situation of the town is 9 km from the Erzurum - Artvin road. If built, new Yusufeli must be nearer to this road. But it is seen that that the road will be further from new Yusufeli (Encon, 2006b). In this case the new place of Yusufeli must not cause a desire for the past. The most important thing is that authorities should pay attention in this prevention. The World Bank long ago recognized that “involuntary resettlement may cause severe long-term hardships, impoverishment, and environmental damage unless appropriate measures are carefully planned and carried out.” For these reasons, the World Bank's safeguard policy (OP 4.12) requires that involuntary resettlement “should be avoided where feasible, or minimized, exploring all viable alternative project designs” (WB, 2001). Hence, in the Yusufeli dam project, the alternatives to rescue the town from the reservoir of the dam should be considered.

Possible Positive And Negative Impacts Of The Dam

Every dam may include positive and negative impacts on the environmental, economic and social life. Tahmiscioglu et al. (2007: 762-763) indicates that dams generally may bring these positive and negative impacts on environment:

1. As a result of dam construction and holding of sediment in reservoirs, sediment feeding of downstream channel or shore beaches is prevented. Corrosions may occur. As the transfer of sediment is avoided this way, the spawning zone of the fish living in the stream ecosystem is restricted, too.

2. Archaeological and historical places in company with geological and topographical places that are rare with their exceptional beauties disappear after lying under the reservoir.

3. Reproduction of migrating fish is hindered by the floods that harm the egg beds. Or the egg gravel beds can be destroyed while the excavation and coating works in the stream beds.

4. Temperature of water, salt and, oxygen distribution may change vertically as a consequence of reservoir formation. This may cause the generation of new living species. (International River Network, 2001; Canadian Dam Association, 2001).

5. Normal passing ways of territorial animals are hindered since the dam works as a barrier. Meanwhile the upstream fish movement intending to ovulate and feed is prevented and thus the fish population decreases significantly (Stott and Smith, 2001).

6. The fish can be damaged while passing trough the floodgates, turbines, and pumps of the high bodied dams. Drainage of marshes and other water accumulations and the excavation works causing changes in the stream bed structures affect the creatures living here negatively and can even result in their death.

7. There will be serious changes in the water quality as a result of drainage water returning from irrigation that was done based on the irrigation projects. In other words, an over transfer of food and increase in salt density can raise water lichens and may change water living species.

8. The species may change parallel to the erosion caused by the human activities or the permanent increase in the water turbidity as an outcome of the dam construction.

9. Discharge of toxic matters (pesticides, toxic metals etc.) and their condensation in the food chain may affect sensitive animals immediately; all living organisms may expire when the stream becomes unable to recover.

10. The water regime may change as a result of the destruction of nature. Unexpected floods may occur and consequently vegetation and natural structures in the riverbanks can be damaged.

11. Some increase in earthquakes may occur because of filling of big dam reservoirs.
12. Rise in evaporation losses may be expected as a result of the increase in the water surface area.

13. Microclimatic and even some regional climate changes may be observed related to the changes in air moisture percentage, air temperature, air movements in big scale and the changes in the region topography caused by the stagnant, big scaled mass of water.

14. Water-soil-nutrient relations, which come into existence downstream as a result of floods occurring from time to time in a long period of time, change. Depending on this fact, compulsory changes come into existence in the agricultural habits of the people living in this region and also in the flora and fauna.

15. Dams may cause increases in water borne illnesses like typhus, typhoid fever, malaria, and cholera.

16. Dams affect the social, cultural and economical structure of the region considerably. People, whose settlement areas and lands remain under water to migrate, are negatively affected psychologically.

In this context, when the harmful effects are of the Yusufeli dam are checked in its background, it is possible to explain these main impacts:

The Yusufeli project would directly affect 15,000 people, forcing them from their homes. Up to 15,000 more people could also be indirectly affected. Thousands of people will be forced to move, threatening their livelihoods and ways of life. In addition agricultural land, mostly in the form of terraces covering the mountainside, will be lost.

The area surrounding the river is rich in wildlife, including the threatened brown bear, wild boar, wolf, jackal, and pine marten. International Fact Finding Mission, (2002) argued that much cultural heritage and subjects of wildlife would also be affected.

The current Yusufeli project would flood all the roads in the reservoir area, effectively cutting off villages from each other and causing major disruption to the economy and society of the region (see Figure 2).

The cost of re-establishing the road system flooded by the Yusufeli project could reach $2.2 billion - more than two and a half times the cost of the dam. Others put the cost at $1.5 billion. Much of this cost would be avoided, according to villagers, if Yusufeli was abandoned in favor of the three dam project, since the area flooded would be reduced and there would be no need to reconnect all the villages to a new centre. Because when it is checked in point of the view of villagers whose field will be under water the effect of the dam is negative.

Maybe the worst negative impacts of the dam will be on the nearly 15,000 villagers who live in the mountainous areas. They are connected very well to the Çoruh River base. Their lives depend on the agricultural production because they are engaged to cattle-dealing. While they are supported by the agricultural production of the Çoruh River base, the people who live in the base of the river are supported with animals and animals’ production of the mountain villagers. The dam process will absolutely cut these socio-cultural relations within two different regions and people. So, it is seemed that the people who live in the mountains will not be able to find a better life to sell their productions and to get agricultural production for their future. It means if these people are not supported by the authorities they will disappear in the near future from the whole region.

**What will be in the Future? Economic Progress or Regression?**

Options for alternative projects have not been comprehensively assessed about the Yusufeli project. Authorities have not given serious consideration to alternatives such as solar and wind power and demand and supply side management. So, the Yusufeli project is seen as an unavoidable alternative. If the dam is built, Yusufeli town should be located in a better place to aid in economic, social, tourism, and communication development. As seen in Figure 2, new Yusufeli will be built on the west coast of the dam. In the field trip by the researchers of this study, it has been seen that that new place is not large enough for the
town to grow because the current place of the town is 9 km. from the Erzurum-Artvin roads. In the new situation, this road will be further from new Yusufeli. That would result in new Yusufeli being less economical sound in the future. In addition, there will be very limited agricultural areas to feed the new town in the future. These reasons will be the determiners for a larger and more developed Yusufeli. In this context it can not be said that it will result in economic progress for Yusufeli to move to another place.

**The Situation after Resettlement**

In fact, a better place must be thought of to found new Yusufeli. In this context, it is needed to develop a geographical and sustainable development viewpoint. When it is checked from these viewpoints the new place of Yusufeli or when it is searched a new place for Yusufeli, it is very important to pay attention to these major points:

The new place of Yusufeli should be founded close to the coast of the reservoir because it is very important to protect the climate character of Yusufeli. Its altitude is 560 meters and the reservoir level will be around 720 meters. So if it is moved too high, it will absolutely lose its good climate character. In summers, present Yusufeli has a dry Mediterranean climate character. Because of its climate, every kind of Mediterranean agricultural product is grown up in Yusufeli. When the reservoir makes enough humidity, the irrigation needs will decrease around the reservoir in the future.

The place of current Yusufeli is 9 km. from the Erzurum-Artvin intercity highway. It should be considered to be placed nearer to this road. So the new place of Yusufeli should be across this road. This can help the town develop economically and makes it a transit point across this highway.

The new place of Yusufeli should have a larger hinterland than the previous place if the authorities want to prevent migration from this region. It can be possible to have a larger hinterland with its roads connected to all villages and develop this city economically, socially, and culturally. This is a good plan in the viewpoint of sustainable development.

But unfortunately, there is still a trouble about whether to build the dam or not, whether the chosen place is the right place for new Yusufeli or not, and what will be shared with local people by the formal authorities. Beside those problems and complexity, another problem will come true in the future after building the dam. The reservoir area will end on the 712 m. level. It means that almost all of the productive agriculture areas will be lost. 15.000 people who will probably have to live above the dam level will be affected badly in an economic sense.

The agricultural land in Yusufeli mostly takes the form of terraced “orchards” built on the side of the mountains. These are the result of much hard work by local people. The region around Yusufeli is largely stony and so people carried earth on their backs and made terraces to create orchards. The orchards are therefore highly valued by their owners who tend them with such care and knowledge that the land is consequently very productive and it is possible to get four different harvests a year. Most of the “orchards” will be lost after the dam is constructed because these orchards are located in the basin of the river. One more important situation about the basin: These orchards feed the whole town and its hinterland in a point of view all kinds of vegetables and fruit. So, there is an anxiety of the local people about being paid their value by government. Turkey has had those problems in similar projects. For example, in the Southeastern Anatolia Project area (GAP) has two obvious problems in the state ownership. The first one is that the state purchases lands below their actual values. The second one is that payment is not made on time and no interest aroused by the delay is paid (Akış, 2002: 164).

The socio-economic structure of the region is more complicated than thought by the producers of EIA report and components of the dam. The people who live in the mountain areas are dependent on relating to life. Hence, when the dam is completed, more than 15.000 people above the dam reservoir will regress due to the economic social situation. This population has been fed by “orchards” for years. It is seen that from the EIA, this situation has not been taken into account and it is an unknown future for these people. So it
must be considered by the authorities building the dam to not only look at the past, but after analysis of the region in the future in relation to sustainable development. This means that compensation is only given for direct impacts (i.e. loss of land due to flooding) and potential indirect impacts such as changes in size, drainage, erosion, and problems with accessing land are not considered (IFFM, 2002).

Conclusion

The impact of dams on people’s livelihood, health, social systems and culture are not easily quantified and often not considered in the analysis of the benefits of dams. The direct benefits they provide to people are typically reduced to monetary figures for economic analysis and are not often recorded in human terms (Ogbeide et al; 2003).

The people haven’t been involved effectively in the process of the dam yet in the Yusufeli project. In this process, a healthy consultation with local people by authorities could not be found. The people who live in Çoruh River Basin still don’t know what will happen in their near future. The resettlement process is developed only in favor of governmental authorities. Because of these reasons, the people in the town don’t know what to do for their future. Infirmit of purpose is dominated to life of most of the people in the valley. Local people haven’t been involved as early as possible in the EIA and still they are not thought of enough to provide important information and not informed about the project and activities of the coming changes.

The same doubts are observed between governmental authorities. These institutions are responsible for part of the process. Even they don’t know their responsibility and what to do about resettlement, road relocation, and economical and social support to people. In this ambiance, it doesn’t seem possible to inform the people who live in the valley in a healthy way. First of all, assessments and proposals for the construction of the dam and hydro-electric power plants were based solely on technical and economic criteria.

On this level, the Yusufeli dam project should be discussed again with effective participation of the local people and authorities. In the new process social, economical, ecological and cultural impacts of the dam in the future life must be evaluated. Public feelings, aspirations and demands and views on environmental loss from project proponents also needs to be apparent within the process of the dams (Khwairakpam, 2003) Even the authorities should commence a post-impact assessment of the dam on the local people who will live there after the dam with an outlook on mitigating the existing impacts and effectively managing future impacts.

Government should not consider constructing dams to produce only energy unless it is needed for irrigation. But they should consider other environmentally friendly options such as wind energy, solar energy technologies, and indigenous/local water treatment systems to complement the water supply from the dams. It is understood that authorities haven’t thought of an action plan for the future of the region. Hence, authorities should deal with a socio-economic empowerment program for the local people and flood victims of the dam. They should also put in place disaster reduction strategies for the state and these strategies must be translated into actions.

The resettlement plan is very complicated for Yusufeli. The negative consequences of the resettlement action plan, if not carefully studied and insufficiently prepared, will be quite heavy and long lasting. Therefore, high-level policies on this issue should be revised towards sustainability and the implementation should follow a strict procedure with full participation of both the affected people and the host people.

The EIA team and other authorities should pay attention to studies done by geographers in the region. Those studies deal with the region according to social, economical, cultural, and sustainable development. But none of them have been used by them up to now in the process (see Encon 2006 resettlement action plan and HEPP).


Akiş, A. (2002). The Effects of The Southeastern Anatolia Project (Gap) on the Socio-Economic Geography of The Şanlıurfa Region, Unpublished Ph.D Thesis, Selçuk University, Social Sciences Institute, Social Sciences Teaching of Secondary-Teaching Department, Geography Teaching Department, Konya.


Tuncer, M. (2000), Suda Kurudu K Kökler, Bu Yayınları, İstanbul


World Bank, (2001), Involuntary Resettlement, OP 4, p12, USA.


Yen, Cao Thi Thu (2003), Towards Sustainability Of Vietnam’s Large Dams: Resettlement In Hydropower Projects, Department of Infrastructure, Department of Infrastructure, Royal Institute of Technology, ISSN 1651 -9051, Sweden.