



Netherlands Commission for  
**Environmental Assessment**

# 2nd Advice on the Scoping Report for the ESIA for the Rehabilitation of the Zemo–Samgori Irrigation Project

## GEORGIA



21 October 2016





Mr Zoran Lazic  
Project leader  
Rijksdienst voor Ondernemend Nederland (RVO)  
Den Haag

Your reference: --  
Your letter: --  
Our reference: 7195/AK/LW  
Enquiries to: Arend Kolhoff  
Direct phone no.: +3130 234 76 04

Date: 21 October 2016  
Subject: 2<sup>nd</sup> Advice on the Scoping Report for the ESIA for the  
rehabilitation of the Zemo-Samgorie irrigation scheme,  
Georgia

Dear Mr Zoran Lazic,

The Netherlands Enterprise Agency (Rijksdienst voor Ondernemend Nederland – RVO) requested the Netherlands Commission for Environmental Assessment (NCEA) to advise on the 4<sup>th</sup> draft Scoping Report (June 2016) for the Environmental and Social Impact Assessment (ESIA) for the rehabilitation of the Zemo-Samgori irrigation project. Therefore, the NCEA has reviewed the Scoping Report and provided guidelines to complete the Scoping Report for the ESIA.

A visit to Georgia was made including a field visit in the last week of September 2016.

In this advisory report the quality of the 4<sup>th</sup> draft Scoping report (June, 2016) has been reviewed against IFC performance standards and the new draft EIA legislation of Georgia has also been used as a reference.

The NCEA is ready to review the final ESIA.

Yours sincerely,

Professor Rudy Rabbinge,

Chairman of the Working Group  
2<sup>nd</sup> Advice on the Scoping Report for the ESIA for the rehabilitation of the Zemo-Samgorie  
irrigation scheme, Georgia



**Visiting address**

A. v. Schendelstraat 800  
3511 ML Utrecht  
The Netherlands

**Postal address**

P.O. Box 2345  
NL-3500 GH Utrecht  
The Netherlands

t +31 (0)30 2347660  
e mer@eia.nl  
w eia.nl

IBAN NL30RABO0394334973  
CoC 41185216  
VAT NL8004.015.42.B.01

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## Advisory Report by the NCEA

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**To** Netherlands enterprise Agency (RVO)

**Attn** Mr Z. Lazic

**From** The Netherlands Commission for Environmental Assessment (NCEA)

**Date** 21 October 2016

**Subject** **2<sup>nd</sup> Advice on the Scoping Report for the ESIA for the Rehabilitation of the Zemo Samgori Irrigation Project, Georgia**

By: the Secretariat of the Netherlands Commission for Environmental Assessment – Mr A.J. Kolhoff and Ms G. van Boven (quality control)

**Reference** 7195

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# 1. Introduction

The Zemo Samgori Irrigation System is a large irrigation scheme north-east of Tbilisi, Georgia that is located in the sub-basin of the Iori river (see Annex 1 for a map of the project area). It was developed in the 1950s and 1960s and in use until 1991. In the post-soviet era (after the separation in 1991) this irrigation system deteriorated. Deterioration was due to a shift in production systems (brought about by de-collectivisation and introduction of smallholder agriculture) as well as the lack of funds for operation and maintenance. The majority of the farmers have shifted to rain-fed agriculture and extensive animal husbandry, realizing far lower production figures and income than during the soviet period when the full irrigation scheme was functional. During this deterioration period, farmers developed mistrust in government agencies, responsible for water distribution and maintenance of the main, secondary and tertiary canals.

Having become a net importer of food, the Government of Georgia (GoG) has decided to intensify agriculture in order to realise economic development. In some regions of the country this needs to be achieved through the provision of irrigation services. In 2012, the GoG developed a new plan for the agricultural sector, set out and approved in the 'Strategy of Agriculture Development of Georgia for 2012-2022'.

The priority of this strategy is (among other things) the revitalisation of irrigated agriculture through rehabilitation, reconstruction and modernisation of old irrigation schemes. Following the approval of the above strategy, the Ministry of Agriculture has restructured the government agencies entrusted with the management of irrigation and drainage infrastructure (now the Georgian United Amelioration Systems Company of Georgia, GA) and proposed the rehabilitation of the Zemo Samgori irrigation scheme at an estimated cost of 40 million Euro. GA has obtained government funds to rehabilitate major parts of the primary irrigation canals of this scheme. GA asked the Netherlands Enterprise Agency (RVO) to fund the rehabilitation of the remaining parts, primarily the secondary and tertiary structures of the scheme through ORIO funding under the 2013 ORIO call for proposals. With cost eligible for ORIO funding, a grant of 15 million Euro is asked for by the GoG. The proposed project is the largest project in the ORIO programme. GA has hired Eptisa, an international consultancy firm to execute the scoping report and subsequently the ESIA.

The project is not subject to Environmental and Social Impact Assessment (ESIA) nor environmental licensing under the current legislation in Georgia, but it will be obligatory to ESIA under the new legislation that is planned to be in place on 1 September 2017. However, the RVO requires that the results of an ESIA underlie decision making of funding for this project. Moreover, according to the IFC Performance Standards, with which ORIO funded projects must comply, a full ESIA is obligatory when more than 10,000 hectares are developed or rehabilitated. Upon request of the RVO, GA as the proponent of this project has drafted a scoping report for this ESIA.

The objective of this report, prepared by a working group of the Netherlands Commission for Environmental Assessment (NCEA) on request of the RVO, is to review the quality of the fourth draft of the scoping report (June, 2016) against the IFC performance criteria and provide recommendations for improvement of those issues where shortcomings are identified. As such, this advisory report provides supplementary guidance to complete the scoping

report and needs to be read together with the 4<sup>th</sup> draft version of the scoping report (June, 2016). The aim of the scoping report is to provide guidance for the contents as well as the process of the ESIA study and report.

## 1.1 Approach taken

This is the second advisory report, prepared by the NCEA in order to provide guidance for the scoping report for the ESIA. The first advisory report has been prepared by the secretariat of the NCEA and submitted to the RVO and has been sent to GA by the RVO on 12 April 2016: Advice on Review of the Draft ToR for the ESIA for the Rehabilitation of the Zemo Samgori Irrigation System, Georgia.

The working group of the NCEA consists of chair prof. Rudy Rabbinge, technical secretary Arend Kolhoff and an expert in the field of irrigation and drainage Erik Zigterman. In addition, a Georgian resource person was appointed, prof. Givi Gavardiashvili who provided expertise in the field of hydrology. In the composition of the working group the secretariat selected experts in field of water related issues because these issues are important and insufficiently elaborated in the scoping report. For aspects other than irrigation, drainage and hydrology, the NCEA's secretariat general knowledge from previous and similar projects has been applied in the preparation of this advisory report.

The NCEA has made use of the following document to prepare this advisory report:

- The 4<sup>th</sup> Draft of the Scoping Report, deliverable 2 (June, 2016);
- The Input and Output Plan for the development phase of the project;
- The Site Investigation Report: Main report (June, 2016).

In addition, a visit to Georgia was made from 27–30 September, including a one day field visit (see Annex 3 for the programme of this visit). During the field visit staff of GA and Eptisa have guided the representatives of the NCEA through the entire scheme. The NCEA has not met the farmers during this field visit. Due to the limited time available for the field visit it was agreed upon between the NCEA, GA, and Eptisa to give priority to getting a good overview of the total scheme instead of meeting farmers.

The RVO has pointed out that the performance standards and the new EIA legislation prepared by Georgia need to be used as a reference framework. Firstly, a screening process determined which IFC performance standards are relevant for this project, see Annex 4 for the findings. Secondly, guidelines have been included in this advisory report for the relevant standards.

### **Reading guide**

In chapter 2 the main findings are presented and these are elaborated in chapter 3. Not all parties involved in this project have extensive experience with ESIA. Therefore, the NCEA has provided a short explanation of the purpose of that paragraph *in italics* under the heading of each paragraph in chapter 3.

For the structure of the paragraphs in chapter 3 the NCEA follows international best practice EIA. In each paragraph of chapter 3, we follow a three step approach. First, an assessment is made to determine if the scoping report provides sufficient information. Then, if the

information turns out to be insufficient, an explanation will be given as to why this information is important and needs to be included. Finally, again when the information is insufficient, recommendations will be included in the next and final version of the scoping report.

## 2. Main observations

The ESIA aims to support the development of the design as well as the decision making in relation to this project. To set realistic project objectives it is necessary to make a problem analysis of the current situation, in particular with respect to water availability. Such an analysis is lacking in the scoping report. In this report, the NCEA presents a brief overview of the problems that need to be included in the scoping report and elaborated in the ESIA.

Currently, the scoping report presents some alternatives such as increasing the storage water layer in the Tbilisi Sea and reducing the water use for electrical power production. In order to develop feasible alternatives the NCEA recommends to follow a four-step approach:

- Step 1: development of alternatives that could contribute to the increase of water availability.
- Step 2: development of alternatives for the distribution of water.
- Step 3: Comparison of the alternatives.
- step 4: the alternative most favourable to the environment and the preferred alternative should be selected and justified.

In this chapter, the alternatives asked for in step 1 and 2 are identified. All four steps are elaborated in detail in chapter 3.

### **Step 1: Alternatives to increase the water availability**

It is recommended that the following five options are presented in the final scoping report. In the ESIA the feasibility of these options needs to be assessed from a technical, political, environmental and socio-economic perspective for the entire scheme and for the distinguished regions if applicable. The options that are feasible can be used to adjust the water balance for the scheme and the regions.

- The Sioni reservoir is used for hydropower generation and the water is indirectly used for irrigation. The feasibility for optimisation of the water in this reservoir for irrigation of the Zemo Samgori irrigation scheme needs to be assessed;
- Expansion of the Tbilisi reservoir, so larger quantities of water can be stored. Based on the site visit, this option does not appear to be feasible. Leakage would make the water unsuitable for domestic use. The Water and Power authority of Tbilisi, provides water for domestic use, including drinking water for the Tbilisi area.
- The option to pump water from the Mktvari river might be feasible but is not discussed during the site visit.
- The development of a new reservoir located north of the southern main canal close to the secondary channel identified as G22 has been discussed. It is clear that only a pre-feasibility assessment, based on existing information can be executed in the framework of the ESIA.
- The construction of a direct connection between the Upper and Lower Main Canals. Water would flow directly into the Lower Main Canal (as required) during the peak season.

### **Step 2: Alternatives for water distribution**

In order to stimulate a debate and select the preferred alternative, the following alternatives are recommended to be elaborated and compared:

- Whole command area under irrigation;

- Optimising the water efficiency (most likely the favourable environmental alternative);
- Optimising the investment cost per hectare;
- Focusing on small farmers.

### 3. Policy, legal and institutional framework

*The purpose of describing legislation, regulations and policies is: (i) to check if the intended initiative complies with these and (ii) to get insight in the opportunities and constraints concerning the development of alternatives.*

The NCEA observed that in the scoping report the following important policies and laws are not mentioned:

- The strategy of agricultural development of Georgia for 2012–2022 and the vision 2015–2020 of GA set the relevant policies for agricultural irrigation in Georgia. GA presents in its vision that irrigation management should become a profitable business by the end of 2020. The NCEA underlines the importance of this vision for the development of feasible alternatives<sup>1</sup> Tools for this are for instance decentralisation of its management and reforming its organisational structure, the introduction of a new tariff system, introduction of water users groups and private water management companies, stimulating land registration, stimulating water efficient irrigation techniques and improving agricultural knowledge.
- A new land registration law that became effective in August 2016. This law facilitates the registration of landownership and may be instrumental in developing contractual arrangements between farmers or water users groups and GA or other (private) organisations.
- Other policies or laws that might influence irrigation development such as:
  - Plans or policies for drinking water supply of Tbilisi and Rustavi (as far as relevant);
  - Draft–Water Directive law (based upon the EU Water Directive) and draft–regulation on environmental flow;
  - Energy generation by the Sioni hydropower project;
  - City development (land use) master plan for Tbilisi and Rustavi;
  - Management plan of Tbilisi National Park.

It is recommended:

- To elaborate these policies briefly in the scoping report and describe how they influence the proposed project.

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<sup>1</sup> As an output of this new strategy GA has indicated that in their view small/medium landowners should organise themselves in water users groups (WUGs) of minimally 50 Ha and at least 10 landowners. In that situation, GA will take care of the delivery of pressurised water to the small/medium size landholders area. This will be done through a long pipe of maximum 1000 m, the water taken mostly from a secondary canal, but could also be taken directly from the main canals or tertiary canals. GA will then take care of the 1000 m pipe and the field investment. The members of the WUG have to repay 50% of the field investment costs over a period of four years, so no upfront investment is required. GIS mapping could reveal which parts of the command area that includes most of the small/medium size landownerships could benefit from the GA policy.

- That the project components/activities and identified alternatives are checked for their consistency with the relevant existing policies and plans. Such a consistency check provides insight in the way the proposed project components/ alternatives are contributing towards the achievement of objectives in the approved plans and policies. If it turns out that project activities are in conflict with one of the plans or policies, the ESIA study should describe how this is resolved.

## 4. Project description

*In the ESIA study, each of the project activities needs to be described, to enable the assessment of the environmental and social effects. For each of the project activities the ESIA study should provide more specific information.*

The project area is the Zemo Samgori irrigation scheme. However, the irrigation scheme influences a larger area designated as the study area. This area also includes the upper river basin; the reservoirs, the drainage basin and other irrigation areas depending on the same river water.

- It is recommended to briefly describe the study areas and indicate the important elements on a map

In the chapters 2 and 3.2 of the scoping report the main activities as proposed in the project proposal are described. However, in the view of the NCEA the description of these activities is too detailed in the scoping report.

- It is recommended to briefly describe and categorise these activities as follows and indicate these on a map:
  - Reservoirs (i.e. Zioni, Tbilisi Sea);
  - Main or primary canals including inlet and outlet works;
  - Secondary canals;
  - Tertiary canals;
  - Drainage works;
  - Other works such as installing water measuring systems, water distribution measures, land development.
- It is recommended to present schematically the main element of the irrigation system.

The project focuses on technical rehabilitation of the irrigation and drainage system to achieve a total of 30,000 ha irrigable land. It may well be that the possible irrigable land is less, as indicated by the scoping report. The project area is bordering Tbilisi and Rustavi, two cities that are rapidly growing. As a consequence potential command areas of mainly the Lower Main Canal are changed into other types of land use such as residential or industrial areas. The recent and future planned land use changes need to be mapped.

- It is recommended to assess the amount of area equipped for irrigation and present the findings on a map:
  - Total command area.

- Areas not accessible for gravity irrigation methods.
- Areas occupied by other functions: expansion of the City of Tbilisi and Rustavi, (new) airports, (new) roads, fish ponds, expansion of villages, etcetera.
- Approved and expected claims for other functions within the command area. A future city plan of Tbilisi may be very useful for this.
- Areas with very poor soil conditions (i.e. layers of gypsum close to the root level).

Combining this information with the landowners map and the irrigation infrastructure will lead to a map showing the maximum command area in the different regions in the Upper and Lower Main Canal. These regions will in general consists of a mix of small, medium and large size landownerships. This map is important for the assessments made during the ESIA study.

- It is recommended to demarcate the project area on a map. This is the area were the proposed activities are planned to be implemented. The NCEA observed that GA/Eptisa distinguish seven areas or regions in the project area; they need to be demarcated on a map. The criteria for demarcating these regions need to be justified. These regions should primarily be used as the geographic unit of study.

## 5. Problem analysis, vision and objectives

*The purpose of describing the problem analysis and objectives is to assess if the proposed activity does solve the observed problem and to assess if the project objectives will be achieved.*

### 5.1 Problem analysis

The scoping report does not list nor briefly analyses the main problems in the project area.

The NCEA observed that the low level of agricultural production is the main problem and that seems to be caused, to a large extent, by the lack of water for irrigation.

- It is recommended that the following problems are briefly analysed in the scoping report:
  - State of the infrastructure;
  - Irrigation management system;
  - Command area;
  - Water demand;
  - Water availability;
  - Water quality;
  - Environmental flow;
  - Landownership and socio-economic position of the farmers.

The NCEA briefly describes these problems anticipating the need for an in depth analysis of these problems in the ESIA, including an analysis of the underlying causes and the consequences for the socio-economic development of the private sector and the people (women and men) living in and outside the project area.

#### ***State of the infrastructure***

The irrigation infrastructure consists of the headworks and a predominantly concrete-lined Upper Main Canal and a Lower Main Canal separated by the Tbilisi Sea that serves as a water storage reservoir. Furthermore, the infrastructure consists of concrete or lined secondary and tertiary canals and in some areas, drainage canals. Control works are of a different nature and water measurement structures are almost absent. According to the Site Investigation Report the headworks and the two main canals are in a reasonable and operable state. Some secondary infrastructure has been rehabilitated; but a lot of the secondary canals, including some of the rehabilitated ones, are in a bad condition. Most of the tertiary system is in a bad state or nonexistent. Due to decades of lack of water, in most areas the field irrigation systems are absent.

The Site Investigation Report does not make clear whether the Upper and in particular the Lower Main Canal has sufficient capacity to transport the required water discharges. In this report is stated that some sections do not meet the original discharge capacity. Depending on the availability of water this may lead to a reduced number of hectares irrigable land in particular in the command area of the Lower Main Canal.

Some areas in the command area need a relatively large investment in rehabilitation for a relative small amount of irrigable hectares (e.g. the area covered by the Lilo–Markcophi canal below the syphon requires a very high investment for a relative small number of irrigable hectares). According to the irrigation engineer of Eptisa, the total irrigation command area can be divided into 7 regions: 4 in the Upper Main Canal zone and 3 in the Lower Main Canal Zone.

- It is recommended to make an assessment of the state of the infrastructure for each of the identified regions. The findings need to be presented on a map. This assessment provides insight for the development of the alternatives such as for example selecting the cheapest region for rehabilitation or, in case of a phased rehabilitation programme, in selecting the region(s) where quick wins are possible.

The windy conditions have a negative impact on the water availability. That is why, during the Soviet time, many wind breaks (trees, bushes) were planted. Many of these wind breaks are currently absent or in a bad condition.

- It is recommended that for each of the seven regions the condition of the windbreaks needs to be assessed by making use of three categories indicating their state.

### ***Irrigation management system***

Currently a regional division of the GA is responsible for irrigation management and maintenance from the intake up to the tertiary canal. Individual farmers are responsible for field irrigation management. GA is promoting in its vision Water Users Associations but also the introduction of private companies responsible for water distribution. It is currently not clear what the proposed organisational structure for the ZEMO Samgori system will be and the proposed division in management roles and financial responsibilities. Also a current clear picture of the legal aspects of the different organisations and the formalisation process of the interaction is not available.

- It is recommended to present in the ESIA the future irrigation management structure of the Zemo Samgori scheme, the financial rules and obligations, the legal situation of the water users organisations, water distribution rules and regulations for each of the management organisations.

#### ***Command area***

Currently about 4,000 ha is irrigated mostly by wild flooding systems at the field level. Originally, the system command area covered about 50,000 ha, but a large part of this area now facilitates other land use functions, for instance in the new districts or industrial areas of the capital of Tbilisi and in the vicinity of a military airport. New future expansions of the capital or the city of Rustavi may further reduce the command area of the Zemo Samgori scheme. In the past, some areas were irrigated through pumping stations which are no longer in use and some areas do not have the proper soil conditions for irrigation (i.e. low level gypsum layers). Therefore, the size of the area that is suitable for irrigation might be much smaller than the original size.

- It is recommended that the command area that is available and suitable for irrigation in the next 10 and 20 years is indicated on a map, including areas that can be excluded and the reason why they are excluded.

#### ***Water demand***

For irrigation to become effective both the manager of the irrigation system and the farmer have to invest in infrastructure: the system manager in the canals and the farmer in field irrigation systems, seeds, fertiliser, cultivation of the field, manpower, etc. For sustainable irrigation development it is crucial that the irrigation water reaches the irrigable land in regular intervals from the beginning of the cropping season until the end depending on the type of crop and the growing state of the crop. In Georgia, in July and August it is peak season and the water demand is then at its highest and it is crucial that the irrigation system provides sufficient water during this peak season. To achieve a good harvest, sufficient water should be available until the end of the cropping season.

Currently wild flooding is the most common field irrigation system; this irrigation technique has a very low water efficiency. Water demand per hectare can be reduced through the introduction of low water use techniques such as drip and sprinkler irrigation. Also the cropping pattern influences the water demand. The Site Investigation Report presents and peak water demand per hectare for an expected mixed cropping pattern for drip and sprinkler irrigation of about 1.0 l/s/ha which seems a reasonable amount. The water demand for wild flooding is almost double.

- It is recommended to elaborate water demand options for two variables: type of irrigation and the cropping pattern. In section 5 alternatives, it is explained how these fit in the assessment of the proposed alternatives

#### ***Water availability***

It is not clear how much water is available during the cropping season. Water is stored in winter time in the Sioni reservoir “above” the head works and in the Tbilisi Sea. The catchment area of 57,000 ha of the Sioni reservoir is relatively small and prone to variable

water availability as a result of erratic rainfall. Climate change may influence the water availability in the Iori water reservoir.

According to Eptisa, the water of the Sioni reservoir is also used for another irrigation system located in Iori sub-basin south east of the Zemo Samgori irrigation project, with a command area of 25,000 ha.

The Upper Main Canal of this irrigation system is also used for hydropower production. It is not clear whether the electricity production influences the discharge in the main channel during the year but it may have a negative impact on the water storage in the Tbilisi Sea.

During winter the Tbilisi Sea is used to build up a water layer that is used as storage for irrigation during the cropping season (from April until September) in the command area of the Lower Main Channel. This water storage in the Tbilisi Sea is influenced by evaporation, by underground water influx from upstream rivers (River Aragvi / Iori) but also by water leakage which seems to cause water influx in the cellars of houses on the southern side of the lake. Because of the latter, the GOG has limited the water table of the lake to a maximum. Therefore, the useable water layer for storage in the lake is just 6 m instead of the 16 m originally calculated (during the Soviet era).

The Tbilisi Sea is also used for drinking water purposes with the highest demand during the summer which is also the period with highest demand for irrigation water. Due to the growing demand from the urban areas in and around Tbilisi, the water outtake from the Tbilisi Sea may rise in future.

- It is recommended to provide an analysis of the total drinking water demand for Tbilisi for the coming 10 and 20 years and to what extent the Tbilisi Sea is expected to contribute to this demand.

The need for Environmental flow in the Iori river (see next item) may have a negative impact on the water availability for the Zemo Samgori scheme. At two-third of the Lower Main Canal, near secondary canal G25, preparations for an additional reservoir were started but not finished in the Soviet period; therefore, the reservoir does not function as yet. This reservoir could be useful to irrigate the lower part of the command area of the Lower Main Canal. However, it is not clear what the impact is of a reservoir with respect to the current land use.

- It is recommended to prepare a thorough water balance study to assess the water availability throughout the cropping season taking into account all the above-mentioned factors. This water balance study should also present the possible means to increase the water availability during the cropping season taking into account the maximum water use during the months July and August and also until the end of the cropping season.

### ***Water quality***

Water quality is important for producing safe crops. Parts of the Upper Main Canal and in particular the Lower Main Canal are crossing urban areas and it is expected that the urban area will further extend into the command area. During the field work the NCEA noticed that some industries and perhaps also households discharge their polluted waste water directly in the Lower Main Canal. The chance of water pollutants entering the agricultural fields channel is expected to increase. This may lead to a serious threat for food safety and will reduce the possibilities for exporting agriculture products to, for instance, the European Union.

- It is recommended to provide an indication of the current and future expected discharge of polluted water in the Main Canals and to what extent this influences the water quality.
- It is recommended to use the Guidelines of the European Union with respect to water quality.

### ***Environmental flow***

Section 6.2.1 of the Scoping report states: “Georgia has no national or international obligation regarding downstream flow neither regarding Iori River, nor other rivers. There are also no legal acts or regulations to define environmental flow or downstream flow. At present, the MoENRP is drafting a regulation regarding environmental flow, but the process is assumed to be finalised not before next year, and the approach is that the environmental flow will be calculated case by case (not to be fixed). The figure of 30 Mm<sup>3</sup>/year in the lower Iori River course was provided in the report on Water Resources Assessment, part 2, of the Deliverable no. 1.”

- As there is as yet no legal requirement for an environmental flow, it is recommended that an 'intelligent guess' is made on the Iori environmental flow. The NCEA also recommends to make the justification of the environmental flow on a monthly basis (instead of annual as above). In particular, the environmental impact on flora and fauna during dry months should be assessed in the ESIA.
- It is recommended to present in the ESIA the required governmental structure to ensure the environmental flow as well as the required management decisions

### ***Landownership and socio-economic position of the farmers***

The Site Investigation Report shows that the landownership in the command area of the Zemo Samgori irrigation schemes substantially differs in size (Table 2, page 22). 25% of the area is owned by small landowners (less than 2.5 ha, totalling 23,897 farmers), 14% is owned by medium-size landowners (between 2.5 and 25 ha, totalling 562 farmers) and 61 % is owned by large farmers (from 25 ha up to more than 100 ha, totalling 204 farmers). It may well be possible that large landowners have a different agricultural perspective than small landowners (intensive agricultural production (fruit trees, vegetables) versus extensive agricultural production (grazing cattle). Also the investment capacity of large landowners is expected to be higher than that of small landowners. However, nothing is clear about this.

During the time the Site Investigation Report was made, a map of the landownership was created and this map will be reviewed after the census/land registration that is currently being executed.

- It should be described how the project is going to deal with the differences in landholdings and agricultural perspective for at least three main groups of farmers that can be distinguished (small, medium and large farmers) and what this means for the rehabilitation of the irrigation scheme.
- ESIA should address landownership and whether the proposed rehabilitation would require additional land and whether this would impact owners and/or users
- Stakeholder mapping should include all landowners and investment capacity for at least the three main groups of farmers and should be determined during the consultation process.

## 5.2 Vision and objectives

*A vision for the future of the project area should briefly be described*

The scoping report does not refer to a vision and the objectives of the project are not clearly stated and divided into long and short term objectives.

- It is recommended that in the scoping report reference is made to the vision of GA for rehabilitation of this irrigation scheme including the objectives they wish to achieve and in which time frame. It is important that a long term perspective is considered to anticipate future developments that might support and/or constrain the utilisation potential of this irrigation scheme.

## 6. Description of the present environment

*This chapter provides guidelines to describe the autonomous development which serves as a reference situation or alternative. With the autonomous development/reference alternative we mean: the current socio–environmental situation in the project area without the project. This could mean for example that the effects of other planned projects are included. Presenting the reference situation also includes presenting the political and technical boundaries of the project. The pros and cons of the reference alternative should be used in the socio–environmental assessment to compare with the pros and cons of the alternatives that as suggested, need to be developed,*

Describing the following elements will provide a clearer overview of the project's boundaries. An overview of these elements should be included in the scoping report and should be elaborated in the ESIA.

- What is the current situation in terms of land use, land ownership, socio–economic position of the land owners/farmers, water use and agricultural production?
- What are other developments influencing the project?
- What is the maximum command area?
- How much water is available (and in 10–30 years)?
- What is (in ~10 years) the expected water demand?
- Landholdings: individual farmers / water user groups.
- What is the expected demand for crops on the market?

### **What is the current situation in terms of land use, water use, agricultural production etc.?**

A large part of the command area of the Zemo Samgori irrigation scheme is currently being used for agriculture; in some areas for irrigation but in most areas just as grassland for cattle. To be able to assess the impact of the project it is important to present the current situation properly. Use can be made of already collected and presented information in the Site Investigation Report. Aspects as land use, water use and current agricultural production area therefore relevant.

- It is recommended to include an assessment of the current situation of the project area concerning land use, land ownership and socio–economic position of the land owners/farmers, present water use and agricultural production in the ESIA report.

### **What are other developments influencing the project?**

Water use in the study area will increase also without the project.

- It is recommended to include in the scoping report a list of additional potential water users and elaborate these in the ESIA report. The following list provides developments influencing the project. This list is to be reviewed and completed in the scoping report.
  - Other existing, new or to be rehabilitated irrigation schemes that might be in competition with the reservoirs and water planned to be used by the Zemo Samgori scheme.
  - Building of hydropower stations or dams in the same river basin may positively or negatively influence the available water for the Zemo Samgori scheme.

- The City of Tbilisi is expanding and therefore it is expected that water use for domestic/drinking water purposes will increase and may have a direct impact on the water availability in the Tbilisi Sea. Loss of command area due to city expansion.
- Increasing electrical power demand may have influence on the water availability.
- Pollution of irrigation water by untreated sewage water (households, industries).
- Other developments such as community development projects.

#### **How much water is available for irrigation: when and where?**

Assessing the available water for irrigation is seen as the most important element for setting the project boundaries. In Chapter 2 some of the possible reasons for uncertainty with respect to water availability have been given. Perhaps other factors are also important. For instance, the need for environmental flow in the river below the Sioni headworks so that services provided through this flow as well as biodiversity can be guaranteed.

During the summer, water from the Upper Main Canal will still flow into the Tbilisi Sea where it may infiltrate and/or evaporate and only a part is available for irrigation in the Lower Main Canal. A **direct connection** between the Upper and Lower Main Canal during the cropping season may enhance the water availability in the Lower Main Canal without having a negative impact on other water users from the Tbilisi Sea in particular water use for drinking water. A new reservoir just upstream of the Lower Main Canal near secondary channel G25 may also have a positive effect on the water availability.

Other positive or negative measures on the water availability may also happen.

- It is recommended to include in the ESIA a detailed analysis (water balance model) that provides the water availability during the cropping season (intervals of 2 weeks) in the two main canals and the different (7) regions of the command area.
- Also present the effects of measures that may enhance the water availability such as the direct connection between the Upper and Lower Main Canal and the extra reservoir upstream of G25 secondary channel in the Lower Main Canal.

#### **What is (in ~10 years) the expected/desired cropping pattern – or water demand per hectare?**

The water demand is based on the expected or desired cropping pattern and on the applied irrigation technique<sup>2</sup>. The cropping pattern will vary between the small, medium and large landowner. A proposal for a limited number of cropping patterns is presented in Chapter 5.

For sustainable irrigation development, it is crucial that irrigation water reaches the irrigable land in regular intervals from beginning of the cropping season until the end depending on the type of crop and the growing state of the crop. In July and August it is peak season in Georgia and the water demand is then at its highest and it is crucial that the irrigation system provides sufficient water during peak season. The NCEA is of the opinion that sufficient water delivery is determined and that in 4 out of 5 years time, farmers will receive enough water to irrigate at proper intervals.

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<sup>2</sup>Any private investment is not without risk. A reasonable risk in irrigated agriculture is that in 4 out of 5 years sufficient water reaches the field within regular intervals from beginning of the cropping season until the end with a peak water delivery during July and August

- It is recommended to present the expected cropping patterns per region and/or per average size of a landholding in the ESIA.

**Landholdings: individual farmers/water user groups**

A significant change comparative to the Soviet era is that currently land is private property (or will be private property after official registration) and that there is a big difference in the size of landownership. The diversity as regards socio-economic characteristics within the group of landowners/farmers is large.

- It is recommended to describe and categorise the present farming systems in the project area. It is important to realise that the identified stakeholders may not be homogeneous groups. The project is currently executing a census to strive for an accurate overview of landownership. The result of this census will provide input for the ESIA.

The new nation-wide policy of the GA (Vision 2015–2020) may have consequences for the project area. GA will cooperate at field level with individual farmers, water-user groups, private water management companies and small, medium and large landowners.

- It is recommended that GA describes what is (are) their main target group(s) and why, and how this might influence the selection of the preferred alternative?

**What is the expected demand for crops on the market?**

Investing € 40,000,000 in rehabilitation of an irrigation scheme needs an analysis as to whether there is a future demand for the products produced and whether the investment is economically sound. This analysis should take into account the maximum number of hectares irrigable, based on the water availability and the expected cropping pattern.

- It is recommended to execute a market analysis. This can be done in parallel to the ESIA as such an analysis is in general not part of an ESIA.

## 7. Development, comparison and selection of alternatives

*The project objectives may be achieved in different ways. The purpose of describing the development of alternatives is to investigate any potential alternatives that may present environmentally sustainable, socially acceptable and economically feasible solutions.*

### 7.1 Alternatives

Feasible alternatives need to be developed in the ESIA study that will be compared to the autonomous development or reference alternative. The proposed alternatives as described in this chapter, are aimed at facilitating debate on the pros and cons of each alternative and at achieving the project objectives and to define the preferred alternative. In the process of developing alternatives, representatives of the identified stakeholders should be involved.

In the development of the alternatives a four-step approach needs to be followed. In the first step feasible alternatives need to be elaborated that could improve the current availability of water. In the second step the alternatives concerning the use of the available water need to be elaborated. In the third step the feasible alternative needs to be compared. In the fourth step the preferred alternative needs to be identified.

#### **Step 1: Alternatives to increase the water availability**

In the current scoping report the first three of the following five alternatives are identified to possibly increase the water availability. During the site visit the opportunity for the development of a new reservoir has been discussed and this option should be described in the final scoping report as a possible fourth alternative. The fifth alternative, a direct connection between the Upper and Lower Main Canal is also recommended.

- The Sioni reservoir is used for hydropower generation and the water is indirectly used for irrigation. The feasibility for optimisation of the water in this reservoir for irrigation of the Zemo-Samgori irrigation scheme needs to be assessed;
- Adjust the Tbilisi reservoir so larger quantities of water can be stored. Based on the site visit this is not a likely option because leakage and possibly competition for the use of water for domestic purposes in Tbilisi. Drinking water is provided by the Water and Power authority and could to be a constraining factor, for reasons mentioned above;
- The option to pump water from the Mktvari river could be feasible but is not discussed during the site visit.
- The development of a new reservoir located north of the southern main canal close to the secondary channel identified as G22 has been discussed. It is clear that only a pre-feasibility assessment, based upon existing information can be executed in the framework of the ESIA.
- The construction of direct connection between the Upper and Lower Main Canal so that during the cropping season the water directly flows into the Lower Main Canal (if necessary).
- It is recommended that these five alternatives are presented in the final scoping report. In the ESIA the feasibility of these alternatives needs to be assessed from technical ( i.e.

water balance study), political, environmental and economic perspective for the entire scheme and for the distinguished regions, if relevant. The feasible alternatives can be used to adjust the water balance for the scheme and the regions, and it is necessary to indicate when additional water could become available. If the preferred alternative results in land acquisition, the impact on owners and/or users needs to be assessed as well as whether this could lead to economic displacement and/or resettlement. A livelihood restoration and/or resettlement plan will have to be developed.

## **Step 2: Alternatives to distribute the water**

At the end of step 1 the amount of water available for irrigation will be identified and it will become clear which of the above presented alternatives provide the best opportunities for water distributing and as a consequence rehabilitation of the Zemo Samgori irrigation scheme.

In essence, agricultural production using irrigation will increase when the risk of water shortages is low and when the scarce water resources are used as efficiently as possible. In the ESIA, it is important to assess what the largest possible area of irrigable land is, keeping in mind the water requirements at peak season and the need to deliver water until the end of the season for different cropping patterns. Although an investment of € 40.000.000 is substantial and a preliminary investment budget has been presented in Chapter 8 of the Site Investigation Report, it is doubtful whether this amount will be sufficient.

In the ESIA, it is therefore advised to assess the rehabilitation cost for:

- each of the identified seven region(s) or, if preferred, per sub-region;
- large/medium size versus small size landholders (with a third mixed scenario);
- intensive versus extensive cropping pattern (with a third mixed scenario).

In short, overall shortage of water may require management decisions in selecting the best regions (or part of regions) to rehabilitate. Those decisions will have a direct effect on farmers: some will be in and some will be out of the project. By selecting the proper alternatives for assessment during the ESIA, the ESIA can help in taking the right decisions.

In order to stimulate a debate on the preferred alternative (or a combination of alternatives) for the rehabilitation of the irrigation scheme the following alternatives are suggested to be elaborated and compared:

1. Whole command area under irrigation;
2. Optimising the water efficiency;
3. Optimising the investment cost per hectare;
4. Focusing on small farmers.

These alternatives will be elaborated further below. It is suggested to present the proposed alternatives in the Scoping Report after giving it sufficient thought and discuss these with the project team. In the ESIA these alternatives need to be elaborated in detail and they need to be presented and compared by making use of maps.

### **Alternative 1: Whole command area under irrigation**

In this alternative suggested by GA at the start of this project, all hectares as mentioned under “setting the study limits” will be irrigated. The rehabilitation of almost the entire

command area is therefore necessary. Several options with different cropping patterns are possible (including different irrigation techniques) but it is suggested to limit the options to two or three. For instance, with respect to cropping patterns the following options may provide sufficient insight:

- 90 % Grazing– wheat – maize combined with wild flooding 10% Fruit – vegetables combined with drip/sprinkler irrigation
- 50 % Grazing –wheat – maize (wild flooding)– 50 % Fruit – vegetables combined with drip/sprinkler irrigation
- 20 % Grazing –wheat – maize (wild flooding)– 80 % Fruit – vegetables combined with drip/sprinkler irrigation

This alternative is most likely not feasible because the water delivery during the cropping season and especially during the peak season is not secured for all regions. If this alternative is not feasible, it can be used as a reference alternative.

### **Alternative 2: Optimising the water efficiency**

This alternative seeks the largest agricultural production in terms of weight (tons) and/or currency (GEL). The maximum water availability as discussed above is a limitation, as is the guarantee of peak delivery in July/August and availability of the sufficient water until the end of the cropping season. The consequence could be that it will not be water efficient to use all the irrigable land in the command area for irrigated agriculture. The NCEA expects that this alternative is the most favourable environmental alternative. However, that needs to be justified in the ESIA.

Several scenarios with different cropping patterns are possible (including different irrigation techniques) but it is suggested to limit the options to two or three. For instance, with respect to cropping patterns the following options may provide sufficient insight:

- 90 % Grazing– wheat – maize combined with wild flooding 10% Fruit – vegetables combined with drip/sprinkler irrigation
- 50 % Grazing –wheat – maize (wild flooding)– 50 % Fruit – vegetables combined with drip/sprinkler irrigation
- 20 % Grazing –wheat – maize (wild flooding)– 80 % Fruit – vegetables combined with drip/sprinkler irrigation

This alternative will provide understanding of the total conceivable agricultural production and which of the seven regions will provide the best agricultural production, and then the next best region, etc. In addition, it will present how many regions could be irrigated in total and where. This alternative will also provide insight into whether the best results would be obtained for the small/medium size landholders or for the individual large landowners. The results could be presented in tons and/or GEL.

It is further recommended to add to this alternative a variation in the form of the rehabilitation of wind breaks. This variation will provide the knowledge on how rehabilitating wind breaks will increase the number of hectares irrigable land due to a reduced evapotranspiration. It may also have a positive effect in reducing wind erosion.

### **Alternative 3: Optimising the investment cost per hectare**

The purpose of this alternative is to identify what are the most or the least costly components of the irrigation system to rehabilitate, in relation to the added number of hectares. For some

areas rehabilitation could be costly and result in a relatively small number of irrigable hectares. Based on the Site Investigation Report the rehabilitation cost per hectare for the identified regions (or sub region, if need be) needs to be calculated.

The maximum water availability, as discussed above, is also a limit for this alternative and also the guaranteed peak delivery in July/August as well as water availability until the end of the cropping season. A consequence could be that it will not be cost efficient to use all the irrigable land in the command area for irrigated agriculture.

The rehabilitation cost per hectare will vary with respect to the type of irrigation technique that will be applied. As above, several options with different cropping patterns are possible (including different irrigation techniques) but it is suggested to limit the options to two or three. For instance, with respect to cropping patterns, the following options (low value crops versus high value crops) may provide sufficient insight:

- 90 % Grazing– wheat – maize combined with wild flooding 10% Fruit – vegetables (drip/sprinkler irrigation)
- 50 % Grazing –wheat – maize (wild flooding)– 50 % Fruit – vegetables (drip/sprinkler irrigation)
- 20 % Grazing –wheat – maize (wild flooding)– 80 % Fruit – vegetables (drip/sprinkler irrigation)

It is important for this analysis to distinguish between the investment cost of GA and that of the investment cost of the farmers.

For decision making, this alternative will provide understanding of the level of investment that is required for each of the regions.

#### **Alternative 4: Focus on small farmers**

As mentioned earlier, the command area includes a large number of small/medium landowners mostly concentrated in specific parts of the command area. For decision making it is important to assess whether investing primarily in small/medium size landowners would lead to the desired growth in agricultural production. This alternative does not exclude investing in large landowners but the investments and the water distribution will primarily focus on small/medium size landowners.

The maximum water availability as discussed above is also a limit for this alternative and also the guaranteed peak delivery in July/August and water availability until the end of the cropping season. The result could be that not all irrigable land in the command area is used as irrigated agriculture.

Several options with different cropping patterns are possible (including different irrigation techniques) but it is suggested to limit the options to two. For instance, with respect to cropping patterns the following options (low value crops versus high value crops) may provide sufficient insight:

- 50 % Grazing –wheat – maize (wild flooding)– 50 % Fruit – vegetables (drip/sprinkler irrigation)
- 20 % Grazing –wheat – maize (wild flooding)– 80 % Fruit – vegetables (drip/sprinkler irrigation)

With these cropping patterns the agricultural production can be calculated in terms of quantity and GEL.

For decision making, this alternative will provide understanding if the focus of the project is on small/medium sized landowners.

### **Step 3: Comparison of the alternatives**

The four alternatives described in step 2 need to be compared. For each of the alternatives 1, 2 and 3, three scenarios (= cropping patterns) and for alternative 4, two scenarios are identified. All alternatives need to be compared for the same scenario. As a result three sets of comparisons will be made and presented. A comparison of the impacts of the proposed alternatives with the reference situation should provide the justification for the selection of one of the alternatives or a combination of alternatives. For a comparison of the pros and cons, the list of criteria presented in the present scoping report and the additional criteria recommended to be included by the NCEA in paragraph section 6.1 can be referred to.

### **Step 4: Selection and justification of the environmentally friendliest alternative<sup>3</sup> and the preferred alternative**

There are too many uncertain factors at this moment to agree upon the environmentally friendliest alternative and the preferred alternative. Based on the results of step 1, 2 and 3 these two alternatives can then be selected from the above mentioned alternatives or a combination of the alternatives identified in step 1 and step 2. The selection of both needs to be justified.

A phased implementation of the preferred alternative is suggested as it provides the opportunity for monitoring and it allows for making adjustments, if necessary. Therefore, it is necessary that the preferred alternative will be divided in the (sub-)regions (e.g. first WUGs) and these should be prioritised.

It is recommended to plan a specific meeting/workshop to select the preferred alternative during the ESIA process when all alternatives have been compared. This could be a joined meeting of GA, the MoA, the RVO and Eptisa.

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<sup>3</sup> According to new Georgian EIA legislation the alternative most favourable to the environment needs to be identified.

## 8. Impact assessment of the alternatives and mitigating measures

*The expected impacts of the identified alternatives need to be described in order to facilitate a comparative assessment of these alternatives. Mitigating measures to minimise the negative expected environmental and social effects need to be identified and described, and an assessment needs to be made to what extent they can remedy the negative effects.*

### 8.1 Impact assessment

In the scoping report a large number of adequate environmental and social criteria have been listed to assess the alternatives.

- It is recommended to include at the very least the likely effects of water logging and the following socio-economic criteria in order to assess the social and economic sustainability of the alternatives:
  - Effect of GA/GoG policy
    - New tariff system
    - New land registration
    - Decentralisation of water management
  - Willingness to invest
  - Availability of sufficient and capable work force

### 8.2 Mitigating measures

After assessing the alternatives, negative impacts may result from the assessment. If that is the case, mitigating measures need to be defined.

Mitigating measures are not only measures such as reduced use of pesticides or replacing Class 1a and 1b pesticides (if that is a problem) but also project implementation measures as a (time)phased rehabilitation programme. A slow start of the project to detect implementation and sustainability problems is recommended, before a wide scale implementation process starts. It is also recommended to develop an implementation process that facilitates interaction and participation with Water Users Groups and individual farmers.<sup>4</sup>

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<sup>4</sup> The built up of a structured development process in seeking cooperation between GA and the landowners/farmers/WUG is a very useful tool. In this process between GA and the landowners issues such as water distribution, water guarantees, irrigation methodologies, irrigation techniques, financial/legal issues related to tariff, O&M of the system by GA are to be included. The process may result in a contract between GA and the farmers and water users groups. Also possible in such a process is the assistance by GA or by other institutions/companies in irrigation techniques, growth of new crops, access to seeds, access to credit and access to the market. Such a structured process will stimulate confidence that lead to investments from the part of the farmers/landowners.

## 9. Cumulative impacts

An ESIA report should include a chapter dealing with cumulative impacts. Cumulative impacts arise when other projects are being executed in the same area simultaneously. During the ESIA this should be assessed and if this is the case, the total cumulative impacts of these projects should be briefly described.

## 10. Environmental and Social management plan

A management plan for functional and environmental and social monitoring and feasible adaptations of the interventions to mitigate adverse effects and other risks should be part of the ESIA. The plan should focus on the measures and actions based on the SMART<sup>5</sup> principle necessary for the client to comply with national laws and regulations, and to meet the requirements of the IFC Performance Standards (see Annex 4).

## 11. Consultation and disclosure

In the Zemo Samgori rehabilitation project many stakeholders (mostly farmers) could directly be affected. Public consultation with these stakeholders aims to ensure that the project has the intended positive effect and avoids or mitigate unintended (negative) consequences. Community meetings are important and perspectives from both men and women should be taken into account. It is important to realise that not all community members may have an equal voice. This could be determined by gender, financial status and age. Furthermore direct stakeholder consultation is an important tool to encourage project collaboration, to prepare people for anticipated changes and to raise realistic expectations.

Other stakeholders include government authorities. Consultation with these stakeholders serves to ensure coherency between and alignment with other government policies and plans. As part of the ESIA process inter-ministerial consultations need to take place. Apart from the Ministry of Agriculture, the water and power authority and the Ministry of Environment may bring relevant perspectives for a coherent intervention.

- It is recommended to describe how stakeholder consultation will take place during the ESIA and how to deal with expectations in the Scoping Report. The stakeholder engagement plan of the ESIA should be continued in the construction and operational phase, including farmers and affected communities.

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<sup>5</sup> Specific, Measurable, Attainable, Relevant and Timely



## Annex 2: Composition of the working group and project information

### Proposed activity

This project is known as rehabilitation of the Zemo–Samgori irrigation project.

This project aims to rehabilitate the irrigation scheme that was developed in the Soviet period but has deteriorated after 1991. Since a couple of years the Government of Georgia started to invest in the rehabilitation of this scheme. The Netherlands Enterprise Agency (Rijksdienst voor Ondernemend Nederland – the RVO) is ready to provide a grant to support the further rehabilitation of this scheme. However, the RVO requested to execute an Environmental and Social Impact Assessment that meets international good practice standards. Therefore the IFC performance standards are used as a reference framework and the Netherlands Commission for Environmental Assessment is requested to secure that these standards are met.

A working group of experts of the Commission for Environmental Assessment (the NCEA) has been composed and they have visited the project including a field visit.

**Project number:** 7195

### Progress

- First Advice for ToR for ESIA, submitted April 2016
- Second advice for coping report for ESIA, submitted 21 October 2016

### Composition of the working group of the Commission for EIA

- Mr E. Zigterman (Erik) – Expert on Civil engineering of irrigation and water management
- Mr G. Gavardiashvili (Givi) – Resource person on hydrology
- Ms M. Hermans (Maartje) – screening IFC performance standards
- Mr. A.J Kolhoff (Arend) – Technical secretary and expert on EIA and environmental issues
- Prof. R.Rabbinge (Rudy)– Chair and expert on agriculture

## Annex 3: Programme of the visit 26–30 September 2016

Day	Time	Meeting
Mon 26-09	19:00	NL embassy
Tue 27-09	9:30-11:00	Georgian Water and Power
Tue 27-09	11:30-12:30	IFAD Georgia – Fund for Agricultural development
Tue 27-09	11:30-12:30	Managements of the HP plants
Tue 27-09	13:30-14:30	Ministry of Agriculture
Tue 27-07	15:00-16:30	Georgian Amelioration
Tue 27-09	17:00-18:00	EPTISA
Tue 27-09	19:00-22:00	Dinner
Wed 28-09	09:00-17:00	Field day
Thu 29-09	09:00-12:00	EPTISA “ESIA workshop”
Fri 30-09	13:00-13:45	Presentation scoping ESIA by NCEA
Fri 30-09	13:45-15:00	Presentation census study approach by ACT

## Annex 4: Screening of the IFC performance standards

**Conclusion:** The following PSs are triggered: 1,2,3,4, 6 and potentially 5 and 8. For further details on the substantiation of the PSs triggered see the attached assessment. Concerning PS5 and PS8: completing the census will provide an overview of land ownership. The final design of the project will identify the need for land acquisition and in combination with the understanding of land ownership establish the need for economic displacement and/or resettlement. Regarding PS8 a further review is needed based on local data whether cultural heritage sites are present in the project area.

PS7: the presence of IPs was checked using [www.landmark.org](http://www.landmark.org). No IPs are present in the project area of influence.

This conclusion is justified in the table presented below.

(Based on FMO & Steward Redqueen Environmental, Social and Governance (ESG) toolkit, the IFC online course and webinar, and other sources)

(See also: <http://www.ifc.org/performancestandards>)

PS	Assessment
PS1: Assessment and Management of Environmental and Social Risks and Impacts	<p>Triggered</p> <ul style="list-style-type: none"> <li>Anticipating a regulatory change in Georgia which will make an ESIA mandatory, but certainly as part of the RVO requirements to finance the project.</li> <li>Regarding the management of the E&amp;S mitigation measures forthcoming from the ESIA (= ESMP) a competent organisational structure should be put in place, which is not a standard ESIA item.</li> <li>Will the RVO require the development of an ESMS as per PS1 requirements or merely an organisation that can execute the ESMP? For guidance see: <a href="http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/learning+and+adapting/knowledge+products/publications/publications_handbook_esms-general">http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/learning+and+adapting/knowledge+products/publications/publications_handbook_esms-general</a></li> <li>Stakeholders are named in the scoping document and these should be included in the consultation process. A stakeholder engagement plan for the ESIA, construction and operational phase, including farmers and affected communities should be developed. The foundations could be laid as part of the ESIA, but it will have to continue into the next phases of the project. This will include ongoing external communications and a grievance mechanism, especially if there are affected communities. These should be identified during the ESIA process.</li> </ul>
PS 2: Labor and Working Conditions	<p>Triggered</p> <ul style="list-style-type: none"> <li>The scoping document mentions GA staff involved in the project and there could be potentially further employment opportunities. <i>The role of the GA staff is to enhance the public entity's capability to manage, operate and maintain the Zemo Samgori irrigation system in a sustainable manner, on subjects related to administrative and financial management, billing and fee collection, irrigation service provision, assets operation and maintenance, customer relations management, etc.</i> In addition there could be contractors in the rehabilitation works and third party workers involved. This will have to be assessed and workers conditions and management of worker relationship of GA will have to be</li> </ul>

	<p>reviewed. This will not be done as part of the ESIA. Policies and procedures in line with PS2 should be in place when the rehabilitation starts. This should also include a grievance mechanism for workers and contractors.</p> <ul style="list-style-type: none"> <li>Georgia has ratified the four fundamental ILO conventions and these should be reflected in the Labour policies and procedures. <a href="http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:10011:0::NO::P10011_DISPLAY_BY,P10011_CONVENTION_TYPE_CODE:1,F">http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:10011:0::NO::P10011_DISPLAY_BY,P10011_CONVENTION_TYPE_CODE:1,F</a></li> <li>Although research is limited, there is evidence that children in Georgia are engaged in child labor in agriculture. <a href="https://www.dol.gov/agencies/ilab/resources/reports/child-labor/georgia">https://www.dol.gov/agencies/ilab/resources/reports/child-labor/georgia</a></li> <li>Special attention should be given to the skills and competencies in implementing the ESMP and maintaining community relations, including addressing grievances.</li> </ul>
PS 3: Resource Efficiency and Pollution Prevention	<p>Triggered</p> <ul style="list-style-type: none"> <li>The availability of water: quantity and quality (see WBG EHS Guidelines for Annual Crop Production, see WBG EHS Guidelines for Annual Crop Production, see table1) will be addressed in the ESIA, including resource efficiency measures.</li> <li>A high level review of the WRI Aqueduct water risk filter showed a medium to high overall water risk: <a href="http://www.wri.org/applications/maps/aqueduct-atlas/#x=45.61&amp;y=41.79&amp;s=ws!20!28!c&amp;t=waterrisk&amp;w=def&amp;g=0&amp;i=BWS-16!WSV-4!SV-2!HFO-4!DRO-4!STOR-8!GW-8!WRI-4!ECOS-2!MC-4!WCG-8!ECOV-2!&amp;tr=ind-1!prj-1&amp;l=9&amp;b=terrain&amp;m=group">http://www.wri.org/applications/maps/aqueduct-atlas/#x=45.61&amp;y=41.79&amp;s=ws!20!28!c&amp;t=waterrisk&amp;w=def&amp;g=0&amp;i=BWS-16!WSV-4!SV-2!HFO-4!DRO-4!STOR-8!GW-8!WRI-4!ECOS-2!MC-4!WCG-8!ECOV-2!&amp;tr=ind-1!prj-1&amp;l=9&amp;b=terrain&amp;m=group</a> This (high level) information expanded with local/regional data should be taken into account when assessing water availability, floods, water stress, etc. for the project, the ecology and other users now and in the future.</li> <li>What about the pump houses: what energy source will be used? The impact of energy source should be assessed and energy efficiency measures should be considered.</li> <li>Please take note of paragraph 17 regarding the use of WHO Class 1a and 1b pesticides which are not allowed based on PS3. This needs to be addressed in the ESIA and alternatives should be included in the ESMP. GA is involved in agricultural (i.e. irrigation) activities that require the use of pesticides by third parties and therefore should promote the use of integrated pest management and integrated vector management approaches through all feasible means of dissemination of information about these agricultural approaches.</li> </ul>
PS 4: Community Health, Safety and Security	<p>Triggered</p> <ul style="list-style-type: none"> <li>There most likely will be communities in the project area of influence.</li> <li>Depending on the final design of the project, i.e. final command area an inventory should be made of communities in the project area of influence and the impacts (e.g. increased traffic movements during rehabilitation, ecosystem services, etc.) should be reviewed in the ESIA. Not included in the scoping document.</li> <li>The inventory and level of impact will determine the community engagement programme (see PS1).</li> </ul>
PS 5: Land Acquisition and Involuntary Resettlement	<p>Potentially triggered</p> <ul style="list-style-type: none"> <li>Construction of a new reservoir (near canal G25) could impact users of the land needed. In case land acquisition is needed for the reservoir which leads to physical and/or economic displacement a RAP and/or</li> </ul>

	<p>livelihood restoration plan should be developed. To be included in the scoping document: design of the project.</p> <ul style="list-style-type: none"> <li>Landownership is in the process of being completed and would have to be known in case additional land is needed for the project.</li> </ul>
PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	<p>Triggered</p> <ul style="list-style-type: none"> <li>Assessing the (minimum) environmental flow as part of the ESIA and management thereof in the construction/operational phase of the project for which responsibility will have to be assigned and resources put in place. An EFMP may have to be developed for this.</li> <li>Drainage and run-off water containing fertilisers and pesticides may impact soil and groundwater in-and outside the project area. This will be covered in the ESIA.</li> <li>A quick screening did not identify modified habitats containing “significant biodiversity value,” natural habitats, critical habitats, legally protected areas, or areas that are internationally recognised for biodiversity in the project area of influence. To be confirmed in the ESIA.</li> </ul>
PS 7: Indigenous Peoples	<p>Not triggered.</p> <p>The <a href="http://www.Landmark.org">www.Landmark.org</a> tool did not identify any IPs in the project area of influence.</p>
PS 8: Cultural Heritage	<p>Currently, not known and this should be addressed in the scoping document and if needed in the ESIA.</p>