

A CRITICAL ANALYSIS OF SOCIAL DIMENSION IN  
SUSTAINABLE DEVELOPMENT: A CASE STUDY OF TEPEKİŞLA  
DAM AND HEPP IN TOKAT, NİKSAR

A THESIS SUBMITTED TO  
GRADUATE SCHOOL OF SOCIAL SCIENCES  
OF  
MIDDLE EAST TECHNICAL UNIVERSITY

BY

PINAR KÖSE

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR  
THE DEGREE OF MASTER OF SCIENCE  
IN THE DEPARTMENT OF  
SOCIAL POLICY

SEPTEMBER 2012

Approval of the Graduate School of Social Sciences

---

Prof. Dr. Meliha Altunışık  
Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Science/Arts/Doctor of Philosophy.

---

Assist. Prof. F. Umut Beşpınar  
Head of Department

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Science.

---

Assoc. Prof. Dr. Sibel Kalaycıoğlu  
Supervisor

**Examining Committee Members**

Assoc. Prof. Dr. Şule Güneş (METU, IR)

Assoc. Prof. Dr. Sibel Kalaycıoğlu (METU, SOC)

Assist. Prof. Dr. Çağatay Topal (METU, SOC)

**I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.**

Name, Last Name: Pınar Köse

Signature:

## **ABSTRACT**

### **A CRITICAL ANALYSIS OF SOCIAL DIMENSION IN SUSTAINABLE DEVELOPMENT: A CASE STUDY OF TEPEKİŞLA DAM AND HEPP IN TOKAT, NİKSAR**

Köse, Pınar

M.S., Social Policy

Supervisor: Assoc. Prof. Dr.Sibel Kalaycıoğlu

September 2012, 109 pages

This study aims to make a critical analysis of the social dimension of sustainable development as implemented within the Environmental Impact Assessment (EIA) process. Social dimension can be assessed on the basis of six social indicators, which are social accountability, local self-reliance, basic human needs, degree of participation, equity, and appropriate technology. In this context, a field study is conducted in four villages which will be affected by the Tepekışla Dam and Hydroelectric Power Plant (Project). During the environmental and social impact assesment study, public participation meetings (PPM) were held by the project owners and those villages are included in this meeting. During the field study for thesis, 30 questionnaires were conducted with villagers who have participated in those PPMs.

Analyses of the field data indicated that the assessment of the environmental dimension of sustainability according to the EIA By-Law has been fully fulfilled but social dimension is being avoided by the project owners during the assessment study of such

energy projects. Participation of women in the current process of PPM is not encouraged in the social assessment process so that the respondents' opinions are not well representative in terms of gender participation.

Mostly, social indicators like basic human needs and local self-reliance of stakeholders shape their positive or negative perceptions of the Project. Expectation of improvement of infrastructure after the project is implemented is the main reason for positive view in addition to improvements in creation of alternative sources of income and employment which also plays an important role for positive opinions. Moreover, it is observed that previous experience affects opinions on the Project very much that if the previous experience is negative then the current opinion for the Project is also directly negative.

Keywords: Social Dimension, Sustainable Development, Social Indicator, Environmental Impact Assessment, Public Participation Meeting

## ÖZ

### SÜRDÜRÜLEBİLİR KALKINMA SÜRECİNDE SOSYAL GÖSTERGE ÜZERİNE ELEŞTİREL BİR ANALİZ: NİKSAR, TOKAT, TEPEKİŞLA BARAJ VE HİDROELEKTRİK SANTRALI PROJESİ ÖRNEK ÇALIŞMASI

Köse, Pınar

Yüksek Lisans, Sosyal Politika

Tez Yöneticisi: Doç. Dr. Sibel Kalaycıoğlu

Eylül 2012, 109 sayfa

Bu çalışma, Çevresel Etki Değerlendirme (ÇED) süreci içinde uygulanan sürdürülebilir kalkınma sosyal boyutuna bir eleştirel analiz yapmayı amaçlamaktadır. Sosyal boyutu, sosyal sorumluluk, yerel kaynak kullanımı, temel insan ihtiyaçları, katılım derecesi, eşitlik ve uygun teknoloji alt yapısı şeklindeki altı sosyal gösterge temelinde değerlendirilebilir. Bu kapsamda, Tepekışla Baraj ve Hidroelektrik Santral (Proje)'nin çalışmalarından etkilenecek dört köyde saha çalışması yapılmıştır. Çevresel ve sosyal etki değerlendirme çalışmaları sırasında proje sahipleri bu dört köyü de içine alacak şekilde bir Halkın Katılımı Toplantısı (HKT) gerçekleştirmişlerdir. Tez için hazırlanan saha çalışması sırasında, bu köylerden sadece HKT'ye katılmış köylüler ile 30 anket çalışması yürütülmüştür.

Buna dair veriler incelendiğinde, çalışmanın en önemli bulgusu, ÇED Yönetmeliği'ne göre ÇED sürecine tabi olan enerji projelerinin çevresel etki bakımından incelenmekle birlikte, sosyal etki boyutunun yeterince ele alınmamış olması nedeniyle sosyal etki değerlendirmesi bakımından önemli eksiklikler taşıdığıdır. Kadınların katılımının

desteklenmemesi, katılım sürecinin cinsiyet temelinde de eksik ve sorunlu yürütülmesine yol açmaktadır.

Katılımcıların proje üzerindeki olumlu ya da olumsuz fikirleri genel olarak temel ihtiyaçları ve yerel kaynak kullanımı nedeniyle etkilenmektedir. Altyapının geliştirilmesi isteği pozitif fikir beyanında ilk sırada yer almaktadır. Buna ek olarak, iş imkanlarının artması ile gelirlerinin artması isteği projenin uygulanması için pozitif fikir ortamı yaratmaktadır. Diğer yandan, katılımcı anketleri incelendiğinde, benzer projelere ait deneyimlerin katılımcının mevcut proje üzerinde fikirlerini öneli ölçüde etkilemektedir. Bu etki o kadar büyük bir etmendir ki, bir önceki deneyimin olumsuz olması durumunda mevcut proje ile ilgili de direk olarak olumsuz düşünmelerine neden olmaktadır.

Anahtar Kelimeler: Sürdürülebilir Kalkınma, Sosyal Boyut, Sosyal Gösterge, Çevresel Etki Değerlendirmesi, Halkın Katılımı Toplantısı

## **ACKNOWLEDGEMENTS**

First of all, I denote my gratitude and my sincere appreciation to my supervisor Sibel Kalaycıoğlu for her guidance. She inspired me by her comments and feedbacks but mostly her consistently patience with my work and master thesis helped me to pass through the whole stage of my Social Policy Programme.

I also express my genuine thanks to Assoc. Prof. Şule Güneş for her guidance from the research stage to the examining committee. I learned a lot during the courses that I have taken from her, not only for my Social Policy Programme but also for my environmental engineering background.

Also, I want to express my special thanks to Assis. Prof. Çağatay Topal for his kindness to accept in participating and for her valuable comments in my examining committee.

Moreover, I want to give special thanks to my dear four close friends Ayşe Yaşar, Hande Küçükcoşkun, Pelin Taşanlar and Zeynep Şaklar who gave their love and support every time I needed. Thank you for everything that helped me on my way to finish this thesis. I owe you lot because you took away my load more than you think you did.

Last but not least, I owe my deepest gratitude to my family, my parents and my dear brother. I thank my brother, Orhun Köse, for all his support and trust for me to complete this thesis and also his help for conducting field study. It wouldn't be easier for me if you were not in my life.



## TABLE OF CONTENTS

PLAGIARISM.....	iii
ABSTRACT.....	iv
ÖZ .....	vi
ACKNOWLEDGEMENTS .....	viii
TABLE OF CONTENTS .....	ix
LIST OF TABLES .....	xi
LIST OF FIGURES .....	xii
LIST OF ABBREVIATION .....	xiii
CHAPTERS	
1. INTRODUCTION .....	1
1.1. General.....	1
1.2. Sustainable Development as a Concept .....	2
1.3. EIA as a Technical Tool for Sustainable Development .....	8
1.6. The Case Study: EIA Process of Tepekışla Dam and HEPP .....	21
1.7. Methodology of Study .....	22
1.8. Limitation of the Study .....	24
2. TEPEKİSLA DAM AND HYDROELECTRIC POWER PLANT (HEPP).....	26
2.1. Introduction.....	26
2.2. Brief Description of the Project Area and Vicinity.....	27
2.3. Technical Information of the Tepekışla Dam and HEPP.....	28
2.4. Economical Dimension Assessment of Tepekışla Dam and HEPP According to EIA Report.....	32
2.6. Social Dimension Assessment of Tepekışla Dam and HEPP According to EIA Report..	39
3. FIELD STUDY FOR THE ANALYSIS OF SOCIAL INDICATORS OF THE TEPEKİŞLA DAM AND HEPP .....	46
3.1. Analysis on Social Accountability .....	46
3.1.1. Socio-demographic Profile of the Respondents.....	47

3.1.2. Socio-economic Profile of the Respondents .....	50
3.2. Analysis of Local Self-reliance.....	54
3.3. Analysis of Basic Human Needs.....	55
3.4. Analysis of Participation.....	57
3.5. Analysis of Equity.....	58
3.6. Analysis of Appropriate Technology .....	59
3.7. Conclusion .....	59
4. CONCLUSION AND POLICY RECOMMENDATIONS .....	67
REFERENCES.....	76
APPENDICES	
APPENDIX A: LIST OF RESPONDENTS .....	83
APPENDIX B: TEPEKİŞLA DAM AND HEPP PROJECT 1/40.000 SCALED SATELLITE MAP .....	84
APPENDIX C: TECHNICAL SPECIFICATIONS OF TEPEKİŞLA DAM AND HEPP PROJECT.....	85
APPENDIX D: LIST OF PARTICIPANTS IN PUBLIC PARTICIPATION MEETING .....	88
APPENDIX E: TABLE OF MUHTARS' QUESTIONNAIRE ANALYSIS .....	98
APPENDIX F: TABLE OF RESPONDENTS' QUESTIONNAIRES ANALYSIS .....	106
APPENDIX G: TEZ FOTOKOPİSİ İZİN FORMU .....	109

## **LIST OF TABLES**

### **TABLES**

Table 1 The Cost of Tepekışla Dam and HEPP Project.....	34
Table 2 Property Ownership Status of the Lands that are Necessary for Project Units...	41
Table 3 Populations of Doğayurt, Ayan, Kümbetli and Buzköy Villages .....	48
Table 4 Agricultural Land and Animal Ownership of Respondents.....	53
Table 5 Public Services, Social and Cultural Opportunities of Villages .....	53

## LIST OF FIGURES

### FIGURES

Figure 1 The overlapping zones of sustainable development represented by ‘ecological modernization’ (Pinfield, 1996) .....	5
Figure 2 Taken During the PPM in Niksar (Source: DOKAY, 2011) .....	44
Figure 3 Taken During the PPM in Tepekışla (Source: DOKAY, 2011) .....	45
Figure 4 Age Distribution of Respondents.....	47
Figure 5 Educational Status .....	49
Figure 6 Occupation of Respondents .....	51
Figure 7 Main Types of Crops Planted in Four Villages .....	51
Figure 8 Stockbreeding Types of Respondents.....	52
Figure 9 Villages of Respondents’ vs their Perceptions according to the Project .....	55
Figure 10 Opinions on Public Participation Methods for Future Implementations .....	58
Figure 11 Number of Positive and Negative Perceptions of Respondents’ vs. Without Previous Experience about HEPP .....	62
Figure 12 Number of Positive and Negative Perceptions of Respondents' vs. Previous Experience about HEPP .....	63

## **LIST OF ABBREVIATION**

DOKAY	Dokay ÇED Engineering and Consultancy Ltd. Co.
EAC	Examination and Assessment Commission
EAP	Environment Action Programme
EIA	Environmental Impact Assessment
EU	European Union
Gwh	Giga watt/hour
HEPP	Hydroelectric Power Plant
Km	kilometer
km <sup>2</sup>	square kilometer
kV	kilo Volt
m	meter
m <sup>2</sup>	square meter
MDG	Millennium Development Goal
Mm	milli meter
MoEF	Ministry of Environment and Forestry
MoEU	Ministry of Environment and Urbanization
MW	Mega watt
NEAP	National Environmental Action Plan
NGO	Non-governmental Organization
NSDS	National Sustainable Development Strategies
PPM	Public Participation Meeting
SDS	Sustainable Development Strategy
SEA	Strategic Environmental Assessment
Sec	second
SHW	State Hydraulic Works

TL	Turkish Lira
TURKSTAT	Turkish Statistics Association
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environmental Programme
USD	U.S. Dollar
WCED	World Commission on Environment and Development

## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1. General**

Sustainable development has become of interest to disciplines to sustain the potential long-term maintenance of well-being that has three pillars; environmental, economic and social. Sustainability considers our economic, social and environmental needs and involves taking responsibility to minimize negative human impact at local, regional and global scale.

Different conferences, treaties and declarations were set up in connection with the topic of sustainable development in the last three decades. During the different periods of these conferences analysis of interference between three (economic, environmental and social) pillars with each other gone through an evolution. Assessment tools had been developed from international to national scale.

This chapter explains the historical evolution of sustainable development and “three pillars” especially social sustainability. Moreover, the linkage between sustainable development and its technical and legal tool Environmental Impact Assessment (EIA) is explained.

General aim of the EIA process is monitoring and inspection of the projects which are within the scope of EIA before, during, and after their operational period. EIA includes; the studies to be carried for determining the expected positive or negative impact that the projects will have on the environment and social, studying possible environmental

protection measures relating to these projects by inclusion of stakeholders in order to minimize negative effects, determining and assessing selected technological alternatives and locations, and monitoring and controlling the implementation of such projects.

In the following sections, I used description of sustainable development and its “three pillars”, evaluation of EIA from some scholars and researchers to describe the concept.

## **1.2. Sustainable Development as a Concept**

Linkage of environment and development became an important policy area in international arena especially in United Nations (UN). It starts at 1970s through Founex Report<sup>1</sup>, in 1971, which calls for the integration of environment and development strategies. This acknowledgement was a factor in persuading many developing countries to attend the 1972 Stockholm Conference. Environment and development was stated in main output of the United Nations Conference on Human Environment, Stockholm Declaration<sup>2</sup> Article 11 which lead the concept of sustainable development is cohesively argued to present a satisfactory resolution to the environmental vs. development dilemma. The conference leads to the establishment of numerous national environmental protection agencies and the United Nations Environment Programme (UNEP) was founded as a result of the Conference<sup>3</sup>.

Environment and Development were reconciled by the concept of Sustainable Development starting from 1987 Brundtland Report<sup>4</sup>. In the last half of the twentieth century, sustainable development is defined in many different ways, but the most

---

<sup>1</sup> *Development and Environment: The Founex Report; In Defense of the Earth, The Basic Texts on Environment*, UNEP, Executive Series 1, Nairobi 1981.

<sup>2</sup> *The United Nations Conference on the Human Environment, having met at Stockholm from 5 to 16 June 1972, having considered the need for a common outlook and for common principles to inspire and guide the peoples of the world in the preservation and enhancement of the human environment*, <http://www.unep.org/Documents.Multilingual/Default.asp?documentid=97>

<sup>3</sup> For detailed information about structure of UNEP visit <http://www.unep.org/>

<sup>4</sup> *World Commission on Environment and Development (WCED), the Brundtland Commission's mission is to unite countries to pursue sustainable development together. The Chairman of the Commission, Gro Harlem Brundtland, was appointed by Javier Perez de Cuellar, former Secretary General of the United Nations, in December 1983.* <http://www.un-documents.net/wced-ocf.htm>



frequently quoted definition is from Our Common Future Report or also known as the Brundtland Report (World Commission on Environment and Development (WCED), 1987);

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."<sup>5</sup>

Our Common Future Report focused on the critical issues of equity and environment and raised important ethical considerations regarding human-environment relationships (Langhelle, 1999) that remain highly relevant. The decline in equity and environmental quality since this report should certainly give pause to proponents and critics alike; the failure to stem the tide of unsustainable human activities can be linked to both ineffective institutions and a general lack of political will on the part of governments and citizens at multiples scales. The rise in our scientific understanding of climate change and other global biophysical transformations and their profound implications for the health of the planet, along with the increasing awareness that solutions will have to address vast inequities in human development capabilities, underscores this point. Thus, the concept and practice of sustainable development remains salient in confronting the multiple challenges of our new global context.

Moreover, Our Common Future Report marked, anchored, and guided the rise of political debate; creating a whole new political discourse across contesting interests, from grounded practitioners to philosophical academics, from indigenous peoples to multinational corporations. Sustainability may yet be possible if sufficient numbers of scholars, practitioners and political actors embrace a plurality of approaches to and perspectives on sustainability, accept multiple interpretations and practices associated with an evolving concept of “development”, and support a further opening up of local-

---

<sup>5</sup>From A/42/427. *Our Common Future: Report of the World Commission on Environment and Development, Chapter 2: Towards Sustainable Development*, page 1, 1987.

to-global public spaces to debate and enact a politics of sustainability (Sneddon et al, 2006).

Moreover, the Our Common Future Report states that economic development cannot stop, but it must change the concerns on sustainable world to fit within its ecological limits.

After publication of Our Common Future Report, there were political and policy changes in the concept and practice of sustainable development. It should be noticed that all definitions of sustainable development point out that we should see the world as a whole system which is developed by interaction between the “three pillars”. As it can be understood these three pillars of sustainable development are economic, environment and social pillars.

Figure 1, a view of the characteristic overlapping zones of interest which epitomise this interpretation of a sustainable development pathway. An essential element of this pathway is the recognition that the characteristics of places vary considerably and that policies, indicators and methods of evaluation should recognise this spatial distinctiveness. As it is shown in the figure, there are six social indicators for social sustainability as: Local self-reliance, Basic Human Needs, Equity, Participation, Social Accountability and Appropriate Technology.

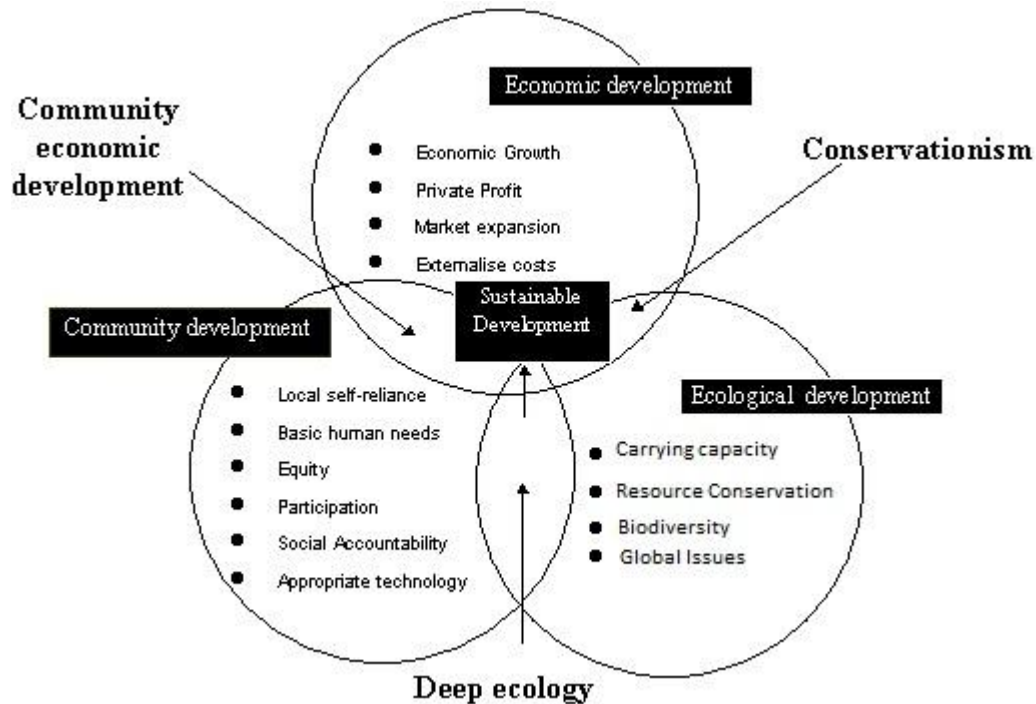


Figure 1 The overlapping zones of sustainable development represented by 'ecological modernization' (Pinfield, 1996)

Uncertainty over whether the new paradigm requires adherence to a .strong. or weak. Interpretation of sustainability has been the source of much of the confusion in developing appropriate indicators to measure performance in sustainable development. If any one of these pillars is weak then the system as a whole is unsustainable.

To analyze the unsustainability problem on sustainable development, LeLe (1991) who has a broad interest in resource and environmental issues, argues about two goals came up with Our Common Future Report;

“While the broad goals were widely embraced, critics argued that steps toward their implementation would be thwarted; first, by fundamental contradictions between the renewed call for economic growth in developing countries and enhanced levels of ecological conservation; and, second, by the inattention to power relations among the local-to-global actors and institutions supporting unsustainable development”.

Although the ambiguous and changeable form of sustainable development brought arguments on “unsustainability” of sustainable development in 90s, it is still in condition that second goal, “inattention power to relations among the local-to-global actors and institutions supporting unsustainable development” is still has an unknown gap between sustainable development and of the role of social actors.

After the global effects of Our Common Future Report, the United Nations Conference on Environment and Development (UNCED) organized in between June 3rd – 14th 1992 has been a turning point with respect to incorporation of the Sustainable Development into the various hard law and soft law instruments such as Rio Declaration<sup>6</sup>, Agenda 21<sup>7</sup>, United Nations Framework Convention on Climate Change<sup>8</sup> and so on.

However, concept of sustainable development stayed as a paradigm and this controversial situation continues from 2002, with World Summit on Sustainable Development in Johannesburg to 2012, with United Nations Conference on Sustainable Development in Rio de Janeiro or also knows as Rio +20 Conference. The Rio+20 Conference had three objectives: i) securing renewed political commitment to sustainable development, ii) assessing the progress and implementation gaps in meeting already agreed commitments, and iii) addressing new and emerging challenges<sup>9</sup>.

---

<sup>6</sup>A set of 27 universally-applicable Principles to help guide international action on the basis of environmental and economic responsibility. <http://www.unep.org/Documents.Multilingual/Default.asp?documentid=78&articleid=1163>

<sup>7</sup> Agenda 21 sets a thorough and broad-ranging programme of actions demanding new ways of investing in our future to reach global sustainable development. <http://www.un.org/esa/sustdev/documents/agenda21/english/Agenda21>.

<sup>8</sup>A legally-binding agreement, signed by 154 governments at the Summit in Rio, its ultimate objective is the "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic (man-made) interference with the climate system. <http://unfccc.int/2860.php>

<sup>9</sup>The United Nations Conference on Sustainable Development (UNCSD) is being organized in pursuance of General Assembly Resolution 64/236 (A/RES/64/236), and will take place in Brazil on 20-22 June 2012 to mark the 20th anniversary of the 1992 United Nations Conference on Environment and Development (UNCED), in Rio de Janeiro, and the 10th anniversary of the 2002 World Summit on Sustainable Development (WSSD) in Johannesburg. <http://www.uncsd2012.org/about.html>

From global scale to the regional scale, sustainable development is also an important concept for the European Union (EU). As it is mentioned above that global scale tools are in use for nations for sustainable development, there are also EU Sustainable Development Strategy (SDS) and its tools. The renewed EU SDS sets out a single, coherent strategy on how the EU will more effectively live up to its long-standing commitment to meet the challenges of sustainable development. It recognises the need to gradually change our current unsustainable consumption and production patterns and move towards a better integrated approach to policy-making<sup>10</sup>. The EU tools for three pillar of sustainable development consist of directives and action plans. Some general facts and the timeline of the concept are shown.

The overall aim of the EU SDS is to identify and develop actions to enable the EU to achieve a continuous long-term improvement of quality of life through the creation of sustainable communities able to manage and use resources efficiently, able to tap the ecological and social innovation potential of the economy and in the end able to ensure prosperity, environmental protection and social cohesion.

Even if sustainable development is a controversial concept and no matter how much it is being argued about, it is the center and heart of implementation process' of environmental policies. Moreover, it has technical and legal tools for better implementation process such as EIA. EIA is a planning and management tool which is being improved by evolution of sustainable development.

Nieslony (2004) who is a German researcher and studied effectiveness of EIA in promoting sustainable development in Germany says that, "the concept of sustainable

---

<sup>10</sup>In July 2009 the Commission adopted the 2009 Review of EU SDS. It underlines that in recent years the EU has mainstreamed sustainable development into a broad range of its policies. In particular, the EU has taken the lead in the fight against climate change and the promotion of a low-carbon economy. At the same time, unsustainable trends persist in many areas and the efforts need to be intensified. <http://ec.europa.eu/environment/eussd/>

development has the potential to become a paradigm, on the basis of ecological, economic and social considerations, which can influence society's behavior towards the human and natural environment implemented by planning and management tools like EIA.”. Nieslony states the reason for this is that much research has been done on the general issue of effectiveness of EIA, which is variably defined, however there is little systematic consideration of the relationship between EIA and the concept of sustainable development. Therefore, in order to have an effective EIA process in accordance with sustainable development, EIA process has to be analyzed more systematically in countries with regulation on environmental assessment.

### **1.3. EIA as a Technical Tool for Sustainable Development**

Since researchers have developed and re-developed “definitions” for the concept of sustainable development, there has also been the growing awareness of the need to measure sustainability (Moffatt et al., 2001). Whilst the measurement of environmental impacts of a development against certain standards (e.g. air quality standards) provides information about the current environmental performance, it does not assess whether the development is ‘sustainable’ or not in the long-term (Kuik and Verbruggen, 1992). Therefore, the introduction of “measurement instruments” was regarded as necessary to put the theoretical concept of sustainable development into concrete form (Becker and Jahn, 1999). Given their long record of use in fields such as economics, social accountability and environmental science, indicators were seen as the logical device to actually do and assess sustainable development (Bell and Morse, 2003).

Therefore EIA is one of the “measurement instruments” where necessary theoretical and practical concepts of sustainable development are transformed into concrete form. For this, a variety of research has been done on the interpretation and explanation of so in order to establish specific sustainability criteria against which the EIA process can be assessed (e.g. George, 1999; Bosshard, 2000).

In 1987, UNEP developed a tool an EIA guideline to obtain and evaluate environmental information prior to its use in decision-making in the development process according to environmental law. This information consists, basically, of predictions of how the environment is expected to change if certain alternative actions are implemented and advice on how best to manage environmental changes if one alternative is selected and implemented.

By this guideline UNEP aimed to broaden the usage of EIA all around the world and to bring clearness and effectiveness on the participative, informative and assistive principles of the EIA process according to the environmental law. This aim influenced the concept of EIA from global scale to regional scale including other branches of UN body such as United Nations Economic Commission for Europe (UNECE)<sup>11</sup>. Under this mandate, UNEP is actively engaged in EIA and Strategic Environmental Assessment (SEA) capacity building at the national and international levels and with specific reference to the needs of developing countries and states with economies in transition.

Ever since the 1972 UN Conference on the Human Environment, which established the nexus between development and environmental integrity, environmental issues have become transnational. Awareness has generated of the devastating impact of uncontrolled exploitation of environmental resources. Brundtland Commission inspired from this idea of Stockholm Conference and stated that the EIA is the main planning and management tool for sustainable development principles.

---

<sup>11</sup>The United Nations Economic Commission for Europe (UNECE) was set up in 1947 by ECOSOC. It is one of five regional commissions of the United Nations. UNECE's major aim is to promote pan-European economic integration. To do so, it brings together 56 countries located in the European Union, non-EU Western and Eastern Europe, South-East Europe and Commonwealth of Independent States and North America. All these countries dialogue and cooperate under the aegis of UNECE on economic and sectoral issues

The broad aim of UNECE's environment activities is to safeguard the environment and human health, and to promote sustainable development in its member countries in line with Agenda 21. The practical aim is to reduce pollution so as to minimize environmental damage and avoid compromising environmental conditions for future generations. UNECE has negotiated three environmental treaties, all of which are now in force:

- Espoo Convention, Convention on Environmental Impact Assessment in a Transboundary Context;
- Aarhus Convention, Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters; and
- Protocol on Strategic Environmental Assessment. <http://www.unece.org/>

Besides these Our Common Future Report put the term on the map for EIA by planting seeds for SEA tool. SEA is the assessment of the wider environmental, social and economic impacts of alternative proposals at the beginning of a project.

SEA is a tool that evolved from EIA. Whereas EIA is applied at the project level and considers specific environmental impacts, SEA is applied at policy, programme and planning levels<sup>12</sup>.

The work of the WCED on publication of Our Common Future Report and planting seeds of SEA laid the groundwork for the convening of the 1992 “Earth Summit” and the adoption of Agenda 21 and Rio Declaration on Environment and Development.

With regard to Agenda 21 and at the 17<sup>th</sup> Session of the UNEP Governing Council (Nairobi, 1992) UNEP was asked to “.... (undertake) further development and promotion of the widest possible use of environmental impact assessment, including activities carried out under the auspices of UN specialised agencies,” and “.... promote widespread use of EIA procedures by governments and, where appropriate, international organizations as an essential element in development planning and for assessing the effects of potentially harmful activities on the environment” by UNCED (Abaza et al., 2004, pp 1).

Doubtless the EU developed a significant international leadership role in global environmental politics and more recently in sustainable development issues. The first EU EIA Directive was accepted in 1985 (Directive 85/337/EEC)<sup>13</sup>. The EIA Directive of 1985 has been amended three times in accordance with conventions and developments, in 1997, in 2003 and in 2009. The final version of the EU EIA Directive has amended in 2009 so that the initial Directive of 1985 and its three amendments have been codified by Directive 2011/92/EU of 13 December 2011.

---

<sup>12</sup>[http://www.unepce.org/env/eia/sea\\_protocol.html](http://www.unepce.org/env/eia/sea_protocol.html)

<sup>13</sup><http://ec.europa.eu/environment/eia/eia-legalcontext.htm>



First amendment of EU EIA Directive had an influence from one of the UNECE conventions called Convention on Environmental Impact Assessment in a Transboundary Context or so called Espoo Convention<sup>14</sup>. With Espoo Convention it has been released that environmental threats do not occur only in national borders. Governments have realized that to avert this danger they must notify and consult each other on all major projects under consideration that might have adverse environmental impact across borders. So, Espoo Convention is accepted as a key step to bringing together all stakeholders to prevent environmental damage before it occurs.

Same as Espoo Convention, UNECE conducted a Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters Danish city of Aarhus, in 1998. As it can be understood from the name of Convention, the aim was to link environmental rights with human rights. Therefore, under the influence of Aarhus Convention<sup>15</sup>, EU EIA Directive 2003/35/EC was amended to align the provisions on public participation in decision-making and access to justice in environmental matters.

During the inclusion of the right to participate in environmental decision-making process, arrangements are to be made by public authorities to enable the public affected and environmental NGOs to comment on, for example, proposals for projects affecting the environment, or plans and programmes relating to the environment, these comments to be taken into due account in decision-making, and information to be provided on the final decisions and the reasons for it.

---

<sup>14</sup>The Espoo Convention sets out the obligations of Parties to assess the environmental impact of certain activities at an early stage of planning. It also lays down the general obligation of States to notify and consult each other on all major projects under consideration that are likely to have a significant adverse environmental impact across boundaries. <http://www.unece.org/env/eia/>

<sup>15</sup> The subject of the Convention goes to the heart of the relationship between people and governments. The Convention is not only an environmental agreement, it is also a Convention about government accountability, transparency and responsiveness. The Aarhus Convention grants the public rights and imposes on Parties and public authorities obligations regarding access to information and public participation and access to justice. The Aarhus Convention is also forging a new process for public participation in the negotiation and implementation of international agreements. <http://www.unece.org/env/pp/introduction.html>

EIA has become a significant policy tools for the international financial institutions as a requirement for lending activities. These requirements are similar to UN and EU criteria and rely on international best practice in the sustainable development field. International financial institutions have developed specific requirements on key environmental issues that are mandatory for social and environmental assessment of the project. The main international instruments regulating the social and environmental assessment are the requirements of the World Bank, in particular – the International Finance Corporation and the European Bank for Reconstruction and Development.

During 1970s, it is observed that these development projects caused negative impact on conservation of natural resources and demographic structure of their locations. For this reason, sustainable development became fundamental to the World Bank mission after 1970s. World Bank is one of the global instute<sup>16</sup> that lends funds for infrastructure developments. It acts as an institute with data bank and data sharing hub for EIA and SEA.

Moreover, tools are introduced for implementation of sustainable development and environmental assessment with policy makers, civil society, and the private sector to address climate change and encourage inclusive green growth.

The World Bank developed Environment and SDSs that provided the conceptual framework for setting priorities, strengthening the policy and institutional framework for sustainable development, and addressing key environmental and social development challenges through projects, programs, policy dialogue, and partnerships.

According to “Definition of Scope of Work for Environmental Impact Assessment and Feasibility Study” of World Bank, Public Consultation and Participation take great place

---

<sup>16</sup> There are still debates on expression on “global instute” because of the selection of their projects where they lend their funds.

in the scope of EIA process. The Public Consultation and Participation process will continue through project implementation and facility operation.

According of World Bank on Public Consultation and Participation process, the consultant which is conducting the EIA process of a development project should work with an NGO to be mobilised by the Government as part of the team to design and facilitate the implementation of a suitable consultation process, ensuring that public views are considered in project design and subsequently incorporated in construction and operation phases. The Consultant should assist local authorities to:

- identify and form a stakeholders group, and periodically convene it to obtain feedback;
- assist the stakeholders group in preparing and disseminating public information;
- assist the group in establishing mechanisms and conduits for consulting communities and representative groups;
- keep record of information and consultation; and
- propose a strategy for continuing community and NGO monitoring during facility construction and operation (World Bank, 1996).

Through its analytical and technical assistance and lending programs the World Bank has developed strong criteria to support environment and social objectives in accordance with sustainable development. This approach brought obligations for project owners for their World Bank funded development projects to use social impact assessment throughout their assessment, implementation and operational process. Therefore, it is observed that World Bank lended projects conducted better social impact assessment processes rather than the ones that are not lended.

The public participation would be one of the main tools toward the process, but since the concept became a ‘magnet for special interest groups’ or ‘stakeholders’ the citizens are confused with the meaning of the sustainable development.

Turkey follows international arena for evaluation of sustainable development policies. Turkey has attended to Stockholm and Rio Conferences and the legal outcomes of these conferences bind Turkey either as hard-law and soft-law instruments. Moreover, Brundtland Report is translated into Turkish and has been integrated into implementation of sustainable development policies. Furthermore, the negotiations about the environment chapter of the EU accession process were opened in December 2009 and the environment chapter creates substantial commitments on Turkey.

At the moment, government approach to sustainable development is manifested in the current development plan by Ministry of Development (formerly named as State Planning Organization)<sup>17</sup>, Turkey's commitment to MDGs and Turkey's EU accession plans. Turkey is currently developed a National SDS to sustainability recently by establishing organizations and being involved in projects dedicated to sustainable development in contribution with private sector and NGOs.

The most prominent formal document that integrates the concept of sustainable development in Turkey is the "Ninth Development Plan, 2007-2013"<sup>18</sup>, which is the ultimate formal manifestation of development plans covering the period between 2007 and 2013, prepared by the Ministry of Development. National development plans were started to be prepared in Turkey in 1963.

Following 2013, study on The Tenth Development Plan<sup>19</sup> has started and it will be in action, covering the next seven years from that year on, in line with the EU fiscal calendar. Ministry of Development already started the preliminary work on the next Plan

---

<sup>17</sup> The Ministry of Development, established in 2011, builds over the competences previously accumulated by the State Planning Organization which was working under the orders of the prime minister, and was authorized to make national plan

<sup>18</sup> The Ninth Development Plan specifically incorporates the principle of sustainability into social, economic and cultural policies at national, regional and local scales in Turkey. With a closer look into the Ninth Development Plan, <http://ekutup.dpt.gov.tr/plan/plan9.pdf>

<sup>19</sup> The Tenth Development Plan is being prepared by commissions, [http://www.dpt.gov.tr/DocObjects/View/14324/Onuncu\\_Kalk%C4%B1nma\\_Plan%C4%B1\\_%C3%96zel\\_%C4%B0htisas\\_Komisyonlar%C4%B1\\_El\\_Kitab%C4%B1.pdf](http://www.dpt.gov.tr/DocObjects/View/14324/Onuncu_Kalk%C4%B1nma_Plan%C4%B1_%C3%96zel_%C4%B0htisas_Komisyonlar%C4%B1_El_Kitab%C4%B1.pdf)

and announces that sustainable development will be more explicit in Tenth Development Plan, integrating the concept of sustainable development in a wider range of sectors.

The National Environmental Action Plan (NEAP) is another policy document within the domain of sustainable development. For its preparation, the NEAP Project has been implemented in collaboration with the MoEU (formerly named as Ministry of Environment and Forestry)<sup>20</sup> and Ministry of Development and with the contribution of stakeholders between 1995 and 1998. Sustainability in environmental terms is integrated in this plan. Within the scope of the project, 19 thematic reports are designed based on environment issues.

The most important tool of sustainable development in Turkey has enacted in 1983 and revised in 2006, Environment Law No 2872 is the first legislation that pronounces sustainable development as a strategic aim. It continues to provide a legal framework for many regulations scattered throughout Turkish legislation that seek to clarify and elaborate its intentions, including EIA. The aim of the Environment Law is not only to prevent and eliminate environmental pollution, and also to ensure management of natural and historic assets and the land in such a way as to utilize its richness and preserve it for future generations.

Accordingly, the first article of the Law is revised to bring preservation of environment in line with the sustainable development principles. Article 10 of the Turkish Environment Act provides the necessity of environmental impact assessment reports or project profile files for all activities and infra or superstructure projects. The Environment Law makes reference to monitoring of environmental data, which regarding the strategic aim of the Law, makes it the first regulation that covers sustainable development evaluations.

---

<sup>20</sup>Prior to establishment of the Ministry of Environment and Forestry, a General Directorate of Environment has been founded under the Prime Ministry in 1978. In 1991, this organization was reorganized as the Ministry of Environment. In 2003, the Ministry of Environment has been united with the Ministry of Forestry. In June 2011, it divided into two ministries by Ministry of Environment and Urbanization and Ministry of Forestry and Water Affairs.<http://www.csb.gov.tr/turkce/>, and <http://www.ormansu.gov.tr/osb/AnaSayfa.aspx?sflang=tr>

The first EIA By-Law<sup>21</sup> is drafted in 1993<sup>22</sup> where ten years have passed from the adoption of Turkish Environment Act Article 10 and natural environment has continued to be affected because of human activities. Final version of EIA By-Law enacted in 2008. The regulation presents a detailed description of which projects are required to submit an EIA report and which projects are eligible for submitting only project information files that do not include an EIA report by scope of Annex I and Annex II. In other words, the regulation presents a guideline for monitoring the environmental impact of all infra and superstructure projects. Although the by law does not make direct reference to sustainability, there are some implicit considerations of sustainability in the articles.

In global and EU perspective, the EIA process of a project is assessed with “three pillars” that interfere with each other during the construction and operation periods. However, when compared with the assessment on biophysical environment and economical impact, impact on social dimension has not been widely adopted in the assessment and decision making-process in Turkish EIA By-Law. For Annex I projects, social dimension in EIA process is studied under few headlines in EIA Report according to Special Format Determination Meeting if it is found necessary by the commission. On the other hand, there is no social impact assessment report or study is included in EIA process of the projects. Moreover, Information Files for Annex II projects do not include any chapter or headlines for assessment of social dimension. Therefore, social dimension is avoided in the Turkish EIA process.

---

<sup>21</sup><http://www.mevzuat.gov.tr/Metin.Aspx?MevzuatKod=7.5.12256&sourceXmlSearch=&MevzuatIliski=0>

<sup>22</sup>EIA by law was first drafted and entered into force by February 7, 1993 dated and 21489 numbered Official Gazette. By Law was amended and revised in various times by June 23, 1997 dated and 23028 numbered Official Gazette, by June 6, 2002 dated and 24777 numbered Official Gazette, by December 16, 2003 dated and 25318 numbered Official Gazette, by July 17, 2008 dated and 26939 numbered Official Gazette and finally constituted as the present version after amended by July 30, 2011 dated and 27980 numbered Official Gazette.

#### 1.4. Scope of the Thesis

In this study, the implementation of social dimension in EIA planning processes has been discussed according to Turkish legislation. To discuss social dimension in EIA planning process I have searched sustainable development and EIA process in terms of global, EU and national scale.

For thesis discussion a case study, analysis of project called Tepekışla Dam and Hydroelectrical Power Plant (HEPP) is conducted. The project is located in the borders of Erbaa and Niksar Districts of Tokat Province. EIA process is conducted by Dokay ÇED Engineering and Consultancy Ltd. Co. (DOKAY). The Final EIA Report is the main source for the technical and assessment of economic, environmental and social impacts of the Tepekışla Dam and HEPP Project. As it is mentioned above, social dimension of Tepekışla Dam and HEPP Projecti as an Annex I project is assessed under few headlines in EIA Report according to Special Format Determination Meeting of commission which is summarized in Chapter 2. No further social impact assessment studies are conducted for this Project.

The main research question of this study is: “How is the social dimension included in Environmental Impact Assessment process in accordance with the implementation of Sustainable Development?” Throughout the thesis I also try to answer the questions and sub questions in order to answer my main research question:

- What are the pros and cons of the energy projects according to the three pillars especially social dimension?
- What is the nature of social sustainability and its indicators (local self-reliance, basic human needs, equity, participation, social accountability and appropriate technology) in EIA process?

The analysis of the implementation of social dimension in Turkish EIA process, this study consists of chapters on evaluation of sustainable development and social dimension, linkage between sustainable development and EIA, the introduction, methodology, information about Tepekışla Dam and HEPP Project, field study analysis and conclusion chapters.

First chapter gives brief description of sustainable development and three pillars, and history on EIA process as a tool for sustainable development within global, EU and Turkish approaches also given in this chapter. Moreover, description of thesis methodology, the definitions of the concepts used, information about the data used and the limitations of the study also given in this chapter.

In Chapter 2, the case study of an EIA process of Tepekışla Dam and HEPP Project is given. Technical information gives brief description of the case study. Summary of economic, environmental and social assessment of the Tepekışla Dam and HEPP Project according to EIA Report is given in this chapter.

In Chapter 3, social dimension of the project is discussed according to the analysis of the field study. A questionnaire is developed to receive EIA respondents' perceptions on the Tepekışla Dam and HEPP Project and its EIA process in accordance with social indicators basis on the sustainable development. With this, data gathered on opportunities for development, perceptions of respondents on social development and perceived project impacts are presented in this chapter.

Finally, general evaluation of the thesis is presented and conclusion is drawn based on comparison of EIA report and field study findings. Policy implications are suggested according to the results and the criticism of implementation of social dimension in EIA process in context of the sustainable development in the conclusion chapter.



### 1.5. Definition of Social Sustainability and Its Indicators

The key concepts used in this study are social sustainability and social sustainability indicators. Definitions of the all concepts differ depending on the context. Thus, it is needed to define them clearly at the beginning of this study. I have defined my concepts in two ways; first in general and then in context of this study.

I have tried to make the analysis of social indicators that shown in Figure 1 in Chapter 1 by analyzing questionnaires that are conducted in the field study. These social indicators are defined for the study as follow.

#### Social Sustainability

Social sustainability is one pillar of sustainable development. In general social sustainability encompasses human rights, labor rights, and corporate governance in accordance with environmental sustainability.

In this study, I defined social sustainability as one pillar of sustainable development that should be measured in EIA process of planned projects according to the analysis of social indicators.

#### Social Accountability

Social accountability is defined as measure of social concerns and priorities of stakeholders and reflects some factors such as; unemployment, poverty, educational level, health and safety, demographic, economic and socio-economic conditions and basic civil and human rights.

In this study, social accountability is defined as socio-demographic and socio-economic conditions of the respondents’.

### Local Self-reliance

In general, local self-reliance is for policy-makers and entrepreneurs to design systems, policies and enterprises that meet local or regional needs; to maximize human, material, natural and financial resources; and to ensure that the benefits of these systems and resources accrue to all local citizens.

In this study, local self-reliance is defined as potential employment concerns of the respondents to be affected from the implementation of the Tepekışla Dam and HEPP Project directly.

### Basic Human Needs

Basic human needs are defined as social and environmental needs in context of sustainability.

Water, electricity, shelter, farming and animals breeding activities and education needs of respondents are defined as basic human needs in this study and analysis of the questionnaires.

### Participation

Participation is generally known as having right to express opinions on things that will be directly or indirectly effecting personal needs.

According to this thesis study, participation is defined as right to express opinions of all stakeholders including both genders, within widely distribution of ages and includes ethnic groups if present in EIA process.

### Equity

Equity is defined as right to have equal opportunity, in a safe and healthy environment.

However in this study, equity is defined as perception of respondents' on the implementation of the Tepekışla Dam and HEPP Project according to their environmental concerns.

### Appropriate Technology

Appropriate technology is defined as “technology tailored to the psychosocial and biophysical context prevailing in a local area in certain period of time (Willoughby, 1990). Moreover, it is necessary improvements in technology (i.e. support by technological or research) for better job opportunities and to improve employment status.

In this study, appropriate technology is defined as possible infrastructural developments for basic human needs and local self-reliance of the respondents in accordance with the implementation of the Tepekışla Dam and HEPP Project.

## **1.6. The Case Study: EIA Process of Tepekışla Dam and HEPP**

EIA process is a systematic process to identify, predict and evaluate the environmental impacts of proposed actions in order to help decision making regarding the significant environmental consequences of projects, developments and programmes.

Tepekışla Dam and HEPP Project is a project to generate electricity from hydro power. Ark Energy Ltd. Co. is the owner of the project and EIA process of the project is conducted by DOKAY. Project is located in Niksar and Erbaa Districts of Tokat Province.

EIA process is conducted and EIA Report has been prepared for Tepekışla Dam and HEPP Project because the installed capacity of the project is above 25 MW where it is qualified within the scope of the Annex I (Projects to be applied an EIA Report) of the EIA By-Law.

This project is chosen as the case study of my thesis because I had a chance to involve in EIA process which gave me an advantage to understand the technical aspects of the project, to see how the EIA process is conducted and to meet with local authorities according to this involvement.

### **1.7. Methodology of Study**

The qualitative interview is seen as “an essential source of case study evidence” (Yin, 1994, p. 85). It is a form of social interaction in which knowledge evolves through determined dialogue which aims to collect rich and detailed data (Kvale, 1996). This study is mainly based on interview with questionnaires that I have prepared and conducted in the field study with two undergrad students for the project named “Tepekışla Dam and HEPP Project”.

In this study, the questionnaires are prepared and used as an instrument as a means to achieve the aims of research question, i.e. to receive EIA stakeholders’ perceptions on the project to understand conceptual framework for ‘sustainable development’ in EIA process.

Two types of questionnaires are prepared for the field study. First one is to understand the socio-economic and socio-demographic state of four villages (Muhtars’ Questionnaires) and other one to receive villagers EIA stakeholders’ perceptions (Respondents’ Questionnaires) on the Tepekışla Dam and HEPP Project.

Face-to-face questionnaires were conducted in the field study. The field study was conducted by me and two other undergrad students. List of the respondents of these questionnaires are given in Appendix - A. Moreover, throughout the study, I also used national and international statistics from the Turkish Statistics Association (TURKSTAT)<sup>23</sup>.

The field study is conducted in four villages of Tokat Province; Ayan and Doğanyurt in Erbaa, Kümbetli and Buzköy in Niksar which are located near Kelkit River. These villages are selected because they are considered as the villages that will be affected from the Tepekışla Dam and HEPP Project directly and mostly. Total of 30 people from these villages participated in the face-to-face questionnaires which were aimed for those villagers who have participated in PPM. Also one settlement questionnaire with the local administrator (muhtar) of each village is conducted.

Field study has started by the face-to face questionnaires between April 8 and 10, 2011 before the beginning of the construction of the project. Selected villages formed the universe for this thesis because the project is planned to be constructed in this certain area (see Appendix – B: 1/40,000 scaled Satellite Map of the Project Site). And these villages are in the direct impact area of the Project by the condemnation because of the construction site or the reservoir catchment area. In the construction period, some of the villagers' lands will be expropriated because of the construction of dam and other facilities on the other hand in the operation period the dam lake area will cover most of the lands with borders to the Kelkit River.

Moreover, the sample of 30 persons is chosen from these selected villages who have participated in PPM meetings which were held in Erbaa Government Office Meeting Place and Niksar Public Education Center Meeting Place on November 8<sup>th</sup>, 2010. Three PPM is conducted and announced in local and national newspapers by DOKAY experts according to the Article 9 of EIA By-Law. It is accepted that these villagers have

---

<sup>23</sup><http://www.tuik.gov.tr/>, accessed on 01.02.2012

economic, social and environmental information about the Project. The sample is an all male sample not by purpose, but because all the participants from these villages were male.

Eight face-to-face questionnaires and one settlement questionnaire with the muhtar were conducted in Kümbetli Village, six face-to-face and also one settlement questionnaire with the muhtar were conducted in Doğanyurt Village. In these face-to-face meetings, I got the chance of observing the participation and non-participation of the villagers. In Kümbetli and Doğanyurt Villages most of the villagers were cooperative and willing to participate in the questionnaires, however some of them had little information about the project than I have expected despite the fact that they have participated to the PPM meetings. I have to explain the project to the villagers once again and they answered the questions better after this brief information.

Also eight face-to-face and eight face-to-face questionnaires were conducted in Ayan and Buzköy villages respectively. The villagers from Ayan and Buzköy were more informed about the project but they cooperated less to the questionnaires than the villagers in Kümbetli and Doğanyurt.

### **1.8. Limitation of the Study**

First and foremost, the biggest limitation for this study is that it does not cover implementation process of the project, but it just covers the assessment process of the project. Moreover, not all social indicators were covered in the analysis of social sustainability dimension of the assessment process. The analyses of all six indicators are conducted however data set is adaptable just for qualitative approach.

An additional obstacle for this work is that one quarter of the villagers didn't cooperate to participate for face-to-face questionnaires. They either avoided or left questions without a comment or were never available and free to answer the questions. Thus,

participation decreased to 30 persons from the originally intended 40 persons. Even if the number of respondents is less than PPM participants, respondents were chosen from villagers that are mostly under direct impact of the Tepekışla Dam and HEPP Project.

Another problem with the data set is that since all of the samples were males, because only males participated in the PPM of the Project, the gender difference on the social indicators couldn't be assessed according to female side.

Lastly, there are no studies in Turkey, to the best of my knowledge, for the energy sector considering different dimensions of the sustainable development. Similarly, there are not enough quantitative studies conducted. Hence, there are not any benchmark studies for me to compare the results I obtained.

## CHAPTER 2

### TEPEKISLA DAM AND HYDROELECTRIC POWER PLANT (HEPP)

#### 2.1. Introduction

As it is explained in Chapter 1, this study is mainly based on the field researches conducted for the projects named “Tepekışla Dam and HEPP”. At the beginning of this Chapter, I described technical and general aspects of the Tepekışla Dam and HEPP Project. Afterwards, I try to summarize the economic, environmental and social assessment of Tepekışla Dam and HEPP Project according to the EIA Report prepared by DOKAY.

Tepekışla Dam and HEPP Project is a revised project of Erbaa HEPP. Previously, an EIA Report was prepared for Erbaa HEPP which was planned to be established by Ark Energy on the River Kelkit within the administrative borders of Erbaa and Niksar Districts in Tokat Province. This EIA Report has been submitted to MoEF<sup>24</sup>. The SEEC first meeting for this Project was held on the date May 12, 2008 and thus the submitted EIA Report has become final. However, at this stage, in line with the opinions of certain institutions, agencies and commission members about the Erbaa HEPP, certain ambiguities emerged. The project design which included in the Erbaa HEPP EIA Report that was approved in the First Commission meeting as Final and which had an approximately 60 km - long conveyance channel that passes through the adjacent area of Niksar Municipality and through the Niksar and Erbaa right bank irrigation areas was revised and taking the more favorable approaches of both local population and the authorities from State Hydraulic Works (SHW) into consideration, was replaced by the

---

<sup>24</sup> At that point of time MoEU was still named as Ministry of Environment and Forestry (MoEF)



2nd Revised Feasibility Report which anticipates a dam with the name Tepekışla Dam and HEPP to be constructed on the gullet connecting the Niksar and Erbaa Plains, again on the River Kelkit, was submitted to the General Directorate of SHW for approval. Yet, this time the alternatives for the dam were improved and a 3rd Feasibility Report including these improved alternatives was prepared. The 3rd Feasibility Report including the dam alternatives has been submitted to General Directorate of SHW for approval.

After the revision studies regarding the Erbaa HEPP Facilities Project, Ark Energy requested information on the EIA process from the MoEF with its letter dated 29.07.2010 and numbered 75220. In the relevant reply letter from the MoEF dated 18.08.2010 and numbered 8196, it was notified that in pursuance with the Article 8 of the EIA By-Law, the EIA process had to be restarted for that the weir was a storage structure and that the conveyance channel route was changed and that the Tepekışla Dam and HEPP Project was to be realized different from the Erbaa HEPP.

## **2.2. Brief Description of the Project Area and Vicinity**

Purpose of the Tepekışla Dam and HEPP Project is to generate electricity according to the transformation of potential energy of River Kelkit to kinetic energy by energy turbines. Project takes place on River Kelkit in the along village borders of Erbaa and Niksar Districts in Tokat Province.

The aim of the project is to contribute to the energy need of Turkey by increasing the diversity of the energy resources and an important role in solving the power deficit problem which Turkey will face in short term. It is planned to generate an average of 217.06 GWh of power each year which will contribute in the Turkish energy market.

The Project is located in the Middle Black Sea Region, Tokat Province, Erbaa and Niksar Districts, on the River Kelkit within the Yeşilırmak Basin. The project is

designed to be located on 12 km east of Erbaa, 20 km north – west of Niksar and 3.8 km, at 4503714 north and 305784 east coordinates. The direct location of the Project Site is presented in Appendix – B: 1/40,000 scaled Satellite Map of the Project Site.

The Project Site is located in the Yeşilırmak Basin on the Kelkit River. In the upstream direction of the Project, which is located on the narrow gullet that connects the Niksar and Erbaa plains in Tokat province; Kılıçkaya Dam and HEPP, Çamlığöze Dam and HEPP and Köklüce HEPP facilities are located. In the downstream of the Project, on the other hand, Hasan Uğurlu and Suat Uğurlu Dams are located. Additionally, Koyulhisar HEPP, Reşadiye HEPP, Akıncı HEPP and Niksar HEPP projects are planned on the upstream. On the upstream direction of the Kılıçkaya Dam - which is located on upstream of the Project – Gölova, Koruluk and Köse Dams are currently under operation and planning reports for Tersun, Çamur and Sadak Dams are already prepared.

The ponds located in the immediate environment of the Project Site which are currently under operation are: İngölü, Temle, Yeşilbük and Toplukonak ponds. On the upstream of the Köklüce HEPP, Niksar Plains irrigation, and on the downstream, Erbaa and Karayaka Plains irrigations are located. The surface water sources located in the Project Site and its immediate environment (dams, lakes, ponds, etc.) are generally used for energy generation and irrigation purposes.

### **2.3. Technical Information of the Tepekışla Dam and HEPP**

The installed capacity of the project is 34.01 MWm - 33 MWe and it is planned to generate an annual average of 217.06 GWh of energy. Within the scope of the Tepekışla Dam and HEPP Project, which is designed to have a thalweg elevation of 214.75 m and a crest elevation of 254.50 m, the water to be regulated will pass through a 95 m – long penstock and will reach the turbines of Tepekışla HEPP located on the tail water elevation at 214.00 m and then will be discharged to the riverbed of the River Kelkit (DOKAY, 2011).

The reservoir of the dam has a total catchment area of 10,780 km<sup>2</sup> and is approximately 2,942,000 m<sup>2</sup> at the maximum water elevation. The embankment is designed with a height of 39 m.

The 1/40,000 scaled Satellite Map indicating the project units and material quarries, prepared by the General Directorate of Cartography as well as General Layout Plan and Typical Sections of the Dam Units are all presented in the Appendix – C. Following paragraphs give brief description for the units of the Tepekışla Dam and HEPP.

Tepekışla Dam: Tepekışla Dam located within the administrative borders of Tokat Province on 12 km east of Erbaa, 20 km north – west of Niksar and 3.8 km south – east of the Tepekışla Village on the River Kelkit. The embankment volume of the dam is designed as 356,172 m<sup>3</sup>. The dam embankment is designed on 214.75 m thalweg, 254.50 m crest and 189.75 m base elevations. The type of the Tepekışla dam's embankment is envisaged to be hard fill embankment. However, it is also being considered to change the embankment type as clay core rock fill during the project phase. If such a change is decided all the relevant authorities and agencies will be notified. In this EIA report, the maximum excavation amounts were calculated to assess the worst case scenario.

Derivation and Bottom Outlet Structure: Upstream and downstream cofferdams and double chamber derivation conduit will be constructed to be used during the construction. The design of derivation conduit and upstream cofferdam was prepared taking the 668 m<sup>3</sup>/ sec, i.e. the 25 years flood flow, into consideration. The derivation conduit will be used as bottom outlet later. It consists of two chambers of 6 x 6 meters of size and 411 m and 426 m of length, respectively. The intake elevation of the derivation conduit is 217.00 m and outlet elevation is 215.80 m.

Spillway Structure: Tepekışla Dam is designed as hard fill embankment type thus the anticipated spillway is on the embankment with frontal intake and radial gates. The design flow rate of the spillway was taken as 1,689 m<sup>3</sup> / sec. and the size of the gates

were designed in accordance with this flow rate. The spillway structure is equipped with 2 radial gates and its sill elevation is 232.50 m and its dimensions are 8 (width) m x 20 (height) m. The spillway approach channel's elevation is 228.50 m.

Conveyance System: Within the dam embankment a single chambered water intake structure is designed. The penstock pipe is designed to be 95 m long with a diameter of 5.2 m. It will be constructed with a thickness of 14.15 mm.

Power House and Tailwater Channel: Tepekışla Dam is planned with a tail water elevation of 214 m. 3 vertical axis Kaplan turbines will be installed in the power house which is designed to have an installed capacity of 34.01 MWm - 33 MWe.

Switchyard: For Tepekışla Dam and HEPP Project a 154 kV open switchyard of 50 m x 70 m is planned to be constructed on the right bank.

Construction Site: The construction site to be established in the Project Site is located 750 m away from the Doğanyurt village which is the nearest settlement.

Excavation Material Storage Areas: A period of approximately 36 months is anticipated for construction of dam units. During this period approximately 460,000 m<sup>3</sup> of excavation materials will be generated. Within the scope of the project approximately 630,000 m<sup>3</sup> of aggregate will be needed. Around 260,000 m<sup>3</sup> of this need will be supplied from the excavated materials and the rest will be taken from the borrow pits. The remaining 200,000 m<sup>3</sup> will be stored at the excavation material storage areas. The possible total amount of topsoil (vegetable soil) to be generated in project units and borrow pits is 54,000 m<sup>3</sup>, which is planned to be stored in the excavation material storage area numbered DA-2. In this context, 2 excavation material storage areas will be used during the construction phase of the project. The capacities of these storage areas are respectively 500,000 m<sup>3</sup> and 60,000 m<sup>3</sup>. Opinion of SHW 7<sup>th</sup> Regional Directorate and Provincial Special Administration on the location and compatibility of storage areas

for the excavation material to be used within the scope of the project will be taken during the final project phase.

*Material Quarries:* The materials to be used within the scope of the project will not be supplied from outsources. For this purpose, 2 impermeable material (clay) quarries, 1 rock material quarry and 2 permeable material (sand – gravel) quarries will be used. The exploitation applications for the clay and rock material quarries to be used within the scope of the project have already been submitted to the General Directorate of Mining Affairs. The construction works will start after the required permission for permeable material quarries to be used within the scope of the Project is issued by the Tokat Special Provincial Administration.

*Crushing - Screening Facility and Concrete Plant:* Both the crushing – screening facility and concrete plant planned within the scope of the project will be used for obtaining the needed materials. In the crushing – screening facility the materials taken from the quarries and appropriate material obtained from the excavation works will be processed and the crushed material will be used for the filling material needs and material needs for concrete in the project site. The concrete plant will be used to fabricate the concrete needed for project buildings. A total of 510,000 m<sup>3</sup> of concrete will be needed within the scope of the project.

*Fish Passage:* Within the scope of Tepekışla Dam and HEPP Project, in order to facilitate the possible fish migration in between the upstream and downstream on the Tepekışla Dam a fish pass with a length of approximately 350 m, with free outlet was designed. The size of the fish pass is 1.20 m x 2.00 m and 1.00 m of height

The 154 kV Almus - Erbaa Suat Uğurlu Energy Transmission Line passes through the Project Area. It is proposed to transmit the power to be generated in the Tepekışla HEPP to the transformer in the Erbaa District center through the 15 km – long 154 kV transmission line and then supplied to the national network through 154 kV Almus -

Erbaa Suat Uğurlu Energy Transmission Line. In this case, the connection of the power plant to the system will be 15 km - long 154 kV 2 x 795 MCM Tepekışla HEPP - Erbaa Transformation Station.

#### **2.4. Economical Dimension Assessment of Tepekışla Dam and HEPP According to EIA Report**

Economical dimension of Tepekışla Dam and HEPP Project is assessed in 3<sup>rd</sup> Revised Feasibility Report (2010) and stated in EIA Report. In the EIA Report, economical dimension of Tepekışla Dam and HEPP is assessed under five topics given below and summary of these topics follows.

- Section III.1. Investment Program and Financing Resources in respect to the Materialization of the Project,
- Section III.2. Work Flow Chart or timing table for implementation of the project,
- Section III.3. Cost – Benefit Analysis of the Project,
- Section III.4. Other Economic, Social and Infrastructure Projects which are not included in the scope of the Project, though related to the Implementation of the Project and Planned to be Performed by the Project Owner or Other Investors,
- Section III.5. Other Economic, Social and Infrastructure Projects which are not included in the scope of the Project, but obligatory for the Implementation of the Project and Planned to be Performed by the Project Owner or Other Investors

The economic feasibility of Tepekışla Dam and HEPP Project has been evaluated according to the internal rate of return and income/expense ratio. The internal rate of return is the discount value compensating current value of income and expense of the proposed plant within the period until the end of the economic life of the plant. Because the calculated discount value is higher than social discount rate, the Tepekışla Dam and HEPP Project is accepted as economically feasible. The Income / Expense ratio is

calculated by transferring the cash flow of incomes and expenses of the project during the operation period to the first year with the discount rate and proportioning this value.

The feasibility of the Tepekışla Dam and HEPP Project is assessed according to the economic life cycle of the project was determined as 50 years. In calculating the project revenues, firm and secondary energy benefits were used. For investment and 50 years of operation phases, the annual interest rate was taken as 9.5 %. In the investment cost calculations, insurance, independent consultant, operation capital and Value Added Tax expenses were not included in the total amount because the economic analysis was examined with regards to the national economy. The project cost (which consists the estimated cost and establishment cost) total interest, operation – maintenance and depreciation values constitute the expenses. By using the discount ratio as accepted by the SHW (9.5 % for energy projects) the up-to-date values of annual energy benefits and costs of the project were calculated. The figures obtained by dividing the total of the present annual energy benefits by the present Project costs, represents the income / expense ratio. As a result of the calculations, the internal rate of return is determined to be 8.43 %. Any value exceeding “1” for the income / expense ratio means that the project is feasible in economic terms.

The benefits of the project includes the goods and services produced for meeting the needs and demands by executing the continuous repair and maintenance services following the commissioning of the facilities within the scope of the Tepekışla Dam and HEPP after construction period. The benefits used in economic analysis are measurable which can be calculated directly.

The Tepekışla Dam and HEPP Project completely belongs to Ark Energy as the project owner with development, design, construction, operation, and finance liabilities. It is expected that project owner might work in cooperation with the leading local and/or international companies during the design, construction and operation phases of the project. According to all calculation in Third Revised Feasibility Report (2010)

this project investment cost will be 140,414,651 USD which doesn't include unexpected expenses. The total costs of the Tepekışla Dam and HEPP Project is given at Table 1.

Table 1 The Cost of Tepekışla Dam and HEPP Project

<b>DAM UNITS</b>	<b>TOTAL COST (USD)</b>
Construction Works	74.714.076
Electromechanical Equipment	13.200.000
Estimated Cost	87.914.076
Energy Transmission Line	1.500.000
Total Establishment Cost	97.545.484
Survey, Project, Inspection	8.218.548
Project Cost	116.714.032
Interest During the Construction	23.700.619
Unexpected Expenses	19.081.408
Total Investment Cost	140.414.651

Source: Tepekışla Dam and HEPP Project EIA Report, 2011

As it can be seen from the Table 1, the total cost of the construction works within the scope of the Tepekışla Dam and HEPP Project is 74.714.076 USD (119.863.792.- TL). The estimated cost is calculated by addition of the electromechanical equipment to this sum, which resulted 87.914.076 USD (141.040.552 - TL). Along with the unexpected expenses and energy transmission line, the total establishment costs will rise up to 97.545.484 USD (156.492.219 - TL). In order to determine the total cost of the Tepekışla Dam and HEPP Project the total establishment, surveys, project and inspection costs were added and as a result a total Project cost of 116.714.032 USD (187.244.322 - TL) was determined.

The investment cost calculations were made by taking the interest rate as 9,5 % which is the interest rate for energy projects in SHW criteria. This cost, as it can be seen from the Table 1, is calculated as 23.700.619 USD (38.022.903 - TL). The investment cost which is the total number obtained by addition of interest during the construction period and the project cost, is determined as 140.414.651 USD (225.267.225 - TL)



## 2.5. Environmental Dimension Assessment of Tepekışla Dam and HEPP According to EIA Report

According to the EIA Report, Environmental dimension is assessed under two topics. First environmental assessment is studied in construction period, second one is in operational period. The impacts of these periods are divided into subtopics as impact on physical and biological environment; water, air and soil environment. There has been one field study conducted for the assessment of background data for noise and dust emission and another field study conducted for geographical research.

On the subject of expected environmental impacts to physical and biological environment, impacts on natural geographical and geological structure, meteorological and climatic changes, impacts on water sources and on the aquatic ecosystem, terrestrial ecosystem, earth slides, flood hydrology, land use, air quality, noise and vibration impacts and impacts on infrastructure services can be examined; some other possible impacts like those on the socio – economic environment and impacts of expropriation, water use rights is considered.

For the assessment of the environmental and social impacts of the Tepekışla Dam and HEPP Project, the impact area of the project was determined by taking all of the above stated impacts into consideration. The dust modeling, noise calculations and the surface area of the dam reservoir was taken into consideration. In HEPP Projects, the most significant environmental impact is the noise generated during the construction phase. In order to determine the places to be affected by the noise during the construction phase of the Tepekışla Dam and HEPP Project, a Noise Modeling Map was prepared and the Project's Impact Area is determined based on this map. Accordingly, since the noise value at the Project Site is obtained at 500 m, the areas located within this distance are qualified as areas to be effected by the project.

The villages that are most expected to be affected from the impacts of the Tepekışla Dam and HEPP Project are Ayan, Buzköy, Kümbetli and Doğanyurt. The lands of these villages are located in and vicinity of the Project. As it can be seen in the 1/40,000 scaled Satellite Map of the Project Site, unit in Appendix - B, most of the construction activities will take place in Doğanyurt and Kümbetli. Moreover, reservoir lake will flood over some agricultural and meadow lands of the Buzköy and Ayan.

After the impact area is determined “Characteristics of Physical and Biological Environment and Use of Natural Resources within the Impact Area” is studied in a chapter of EIA Report and then environmental and social impacts are assessed accordingly.

When impact on water environment assessed, the direct impact of the project is expected to be on the Kelkit River which is also the main source of the project. Within the scope of the project, waters of the Kelkit River will be used in power generation. For domestic waste water to be generated during the construction and operation phases a package treatment facility will be constructed. After the necessary permissions are obtained, the waters treated in this facility will be discharged to the Kelkit River, which is also the nearest receiving medium.

Possible impacts of the project on the natural structure of the area will be resulted from removal of forestry areas due to the construction of the project facilities, from floodover forestry areas because of reservoir lake and from the diversion of the water in the river bed to the derivation tunnel for the dam construction.

The fauna species living within the Project Site will retreat to the surrounding forestry areas with the same characteristics. According to the EIA Report, there won't be any negative impact on the fauna, in the habitat of the forestry areas that will be destruct or flooded by reservoir lake due to the project activities is in question.

In order to conduct construction works on a dry river bed, the river flow path will be regulated by upstream and downstream coffer dams and the derivation tunnel. This will cause change in flow path of river.

On the other hand, fish passage will be constructed for the migration of fishes in the river through upstream to downstream of the dam. The fish passage will be designed and constructed according to national standards. The technical detail of fish passage is given at section 4.3.

According to the provisions of the “Regulation on the Principles and Procedures Related to the Release of Ecological Water Agreement for Electricity Generating Activates in the Electricity Market” the amount of the water to be discharged to downstream to preserve the natural life has to be at least % 10 of the average flow of last ten years which is taken as basis of the project. However, given that the power plant is a skirt plant, no additional water discharge to the downstream on the river Kelkit is needed.

Regarding the aquatic species, EIA report states that the new reservoir can be regarded as an advantage. It is stated that the fishes belonging to the Cyprinidae family which is observed in the area during the field studies are species which can easily adopt to the still water environments. It is expected that amphibians and the other hydrophilic species will benefit from this development. Similarly, this development will have positive impact on bird species. Moreover, regarding the fish spawning and breeding areas, due care will be paid not to destruct the coastal vegetation and bottom structure during the construction phase.

According to the EIA Report prepared for Tepekışla Dam and HEPP Project; in order to conduct the facility constructions to be executed in the river bed on a dry and safe surface, derivation conduit and upstream - downstream coffer dams will be constructed before the commencement of construction activities. Upon completion of the construction works, the derivation conduit will be used as bottom outlet. During the

construction of the cofferdam to be executed before the construction of the embankment, the muddiness in the downstream may increase for a short time. There is no reducing precaution against this yet, given that the construction works will be completed within a very short period, no permanent impact is in question.

When we assess environmental impacts on air environment can be considered as dust, noise emissions expected to occur during the construction period of the project depending on the type of construction activities and location of the construction site and these impacts are expected to disappear end of construction works.

According to the EIA Report, the noise and dust emissions are calculated and computer models are used to support these calculations so that these emissions will stay under the related regulation limits. Noise emission that may generate through construction equipment and explosions are calculated and secure limits are provided for the human beings and fauna according to “Regulation on Assessment and Management of Environmental Noise”.

On the other hand, in order to prevent the dust emissions that may be produced during excavation, filling and soil removing activities precautions will be taken accordingly to the “Regulation on Management of Industrial Air Pollution” and Regulation on Assessment and Management of Air Quality”.

Explosions are another important negative impact on environment which is also assess in EIA report. The explosives that will be used for certain construction activities will be kept locked up and will not be used outside of their purpose and there will be necessary heat insulation, ventilation and fire extinguishing equipment in the store rooms. During the transportation and storage of these items the regulations and statutes will be prevented to prevent any damage to human or environmental health.

Moreover, the explosions that will be conducted during the Project will be conducted by educated and experienced blasters. These operations will not be conducted during the reproduction period of the livestock between March-June. Warning alarm with sirens will be used before each explosion and explosion site will be secured by fences by showing entry/exit routes and risk areas to prevent human beings and fauna entrance to the explosion zone.

Environmental assessment on soil is also in EIA report. According to EIA report, vegetation loss may occur during the construction phase of the project will be compensated during nature regeneration. Additionally, after the completion of the construction works, plants and tree species competent to the locality will be planted in the Project Site within the scope of landscaping and surface arrangement works.

According to the EIA report, to minimize negative impact on soil, improper handling of solid and liquid wastes will be prevented. All kinds of wastes will be collected, stored, transported and all precautions will be taken according to related regulation

## **2.6. Social Dimension Assessment of Tepekışla Dam and HEPP According to EIA Report**

As it is stated in section above social impacts of the Tepekışla Dam and HEPP Project is assessed within the impact area. Social dimension of the Tepekışla Dam and HEPP Project is assessed in EIA report under following topics;

- Section III.4. Other Economic, Social and Infrastructure Projects which are not included in the scope of the Project, though related to the Implementation of the Project and Planned to be Performed by the Project Owner or Other Investors,
- Section III.6. Expropriation, How to Realize Resettlement, Information on Methods of Informing the Public about Expropriation,
- Section V.3. The Impacts of the Project on Social-Economic Environment

- Section V.3.1. The predicted income increase, created employment, mobility, resettlement, education, health, culture, other social and technical infrastructure services and the changes in obtaining these services etc.
- Section V.3.3. Assessment of social impacts in accordance with the Project. (impacts on agriculture in the Project Site and impact area, stockbreeding, fishery, beekeeping etc. relations between the local community and people who will work in the construction and operation periods of the project, the impacts of these on the human life and socio-economic analysis, social responsibility projects that will be carried out.) (Determining the sociological impact by making interviews with the local community who is affected by the Project.)
- Chapter IX. Public Participation

Moreover, to assess social dimension in accordance with Article 9 of EIA By-Law, the PPM is conducted with stakeholder in October 11th, 2010. The summary of these assessments according to EIA report and PPM is given in following paragraphs.

First of all the most important social impact is accepted as expropriation process which is assessed in Section III.6 in the EIA Report. It is stated that the expropriation studies within the scope of the Tepekışla Dam and HEPP Project were conducted by Başak-Su Mühendislik İnşaat Taahhüt Tarım Sanayi ve Tic. Ltd. Şti. The Erbaa Hydroelectric Energy Project (former name of Tepekışla Dam and HEPP Project), Tepekışla Dam Expropriation Planning Report” is prepared. According to this report the ownership status of the lands that are necessary for construction of dam and auxiliary units is given in the

Table 2 Property Ownership Status of the Lands that are Necessary for Project Units

UNIT	PROPRIETARY STATUS
A Impervious Material Borrow Pit	Private Property (agricultural land) belonging to Kümbetli Village
B Impervious Material Borrow Pit	Private Property (agricultural land) belonging to Doğanyurt Village
G1 Pervious Material Borrow Pit	Private Property (agricultural land) belonging to Doğanyurt Village
G2 Pervious Material Borrow Pit	Private Property (agricultural land) belonging to Tepekışla Village
T Rock Quarry	Forestry Land within the land registration boundaries of Doğanyurt Village
Switchyard	Forestry Land within the land registration boundaries of Doğanyurt Village
DA-1	Was not included in the scope of expropriation studies since it is going to be covered by the dam reservoir
DA-2	Forestry Land within the land registration boundaries of Doğanyurt Village
Concrete Plant and Crushing – Screening Facility	Private property belonging to Doğanyurt Village
Construction Site	Private property belonging to Doğanyurt Village

Source: Tepekışla Dam and HEPP Project EIA Report, April 2011.

According to the EIA Report, expropriation will be conducted by Energy Market Regulatory Authority according to Article 15.c of Electricity Market Law numbered 4628 (Amendment. Law numbered 5496, Article 5). Moreover, the expropriation process for the Tepekışla Dam and HEPP Project will be conducted in accordance with the “Expropriation Act<sup>25</sup>” numbered 2942.

Within the scope of the expropriation, first of all a bilateral meetings for correspondent agreement with the owners of private properties will be sought. In cases of non-correspondent agreement with the owner, the provisions of two laws regarding the

<sup>25</sup>This law regulates the procedures to be followed in expropriation of the real estate assets under the propriety of natural or private law legal entities by Governmental and public legal entities when public utility uses necessitate so; the calculation of expropriation fees; registration of the immovable asset or easements in name of the competent administration; re-acquaintance of the unused immovable asset; transfer of immovable assets between the administrative agencies; mutual rights and obligations and; methods and principles of settlement of disputes that arise from these rights and obligations.

expropriation will apply. One is Expropriation Act as it is stated above where the real estate assets are the subject.

Second one is, in cases where the real estate assets of the local residence have been expropriated but their residence has not been changed, the possibility of expropriating the residences of such people will be explored. According to the Article 47 of the “National Defense Obligation Act<sup>26</sup>”, in cases where an agreement cannot be reached, firstly the appraisal will be made by the expert witnesses and the determined fee will be deposited to the relevant bank account by the activity owner to be paid to the right holders through the governorship office.

Expropriation for lands that are qualified as forestry and agricultural lands; for forestry lands located within the facilities that will be constructed, required permissions will be obtained in pursuance with the Article 17. 3 of the “Forestry Law” numbered 6831 and required fees will be paid for the necessary lodging activities.

For agricultural required permissions as provided by the provisions of Article 13 of the “Soil Preservation and Land Use Law” numbered as well as all the permissions related to the use of pastures as provided by the Article 14 of the "Pasture Law" numbered 4342 will be obtained before the commencement of construction works. Additionally, the seasons of harvest will be taken into consideration for all works within the scope of the Tepekışla Dam and HEPP Project.

According to Section V.3.1 of EIA Report, socio-economic impact of Tepekışla Dam and HEPP Project will be on employment and income, mobility and migration, education, health and cultural activities, social and technical infrastructure. EIA Report

---

<sup>26</sup>”In cases where the Council of Ministers decrees the need or urgency for the defense of homeland or in cases of emergency as provided in special laws, the proceedings except the appraisal related to the expropriation of the needed immovable asset are to be completed later and upon the request from the relevant administration, the immovable asset in question can be confiscated by invitation of the administration to be notified to the owner of the immovable in question in accordance with the Article 10 and by depositing the fee determined by expert witnesses to be chosen by the court in accordance with the provisions of the Article 10 and the Article 15 to the bank account declared in the notice within seven days by the court. In cases stated in the 2<sup>nd</sup> Sub paragraph of the Article 3 of hereby law, the amount to be deposited is the amount equal to the amount of first installment”.



states that employment will increase and in accordance with this both directly and indirectly income of local people will increase. Direct income increase will occur according to direct employment. The temporary or permanent construction workers (300 personnel) will be employed within the region if required qualifications are complied. Indirect income increase will occur with necessary services that will be provided from local businesses such as food, gasoline etc.

When mobility and migration is assessed in EIA Report, it is stated that there will be no mobility and resettlement is expected because of possible employment options. It is observed from EIA Report that this assessment is just estimation. Resettlement is not an option because there will be no impact on residential building.

In EIA Report, impact on social services, education, health and cultural activities, social and technical infrastructure within the Tepekışla Dam and HEPP Project is neutral. Only workers from outside of region may cause overload on educational, health and safety, cultural activities, social and technical infrastructure (such as traffic load) in the region however this impact is temporary after the completion of construction.

In Section V.3.3.in EIA Report, it is stated that the Tepekışla Dam and HEPP Project will contribute to national economy and power market as well as providing the region that has a potential for growth, with progress in transportation and new energy options while contributing to economy, employment options during the construction and operation stage. Hence both direct and indirect economic benefits are high within the construction and operation activities.

It is also stated that within the scope of Tepekışla Dam and HEPP Project necessary precautions will be taken by the Project Owner minimize the negative impacts to the environment and local community from beginning of construction period.

According to the EIA Report, one negative impact on infrastructure is on highway which is under construction but will be flooded after the development of reservoir lake. Amasya

– Erbaa - Erzincan State Highway will be used for accessing to the Project Site. This road is a high quality asphalt road which is open to the Project Site from every direction and in all seasons of the year. When the Project works are started, a 3,500 m part of the Amasya - Erzincan highway will be submerged in the dam reservoir. For this reason, before commissioning the facility, 5,391 m of this road will be relocated. It is stated that project owner will relocate the highway and construct it within the Tepekışla Dam and HEPP Project. Additionally, during the construction and operation phase of the Project, a two – kilometers service road will be constructed for access to the derivation conduit.

Last topic on social dimension in EIA Report is PPM conducted in 08.11.2010 within the EIA process. The project owner has informed the national and local authorities by publishing newsletter on national and local newspapers to give information and seek their opinions and recommendations about Tepekışla Dam and HEPP Project in PPM. PPM is conducted in accordance with national authorities in MoEU. Because the Project Field is within both Erbaa and Niksar districts, Tokat Provincial Directorate of Environment and Urbanization wanted PPM to be conducted Niksar and Erbaa counties. The photos of PPMs in Niksar and Erbaa are given in Figure 2 and Figure 3.



Figure 2 Taken During the PPM in Niksar (Source: DOKAY, 2011)



Figure 3 Taken During the PPM in Tepekışla (Source: DOKAY, 2011)

After the technical information presentation by project owner, participants in the PPM asked their questions on how will the irrigation water be obtained, what will be the amount of land that will be expropriate, whether the fields affected by the Tepekışla Dam and HEPP Project will be compensated or not and concerns on how the Tepekışla Dam and HEPP Project will be effected by the seismic zone. Project owners stated that there won't be any irrigational infrastructure constructed within the Tepekışla Dam and HEPP Project. Expropriation will be conducted with bilateral meeting with stakeholders and in accordance with the engineering studies there won't be any seismic effect concerning the Tepekışla Dam and HEPP Project.

It is also stated in EIA Report that people in the PPM are positive about the Tepekışla Dam and HEPP Project and that they want to be employed at its construction (DOKAY, 2011). Moreover, within the scope of the Tepekışla Dam and HEPP Project, there is no additional infrastructure activity will be included other than those mentioned above.

As it is observed from the EIA Report, there are no additional social assessment and consultation activities conducted for the Tepekışla Dam and HEPP Projects because it is not found necessary for the project owner.

## **CHAPTER 3**

### **FIELD STUDY FOR THE ANALYSIS OF SOCIAL INDICATORS OF THE TEPEKİŞLA DAM AND HEPP**

In this chapter, in the limits and depending on quantitative and qualitative data from the field study, I try to analyze social dimension of the planned project; Tepekışla Dam and HEPP according to the social indicators. First of all, social accountability is analyzed by socio-demographic and socio-economic profile of the respondents'. In the following sections perceptions of respondents' are given according to basic human needs, participation, equity, local self-reliance and appropriate technology indicators. I also used TUIK data to support my analysis.

As it is stated in Chapter 1, the social dimension of the project is analyzed according to the questionnaires from the field study. Total 30 persons who have participated in PPMs respond to the questionnaires. The following paragraphs describe respondents' positive or negative opinions to the project according to social sustainability. The comparison is studied from the Table of Muhtars' Questionnaires Analysis Appendix - E and Table of Respondents' Questionnaires Analysis in Appendix - F.

#### **3.1. Analysis on Social Accountability**

Socio-demographic and socio-economic profiles of respondents' are analyzed in the following subsections in order to have an opinion on social accountability of respondents'.

### 3.1.1. Socio-demographic Profile of the Respondents

Socio-demographic profiles of four villages and respondents according to the questionnaires indicate that all respondents are Turkish and their religion is Islam. Other profile such as gender, age, population status, marital status, education status and residency of respondents are analyzed in subsections.

#### Gender

According to the analysis of the Table of Muhtar Questionnaire in Appendix - E, 50% of Buzköy and Doğanyurt, 48% of Ayan and 55% Kümbetli villagers are female. But the sample of 30 respondents are all male since only males were selected for the PPMs.

#### Age

The age difference of the respondents is analyzed according to the Table of Respondents' Questionnaires Analysis in Appendix - F. It is found that respondents' ages are between 30-73. This means that the age profile of the respondent sample is mostly middle ages and over.

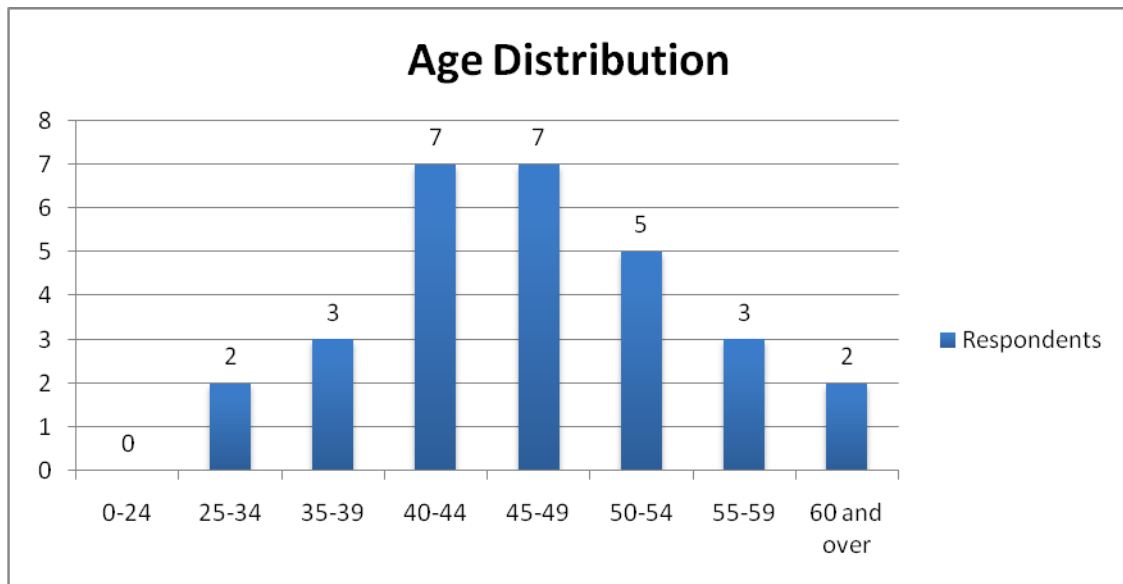


Figure 4 Age Distribution of Respondents

As it is presented in Figure 4, Almost 50% of the respondents are between 40-49 ages. Rest of the respondents are 50 and above. Only two respondents are 30 and 34 years old.

According to the responses of muhtars, largest population distribution in Ayan and Kümbetli villages is over 60, in Doğanyurt 18-59 and in Buzköy, it is below 18. Therefore, it can be accepted that labor forces in Ayan, Buzköy and Kümbetli villages are lower than Doğanyurt because of the age distribution.

### **Population Status**

Populations of selected villages according to address-based population registration system 2011 are given in Table 3, below.

Table 3 Populations of Doğanyurt, Ayan, Kümbetli and Buzköy Villages

<b>VILLAGE NAME</b>	<b>TOTAL</b>	<b>MEN</b>	<b>WOMEN</b>
Doğanyurt	657	320	337
Ayan	129	66	63
Kümbetli	277	122	155
Buzköy	320	156	164

Source: TUIK, 2012

The villages of Niksar District, Doğanyurt and Ayan have the largest population and smallest population, respectively, in between these four villages. According to the analysis of the Muhtars' Questionnaire (see in Appendix – E: Table of Muhtars' Questionnaire Analysis), populations of Ayan and Kümbetli are decreased in past five year where populations Doğanyurt and Buzköy are approximately remained same. Moreover, most of this population in Ayan and Kümbetli are ages over 60 because the young populations of these villages are migrating to bigger cities to find jobs. Population of Ayan, Kümbetli and Buzköy are aging (mostly over and around 60), however, Doğanyurt's population remains young for the near future.

### **Marital Status**

Marital status also researched in the field study. Only four of the respondents are not married. The rest of the respondents are married mostly with children.

### **Education Status**

Educational status of the respondents is another important social dimension in the analysis of the field study. As it is presented in Figure 5, 50% of the respondents are educated just in elementary school level. Most of the rest of the respondents are educated in middle school level.

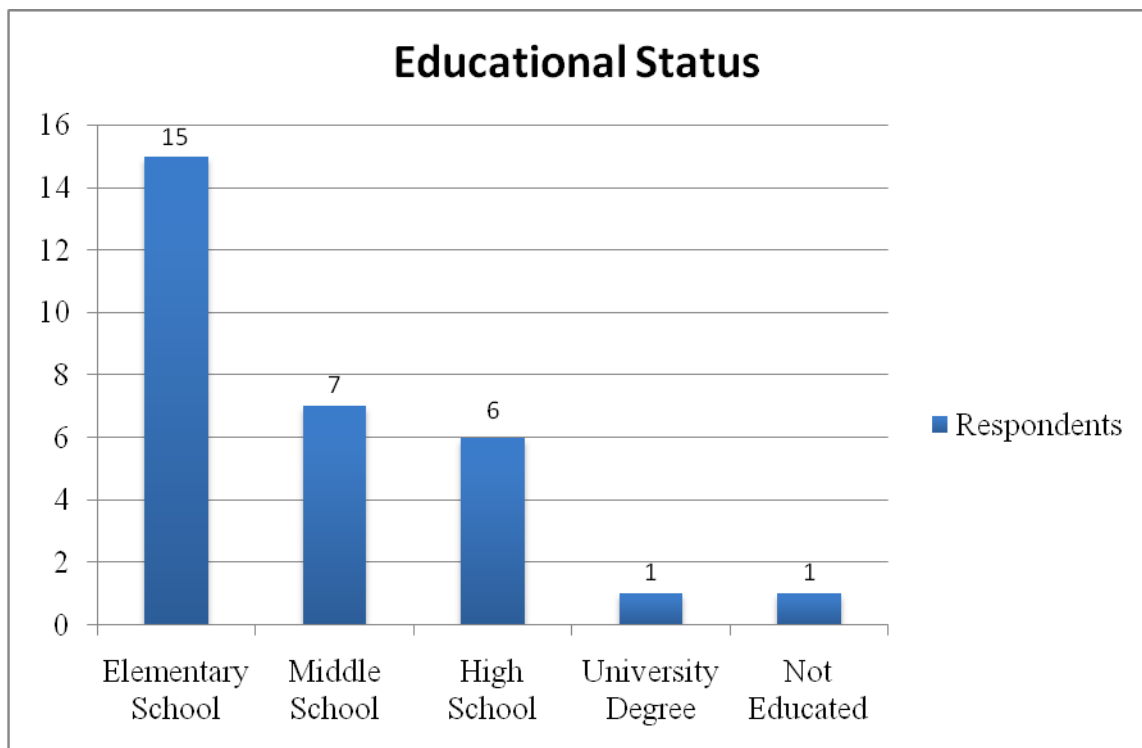


Figure 5 Educational Status<sup>27</sup>

<sup>27</sup> In this table elementary school represents first five year, middle school represents first eight years and high school represent eleven years of education life.

All three villages have an elementary school in the village except Ayan. Elementary school students in Ayan have mobile education to the nearest village, Doğanyurt (see Appendix – E: Table of Muhtars’ Questionnaire Analysis).

### **Residency**

Most of the respondents live in their villages in all of their lives. 87% of the respondents own their house by themselves or by family member. Rest of the respondents (13%) do not own their place of residency.

### **3.1.2. Socio-economic Profile of the Respondents**

Socio-economic profile is the second topic in the analysis of the field study. Occupation status according to the occupation, property ownership of housing, land and animals are analyzed in this section. Also,

### **Occupation of Respondents**

According to the interviews that have been conducted, it has been observed that the young population migrate to the metropolitans (especially to Istanbul) to find a job in the majority of the villages. Hence, the population with higher education does not dwell in the village, and the job opportunities in the village remain limited.

Most of the respondents are farmers and stockbreeders (see Figure 6). Therefore, the main sources of income of these villages are agriculture and stock breeding. The natural structure of Tokat Province, fertile plains irrigated by Yeşilırmak and altitude differences and the favorable climate for a wide variety of products are resulted in the fact that the agriculture sector is the predominant sector in Tokat Province. Likewise, these four villages mostly lay on plain and forest areas. Main types of crops are shown in



the Figure 7, the most common agricultural crop is wheat and it is followed by grape, sugar beet and tobacco leaf.

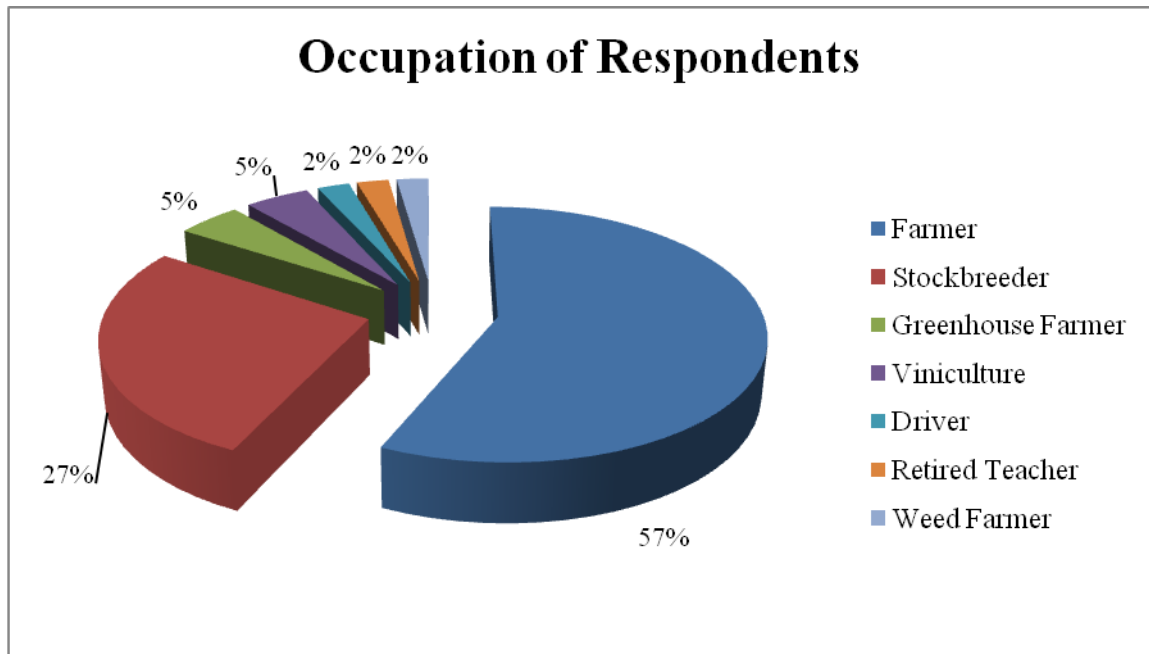


Figure 6 Occupation of Respondents

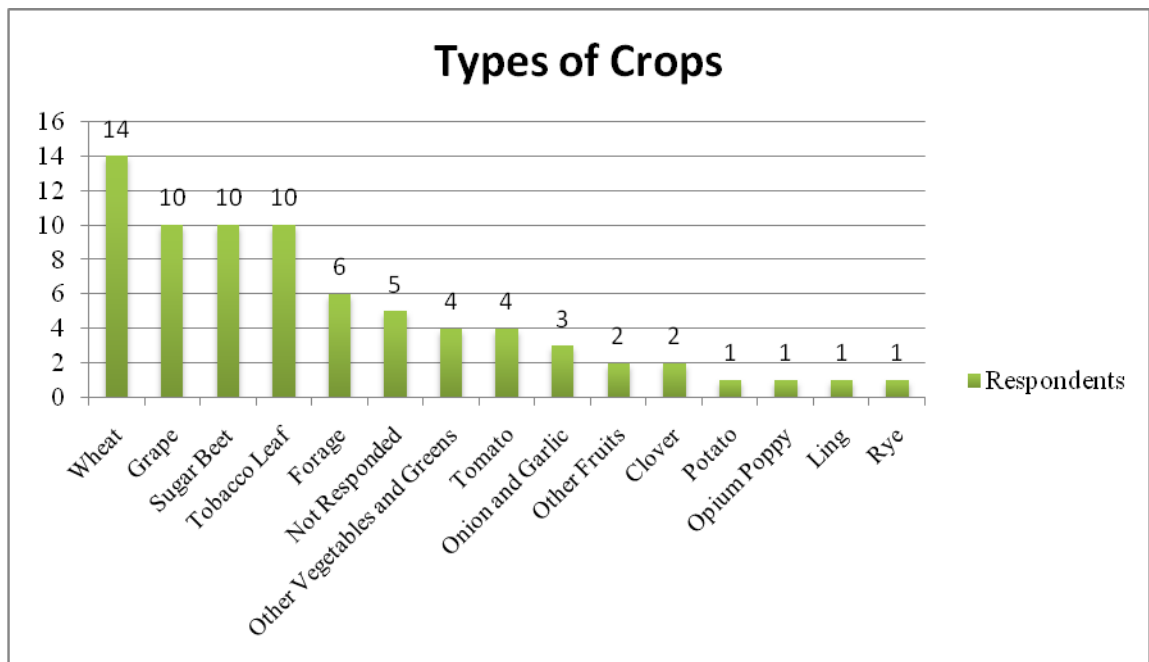


Figure 7 Main Types of Crops Planted in Four Villages

According to muhtar questionnaires, transportation is one of the major problem in Ayan, Kümbetli and Buzköy because of lack of vehicles and asphalt roads. Only Doğanyurt has an asphalt road that goes through the village (see Appendix – E: Table of Muhtars’ Questionnaire Analysis). Farmers have problems to transport their agricultural tools to their fields.

Along with the agricultural production, stockbreeding activities are another important element of Tokat’s economic structure and these villages. As it is presented in Figure 8, cattle and cow are the main stockbreeding animals. The region has an animal stock which can be defined as rich. All kinds of improvement studies are currently held on the region so as to develop the dairy farming. Additionally, various bee floras are present in the province (see Appendix - E: Table of Muhtars’ Questionnaire Analysis).

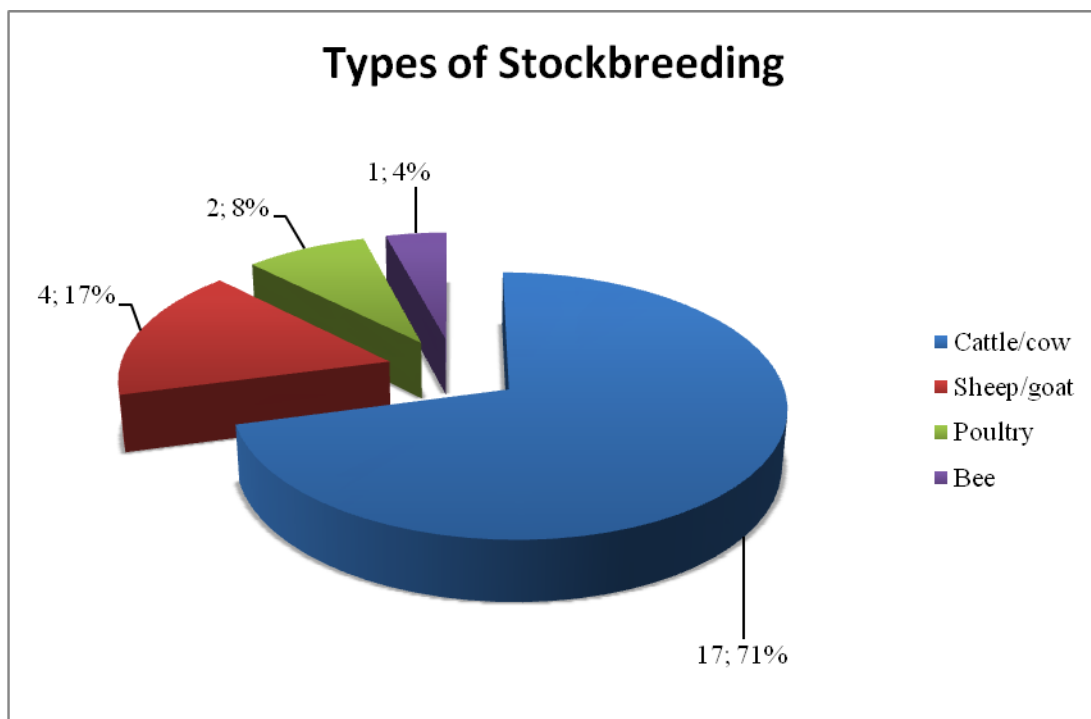


Figure 8 Stockbreeding Types of Respondents

Only one of the respondents is a driver in Kümbetli. He is responsible for the transportation of middle and high school students to the nearest schools.

### **Property Ownership of Respondents**

Another important criteria for analysis of the social dimension in the field study is property ownership. Property ownership is divided into two parts according to labor force of the respondents; agricultural and animal. According to Table of Respondents' Questionnaires Analysis in Appendix - F, 90% of the respondents own their agricultural lands and 80% of respondents own animals for stock breeding (see Table 4).

Table 4 Agricultural Land and Animal Ownership of Respondents

<b>AGRICULTURAL LAND OWNERSHIP</b>	<b>NUMBER OF RESPONDENTS</b>	<b>PERCENTAGE OF RESPONDENTS</b>
Owens their land	27	90%
Don't own their land	3	10%
<b>Total</b>	<b>30</b>	<b>100%</b>
<b>ANIMAL OWNERSHIP</b>	<b>NUMBER OF RESPONDENTS</b>	<b>PERCENTAGE OF RESPONDENTS</b>
Owens their animals	24	80%
Don't own their animal	6	20%
<b>Total</b>	<b>30</b>	<b>100%</b>

The types of crops and animals are presented in Figure 7 and Figure 8.

### **Public Services, Social and Cultural Opportunities of Villages**

The social and cultural activities of the villages are important for the villagers. The public services for social and cultural opportunities of four villages are presented in Table 5.

Table 5 Public Services, Social and Cultural Opportunities of Villages

<b>PUBLIC SERVICES</b>	<b>AYAN</b>	<b>DOĞANYURT</b>	<b>KÜMBETLİ</b>	<b>BUZKÖY</b>
Health Institution		X		X
Small market		X	X	X
Coffee house			X	X
Library		X		

Table 5 (continued) Public Services, Social and Cultural Opportunities of Villages

<b>PUBLIC SERVICES</b>	<b>AYAN</b>	<b>DOĞANYURT</b>	<b>KÜMBETLİ</b>	<b>BUZKÖY</b>
Post office		X		
Agricultural credit cooperatives		X		X
Sports facility				
Recreational facility		X		
Other	Mosque		Kur'an Course	

As it is presented in the Table 5, Ayan and Kümbetli have few social and cultural activities where Doğanyurt and Buzköy have more opportunities. Reason for this is that Doğanyurt and Buzköy are bigger villages than the other two villages.

### 3.2. Analysis of Local Self-reliance

In this section, I have analyzed how the respondents' perceptions differ for Tepekışla Dam and HEPP Project according to local self-reliance. In this context, employment opportunities, possible effect on in or out migration from villages are analyzed according to the questionnaires.

The number one positive perception on the Tepekışla Dam and HEPP Project is possible direct and indirect employment opportunities. Respondents want project owners to employ workers from local people. Moreover, respondents' think that project will be an opportunity for tourism developments and fisheries.

On the other hand, 33 % of the respondents think that the project will have a negative effect on their lands and crops so that their economy might be affected negatively. In case that they need to change their agricultural crop types their income will drop down or even will end because they don't have any experience or knowledge on different types of crops other than the ones they used to plant.

In terms of respondents' perceptions, this negative effect may be also caused by expropriation process. As it is shown in Figure 9 most of the negative opinions are from Buzköy and followed by Doğanyurt. According to Table 2 in Section 4.6 from EIA Report, these two villages will be affected mostly from expropriation process. During the field study, it is observed that most of the land owner respondents whose land will be flooded by reservoir lake are against the project because they say “expropriation process won't be fair and they will not benefit from our property”.

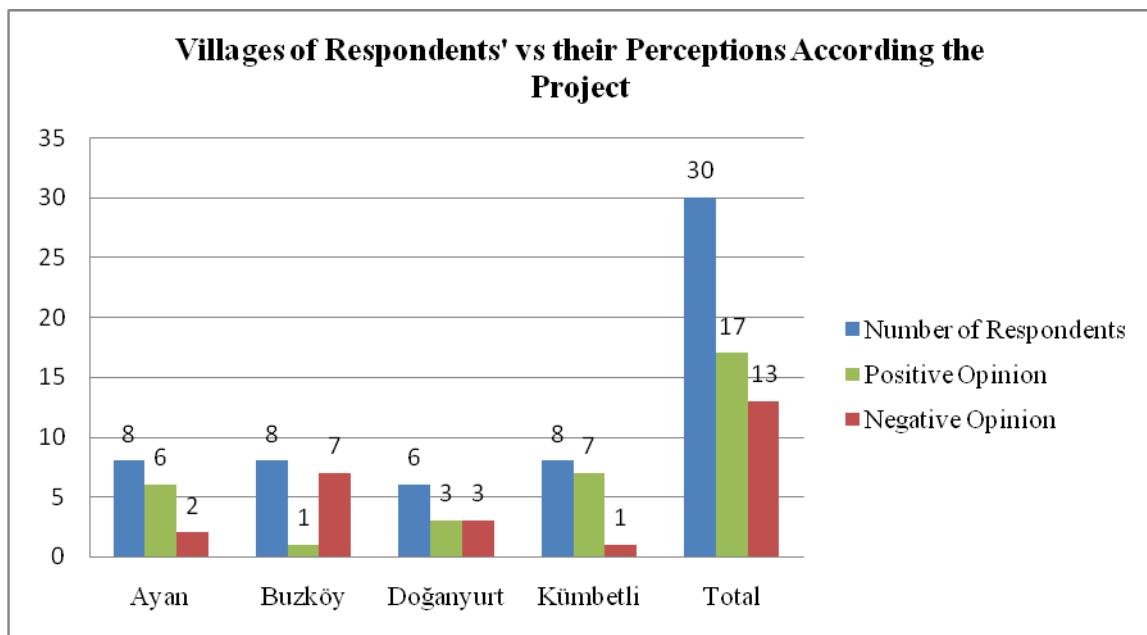


Figure 9 Villages of Respondents' vs their Perceptions according to the Project

### 3.3. Analysis of Basic Human Needs

Basic human needs indicator is analyzed according to the perceptions of the respondents' on the project. These perceptions are positive or negative regarding to their water, electricity, shelter, farming and animals breeding activities and educationas basic human needs. It should be noted that most of the analysis on basic human needs indicator comply with local self-reliance indicator.

According to the Appendix – F: Table of Respondents' Questionnaires Analysis 20 % respondents' have positive perception on the Tepekışla Dam and HEPP Project because According to the field study, the main reason for the positive opinions on the planned project is the electric energy which will be provided from the project Tepekışla Dam and HEPP.

As it is mentioned before most of the respondents are farmers and stockbreeders who produce their own food so that damage on lands and crops is selected as primary reason for negative perception. This concern has been supported with their previous experience from same kind of HEPP project with different arguments of the respondents'. One of the respondents pointed out his point of view as given below:

“Interviewer: Did you have a previous experience about a dam and HEPP project?

Respondent: Yes I have, and I am not appreciating what have been done during that project.

Interviewer: Is that okay for you?

Respondent: Of course not. I don't want to change my crops because our weather is going to change according to reservoir lake. My friends in a village who are effected from that previous project couldn't grow their own crops and now are trying to survive in other ways. I don't have an education or knowledge on growing other types of crops. It is also going to be same for me.”

He also stated that even if other villagers from his village or other villages are not aware of this situation, this is going to happen to them also. And in that case there will be a negative impact on local economy.

One last concern of respondents' was on their shelter or security on the project area. According to the previous experiences with same kind of HEPP projects, some of the respondents and other villagers had problems with security or logistic personnel that are not local. This response is obtained from respondents with negative perception because of security issues. This is another reason that they want project owner to employ workers from local people.

### **3.4. Analysis of Participation**

The first analyzed social indicator is participation because it the most important issue in this study. It should be stated that one of the characteristics of the gender issue in Turkey is the low female participation rates. As it is stated in the limitations of the study, the field study is conducted with participants of the PPM. Therefore, since the gender of all participants in the PPM from villages are male, so the respondents are all male.

Moreover, in the field study it is observed that respondents are not completely informed of possible impacts of the Tepekışla Dam and HEPP Project. Respondents stated that the information in PPM didn't comply what they have expected, moreover one of the respondents said:

“Respondent: the pictures of the project that shown in PPM were from another dam and HEPP Project which didn't give idea about the project itself”.

To avoid this situation, most of the respondents agreed that the meetings in the local, mostly in the village gathering point should be conducted instead of high populated participation meetings according to the Table of Respondents' Questionnaires Analysis in Appendix - F (see Figure 10).

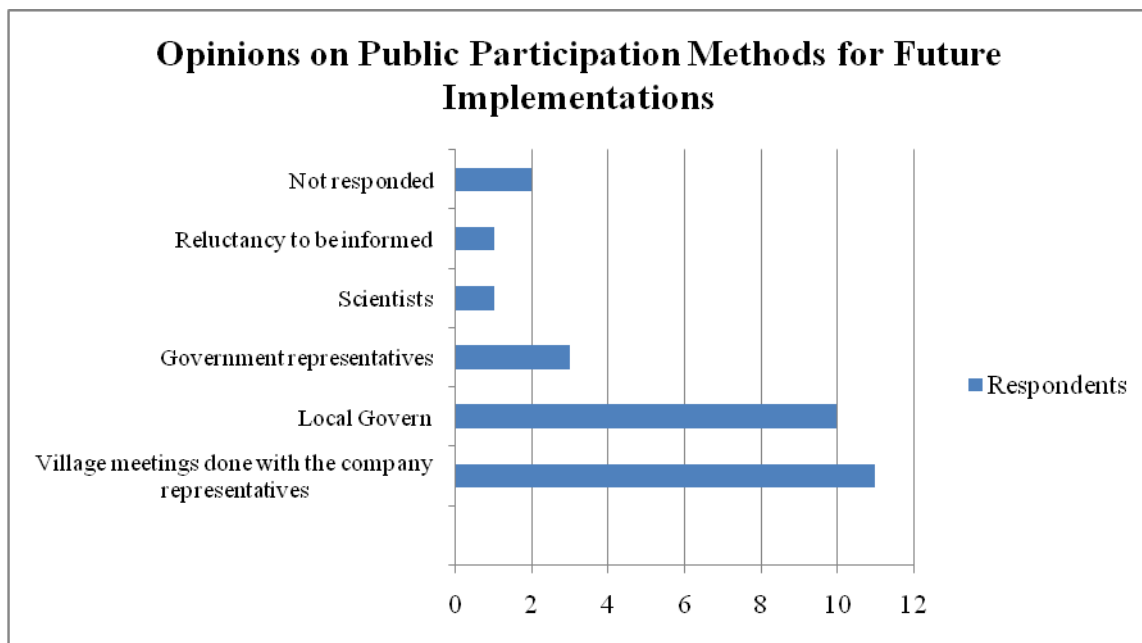


Figure 10 Opinions on Public Participation Methods for Future Implementations

This process should be conducted by company representatives however participants think that it is very important chief of the village attends to these meetings. Moreover, attendance chief of the village is more important than government representatives and scientist because villagers stated that the opinion of chief of village is important for them.

### 3.5. Anaylsis of Equity

As it is stated in Section 3.2., equity indicator is defined as right to have equal opportunity, in a safe and healthy environment.

Humidity is one of the most selected concerns because respondents think that the mitigation measures for interaction between flora and fauna is not stated well and again respondents believe that they are not properly informed about this situation. Some of the respondents think that their climate will change in following years which will affect their living standarts and agriculture. This is very important for respondents because the



source of income for most of the villagers are only agricultural and stockbreeding activities. Moreover, respondents think that project owner should minimize the negative effect on their agricultural lands and meadows to protect their economic and social life.

Likewise, respondents have concerns on dust emissions that will occur from the planned project during the construction works such as digging and explosions. From their previous experience dust emissions had an effect on their health and again agricultural lands. Moreover, some of the respondents believe that explosions caused psychological problems on some of the family members and friends in their villages.

### **3.6. Analysis of Appropriate Technology**

Last social indicator, appropriate technology indicator is analyzed from the concerns on current technological developments that help them to sustain their basic human needs and local self-reliance for the villages. Respondents with positive perceptions think the project will be good for them because they think project will provide them infrastructure for water supply and irrigation and better roads for transportation.

On the other hand, Among 30 respondents “deformation of road” is selected as third negative perception in three villages, except Doğanyurt, that already have roads with bad conditions so they think that it is going get even worse with impact of the heavy duty construction vehicles.

### **3.7. Conclusion**

The field study is analyzed according to six social indicators of social sustainability; participation, basic human needs, equity, local self-reliance, appropriate technology and social accountability that are defined in Section 3.2. One of the most important finding from this study was working in the PPM process of the project which is conducted

according to EIA By-Law. With respondents' questionnaires, PPM process is analyzed according to indicators of social sustainability in the field study.

PPM is organized before scoping and special format determination meeting in order to inform the public about project and seek their opinions and recommendations regarding the project. However, participation to this meeting neither equal for both genders nor for age distribution. It is stated in EIA Report that information about PPM is published in national and local newspapers with an advertisement however some villagers stated that they have attended to the PPM because muhtar asked them to participate, they didn't have information before this call.

According to the EIA By-Law, there is no obligation for additional social assessment and consultation activities conducted for the planned projects if it is not found necessary by MoUE. While included in EIA process, I have experienced that project owner didn't want to conduct a social impact assessment because it was obliged in format of EIA Report. One conclusion to be drawn for better participation process comes from respondents' opinions on future implementation of the project that face-to-face questionnaires or local meetings in village gathering places should be conducted.

In respondents' questionnaires, it has been noted that answers are biased to confirm with other villagers, trying to create "group thinking". Also, there is a distinct connection between the way of conducting questionnaires with stakeholders and their answers about the way they look at the project itself. Hence, to decrease the subjectivity of the answers, the questionnaires should be conducted at stakeholders' own homes.

One of the most important negative impacts of current PPM process is not being effective on participants with the different educational levels. The educational level of the respondents is mostly at elementary (5 years) level. Low educational level of the participants complicates the comprehension of the project and affects adversely their point perception on the project. During the face-to-face questionnaire reviews, it has

been observed that their low educational level prevented them from obtaining the necessary information about the planned project from current stakeholder meeting method which is stated in EIA By-Law. This is also another issue for participation indicator of social sustainability for not having local participation meeting or consultation activities in the EIA process; moreover it causes negative impact on participation indicator because of lack of necessary information.

Moreover, respondents had expressed concerns with the terms of ‘indirect’ and ‘cumulative’ impacts, these impacts were considered within the EIA Report. Nevertheless, the assessment of cumulative impacts seems to be better in EIA Report than of indirect ones. However, the partly poor consideration of these impacts, supported by the statements of the respondents states that further guidance (e.g. clearer and direct meetings for definitions of these impacts) is needed. Social impact assessment and consultation will enable the project owners to understand the stakeholders requirements and ambitions and for the stakeholders to develop an understanding of the Tepekışla Dam and HEPP Project.

When basic human needs indicator is analyzed according to the field study, the environmental dimension is assessed according to two indicators; biodiversity and resource conservation. Carrying capacity of the region is not well assessed in the EIA Report. Moreover, it is stated in EIA Report that water resource - in this case Kelkit River -will be conserved according to relevant regulations no harm will occur on aquatic flora and fauna. However, the usage of the water resource is vital and differs in urban areas. Water resource is used for basic human needs in the region for economic and social development. Stockbreeders concern about their cattles that will not be able to use Kelkit River to drink water because of the security measures around the reservoir lake. This may cause the long distance travel for the cattle to find another water resource.

The most significant feedback information of the respondents with a previous experience about dam and HEPP projects show us that previous projects differ in implementation process.

During the field study it is analyzed that most of the respondents with negative perceptions have a previous experience about dam and HEPP projects. On other hand, respondents without a previous experience also have negative perception however not much as the ones with a previous experience. Number of respondents' perceptions vs. without a previous experience about HEPP and with a previous experience about HEPP presented in Figure 11 and Figure 12, respectively.

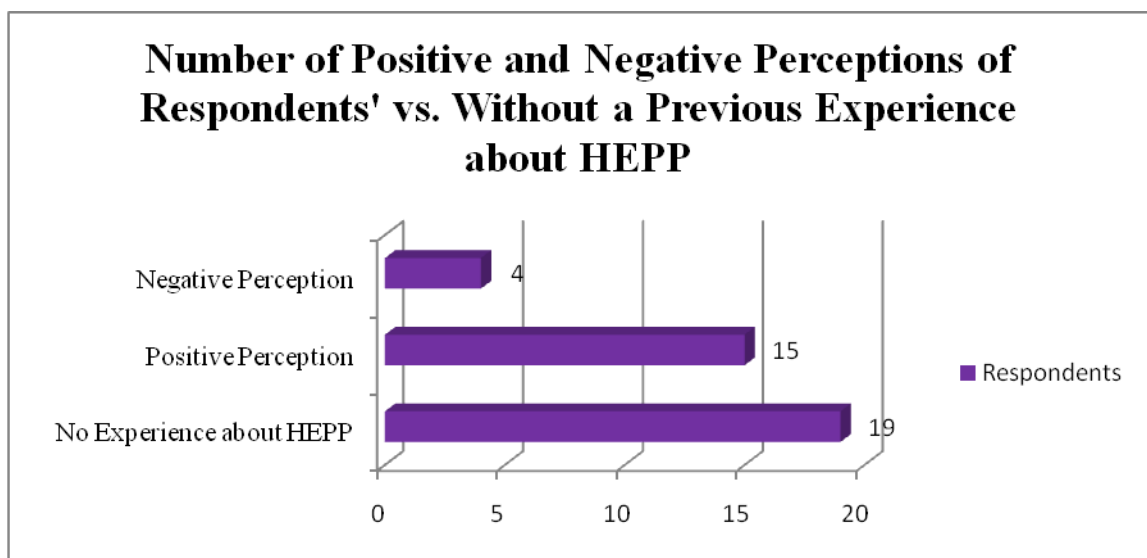


Figure 11 Number of Positive and Negative Perceptions of Respondents' vs. Without Previous Experience about HEPP

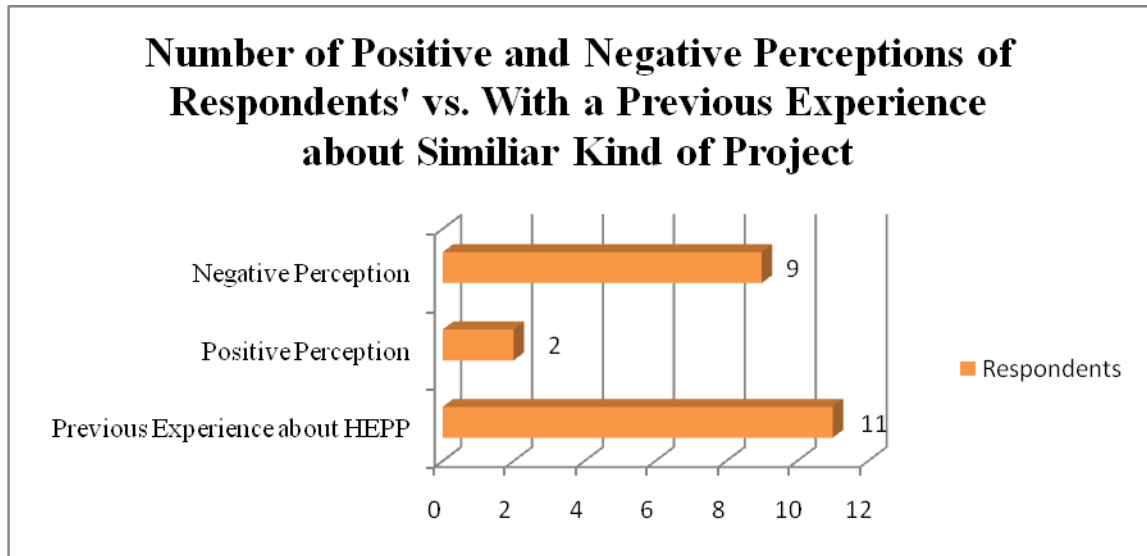


Figure 12 Number of Positive and Negative Perceptions of Respondents' vs. Previous Experience about HEPP

According to Table of Respondents' Questionnaires Analysis in Appendix - F, most of the respondents without a previous experience have a positive perception because they think that employment will increase and infrastructure will be developed in accordance with the Tepekışla Dam and HEPP Project.

On the other hand, the one of respondents with a previous experience stated that agreements on expropriation and infrastructure were broken and never applied during previous dam and HEPP project. This experience affected the respondent about his perception on the project negatively.

Moreover, another respondent stated that in previous dam and HEPP project, all of the workers were selected from hometown of the project owner or/and from the villages where the wages are cheaper. One of the respondents said:

“Respondent: They said workers will be selected from local people which were commitment of project owner of previous HEPP project. However, when our unemployed workers applied to work in that project they are refused. And workers are employed from South-Eastern or Eastern Anatolian people.”

The consideration of interactions between environmental components in EIA Report, although required in the EIA By-Law, was overall weak. The only exception was the mentioning of interactions between the impacts on the bio-physical environment and those on human beings. Interactions between the particular bio-physical elements and social elements were neglected such as agricultural and stockbreeding activities. Herewith, a more differentiated consideration of the criterion interactions is sensible when we think almost all of the villagers are farmers and stockbreeders.

This is a result of an unsatisfactory number of field studies conducted in EIA process. In EIA Report, it is stated that only one field study is conducted to assess geographical formations, protection areas, background information on noise and dust emissions and general ecology. This field studies are conducted for assessment of environmental impacts without an assessment on bio-physical elements of local socio-economic.

In case of local self-reliance and appropriate technology indicators of social sustainability, the villagers gain their lives mainly from agriculture and stockbreeding. Four of the villages mostly have same problems like insufficient irrigation water, unemployment, insufficient wastewater system, insufficient road to reach their agricultural lands and mostly insufficient support to sell their crops (see Appendix –F: Table of Respondents' Questionnaires Analysis). Since they presented that there is no sufficient irrigation infrastructure, they believe that the dam to be constructed would provide the infrastructure for the agricultural irrigation for the villagers. However, it is stated in EIA Report that there won't be additional infrastructure construction besides dam units and relocation of highway.

Moreover, mobility and migration is assessed in EIA Report, it is stated that there will be no mobility and migration is expected because of possible employment options. It is observed from EIA Report that this assessment is just estimation. Most of the respondents with a negative perception with a possible damage on lands and crops think

that they need to migrate from their village likewise their young population who cannot find jobs in or around the village if they lose their only income from their lands.

According to the respondents' questionnaires, most of the respondents of Ayan, and Kümbetli villages have positive opinion for the project however respondents in Doğanyurt and Buzköy villages are against the Tepekışla Dam and HEPP Project. This difference occur because of the previous HEPP experience of the Buzköy respondents and respondents in Doğanyurt have to lend their lands in expropriation process. Most of the participants were experienced and prejudice according to this experience. In EIA Report it is stated that expropriation process will comply with relevant regulations however previous experience of the respondents occur oppositely. According to one of the statement of respondent;

“Respondent: Previous experience showed us there won't be any employment for local people, there will be damage on lands and crops and moreover expropriate process caused them to lose so much time for so little money. Either project owner didn't comply his project plan as whole for the benefit of local.”

As it is stated in Section 4.5 and 4.6, mitigation or minimization measures were provided within the EIA Report. Mitigation measures were exceptionally well considered in respect to providing quantified data for their realization and these measures were connected to the requirements of the Turkish Environmental Law. However, in contrast to the EIA Report, respondents are not fully aware of what will be the mitigation measures in order to minimize impact on environment and social, uncertainty was overall not, or only seldom, considered.

As seen from the Table of Muhtars' Questionnaires, there is a 100% positive response to the HEPP project. This is unusual because most of them reported negative possible outcomes for the project. The underlying reason for this acceptance is maintaining "status quo", or the unspoken agreement with the government for their projects despite their own motives. This is again another indication that local authorities prefer their

political values than their social sustainability. Such shortsighted approach is another setback for the sustainable development.

To sum up, besides the difficulties resulting from this study, when field study is compared with EIA process, it leads to the conclusion that these sustainability criteria are not suitable in practice and hence will not be used in this approach. The reason why this conclusion has been reached is, as well as, the fact that the conceptual ambiguity of what sustainability means in general, and in the context of EIA in particular, is surely one reason for the unsuccessful development of an EIA methodology which is conducted in accordance with the EIA By-Law.



## **CHAPTER 4**

### **CONCLUSION AND POLICY RECOMMENDATIONS**

For implementation of social and environmental dimensions of sustainability paradigm by EU and international finance organizations such as the World Bank, offers pragmatic support for adopting policies, programmes and projects, along with the appropriate indicators capable of providing the evaluative framework, in seeking to implement sustainable development.

To improve linkage between sustainable development and social and environmental dimensions, a more integrated approach to policy making is proposed, based on better regulation (for impact assessments) and on the guiding principles for sustainable development. As it is stated in Chapter 1, EIA is the main tool where necessary theoretical and practical three pillars of sustainable development are transformed into concrete form.

My aim in this study is to understand the contribution of social dimension into the sustainable development context in EIA process. I conducted study to answer “How is the social dimension included in EIA process in accordance with the implementation of sustainable development?” Throughout the thesis I also try to answer the questions such as: “What are the pros and cons of the energy projects according to the three pillars especially social dimension?” and “What is the nature of social sustainability and its indicators (local self-reliance, basic human needs, equity, participation, social accountability and appropriate technology) in EIA process?”

In this study it is found that there has been a massive increase in the literature on potential sustainability indicators over the years, but there is no consensus on what constitutes good indicators for implementation of sustainable development in EIA process. It is commonly agreed for all three pillars that information and communication (of visions and contents of the concept of sustainable development), orientation (for decision-makers), evaluation and controlling (of the achievement of goals) and networking (for co-operation between stakeholders) are essential (Heiland et al., 2003). EIA aims to protect the environment (including human beings, fauna, flora, natural resources such as soil, water and air, climate, landscape, cultural heritage and interactions between those) in a precautionary way. Furthermore, EIA is among other environmental management tools, an instrument for achieving and promoting sustainable development.

Besides these more “technical” failures, the lack of a precise description of the relationship between sustainable development and the process of EIA is another reason for unsatisfactory achievement. The term ‘sustainability’ has been interpreted differently from project to project, thus a definition of a sustainability terminology or a conceptual framework was hard to find (Plachter and Werner, 1998). As it is observed from the muhtars’ “biased” perceptions on the project, the undertaking of EIA as an instrument to achieve sustainability depends on the individual definition and interpretation of the concept of sustainable development of different stakeholders (Cashmore, 2004). Therefore, leading this process towards sustainability is a matter of social and political choices.

Overall, it can be stated that social sustainability appears to present different and more severe challenges compared to environmental sustainability, because there is no widely accepted scientific basis for its analysis; unlike the acceptable levels of noise emission, acceptable amount of wastewater or acceptable concentrations of greenhouse gases in the atmosphere. Nor is there a common unit of measure such as monetary units, like the economic dimension of the sustainable development.

It has been about two decades since the concept of sustainable development is being pronounced in Turkey. However, it is only recently that the public sector started to integrate this term. For long, the public sector used to formulate its strategy as “first development, then sustainability”, underlining Turkey’s need to achieve economic development at the first place and inability to finance sustainability without developing first. Sustainable development being relatively new in Turkey’s agenda has still been interpreted in a different way for different sectors. In other words, there is a lack of consensus on the understanding of sustainable development concept and how to integrate it into the existing institutions.

EIA process in Turkey is not effective because implementation of social sustainability indicators inadequately fulfill these functions. Moreover, according to the 2012 Progress Report of Turkey, there are many HEPP projects are developed however there is no SEA or concurrent EIA studies are conducted within the impact assessment of these HEPP projects<sup>28</sup>. The reason for this situation is found as Turkish environmental law has not totally fulfilled the implementation of EU EIA Directive and it still has several steps to follow in practice. Current EIA methodology has no interdisciplinary and synergetic solutions were given; that is integrated ecological, social and economic solutions.

Throughout the thesis, using field study, I focused on to analyze social dimension of the EIA process of Tepekışla Dam and HEPP Project in Erbaa and Niksar District of Tokat Province in Turkey. I have tried to focus on the public participation of the interest groups or stakeholders into the EIA process according to six social indicators. In the context of sustainability, social indicators, local self-reliance, basic human needs, equity, participation and social accountability are important to analyze for conducting a social assessment in an EIA process.

---

<sup>28</sup>2012 Progress Report of Turkey is submitted to the EC to see the progress of accession period. According to the Chapter 27: Environment and Climate Change of the Report, Turkey didn’t improve environmental chapter in the “vectoral legislation”. Turkey still needs to make improvement on transboundary EIA and its principles.

Chapter 2, technical aspects of the Project is described. Moreover, economic, environmental and social dimensions are assessed according to EIA Process. Tepekışla Dam and HEPP Project will generate an average of 217,06 GWh of energy each year which will contribute in increasing the resource diversity for the Turkish energy market. It is stated that the Tepekışla Dam and HEPP Project will have an important role in solving the electricity shortage problem by using national resources. According to EIA Report, the possible impact on environment and social will be minimized by conducting each and every step of the Tepekışla Dam and HEPP Project according to related regulations. Dam and HEPP is a project to generate electricity through the energy of falling water. This method of energy generation is viewed as very environmentally friendly by many people, since no waste occurs during energy generation. However, hydroelectric power can have a profound impact on the surrounding environment and social, leading some people to question the promotion of hydroelectric power as a method of clean energy generation.

In Chapter 3, I focused on social sustainability of the project by analyzing face-to-face questionnaire in the field study according to social indicators. Social sustainability is assessed under six indicators; social accountability, basic human needs, participation, equity, local self-reliance, and appropriate technology. From the experience I obtained from the history of sustainable development and EIA process, any study done for EIA process according to the sustainable development evaluation, the analysis should be conducted including all three pillars, as a whole. This “three pillared” analysis should be conducted from the very first planning stage of the project and up to the EIA process.

In Turkey, in accordance with EIA By-Law, there are two project types to assess in EIA process. Annex I type projects such as the case study in this thesis, are being regulated by MoEU and Annex II type projects are being regulated by Provincial Directorates of Environment and Urbanization. And there are no certain strategies or guidelines to assess social impact for neither type of projects. Social impact assessment process is not from bottom to top it is being conducted just from top. Social impact is only being

assessed if only the project is financed by international institute according to their impact assessment and sustainable development criteria; such as World Bank.

According to one main output of this study, there is no participation of women observed in PPM. Social and cultural structural differences viewed as one of the major reasons for the gender inequality in our country (TUSIAD, 2008) keep the women's place within the society in the background. The most significant consequence of this situation, which is especially seen in the regions with little population, is that woman has no say in the society and that cannot take advantage of the opportunities that may come up. The main reason behind this is that people living in such regions have patriarchal structure and, therefore, women is neglected and deprive them of from their rights. Women who have the potential to make realistic assessments of the social indicators for stakeholder participations should be encouraged to participate in PPM. So that dynamics of social and economic impacts of production processes in urban development would be supported.

However, when we look at in global and EU scale the social impact assessment process is conducted to alert communities and individuals about the proposed project and possible social impacts. At the same time allowing them to assess the implications and identify potential alternatives. The assessment process should also alert proponents and planners to the likelihood and nature of social impacts and enable them to anticipate and predict these impacts in advance so that the findings and recommendations of the assessment are incorporated into and inform the planning and decision-making process.

It should be ensured that there are efforts to comply with EU EIA Directive however it should be driven one step further than just confining sustainable development. According to development plans are prepared with the contribution of stakeholders from public and private sectors, research organizations and civil society organizations, it is possible to adapt and apply social indicators in EIA process in accordance with implementation of sustainable development.

### Policy Recommendations:

For EIA process to fulfill implementation of sustainable development for dam and HEPP projects, needs capacity-building for the stakeholders; monitoring of compliance with EIA recommendations; sharing of 'best practice' across the region; linking EIA with the full project life cycle; harmonization of legislation within the region; and strengthening links between EIA, regional planning and local participatory processes.

In general the benefits used in economic analysis are measurable which can be calculated directly. However, environmental and social sustainability should be explored in different angles and perspectives, including theoretical development, empirical measurements, and policy application. Future studies for sustainable development in context of an energy project should be evaluated under all three pillars including economic sustainability.

Building strong connections among three pillars should be conducted with interdisciplinary teamwork where the social and natural scientists, and policymakers will entail more than just the synthesizers' learning each other's technical vocabularies and how to handle large-amounts of data. It will necessarily mean that the participants in EIA process build up questions with same language. For example, in the participation process is affected by neglect of social dimension assessment in EIA process. The traditional environmental discipline such as engineering and applied science should recognize social dimension of sustainability working together with social scientist.

Nonetheless, the recognition of the complexity of ecological, social and economic issues within the concept of sustainability is generally unquestioned, the researches mostly focus on ecological aspects, rather than on socio-economic ones (Potschin and Haines-Young, 2003). Even obvious socio-economic impacts of a proposed project seem to be inadequately assessed in current EIA practice. The minimal or non-consideration of social, indirect, cumulative and long-term impacts within current EIA practice in Turkey

reflects the traditional choice between environmental degradation and social accountability (usually just employment). The majority of the development indicators include economic and financial ones. Environment indicators mostly include waste, land use, pollution and air quality. This quite limited combination of three pillars of sustainable development in environmental management tools like EIA aim to be prevented in EU.

Considering these facts, it might be more useful to provide a conceptual framework of what sustainable development within the EIA process might mean, instead of attempting to give a concrete definition. As an outcome of this review of the international literature, the following issues should be considered when developing a conceptual framework for the meaning of implementing social dimension in accordance with sustainable development in the context of EIA:

- The achievement of consensus decisions through public participation, stakeholders' involvement (including minority groups), democratic debate and a wider access to the decision-making process;
- The education of stakeholders on sustainability issues through training;
- The consideration of indirect, cumulative and long-term impacts of a proposed development;
- The informing stakeholders with direct participation process of alternatives, mitigation measures and their effectiveness;
- The integration of ecological, economic and social aspects in the decision-making process.

Further, inadequate assessment of alternatives, mitigation measures and their effectiveness, as well as the insufficient stakeholder involvement and the fact that decisions seem to be made in accordance to the developers' intentions (considering project owners not being keen on conducting social impact assessment if it is not obliged

by MoEU), have been identified as reasons for failing to achieve sustainability within the EIA process.

Turkey needs to design a national social impact assessment tool in EIA process according to social sustainability indicators, on which there is a consensus among stakeholders, especially Turkstat, Ministry of Development and the relevant central and local authorities. This set should be able to meet the social impact assessment standards of EU. Moreover, it is essential that social sustainability should be designed and monitored at the local level. Regarding the geographical breadth and socio-economic heterogeneity of Turkey, rather than country level data, city or province level data will be more informative when sustainability oriented policies are concerned. This might call for the reorganization of data collection structure and require extra funding.

Conditions for development consents can be made to reflect more closely the commitments made in EIA reports, especially for mitigation and monitoring, etc., which should also be translated into the terms of social impact assessment guidelines. In these terms, the qualitative assessment can be used and should focus on the (subjective) interpretation of the principles defined by the Rio Declaration.

This qualitative approach should be developed for the future studies is, especially in EIA process for both construction and operation periods of HEPP projects. A stakeholder analysis tool can be developed which should address fundamental questions of:

- Who are the key stakeholders in the project or study being undertaken or proposed?
- What are the interests of these stakeholders?
- How will they be affected by the project?
- How influential are the different stakeholders? and
- Which stakeholders are most important for the success of the project?



Face-to-face questionnaires should be conducted to analyze the social sustainability of the project. Some of the participants were thinking positive for the project because they think there will be fishery according with the dam project however there won't be any fisheries along with the project operation stage. These questionnaires should be unique based on both the content of the project and the properties of the villages to be conducted on. Moreover, to evaluate social sustainability in an equal environment PPM in EIA process should be taken at least to gathering places of villages and should be more than once in the whole process. Follow up meetings should be conducted during construction and operational phases of a project.

The use of social indicators as a measure of performance in the delivery of sustainability targets, over their use at this level for educational or technical purposes will be effective for future studies. However, preference should be given to and community sustainability auditing and community-based partnerships for the delivery of local public services should be included. This approach aims to focus on issues which are, according to the experiences of different EIA stakeholders, actually relevant and “do-able” in practice to promote sustainability (what can be done).

## REFERENCES

“Avrupa Birliği İletişim Stratejisi,” last modified in 2010  
<http://www.abgs.gov.tr/abis/index.php?p=17&1=1>

“Council Directive of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment,” accessed November 23, 2011,  
<http://ec.europa.eu/environment/eia/full-legal-text/85337.htm>

“Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment,” accessed November 23, 2011 <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32001L0042:EN:HTML>.

“Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment” accessed October 18, 2012 <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32001L0042:EN:HTML>

“Environmental Assessment,” *European Commission*, last modified February 23, 2012,  
<http://ec.europa.eu/environment/eia/full-legal-text/9711.htm>

“Environmental Assessment,” last modified March 5, 2012  
<http://ec.europa.eu/environment/eia/home.htm>

“IAIA, 2011,” accessed November 24, 2011,  
[http://www.iaia.org/publicdocuments/special-publications/Principles%20of%20IA\\_web.pdf](http://www.iaia.org/publicdocuments/special-publications/Principles%20of%20IA_web.pdf).

“IAIA, Strategic Environmental Assessment Performance Criteria”, accessed February, 2012, <http://www.iaia.org/Publications/spl.pdf>.

“Nineth Development Report 2007-2013, published in July 1st, 2006 dated and 26215 numbered Official Gazette Turkey” accessed August 28, 2012  
<http://ekutup.dpt.gov.tr/plan/plan9.pdf>

“Resmi İstatistik Programı”, accessed in February 18, 2012. ” [www.tuik.gov.tr](http://www.tuik.gov.tr)

“Rio Declaration on Environment and Development” accessed August 28, 2012  
<http://www.unep.org/Documents.Multilingual/Default.asp?documentid=78&articleid=1163>

“Sustainable Development,” last modified February 23, 2012  
<http://ec.europa.eu/environment/eussd/>

“The Draft Tenth Development Plan” accessed October 18, 2012  
[http://www.dpt.gov.tr/DocObjects/View/14324/Onuncu\\_Kalk%C4%B1nma\\_Plan%C4%B1\\_%C3%96zel\\_%C4%B0htisas\\_Komisyonlar%C4%B1\\_El\\_Kitab%C4%B1.pdf](http://www.dpt.gov.tr/DocObjects/View/14324/Onuncu_Kalk%C4%B1nma_Plan%C4%B1_%C3%96zel_%C4%B0htisas_Komisyonlar%C4%B1_El_Kitab%C4%B1.pdf)

“Turkish Ministry of Environment and Urbanization” accessed March 23, 2012  
<http://www.csb.gov.tr/turkce/>

“Turkish Ministry of Forestry and Water Affairs” accessed March 23, 2012  
<http://www.ormansu.gov.tr/osb/AnaSayfa.aspx?sflang=tr>

“United Nations Conference on Sustainable Development” accessed October 21, 2012  
<http://www.uncsd2012.org/about.html>

“United Nations Economic Commission for Europe” accessed November 23, 2011  
<http://www.unece.org/env/pp/welcome.html>.

“United Nations Economic Commission for Europe, Agenda 21, New York: United Nations, 1992”, accessed October 18, 2012  
<http://www.un.org/esa/sustdev/documents/agenda21/english/Agenda21>.

“United Nations Environmental Programme, Greening the Global Economy-the Role of Environmental Impact Assessments” accessed in February, 2012.  
<http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=620&ArticleID=6523&l=en&t=long>

“United Nations Framework Convention on Climate Change” accessed October 18, 2012  
<http://unfccc.int/2860.php>

“United Nations Report of the World Commission on Environment and Development: Our Common Future” accessed in September 2012. <http://www.un-documents.net/wced-ocf.htm>

“United Nations Strategic Environmental Assessment Protocol”, accessed October 18, 2012 [http://www.unece.org/env/eia/sea\\_protocol.html](http://www.unece.org/env/eia/sea_protocol.html)

Abaza Hussein, Bisset Ron and Sadler Barry. “*Environmental Impact Assessment and Strategic Environmental Assessment: Towards an Integrated Approach*”, UNEP, 2004: 1-12

Avrupa Komisyonu, “*Komisyon Tarafından Avrupa Parlamentosu’na ve Konsey’e Sunulan Bildirim: Genişleme Stratejisi ve Başlıca Zorluklar 2012-2013.*” Komisyon Çalışma Dokümanı: Türkiye 2012 Yılı İlerleme Raporu, 2012.

Becker, E.; Jahn, T., *Sustainability and the Social Sciences: A Cross-Disciplinary Approach to Integrating Environmental Considerations into Theoretical Reorientation*. (Paris: UNESCO, ISOE and Zed Books, 1999)

Bosshard, A., “*A methodology and terminology of sustainability assessment and its perspectives for rural planning*”, Elsevier, Agriculture, Ecosystems and Environment 77 (2000) 29–41

Cashmore, M., “*The Role of Science in Environmental Impact Assessment: Process and Procedure versus Purpose in the Development of Theory*” Environmental Impact Assessment Review, 24-4 (2004): 403-426.

Development and Environment: The Founex Report; In Defense of the Earth, The Basic Texts on Environment”, UNEP, Executive Series 1, Nairobi 1981

Dokay ÇED Çevre Mühendisliği Ltd. Şti., “*Tepekisla Barajı, HES (34,01 MWm-33 MWe), Malzeme Ocakları, Kırma-Elleme Tesisi ve Hazır Beton Santralı Projesi ÇED Dosyası*” (Ankara, 2011).

European Commission. “*Review of the EU sustainable development strategy (EU SDS) - Renewed Strategy*”, Brussels: Commission of the European Communities, 2006.

European Commission. Communication “*A sustainable Europe for a better world*” as proposal for “*a European Union Strategy for Sustainable Development*”, Brussels: Commission of the European Communities, 2001.

George, C.. “*Testing for Sustainable Development through Environmental Assessment*,” Environmental Impact Assessment Review, 19 (1999): 175-200.

Güneş Şule, *Uluslararası Hukuk Açısından Çevresel Etki Değerlendirmesi*, Siyasal Kitabevi, Ankara, 2007

Heiland, S., Tischer, M., Döring, T., Jessel, B., *Kommunale Nachhaltigkeitsindikatorensysteme, – Anspruch, Eignung, Wirksamkeit*. UVP-Report, 17-5 (2003) 202-206.

Jay, S., Jones, C., Slinn, P., Wood, C., *Environmental Impact Assessment: Retrospect and prospect*, Environmental Impact Assessment Review, 27 (4), pp. 287-300., 2007

KAGİDER & TÜSİAD. “*Türkiye’de Toplumsal Cinsiyet Eşitsizliği: Sorunlar, Öncelikler ve Çözüm Önerileri*,” İstanbul, Temmuz 2008.

Kuik, O.; Verbruggen, H., *In Search of Indicators of Sustainable Development* (London: Kluwer Academic Publishers, 1992).

Kvale, S., *InterViews: An Introduction to Qualitative Research Interviewing* (California: Sage Publications, 1996).

Langhelle Oluf, Lafferty William M. *Towards Sustainable Development: On the Goals of Development-And the Conditions of Sustainability*. Macmillan, 1999.

Lele, Sharachchandra M. “*Sustainable Development: A Critical Review*,” World Development (1991), 607-21.

Ministry of Environment and Forestry, “*Environment Lawno.2872*”, 1983(amended in 2006).

Ministry of Environment and Forestry, "Environmental Impact Assessment By-Law", 2008.

Ministry of Environment and Forestry, "Regulation on Soil Protection and Land Use", 2005.

Moffatt, I., Hanley, N., Wilson, M.D. *Measuring and Modelling Sustainable Development*. (New York: The Parthenon Publishing Group, 2001).

National Research Council. *"Policy Division, Board on Sustainable Development, Our Common Journey: A Transition toward Sustainability"* (Washington, DC: National Academy Press, 1999), 22.

Nieslony, Cordula, *"An Evaluation Of The Effectiveness Of Environmental Impact Assessment In Promoting Sustainable Development"* (Case Study Germany , Norwich, 2004)

Özerol & Tacer, *Sustainable Development Evaluations In Turkey: What Lessons Can Be Taken From The Eu Practice?*, 2010.

Pinfield, G. *Beyond Sustainability Indicators: Local Environment*, vol 1, n. 2 (1996): 151-163.

Plachter, H.; Werner, A., *"Integrierte Methoden zu Leitbildern und Qualitätszielen für eine naturschonende Landwirtschaft"* Zeitschrift für Kulturtechnik und Landesentwicklung, 39 (1998) 121-129. Publications, 2003).

Report of the United Nations Conference on Environment and Development, Rio de Janiero, United Nations, 3-14 June 1992, vol 1-3, New York, 1992

Sadler, B. *Environmental Assessment in a Changing World: Evaluating Practice to Improve Performance. International Study of the Effectiveness of Environmental Assessment* (Canadian Environmental Assessment Agency, Canberra, Australia, 1996).

Sneddon, C.; Howarth, R. B. and Norgaard, R. B., “*Sustainable Development in a post-Brundtland world*”, *Ecological Economics*, Vol. 57; Issue 2 (2005): 253-268.

Tóth Eszter, *Different Approaches of Sustainable Development The Global Level: The EU Guideline And The Success Of Local Implementations* (Budapesti Gazdasagi Foiscola, 2006).

UNDP Turkey and SPO, “*Millennium development goals report*”, Ankara, Turkey, 2010.

UNDP Turkey, 2010, “*Integration of sustainable development into sectoral policies*”. Last modified in 2006, <http://www.undp.org.tr/Gozlem2.aspx?WebSayfaNo=98>.

Willoughby K.W., *Technology choice a critique of the appropriate technology movement*. Boulder and San Francisco: Westview Press. p 15, 1990

World Bank, *Environmental Impact Assessment Regulations and Strategic Environmental Assessment Requirements Practices and Lessons Learned in East and Southeast Asia*, Washington D.C., April 2006

Yin, R.K.. *Case study research: Design and Methods*. Second Edition (London: Sage Publications, 1994).

## **APPENDICES**

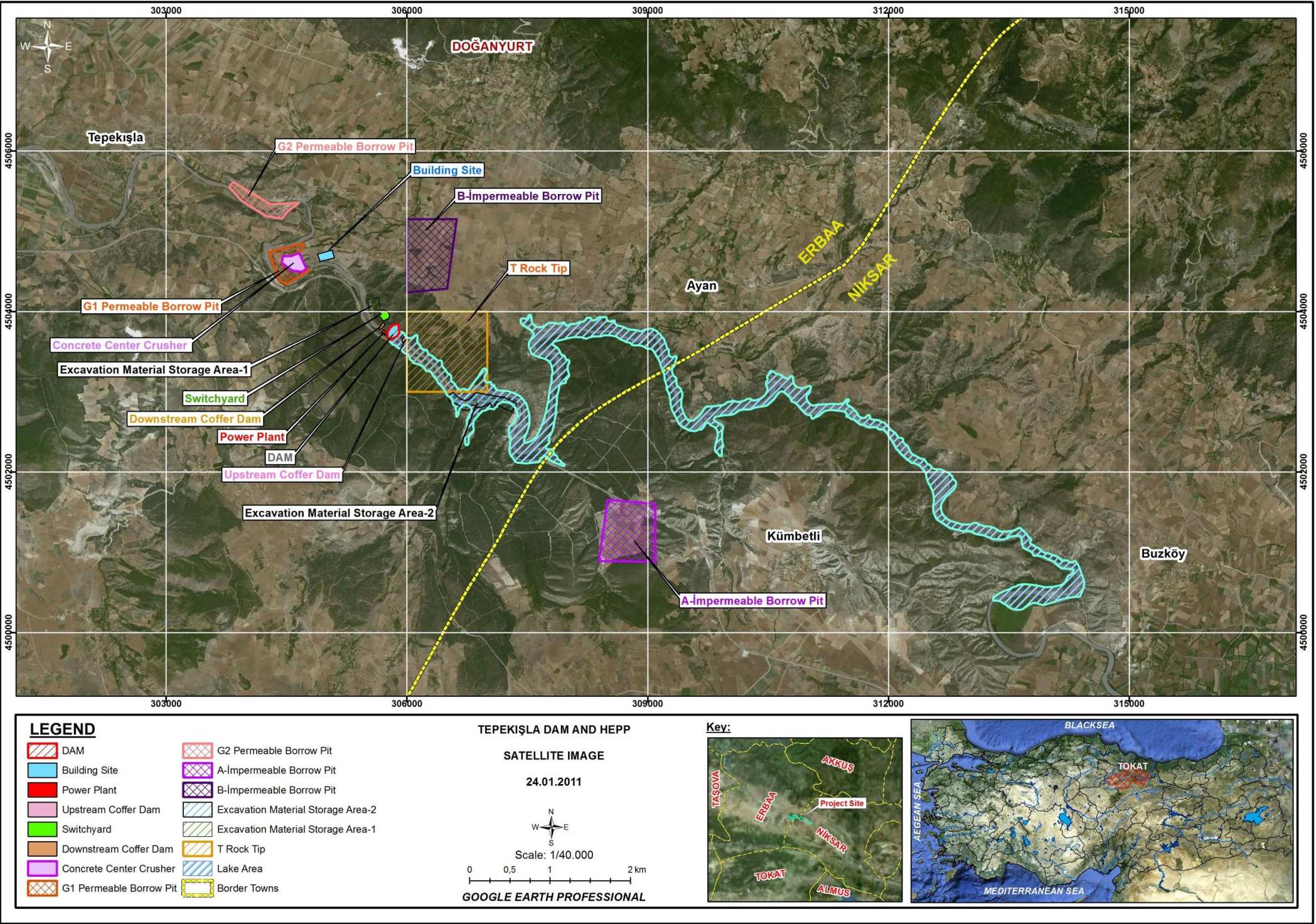


## APPENDIX A: LIST OF RESPONDENTS

No	Name of District	Name of Village	Name /Last Name	Phone Numbers
1	Erbaa	Ayan	Ergün Aksoy	-
2	Erbaa	Ayan	İlhami Coşkun	03567383654
3	Erbaa	Ayan	Kamil Gürel	05429375821
4	Erbaa	Ayan	Zeki Gören	05362597867
5	Erbaa	Ayan	Muammer Kaynak	05433858880
6	Erbaa	Ayan	Naim Gürel	03567382389
7	Erbaa	Ayan	Vahir Şen	05372811668
8	Erbaa	Ayan	Kadir Coşkun	05308756930
9	Erbaa	Doğanyurt	İbrahim Yeşilırmak	05462319430
10	Erbaa	Doğanyurt	Kemal Aydilek	05053569765
11	Erbaa	Doğanyurt	Osman Baş	05354525154
12	Erbaa	Doğanyurt	Erol Baş	05366743004
13	Erbaa	Doğanyurt	Mehmet Doğu	05333100004
14	Niksar	Doğanyurt	Necdet Yapıncak	05059549030
15	Niksar	Buzköy	Cafer Özçelik	05379714340
16	Niksar	Buzköy	İbrahim Yurdakul	05456101708
17	Niksar	Buzköy	Hikmet Çıtır	05368500238
18	Niksar	Buzköy	Halil Çadır	05385676543
19	Niksar	Buzköy	Murat Çelik	05364357397
20	Niksar	Buzköy	Tacettin Özdemir	05365788845
21	Niksar	Buzköy	İbrahim Demirel	05056503239
22	Niksar	Buzköy	Ergin Duyum	05378826958
23	Niksar	Kümbetli	Muharrem Telefoncu	05326574590
24	Niksar	Kümbetli	Hasan Bozok	05365879508
25	Niksar	Kümbetli	Mustafa Yeni	05436547888
26	Niksar	Kümbetli	Mücahit Koç	05303285898
27	Niksar	Kümbetli	Yusuf Bozok	05304649694
28	Niksar	Kümbetli	Vedat Okuklu	05435119994
29	Niksar	Kümbetli	Osman Koç	05303281030
30	Niksar	Kümbetli	İlyas Kırıcı	-



APPENDIX B: TEPEKIŞLA DAM AND HEPP PROJECT 1/40.000 SCALED SATELLITE MAP





## APPENDIX C: TECHNICAL SPECIFICATIONS OF TEPEKİŞLA DAM AND HEPP PROJECT

<b>HYDROLOGY</b>	
Basin	Yeşilırmak
Water course	The Kelkit River
Catchment Area (km <sup>2</sup> )	10,780
Mean Flow Rate (m <sup>3</sup> /s)	92.66
Annual Total Average Flow (hm <sup>3</sup> )	2,922.14
The Peak Flow Rate of 10 Years Recursive Flood (m <sup>3</sup> / sec)	549.00
The Peak Flow Rate of 25 Years Recursive Flood (m <sup>3</sup> / sec)	668.00
The Peak Flow Rate of 50 Years Recursive Flood (m <sup>3</sup> / sec)	766.10
The Peak Flow Rate of 1.000 Years Recursive Flood (m <sup>3</sup> /	1,310.00
The Peak Flow Rate of 10.000 Years Recursive Flood (m <sup>3</sup> /	1,689.00
The Maximum Possible Flow Rate of Flood (m <sup>3</sup> / sec)	3,674.00
<b>DERIVATION CONDUIT</b>	
Location	On the right bank, passes through the
Caliber (m x m)	6 x 6 m, Double Compartment
Type	Box Section
Intake Base Elevation (m)	217.00
Outlet Base Elevation (m)	215.80
Length (m)	L <sub>1</sub> =411, L <sub>2</sub> =426
<b>COFFERDAMS</b>	
Crest Elevation of Upstream Cofferdam (m)	233.50
Height of Upstream Cofferdam (m)	20.75 (From base)
Crest Width of Upstream Cofferdam (m)	6.00
Crest Elevation of Downstream Cofferdam (m)	219.75
Height of Downstream Cofferdam (m)	6.00
Crest Width of Downstream Cofferdam (m)	6.00
<b>DAM EMBANKMENT</b>	
Type	Hard Fill Embankment (If this is not appropriate then the project will re-designed as clay – rock fill)
Thalweg Elevation (m)	214.75
Base Elevation (m)	189.75
Crest Elevation (m)	254.50
Height from Thalweg (m)	39.75
Height from Base (m)	64.75
Crest Width (m)	8.00
Crest Length (m)	207.30
Total Embankment Volume (m <sup>3</sup> )	356,172

<b>RESERVOIR</b>	
Maximum Operation Water Elevation (m)	252.50
Maximum Operation Water Elevation (m)	245.80
Maximum Flood Water Elevation (m)	252.50
Total Reservoir Volume (hm <sup>3</sup> )	39,183
Dead Storage (hm <sup>3</sup> )	24,725
Active Storage (hm <sup>3</sup> )	14,458
<b>SPILLWAY</b>	
Flood Flow Rate for 10.000 Years (m <sup>3</sup> / sec)	1,689.00
Flood Flow Rate for 1.000 Years (m <sup>3</sup> / sec)	1,310.00
<b>SPILLWAY</b>	
Type	On the Embankment
Sill Elevation (m)	232.50
Number of Gates	2
Dimension of Gates	b=8.00 m, h=20.0 m
<b>PENSTOCK PIPE</b>	
Diameter (m)	5.20
Thickness (mm)	14.18
Total Length (m)	95.00
<b>POWER PLANT</b>	
Installed Capacity (MWe / MWm)	33 MWe/34.01 MWm
Tail water Level (m)	214.00
Gross Head (m)	38.50
Average Net Head (m)	36.96
Number of Units	3
Project Flow (m <sup>3</sup> / sec)	106.3
Type of Turbine	Vertical Axis Kaplan
Efficiency of Turbine	0.92
<b>GENERATOR</b>	
Type	3 phase synchronized
Number	3 pieces
Power (kVA)	3 x 12,250 kVA
Power Factor	0.90
Frequency (Hz)	50
Rated Speed	214.30
Generator Efficiency	0.98
Number of Poles	14 doubles (28 pieces)
<b>SWITCHYARD</b>	
Type	Open Type
Elevation (m)	220,25
Dimensions (m x m)	50 x 70
Bus bar Arrangement	Double Bus bars

Bus bar Voltage	154 kV
<b>ANNUAL POWER GENERATION</b>	
Firm Capacity (MW)	19.17
Annual Firm Energy (GWh / year)	168.06
Annual Secondary Energy (GWh / year)	49.00
Annual Total Energy (GWh / year)	217.06

**APPENDIX D: LIST OF PARTICIPANTS IN PUBLIC PARTICIPATION  
MEETING**

Tokat İli, Erbaa ve Niksar İlçeleri Sınırları İçerisinde, Kelkit Çayı Üzerinde Ark Enerji Üretim Sanayi ve Ticaret A.Ş. Tarafından Yapılması Planlanan "Tepekışla Barajı ve HES(34,01 MWM-33 MWe)" Rrojesi İle İlgili Olarak ÇED Sürecinde Erbaa'da Yapılan

Halkın Katılım Toplantı Listesi

Adı-Soyadı	Kurum/Kuruluş/ Görevi	Telefon	e-mail adresi	İmza
Hüseyin Soyman	Selhaş	5354025988	---	[İmza]
Mustafa Sahin	Selhaş	5355423806	---	[İmza]
Abdurrahman Ömür	Demirçi	0538825000	--	[İmza]
Yunis SOYMAZ	Serbest	05357212658	---	[İmza]
İsmail Soyman	Demirçi	05382302004	---	[İmza]
Mehmet Soyman	" " "	05812803500	---	[İmza]
Ahmet Soyman	Demirçi	0538644354	---	[İmza]
Mehmet Soyman	Demirçi	05314010540	---	[İmza]
MUSTAFA DEMİR	Demirçi	0536374	---	[İmza]
Halit SAHİN	Serbest	0536087060	---	[İmza]
Ahmet PINAR	Doğançık	0539320065	---	[İmza]
Mehmet TBAZ	Cifci	0536207000	---	[İmza]
Fatih SOYMAZ	Fırıncı	0564658505	---	[İmza]
Adem SOYMAZ	Fırıncı	05326796195	---	[İmza]
YASAR SOYMAZ	Demirçi	05358355948	--	[İmza]
Mehmet Yılmaz	Tosunlar K. Muh.	05642228616	---	[İmza]
Najdet İşsever	A. Gündir. K. Muh.	05379753693	---	[İmza]
Mehmet Çulcu	Y. Gündir. K. Muh.	05375886220	---	[İmza]
Yılmaz KILIK	Serbest	053321011	---	[İmza]
Fahri DAVAR	Gifci	05392150807	---	[İmza]
Mehmet Çulcu	Pratik	0539612471	---	[İmza]
Cafar ÖZÜK	Emekli	0552085266	---	[İmza]
Murat Demir	Gifci	05383483441	---	[İmza]
Volkan Ağar	Sanki Enerji A.Ş. İrs. Muh.	---	---	[İmza]
M. Ali GENCİ	MTA Gn. Md.	03122012526	---	[İmza]
Mehmet Demirelli	Sanki Enerji	03124729702	---	[İmza]
Pınar KÖSE	DOYAY ÇED	03124757131	---	[İmza]
Nevres GÜNGÖR	DOYAY ÇED	"	---	[İmza]
Deniz Yurtarı	DOYAY ÇED	"	---	[İmza]
Coşkun TAYLAK	"	"	---	[İmza]

**Tokat İli, Erbaa ve Niksar İlçeleri Sınırları İçerisinde, Kelkit Çayı Üzerinde Ark Enerji Üretim Sanayi ve Ticaret A.Ş. Tarafından Yapılması Planlanan "Tepekışla Barajı ve HES(34,01 MWm-33 MWe)" Rrojesi İle İlgili Olarak ÇED Sürecinde Erbaa'da Yapılan Halkın Katılım Toplantısı Listesi**

Adı-Soyadı	Kurum/Kuruluş/ Görevi	Telefon	e-mail adresi	İmza
Erkan YAZICI	Erbaa Kaym. Mol.	745 1001	eyazici@qk.	
Rahmi Yıldırım	İl Genel Meclis Üyesi	0535351560		
İlker Tol	İl Genel Meclis Üyesi	05426345516		
Murat Selami	İl Genel Meclis Üyesi	0532420607		
Abdül Yılmaz	Belediye Başkanı	0505737450		
Esra Kılıç	İl Genel Meclis Üyesi	7151116		
İbrahim Sarı	Kurum Başkanı	05383011573		
Gökhan Arı	Erbaa Belediye	0505876963		
Samiye APEN	Belediye Başkanı	71112010		
Memet Ömür	Belediye Başkanı	7157673		
Seval ERER	Belediye Başkanı	728708		
Mustafa Köksal	İl Genel Meclis Üyesi	728708		
Alihan Kızılcı	Belediye Başkanı	7281000		
Murat Çelebi	Belediye Başkanı	7163307		
Özcan Arı	Belediye Başkanı	532619455		
Fahri ŞAHİN	İl Genel Meclis Üyesi	7157826		
MUSTAFA	Belediye Başkanı	05052429156		
Erdal Alanya	Belediye Başkanı	05554839229		
Corcu F. İLİ	Belediye Başkanı	0534456767		
Bitat YILMAZ	Belediye Başkanı	0534456767		
Yakup FIRSLAN	Belediye Başkanı	0534456767		
Mehmet YILMAZ	Belediye Başkanı	0535921627		
Turan YILMAZ	Belediye Başkanı	05358468141		
Memiş Günel	Belediye Başkanı	05362599973		
İlhami Çelebi	Belediye Başkanı	7383656		
Mahmut Zor	Belediye Başkanı	05372811661		
Adil Çelebi	Belediye Başkanı	05508270970		
Mehmet Çelebi	Belediye Başkanı			
Erdal ŞALU	ÇOB			



**Tokat İli, Erbaa ve Niksar İlçeleri Sınırları İçerisinde, Kelkit Çayı Üzerinde Ark Enerji Üretim Sanayi ve Ticaret A.Ş. Tarafından Yapılması Planlanan "Tepekışla Barajı ve HES(34,01 MWm-33 MWe)" Rrojesi İle İlgili Olarak ÇED Sürecinde Erbaa'da Yapılan**

**Halkın Katılım Toplantı Listesi**

Adı-Soyadı	Kurum/Kuruluş/ Görevi	Telefon	e-mail adresi	İmza
Metin AÇIKSOY	Os. 22 Sube Msd. Mühendis Tokat	356.2145420		[İmza]
Yılmaz SAHİN		05862321112		[İmza]
Fatih SOYMAZ		715 67 69		[İmza]
Cafer Koc				[İmza]
Sefer Ünal		0526276706		[İmza]
Kısacık B. A.		075 70 932473		[İmza]
Kobir Demir				[İmza]
Kınır		Dogan yur		[İmza]
YUSUF KOC		Dogan yur		[İmza]
Mehmet Koc		D25ml		[İmza]
İbrahim YERLİEMER		Dogan yur		[İmza]
Mehmet Yaprincak		Dogan yur		[İmza]
Kamil Ayilok		Dogan yur		[İmza]
Erbil Başara	Karapınar Bulama Koop Bşk.	KARAYARA		[İmza]
Ahmet Sotun	Demirci	5346521209		[İmza]
Mustafa BAKIN	Demirci	5352023235		[İmza]
Ahmet Soyman	Sotun	561959282		[İmza]
Abdullah Soyman	Demirci	5363537998		[İmza]
Mehmet Soyman	Demirci Kalka	0536611728		[İmza]
Mehmet YERLİ		0-539224350-		[İmza]
Ahmet Soyman		05368299980		[İmza]
Sükrü Soyman		05533990859		[İmza]
Ali Soyman		05576696170		[İmza]
İbrahim Soyman		05365569282		[İmza]
Arif Yılmaz KESKİ	Ziraat Teknikeri			[İmza]
Mehmet A. FAYAZ				[İmza]
Mehmet EROL	Yerel TV.	5012278331		[İmza]

M. Mustafa SATILMAZ, Çarşıcadımm Bsk, 2026433  
Daire BŞE.

[İmza]

**Tokat İli, Erbaa ve Niksar İlçeleri Sınırları İçerisinde, Kelkit Çayı Üzerinde Ark Enerji Üretim Sanayi ve Ticaret A.Ş. Tarafından Yapılması Planlanan "Tepekışla Barajı ve HES(34,01 MWm-33 MWe)" Rrojesi İle İlgili Olarak ÇED Sürecinde Erbaa'da Yapılan Halkın Katılım Toplantı Listesi**

Adı-Soyadı	Kurum/Kuruluş/ Görevi	Telefon	e-mail adresi	İmza
Ali Güçsoy	Erbaa Belediyesi Meclis Üyesi	0532561 85408 5788		H. Güçsoy
İhsan Akgel	Ark Enerji A.Ş.	240251		İhsan Akgel
Kemal Aksoy	Selam	2382172		Kemal Aksoy
Sebahattin	İrmak	7383095		Sebahattin
Yusuf Arslan	Ziraat Mnh.-Damlacı	0546.2545 53	yakubulut2000 @hotmail.com	Yusuf Arslan
Altan Yılmaz	Yenimah. muhtarı	05322005240		Altan Yılmaz
Murat Şahin	Erce k. muh.	0538202600		Murat Şahin
Hüsamettin Önkü	Çatalı köyü	05376000761		Hüsamettin Önkü
Hayran Gümrü	bel. mecl. üyesi	5393345616		Hayran Gümrü
Saklıoğlu	k. muh.	05362009515		Saklıoğlu
Doğançık	muhtar.	05383310004		Doğançık
Safkırıören Köyü Muh.		05434871225		Safkırıören Köyü Muh.
Tepekışla Köyü Muh.		05368839540		Tepekışla Köyü Muh.
M. Vainmar	Kaymak	05318120613		M. Vainmar
Recep	Korkmaz	05373201723		Recep
Ahmet	Karababurç	05377851835		Ahmet
Selim Kırıoğlu	Hümmetli köyü	1		Selim Kırıoğlu
Osman Doğan	Günüşe	05356525154		Osman Doğan
Kamil Güröl	Ayhan Köyü	05419375821		Kamil Güröl
Erol Baş	Günüşe	05366743004		Erol Baş
CAMPİDİ KÖYÜ	muhtar.	05363231085		CAMPİDİ KÖYÜ
Kerem	demir			Kerem
Harun Sönmaz	Serbest mes.	0536766 3839	Harun Sönmaz @hotmail.com	Harun Sönmaz
M. Göçmen	Serbest	0537814 5741		M. Göçmen
İsmailiye	Çifçi	0532623 0679		İsmailiye
Lütfi Başara	Eski Karababurç Beldeye başkanı	0544-6748051		Lütfi Başara



**Tokat İli, Erbaa ve Niksar İlçeleri Sınırları İçerisinde, Kelkit Çayı Üzerinde Ark Enerji Üretim Sanayi ve Ticaret A.Ş. Tarafından Yapılması Planlanan "Tepekışla Barajı ve HES(34,01 MWm-33 MWe)" Rrojesi İle İlgili Olarak ÇED Sürecinde Erbaa'da Yapılan Halkın Katılım Toplantı Listesi**

Adı-Soyadı	Kurum/Kuruluş/ Görevi	Telefon	e-mail adresi	İmza
Ali Güçsoy	Erbaa Belediyesi Meclis üyesi	0532561 5788		
İhsan Akgel	Ark Enerji A.Ş.	240251		
Kemal Akçaya	Sefaa	2382172		
Sebahattin	İrmak	2383095		
Yusuf Akbulut	Ziraat Mnh.-Dumank	05462545	gokbulut2000@ehsan	
Altan Yılmaz	Yenimah. muhtarı	05322005240		
Murat Şahin	Erce k. muh.	0538202600		
Hüsamettin Önk	Çatalı köyü	05376000761		
Hayran Gümrü	bel. mecl. üyesi	5393345616		
Sait Doğan	k. muh.	05362009515		
Doğançık	muhtar.	05333310004		
Safir Kırpenköyü	Muh.	05434871225		
Tepekışla köyü	Muh.	05368879540		
M. Vannur	Kaymak	05318120618		
R. Çep	Korkmaz	05373201723		
Ahmet	Karababurç	05377851835		
Selim Kırıcı	Hümmetli köyü			
Osman Doğan	Günözü	05356525154		
Kamil Gürol	Ayhan köyü	05419375821		
Erol Baş	Günözü	05366743004		
CAMPİDİ KÖYÜ	Yukarı	05363231085		
Kerem	deniz			
Harun Sönmaz	Serbest mes.	05367663839	Harun.Soyun@dotmail.com	
M. Sönmaz	Serbest	05377814574		
İsmail Kıpçık	Çip/eri	05326236679		
Lütfi Başara	Eski Karayolları Belediye Başkanı	0544-6748081-		

**Tokat İli, Erbaa ve Niksar İlçeleri Sınırları İçerisinde, Kelkit Çayı  
Üzerinde Ark Enerji Üretim Sanayi ve Ticaret A.Ş. Tarafından  
Yapılması Planlanan "Tepekışla Barajı ve HES(34,01 MWm-33  
MWe)" Rrojesi İle İlgili Olarak ÇED Sürecinde Niksar'da  
Yapılan Halkın Katılım Toplantı Listesi**

Adı-Soyadı	Kurum/Kuruluş/ Görevi	Telefon	e-mail adresi	İmza
Ömer Altınacci	Mahmudiye mahallesi	05324090779	altinaccim@hotmail.com	[İmza]
Abdullah Çetkin	Yeşilköy	0535778223		[İmza]
Devran Demir	Mahmudiye mahallesi	0532250871		[İmza]
İbrahim Akçel	Ark Enerji	05322002239		[İmza]
Kadir Ç. Özden		05377687798		[İmza]
Saim Suvak	İst. Mah.	05322509063	info@tepekisla.com.tr	[İmza]
Mustafa Özlü		05324961254		[İmza]
Abdullah Özcan	Mahmudiye mahallesi	05368502902		[İmza]
Münire KOUAK	Öğrenci	—	—	[İmza]
Zehra TAHA	Öğrenci	—	—	[İmza]
Gülşim VCA	Öğrenci	0841900088	gulum_mengoc@msk	[İmza]
Jevdet ÖZKURT	Öğrenci	05456162683		[İmza]
Burcu ÖZÜL	Öğrenci	—	—	[İmza]
Sikyon SARI	Köylü	—	—	[İmza]
Halil ÖZDEN	Bakkal	05356006772		[İmza]
Şahin Yeteroğlu	Niksar	95435550478	—	[İmza]
Umut Korkmaz	ANKAP	05056347097	—	[İmza]
Abidin Çelik	Doküman	—	—	[İmza]
Volkan DOĞAN	Sarıca mahallesi	02262807700		[İmza]
Celal ALTINDAĞ	Niksar M. Ş. Maden Mah.	05337697704	celalaltindag@nhsa.com.tr	[İmza]
Fatih USTA	Mühendis	05064064066	fatihustamuhendis.com	[İmza]
Sevilcan Şenbörk	Direktör	—	—	[İmza]
Pınar Köse	DOĞAY ÇED	03124737431	pinase@dogayin.com.tr	[İmza]
Nezih Güneri	DOĞAY ÇED	03124737431	—	[İmza]
Umut FERTÜRK	İÇOM	03162283994	umut.ferturk@icom.com.tr	[İmza]
Hawa M. ÖZÜM	İÇOM	03562284994	—	[İmza]
Sadullah Kılıç	İÇOM	—	—	[İmza]
Demet AKOĞUZ	İÇOM	—	—	[İmza]



**Tokat İli, Erbaa ve Niksar İlçeleri Sınırları İçerisinde, Kelkit Çayı  
Üzerinde Ark Enerji Üretim Sanayi ve Ticaret A.Ş. Tarafından  
Yapılması Planlanan "Tepekışla Barajı ve HES(34,01 MWm-33  
MWe)" Projesi İle İlgili Olarak ÇED Sürecinde Niksar'da  
Yapılan Halkın Katılım Toplantı Listesi**

Adı-Soyadı	Kurum/Kuruluş/ Görevi	Telefon	e-mail adresi	İmza
Deniz TURTULU	DOKAY-ÇED			
M. Ali GEMİCİ	MTA Gr. Md			
Mahmut ÖZDEMİR	İlçe Md. İst. Md	0332 9221198		
Bangören ERTOK	Kırsal Gıda İş. Md.			
Rahmeti YETİROĞLU	ÇED Sorumlusu	0547 665 6060		
Bekir SOBACI	Takat Eski. Mv.	0506 5778853		
Uğur TURAN	Niksar Kaymakamı	0332 662337		
Abdul Kadir KOCALAN	Orman İş. Md.	514 11666		
M. Mustafa KUTLU	Orman İş. Md.	0276 6433		
Fazlı Bayram	Niksar Bld. Bşk.	0542 6528312		
Ahmet YILMAZ	Kadastro Müdürü	0542 4879292		
Ali YILMAZ	Tic. Odası Bşk.			
Hasan İCİNECİ	İlçe Orman İş. Md.	2284626		
Habip ZETİCİ	Hayvan Yetiştiriciliği Md.	0542 6640575		
Serel Beldeşi	Av. Part. Niksar	0532 6227587		
Sadullah KANTAR	İlçe Emniyet			
Sait NEMİŞKAN	Belediye Bşk.	0537 4885204		
Öktem ATIL	Belediye Bşk. Niksar			
Elvan BAYRAM	GOP İlçe Başkanı	0336/2521616		
Caner ASILIOĞLU	ELA İlçe Başkanı	0555 4839209		
Erdal ALKAN	"Seviji" Mh.	0505 2429156		
Erman ASILIOĞLU	ELA İlçe Başkanı			
Hacı Ahmet ÇELİK	Buğdaycı	01761		
Tevfik ÇELİK	Buğdaycı			
Tacettin ESKER	Buğdaycı			
Remzi YIGİT	Belediye Başkanı			
Lütfi BOLAT	Tepekışla Köyü			
Caner KUTLU	Niksar İlçe Bşk.	0332 6279914		

**Tokat İli, Erbaa ve Niksar İlçeleri Sınırları İçerisinde, Kelkit Çayı  
Üzerinde Ark Enerji Üretim Sanayi ve Ticaret A.Ş. Tarafından  
Yapılması Planlanan "Tepekışla Barajı ve HES(34,01 MWm-33  
MWe)" Rrojesi İle İlgili Olarak ÇED Sürecinde Niksar'da  
Yapılan Halkın Katılım Toplantı Listesi**

Adı-Soyadı	Kurum/Kuruluş/ Görevi	Telefon	e-mail adresi	İmza
Fahri SİVRİ	Muhhtar	551 1475	Ministreri	
Necati Kütükcü	Güçlü köyü	533 7811		
Mahmut KURT	Direkli köyü	-	-	
Hasan Bözük	Kumbetli köyü	05265877508	-	
Mustafa yeni	Kumbetli	-	-	
Yusuf Bözük	Kumbetli köyü	0530 464 9696		
Selim KIRICI	Kumbetli köyü			
Remziye elal	Buz köyü			
Ali	Dele köyü			
Ömer Akmal	Ağrı			
Hüseyin	Yılmaz			
Vedat OKUKLU	Kumbetli köyü	543 511 9394	vedatam@hotmail.com	
Taner KARIN	Muhhtar	05322 19634		
Ahmet Çelik	Sarıak köyü	536 775 6658		
Hayrettin Yurdakul	Buz köyü	0545610708		
Mustafa	Buz köyü	055210059		
Caner Bözük	Buz köyü	0537 971 43 40		
Rıza ÇIKLA	SÖĞÜZ	05365656593		
Halil Gök	Buz köyü	-	-	
Emel Doğan	Mahmut köyü	05296915883		
Mehmet Doğan	Mahmut köyü	3565491061		
Hüseyin Taşkın	Mahmut köyü	0532376206		
Mehmet Yılmaz	Okul köyü	05308724553		
Hayat Kırıcı	Lise köyü	-	-	
Nergis Bandoğlu	Niksar	05063 161511		
Hikmet Güler	Buz köyü	05268300238		
Erol DUYUK	Buz köyü	05378826358		
MURAT GELİC	Buz köyü	05364357397		
Ali İSİK	Eyüboğaz köyü	05468203151		



**Tokat İli, Erbaa ve Niksar İlçeleri Sınırları İçerisinde, Kelkit Çayı  
Üzerinde Ark Enerji Üretim Sanayi ve Ticaret A.Ş. Tarafından  
Yapılması Planlanan "Tepekışla Barajı ve HES(34,01 MWm-33  
MWe)" Projesi İle İlgili Olarak ÇED Sürecinde Niksar'da  
Yapılan Halkın Katılım Toplantı Listesi**

Adı-Soyadı	Kurum/Kuruluş/ Görevi	Telefon	e-mail adresi	İmza
Ömer Yener				
Abdul Fattah				
Rasim Yener				
Hasan Yener				
Muhammed Tufan	Mühür			
Mehmet Akın	DSİ MÜHÜR	0356 214540		
Cemal Demir	mahmud KÖYÜ			
AHMET ŞAHİTOĞLU	TÜCCAR	0356 5271218		
NUSRET ZENGİN	Dizli köyü			
NUSRET ÖZGÜN	NIKSAR BETON	0532 327636		
Sabir Akın	İns. Müh	0535 2601367		
Tuncer Demir	Buz köyü			
Gülbay Kaya	Çiğir			
Süleyman Yener	Kırsal SSK	0535 506920		
Güngör Kaya	Alınbel köyü	0530 9881030		
Mehmet Kaya	Kimbetli köyü	0530 3285898		
Tahsin Çankaya	Tema temsilcisi	034 26330193		
Murat ÇR	Heliççi çiftlik A1			
Alihan TANIRCI	Heliççi çiftlik A1	0505 589940		
Adnan İNSAL	STK Temsilcisi	0545 939 6204		
Cemal KUTAN	Niksar Ziraat Odası Temsilcisi	034 2341170		
Ali Kocut	Niksar Ziraat Odası yönetimi Kurulu üyesi			
Muhammed ALKAN	Türk Hava Kurumu Başkanı			
AYŞE KAMALI				
Nazik TÜRKER	Niksar AAD Sube Başkanı			
Durmuş Mehmet	B. Ö. Ö.	0536 648 5879		
Hecmetin ÇAĞLAR	İnşaatçı	0539 389 2277		
Coşkun Yurki	DAHAŞ-ÇED	034 425 1131		

## APPENDIX E: TABLE OF MUHTARS' QUESTIONNAIRE ANALYSIS

	<i>AYAN</i>	<i>DOĞANYURT</i>	<i>KÜMBETLİ</i>	<i>BUZKÖY</i>
<b>GENERAL INFO</b>				
DISTIRICT	Erbaa	Erbaa	Niksar	Niksar
CHIEF OF VILLAGE	Kadir Coşkun	Mehmet Doğu	Muharrem Telefoncu	Tacettin Özdemir
<b>GEOGRAPHIC POSITION</b>				
DISTANCE TO TOKAT (KM)	80	85	80	40
DISTANCE TO DISTIRICT (KM)	20	15	55	14
GEOGRAPHICAL LOCATION	Plain	Plain	Forest	Forest
<b>DEMOGRAPHIC PROFILE</b>				
TOTAL # NUMBER OF HOUSEHOLD	41	200	120	110
FEMALE POPULATION (%)	50	50	45	45
LARGEST AGE POPULATION	60+	5-18	60+	19-59
POPULATION CHANGE IN LAST 5 YEARS	Decrease	Remained Same	Decrease	Remained Same
REASON	Migration, Unemployment	-	Migration	-



	<i>AYAN</i>	<i>DOĞANYURT</i>	<i>KÜMBETLİ</i>	<i>BUZKÖY</i>
<b>ETNOGRAPHIC PROFILE</b>	<i>Turkish, Muslim, Sunni</i>			
<b>PUBLIC SERVICES</b>				
SCHOOL		√	√	√
HEALTH INSTITUTION		√		√
SMALL MARKET		√	√	√
GATHERING PLACE (COFFEHOUSE)			√	√
LIBRARY		√		
POST OFFICE		√		
AGRICULTURAL CREDIT COOPERATIVES		√		√
SPORTS FACILITY				
RECREATIONAL FACILITY		√		
OTHER	Mosque		Kur'an Course	
<b>SOCIAL SITUATION (PROBLEMS)</b>				
NATURAL RESOURCE SHORTAGE (E.G. WATER, ENERGY, RAW MATERIALS)		√	√	

	<i>AYAN</i>	<i>DOĞANYURT</i>	<i>KÜMBETLİ</i>	<i>BUZKÖY</i>
LAND (E.G. DISTRIBUTION OF LAND OWNERSHIP)			√	
ECONOMIC (E.G. EMPLOYMENT)	√	√		
CULTURAL DIFFERENCES (INCLUDING ETHNOGRAPHIC ISSUES)				
CONFLICT BETWEEN FAMILIES				
OTHER		Marketing milk		
<b>INFRASTRUCTURE</b>				
CONDITION OF ROADS	Dirt Road	High Quality Asphalt	Dirt Road	Rough Gravel
OWN WATER SUPPLY	√	√	√	√
WASTE DISPOSAL PROBLEM	Used as fertilizer	Village Dump	Used as fertilizer	Dumped in River
<b>ENVIRONMENT AND CULTURAL PRACTICES</b>				
MAJOR PROBLEMS	-	Draught	Draught, Forest Fire	
LOCAL AGRICULTURAL PRODUCTS	Vine Grapes	Grape Leaves		Early Grown Tomatoes
HISTORICAL/ARCHEOLOGICAL AREAS		Hayati Fountain	Caves, Old Settlement	Talazan Bridge

	<i>AYAN</i>	<i>DOĞANYURT</i>	<i>KÜMBETLİ</i>	<i>BUZKÖY</i>
SOCIAL INSTITUTION		Turkish Bath		
ENDANGERED SPECIES		Birds		
<b>ECONOMIC BASELINE</b>				
INDUSTRIAL INSTITUTIONS	<i>No Industrial Institutions Exist</i>			
ECONOMIC ACTIVITIES	Agriculture, Stock Breeding	Agriculture, Stock Breeding, Beekeeping, Mining	Agriculture	Agriculture, Stock Breeding
ACTIVE POPULATION (15-60) JOBS	Farmer, Breeder	Unemployed, Farmer, Student	Farmer	Farmer, College Student
	<i>Doğanyurt takes immigrants as bee keepers in months April-May and September-November.</i>			
<b>MACHINERY EXISTENCE OF VILLAGE</b>				
TRACTOR	30	100+	40	70
HARVESTER		1		
PLOW	√	√		
THRESHER	√	7	40	20

	<i>AYAN</i>	<i>DOĞANYURT</i>	<i>KÜMBETLİ</i>	<i>BUZKÖY</i>
CULTIVATOR		√		√
PNEUMATIC DRILL				
HOEING MACHINES				
AUTOMOBILE / CAR	7	30	15	20
MINIBUS	2	2	3	8
BUS				
TRUCK			1	
OTHER		Commercial Vehicle		
<b>AGRICULTURE (LAND OWNERSHIP)</b>				
REGISTERED LAND (%)	20	100	95	100
STATE OWNED (%)			9	
UNREGISTERED LAND (%)	80			
1-10 DENUM (1000 m <sup>2</sup> )				75
11-50 DENUM (1000 m <sup>2</sup> )	30	30		25
<b>EDUCATION (PRESENT SCHOOLS)</b>	Elementary	Elementary	Elementary	None- Doğanyurt (4km)

	<i>AYAN</i>	<i>DOĞANYURT</i>	<i>KÜMBETLİ</i>	<i>BUZKÖY</i>
<b>HEALTH PROBLEMS</b>		Physical Disabilities	Diabetes, Heart Diseases, Age Related Problems	
<b>VILLAGE PROBLEMS</b>				
TOP PRIORITY	Inadequate access to land	Inadequate wastewater main	Unemployment	Delays in payment from selling agricultural products
SECOND PRIORITY	Poor roads, Inadequate access	Inadequate irrigational water	Inadequate irrigational water	
THIRD PRIORITY	Inadequate irrigational water	Inadequate marketing possibilities	Delays in payment from selling agricultural products	
STANDARD OF LIVING IN LAST 5 YEARS	Worse	Worse	Worse	Better (increase in animal prices)

	<i>AYAN</i>	<i>DOĞANYURT</i>	<i>KÜMBETLİ</i>	<i>BUZKÖY</i>
WAY OF VILLAGE DEVELOPMENT	Animal husbandry, Support for farmers	Sufficient irrigational water, Improved education	Handcrafting, Small businesses	Sufficient irrigational water
OBSTACLES FOR THE DEVELOPMENT	Inadequate access	Inadequate irrigational water	Unproductivity of farming	Inadequate irrigational water
<b>INFORMATION ON THE PROJECT</b>				
VILLAGEMEN'S POSITION ON THE PROJECT	POSITIVE (HAVING A DAM AND A POND)	NEUTRAL (NOT ENOUGH BRIEFING GIVEN)	POSITIVE (TOURISM, SEA PRODUCST, IRRIGATIONAL WATER, MILD WEATHER)	NEGATIVE (LOSING AGRICULTURAL AND MEADOW AREAS)
POSSIBLE BENEFITS OF THE PROJECT	Receiving compensation for land acquisition	Not any direct benefit	Possible Employment opportunities	Not any direct benefit
POSSIBLE HARMSOF THE PROJECT	No harm	Harm to land and product, increase in humidity,	Increase in humidity	Losing Agricultural And Meadow Areas because of flood by dam reservoir
	<i>No other HPP was installed near the villages</i>			

	<i>AYAN</i>	<i>DOĞANYURT</i>	<i>KÜMBETLİ</i>	<i>BUZKÖY</i>
ADDITIONAL COMMENTS	Request for building access to land, usage of workers from the village, proper payment of expropriation	Final status of the project is vague, proper payment of expropriation		

**APPENDIX F: TABLE OF RESPONDENTS' QUESTIONNAIRES ANALYSIS**

No	Opinion	Village Name	Participant Name/Last Name	Age	Marital Status	Education Status	Agricultural Land Ownership	Animal Ownership	Land Ownership	Occupation	Previous Experience about HEPP	Reason 1	Reason 2	Reason 3	Comments
1	Negative	Ayan	Ergün Aksoy	35	Not Married	High School	Yes	No	Yes	Agriculture	One experience	Damage to lands and crops			His land will be flooded
2	Positive	Ayan	İlhami Coşkun	65	Married	Not Educated	Yes	Yes	Yes	Agriculture, stockbreeding	No experience	Touristic lake	Fishery		Tourist attraction and increase in local tourism and social activities
3	Positive	Ayan	Kamil Gürel	73	Married	Elementary School (first five years)	Yes	Yes	Yes	Agriculture	No experience	Electric Energy Generation	Scenery	Fishery	
4	Negative	Ayan	Zeki Gören	57	Married	University Degree	Yes	Yes	Yes	Agriculture and stockbreeding	No experience	Damage to lands and crops	Damage to animals		His land will be flooded
5	Positive	Ayan	Muammaer Kaynak	54	Married	Elementary School (first five years)	Yes	Yes	Yes	Agriculture and stockbreeding	No experience	Employment	Electric Energy Generation	Infrastructure	
6	Positive	Ayan	Naim Gürel	43	Married	Elementary School (first five years)	Yes	Yes	No	Agriculture and stockbreeding	No experience	Employment	Electric Energy Generation	Infrastructure	However it may damage land and crops and animals
7	Positive	Ayan	Vahir Şen	45	Married	Elementary School (first five years)	Yes	Yes	Yes	Agriculture and stockbreeding	No experience	Increase in transportation	No negative side		
8	Positive	Ayan	Kadir Coşkun	58	Married	Elementary School (first five years)	Yes	No	Yes		No experience	Electric Energy Generation	Employment		
9	Negative	Buzköy	Cafer Özçelik	30	Married	High School	No	Yes	Yes	Agriculture and stockbreeding	No experience	Damage to lands and crops	Earthquake zone		
10	Negative	Buzköy	Ergin Duyum	45	Married	Middle school (first 8 years)	No	Yes	Yes	Agriculture, stockbreeding and greenhousing	No experience	Damage to lands and crops			
11	Negative	Buzköy	Hikmet Çıtır	45	Married	High School	Yes	No	Yes	Agriculture	One experience	No positive impact will occur			Previous experience effected him because



															previous project owners didn't conduct what they promised
12	Negative	Buzköy	İbrahim Demirel	43	Married	Elementary School (first five years)	Yes	Yes	Yes	Agriculture	One experience	Damage to lands and crops	Damage to climate change		
13	Negative	Buzköy	İbrahim Yurdakul	45	Married	High School	Yes	Yes	Yes	Agriculture	One experience	Dust			However it may damage land and crops and animals
14	Negative	Buzköy	Murat Çelik	37	Not Married	Middle school (first 8 years)	Yes	Yes	Yes	Agriculture and stockbreeding	One experience	Humidity	Damage to lands and crops		
15	Positive	Buzköy	Tacettin Özdemir	42	Married	Middle school (first 8 years)	Yes	No	Yes		One experience	Electric Energy Generation	Fishery		However it may damage land and crops and animals
16	Negative	Buzköy	Halil Çadır	39	Not Married	High School	No	Yes	No	Stockbreeding	One experience	Security Issues			
17	Positive	Doğanyurt	Erol Baş	45	Married	Elementary School (first five years)	Yes	Yes	Yes	Stockbreeding and transhumance	One experience	Damage to lands and crops			No fair expropriation occurs
18	Negative	Doğanyurt	İbrahim Yeşilırmak	53	Married	Middle school (first 8 years)	Yes	Yes	Yes	Viniculture, weeding, agriculture and stockbreeding	One experience	Employment	Irrigation	Infrastructure	
19	Negative	Doğanyurt	Kemal Aydilek	57	Married	Middle school (first 8 years)	Yes	Yes	Yes	Agriculture	One experience	Damage to lands and crops	Damage on roads		
20	Positive	Doğanyurt	Osman Baş	50	Married	Elementary School (first five years)	Yes	No	Yes	Viniculture and greenhousing	No experience	Employment	Irrigation		
21	Positive	Doğanyurt	Mehmet Doğu	52	Married	Elementary School (first five years)	Yes	Yes	Yes		No experience	Electric Energy Generation			
22	Negative	Doğanyurt	Necdet Yapıncak	41	Married	Elementary School (first five years)	Yes	No	Yes	Agriculture	No experience	Damage to lands and crops	Increase in traffic		Doesn't want to give away his land
23	Positive	Kümbetli	Hasan Bozok	43	Married	Elementary School (first five years)	Yes	Yes	Yes	Agriculture	No experience	Employment	Infrastructure		Roads can be repaired during the

						years)										project
24	Positive	Kümbetli	Mustafa Yeni	46	Married	Elementary School (first five years)	Yes	Yes	Yes	Agriculture	No experience	Employment				
25	Positive	Kümbetli	Mücahit Koç	34	Not Married	Elementary School (first five years)	Yes	Yes	No	Agriculture and transportation	No experience	Services				
26	Positive	Kümbetli	Osman Koç	43	Married	Middle school (first 8 years)	Yes	Yes	Yes	Agriculture	No experience	Fishery				
27	Positive	Kümbetli	Yusuf Bozok	49	Married	Elementary School (first five years)	Yes	No	Yes	Agriculture	No experience	Infrastructure				There is no infrastructure for water supply so he thinks project will help with this problem
28	Negative	Kümbetli	Vedat Okuklu	38	Married	High School	Yes	Yes	Yes	Agriculture	One experience	Increasing traffic	Explosion danger			
29	Positive	Kümbetli	Muharrem Telefoncu	52	Married	Elementary School (first five years)	Yes	Yes	Yes	Retired teacher	No experience	Water supply	Infrastructure			There is no infrastructure for water supply so he thinks project will help with this problem
30	Positive	Kümbetli	İlyas Kırıcı	44	Married	Elementary School (first five years)	Yes	Yes	No	Agriculture and stockbreeding	No experience	Services				

## APPENDIX G: TEZ FOTOKOPİSİ İZİN FORMU

### ENSTİTÜ

Fen Bilimleri Enstitüsü

☐

Sosyal Bilimler Enstitüsü

☐

Uygulamalı Matematik Enstitüsü

☐

Enformatik Enstitüsü

☐

Deniz Bilimleri Enstitüsü

☐

### YAZARIN

Soyadı : Köse

Adı : Pınar

Bölümü : Sosyal Politika

**TEZİN ADI** (İngilizce) : A Critical Analysis Of Social Dimension In Sustainable Development: A Case Study Of Tepekışla Dam And Hepp In Tokat, Niksar

**TEZİN TÜRÜ** : Yüksek Lisans

☐

Doktora

☐

1. Tezimin tamamından kaynak gösterilmek şartıyla fotokopi alınabilir.
2. Tezimin içindekiler sayfası, özet, indeks sayfalarından ve/veya bir bölümünden kaynak gösterilmek şartıyla fotokopi alınabilir.
3. Tezimden bir bir (1) yıl süreyle fotokopi alınamaz.

☐☐☐

**TEZİN KÜTÜPHANEYE TESLİM TARİHİ:**