

**Standard Summary Project Fiche – IPA decentralised National programmes**

**1. Basic Information**

**1.1 CRIS Number: TR2010/0311.01**

**1.2 Title:** Digitization of Land Parcel Identification System

**1.3 Sector:** 11-Agriculture and Rural Development

**1.4 Location:** Turkey

**Implementing arrangements:**

**1.5 Implementing Agency**

The Central Finance and Contracts Unit (CFCU) will be the Implementing Agency and will be responsible for all procedural aspects of the tendering process, contracting matters and financial management, including payment of project activities. The Director of the CFCU will act as PAO of the project. The contact details of CFCU Director are given below:

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**1.6 Beneficiary**

The Ministry for Agriculture and Rural Affairs (MARA), General Directorate of Agricultural Production and Development (GDAPD) and Agricultural Land Evaluation Department (ALED) will be the main beneficiary (ALED includes the Agricultural Basins, Remote Sensing and Agricultural Information Department)

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**1.7 Overall cost:** 46.200.000 Euro

**1.8 EU contribution:** 39.270.000 Euro

**1.9 Final date for contracting:** 2 years after the signature of the Financing Agreement

**1.10 Final date for execution of contracts:** 2 years following the end date for contracting

**1.11 Final date for disbursements:** 1 year after the end date for the execution of contracts

## **2. Overall Objectives and Project purpose**

### **2.1 Overall Objective:**

To contribute to the objective of Turkey for having an area based agricultural support system in line with EU best practices and EU acquis through the full establishment of Integrated Administration and Control System (IACS) and establishment and implementation of Land Parcel Identification System (LPIS) in the whole country in line with EU acquis to fulfil the requirements of Council regulation (EC)73/2009 where through such system all available agricultural land in the country will be recorded, un/misclaimed areas will be identified, the payments will be directly addressed to the farmers together with creating a base for the management of environmental and rural developing actions.

### **2.2 Project Purpose:**

Improved capabilities of the beneficiary for the implementation of an area based agricultural support system in line with EU acquis via establishing the Land Parcel Identification System (LPIS) (EC 73/2009), where once it will be compiled it is going to be the main component of the Integrated Administration and Control System (IACS), through providing digital orthophotos and digital geographical database of reference parcels covering the whole country which will be the basis for addressing the payments directly to the farmers, efficient and controlled management of direct payment schemes and selected Rural Development Plan (RDP) measures on behalf of farmers and the protection of food safety and environment.

### **2.3. Link with Accession Partnership (AP) and National Program on the Adoption of the Acquis (NPAA) priority**

**2.3.1 Link with 2008 Accession Partnership** as defined in Council Decision no. 2008/157/EC of 18 February 2008

*Medium term priority for Chapter 11: Agriculture and rural development, read as:*

- continue developing the system of land identification and the National Farmer Registration System to prepare for controls on agricultural land

**2.3.2 Link with National Program on the Adoption of the Acquis (NPAA), 2008**

Basis for future planned Land Parcel Identification System (LPIS) work aimed to be implemented by this project fiche; is part of National Programme of Turkey for the Adoption of the EU Acquis published in Official Gazette dated 31 December 2008.

#### Chapter 11- Agriculture and Rural Development

*Priority 11.2 Continuing developing the system of land identification and the National Farmer Registration System to prepare for controls on agricultural land* proposes adoption of 3 Turkish legislation, for establishing IACS and LPIS, restructuring of the administration and introduction of payment schemes in line with EU legislation;

Hence establishment of IACS system including all elements consist of the following project steps;

- Establishment of LPIS database
- Identification of the principles regarding the cross-compliance rules and checking the compliance with these rules.
- Development of the Paying Agency part for Single Payment Scheme (SPS) using IACS
- Managing the payment system through IACS by establishing a unit within the Paying Agency
- Training of the staff of MARA on IACS, LPIS , risk management and on-the-spot checks
- Establishing a permanent crop register
- Maintenance and development of IACS software (SW)
- Recruitment of personnel to the management unit that will operate as IACS administrative unit

#### **2.4. Link with Multi-annual Indicative Planning Document (MIPD):**

Section 2 of MIPD identifies agriculture as one of the priority areas for support. It further identifies main priorities and objectives on agriculture under IPA Component I. It particularly underlines administrative structures to operate Common Agricultural Policy as a priority area.

#### **2.5. Link with National Development Plan (NDP)**

The project will contribute to the achievement of the particularly 3 main objectives, among others, defined in Section 7 (namely Main Objectives: Development Axis) of National Development Plan (2007-2013). These are:

- Problems related to the quality and quantity of agricultural statistical data will be eliminated through the consolidation of different information collecting and

processing systems, which are based on this data, and in a structure similar to the Integrated Administrative and Control System used in the EU (under **7.1.9. Improving Efficiency of the Agricultural Structure**)

- The Rural Development Plan (RDP) will be prepared and implemented in line with the National Rural Development Strategy (under **7.4.4. Ensuring Development in the Rural Areas**). Registration of agricultural lands will contribute to efficient and sustainable utilization of soil and water resources, corresponding planning activities and statistical data related to producer organisations will increase effectiveness of their studies.
- Necessary institutional framework will be created for harmonization with the EU rural development policies and the administrative capacity will be improved to manage and use rural development funds effectively. (under **7.4.4. Ensuring Development in the Rural Areas**)

### 3. Description of the Project

#### 3.1 Background and justification

The Republic of Turkey is geostrategically the bridge between East and West. The Republic of Turkey's land surface totals about 78 million hectares. According to Address Based Population Registration System in 2009, Turkey's population counted 72.5 mio persons where 17.7 mio of them are living in villages

With its economical, social, political and technical aspects, agricultural sector has indispensable importance with different characteristics than the other sectors. Besides supplying raw material to industry, it is also important as a market for industry. The agriculture sector has been a major contributor to the country's GDP, exports and industrial growth. Agriculture is one of the most important sectors in the Turkish economy both in terms of its share in total GDP (8.6 % in 2007 and 8.9 % in 2008 with constant prices) and employment about 23,5 % of the whole labour force in 2007, 23,7% in 2008 and 24,7% in 2009.

According to the results of the 2001 General Agricultural Census – Agricultural Holdings (Households) - realized by Turkish Statistical Institute (TurkStat); there are 3.076.650 agricultural holdings where: 3,022,127 of them are operating agricultural land and 54.523 are without land. 83 % of the total number of holdings has land smaller than 10 hectares. The average holding size is approximately 6 hectares. 59,5 % of the agricultural holdings in Turkey has 3 or more patches of land (parcels).

Annual data jointly compiled by MARA and TurkStat are published after they are assessed by the related Crop Estimate Committee. 2008 data related to lands are summarized on the Table1

Table 1: Statistical data for agricultural areas

	2008 Area (hectare) Provisional
Non-permanent crops (arable crop area)	21.555.000
Permanent crops –orchards (horticulture)	1.693.000

Permanent crops- Vineyard (includes all varieties)	483.000
Permanent crops - olive groves	774.000
Forest area	21.189.000

*Source: TurkStat.*

Total utilized agricultural area can be calculated by using the following formula = Arable crop area + Permanent Crops (orchards) + Permanent Crops (Vineyard) + Permanent Crops (Olive groves) + permanent meadows + pasture (range) land

The following figures coming from the Village General Survey during 2001 General Agricultural Census are used for the calculation of total utilized agricultural area.

Permanent meadow: 1.449.312 hectares

Pasture (range) land: 13.167.374 hectares.

As a result, The Total Utilized Agricultural Area for Turkey in 2008 is 39.121.686 hectares.

Turkey is a major producer of grain, cotton, grapes, sunflower, pulses, dried fruit (hazelnuts, seedless raisins, figs, and apricots), fresh fruits, tomatoes, tea and small ruminants. Turkey is one of the world's biggest wheat and barley producers. Besides cotton, sugar beet is another important industrial crop.

In addition to the importance of agriculture; stability of existing agricultural land, and furthermore the continuous decrease in total area due to use of land for non-agricultural purposes or misuse, increased the importance of existing agricultural land registry (detailed inventory).

**Integrated Administration and Control System (IACS)** as a system, covers mechanisms composed for the right administration and control of agricultural supports; while securing correct payments to farmers and preventing false declarations, enable real farmers, particularly the farmers who cultivate their lands, to be supported regarding their lands.

**Land Parcel Identification System (LPIS)**, as one of the components of IACS, has been used for the identification of agricultural land in EU. LPIS is a tool especially for the administration and control of area-based subsidies (direct payments, production in less favoured areas, agri-environmental measures, participation of farmers to specific programs like organic farming, decreasing nitro pollution, reforestation etc.)

In general all the measures taken on the agricultural sector (direct payments, environmental and rural developing actions) are managed through IACS. As the most of the measures are related directly or indirectly with land, LPIS is a crucial component of the process.

Although introduction of current support system and National Farmer Registration System (NFRS) for managing the payments have similar characteristics, lack of reference data compatible with GIS standards shall only be compensated when LPIS system is established and operated. LPIS will also be used for administrative control, to which all submitted applications are subject. Country-wide execution of cross checking will be reached through the help of fully functioning LPIS. In this regards LPIS shall be used for all submitted applications.

The Republic of Turkey is energetically determined to fulfill the *acquis communautaire* especially in the political field of agriculture and rural development. Pre-accession strategies adopted by EU (Accession Partnership) since 2003 have addressed the need for work on setting up of integrated administration system and developing land identification system in Turkey.

In this context, Turkey prepared a Strategy Paper on how it intends to further develop the system of land identification and the NFRS to prepare for controls on agriculture land. Besides specifying the key technical ingredients of the system, the strategy indicates how LPIS will be implemented, sustained and institutionally functioned. Strategy is based on the adoption of Council Regulation (EC) No 73/2009, so the proposed solution and design of LPIS for whole Turkey is fully compatible with EU technical requirements and specifications. Content of this project fiche is consistent with and supportive of the established Strategy paper.

Initial attempt of the alignment was started with the implementation of an EU-funded project within two provinces (Agri and Tekirdag) in 2007. This project was one of the components of the upper project fiche TR 0402.08 Preparation for the implementation of EU Common Agricultural Policy (CAP). The project had two components where ***Project 1: Designing a functioning IACS and LPIS in Turkey*** is directly linked with the current project. The project identified the most suitable reference parcels to be used in LPIS for Turkey and also identified institutional and legal requirements of the LPIS for the establishment and operation of IACS. As the outcome, a fully compliant method and methodology introduced for the establishment and implementation of a phased functioning IACS and its integration with LPIS in line with Council Regulation No. 73/2009. In this context, a preliminary methodology for LPIS digitization suited for Turkish conditions was elaborated.

Project on Digitization of LPIS in Turkey, will seek to build on the methodology developed in the above mentioned project implemented in 2007 (TR0402.08/002) for the development of LPIS throughout the country. Outcome of previous project revealed that use of physical blocks has been selected as reference parcel for primary digitization and for creation of the geodatabase of eligible land which suits with Turkey's conditions. Physical block shall be used as reference parcel at the initial step of future planned LPIS work. After completion of physical block digitization and during the first year of an operating IACS implementation, procedure for the annual aid application process will be supported with the consultation procedure in order to make the farmers familiar with the new reference system. For farmers, the data contained in LPIS will represent reference information, which they use when filling the aid applications. Agricultural parcel locations shall be related to the physical blocks during this stage (after 2013). MARA personnel will assist the farmers to identify and locate the current declared agricultural area using the new reference system.

All Member States are obliged to have their LPIS established with regard to a number of basic requirements defined by the European legislation and by related technical documents. Therefore Project on Digitization of LPIS in Turkey attempts to create LPIS through digitization and establishing the relevant database through the contracts foreseen. Orthoimages covering whole Turkey shall be used as the main input for acquiring parcel-related geographic information under LPIS creation. In practice, orthophotos shall be based on aerial photographs or satellite images of a territory, which are subsequently, processed using advanced computer technology. The resulting maps shall be used as a precise

background for agricultural land mapping. Creating digital geographical database of reference parcels shall include creation of unique, homogenous, reliable and accurate LPIS database as reference system for administration of aid applications. Output of this project shall pay attention to agri-environment measures and cross-compliance rules, for the future country-wide implementation.

### **3.2 Assessment of project impact, catalytic effect, sustainability and cross border impact**

This project is complementary to 2004 project fiche (TR04.02.08 001 and 002) on Preparation for the Implementation of EU Common Agricultural Policy (CAP).

The total area of Turkey comprises 78 million ha and the total utilized agricultural area for in 2008 is 39.121.686 ha. The task has to be resolved in 27 months to cover the whole agricultural area.

Results of the LPIS project will have impact on;

- Support for statements of farmers applying to area-based payments
- Support the administrative control
- Reliable tool for risk analysis and supporting On the Spot Check (OTSC), Control with Remote Sensing (CwRS) and field visit
- Support cross compliance, good agricultural and environmental condition (GAEC) and statutory management rules (SMR), management and controls
- Support area based measures of Rural Development Plan (RDP)
- Management and protection of the environment
- Food traceability and quality
- Implementation of the Nitrate Directive (ND) measures
- Implementation and monitoring of agri-environmental measures
- Landscape planning
- Land consolidation, etc

The system will allow MARA to fulfil the database homogeneity requirement, which defines the continuous projection of parcels without overlaps and artificial division (on the boundaries of map sheets or territorial units). The system will also allow MARA to fulfil the requirement to be met by all Member States in EU since 1 January 2005 – use of Geographic Information System (GIS) for the management of LPIS data. So the output of this project will also provide fulfilment of these requirements.

#### **- Catalytic effect**

One main catalytic effect of implementation of the project would be to support management and control of area-based payments in Turkey compatible with EU standards. Lack of reference data necessary to make all the controls foreseen in the IACS, incompatibility of records, lack of cross-checks based on reference parcels and the rules settled in the Community legislation will be overcome by the outcome of this project. The information taken by using this base data will also assist MARA in designing the agricultural policies.

The project will serve the priorities highlighted in Accession Partnership (AP), National Program on the Adoption of the Acquis (NPAA), Multi-annual Indicative Planning Document (MIPD) and National Development Plan (NDP). Although LPIS can be used for multiple purposes, priority of the LPIS would support the administration and control of direct payments in comparison to other uses, as the most of the measures are related directly or indirectly with land. However all the measures taken on the agricultural sector (direct payments, environmental and rural developing actions) are managed through IACS so LPIS will have effect on the implementation of these measures such as production in less favoured areas, participation of farmers to specific programs like organic farming, agri-environmental measures, decreasing nitro pollution, reforestation etc. It will contribute to the structures necessary for utilization of EU pre-accession assistance in the context of adjustment to EU CAP acquis.

#### **- Sustainability**

MARA has the duty to implement the next steps of technical assistance for setting up Integrated Administration and Control System (IACS) and Land Parcel Identification System (LPIS) in whole Turkey. Ministry of Agriculture and Rural Affairs (MARA) - Agricultural Land Evaluation Department(ALED) is the main responsible body for administration related to the preparation, technical control and implementation of LPIS. In case MARA will be restructured in future, tasks of the above department will be transferred to a foreseen General Directorate of Rural Development under the new organization. MARA Implementation Unit will be established in future under the foreseen General Directorate of Rural Development, and the management of the tasks related to IACS/LPIS implementation such as consultation, updating, maintenance, execution of controls will be transferred to this specialised unit.

Project is complementary to 2004 project fiche (TR04.02.08 001 and 002) on Preparation for the Implementation of EU Common Agricultural Policy (CAP). In order to ensure sustainability of the developed systems MARA prepared and submitted a Strategy Document on the establishment of LPIS, as a formal commitment towards this ultimate goal. Content of the governmentally approved Strategy document are shaped in compliance with the comments of EC authorities. Besides specifying the key technical ingredients of the system, the Strategy indicates how LPIS will be implemented, sustained and institutionally functioned. Strategy provides a commitment on the future maintenance and sustainability of the system. This project fiche is fully consistent with the Strategy.

For the continuation of sustainability, MARA will constitute annual study report, operating budget and financial program, as all other institutions do which allows to be involved in the National Budget. Future planned work for establishing inextricably functioning projects have already been placed in National Programme of Turkey for the Adoption of the EU Acquis published in Official Gazette in 31 December 2008 which shall also form the basis for future planned LPIS work.

Following the completion of LPIS digitization work, in the first application year, control procedures shall be implemented annually according to Council Regulation (EC) No 73/2009 and all required updates shall be done. Within this scope, information about farmer and land shall also be included.

### **3.3 Results and measurable indicators:**



### 3.3.1 Results

Whole project comprises 3 components. First component includes the acquisition and creation of orthophoto . Second component includes implementation of external quality control (EQC) on nationwide scale in order to monitor and control the other components (orthophoto creation and identification of reference parcels). Third component includes identification of reference parcels and creation of Land Parcel Identification System (LPIS) database formulated as two parallel sub-components (3.1 and 3.2) in order to complete the whole project on time, assure a safe period for the flow of deliverables between all components by the accelerating/enforcement effect of LPIS sub-components especially on the image acquisition component (first component).

The orthophoto component is to be launched as one service tender for the whole territory of Turkey. External Quality Control (EQC) component is to be launched as one service tender for the whole territory of the country, where the progress and production of other components are monitored, controlled, evaluated for acceptance and data flow between the other components (orthophoto and reference parcel identification ) are realised. Finally Land Parcel Identification System (LPIS) digitization component is to be launched as one service tender where the integral sub-components (two LOTs) can be contracted by different bidders and the selection and award criteria will be defined per LOT. Geographical division between the sub-components will be arranged by respecting *equal amount of work load between service providers*.

Results of each component are given below with regard to their contribution on the ultimate project purpose;

**R1.** Delivery of the information covering whole Turkey concerning an updated and homogeneous base data (orthophotos) divided into predefined map sheet scale for the whole country to be used for LPIS generation, further implementation of Integrated Administration and Control System (IACS) and as background data for other related measures (protection, environmental assessment etc.)

**R2.** Delivery of the information covering whole Turkey concerning the need for assuring the same level of geographical data quality and consistency satisfying the technical requirements at nationwide scale. External quality control (EQC) contractor will deliver the detailed analysis/control/documentation regarding the quality and accuracy of the deliverables and elaborated materials used/submitted by the orthophoto (1<sup>st</sup> component) and digitization contractors (3<sup>rd</sup> component) and deliver the consolidated outputs of the whole project. All data within the Project on Digitization of Land Parcel Identification System (LPIS) in Turkey will flow from EQC contractor in addition to the control and evaluation responsibilities.

**R3.** Delivery of the information covering whole Turkey concerning the digitization and creation of seamless geodatabase of reference parcels, (physical blocks) covering whole Turkey's agricultural surface, non agricultural areas and remaining "gaps" outside/inside the physical blocks as divided into two geographical region respecting equal amount of work eligible for different contractors. This component will be an important part of the system (IACS) since vector and attribute information will be generated with this

component. Execution of activities to reach the result will be in compliance with the major rules defined in Council Regulation (EC) No 73/2009 and also to be enhanced with adaptations due to national requirements.

### 3.3.2 Measurable indicators

Each measurable indicator specified below corresponds to a result in the preceding section. For the success of the project, MARA will define periodical targets in Terms of References (ToRs) (certain amount of area to be covered) to objectively verify the indicators of delivering the results, where each check point will be formulated to be operationally measurable (quantity, quality, time – QQT). Total project area will (approximately) cover 780.000 sq.km for components 1 and 2; while the project area of component 2 shall cover two LOTs where each of them is assumed to cover (approximately) 390.000 sq.km. (excluding slight differences). All deliverables and other elaborated materials within the project will be checked/qualified by the EQC contractor where the performance of quality control will be controlled and approved by MARA throughout project implementation period via random sampling method.

Indicators which will be used to measure and report the project achievement would be;

**M1.** The improvement in the image acquisition and processing to be controlled by the EQC contractor before the beginning of LPIS digitization process which will begin after nine months from the beginning of first (orthophoto) component. Orthophotos will be delivered in predefined tiles (mapsheets) and will have a resolution of 0,5m (ground pixel size-GSD). In addition to the orthophotos, any intermediate products like Global Positioning System (GPS) measurements, position of ground control points (GCP) etc. will also be delivered and all internal quality control records will be documented. Overall technical quality of deliverables will be ensured through double-checking system (control of the full coverage by EQC contractor verified via secondary control of MARA afterwards). Final acceptance of products will become after completion of both controls. Controls will cover at least final positional accuracy of the produced orthophoto, radiometry and evaluation of the photointerpretation quality of delivered orthoimages.

**M2.** The improvement in the fully working and operating WEB/GIS application to monitor and evaluate the progresses and quality of image (orthophoto) delivery and LPIS reference parcel (RP) identification (vector and database), submission of final version of photo interpretation guideline before the beginning of LPIS digitization process (feedback from digitization contractors concerning the experience/observations on local landscape features are excluded at this stage), execution of data flow between contractors of other components, coordination and consultation services for MARA related to photo interpretation guideline database structure, architecture and data delivery in cooperation with digitization contractors and MARA.

**M3.** The improvement in the total area of land digitized to identify the reference parcels and establishment of LPIS database according to predefined database structure to be controlled by the EQC contractor.

The identification system for reference parcels shall be made of computerised geographical information system techniques with a homogenous standard guaranteeing accuracy at least equivalent to cartography at a scale of 1:10 000.

The measurable indicators are:

- The number of sq. km of land digitized per LOT with the documented internal quality controls to be validated by the EQC component,
- Contributing to the photo interpretation guideline upon local landscape requirements observed during the performance of work in close cooperation with MARA and EQC component in compliance with EU acquis,
- Customization and implementation of software (SW) solution for digitization, data processing and finalization in corresponding geographic database format

**3.4 Activities** Regarding the great input of services, this project will include at least 3 service contracts:

- Acquisition of raw images and creation of orthophotos covering whole country to be carried out through one service contract (Contract 1 in Indicative Budget) where funding from EU contribution expressed in % of the Total Public Cost is %90
- Quality control, data flow and integration to be carried out through one service contract (Contract 2 in Indicative Budget) where funding from EU contribution expressed in % of the Total Public Cost is %90.
- Digitization of reference parcels to be carried out by two service sub-components distributed into two LOTs (Contracts 3.1 and 3.2 in Indicative Budget) where funding from EU contribution expressed in % of the Total Public Cost is %90.

**Specific Activities.1 (Contract 1):** Orthophotos are delivered as divided into predefined tiles (map sheets) and file format, including any intermediate products like; Global Positioning System (GPS) measurements, position of ground control points (GCP). As an ancillary data, MARA will supply existing Digital Terrain Model (DTM) with an average vertical accuracy of 5m – 9m RMSEz (Root Mean Square Error) guaranteed by General Command of Mapping to be used in the orthorectification process. In all cases basic acceptance criteria for ortho imagery will be the final positional accuracy. All internal quality control records are documented.

- Raw data acquisition
- Collection of ground control points (GCPs)
- Orthorectification
- Mosaicing
- Creation of ortho-image tiles
- Internal assessment of accuracy

**Specific Activities.2 (Contract 2):** External quality control applied on both the orthophoto and LPIS layer/database components. Data flow between other contractors (Specific Activities 1 and 3) will also be executed by this service provider.

- Design and develop WEB/GIS application for evaluating and monitoring the deliverables of Specific Activities 1 and 3

- Development and detailed description of external quality control procedures and conditions which was generally defined in ToRs of the tenders
- Executing the data flow from deliverables of Specific Activities 1 to initiate Specific Activities 3
- Execution of quality control of deliverables of Specific Activities 1 and 3
- Providing the consultation services
- Preparation of quality control records and reports which will be re-controlled through sampling and approved by MARA.
- Control and ensure the quality of data homogenization and integration of digital data, orthoimages and LPIS
- Verify data delivery regularity
- Cooperation with orthophoto and digitization contractors and overall project coordinations
- Development of photointerpretation guideline drafted within the prior EU project (TR0402.08/002) and update before the start of digitizing works.

**Specific Activities.3 (Contract 3.1, Contract 3.2):** The total area of land is digitized. The reference parcels are identified and LPIS database established according to predefined database structure. All internal quality controls are documented.

- Recruitment of the needed personnel and training of operator's to make them familiar with the Turkish conditions in agriculture
- Digitisation and attributing of the reference parcels
- Internal assessment of quality
- Establishing the database for the parcels
- Homogenization and integration of digital LPIS data at the geographical division of sub-components

### **3.5 Conditionality and sequencing:**

**3.5.1** The existence of a clear and government approved strategy for the establishment of LPIS was a precondition to the implementation of the project which has been completed. Besides specifying the key technical ingredients of the system, the Strategy indicates how LPIS will be implemented, sustained and institutionally functioned. Strategy provides a commitment on the future maintenance and sustainability of the system. Content of this project fiche is fully consistent with the Strategy.

**3.5.2** The period of execution of all components will be 27 months following the date of commencing performance. All components will be executed as a whole for the purpose of project constitution. First duty is the acquisition and creation of orthoimages for the whole country (Contract 1). It might be satellite, aerial images or hybrid depending on the zones of easier availability to assure time loyalty of the project. Then the application of external quality control on nationwide scale shall commence related to monitoring and controlling of other components (Contract 2). Finally the reference parcels area will be identified and LPIS database of the reference parcels area will be created (Contracts 3.1 and 3.2). In line with orthoimages and digitization process, farmer consultations for the linkage with agricultural parcel location will be *initiated* during the implementation of the project period which will be carried out by MARA under the supervision of the experts from Specific Activities 2 and 3.

**3.5.3** In order not to miss the opportunity to adapt the orthophoto contractor's production process, EQC component will start immediately after orthophoto component and concluded as the latest activity of the project. The period of execution of EQC component is 26 months, orthophoto creation component is 24 months and LPIS digitization component is 17 months following the date of commencing performance. After one month from the beginning of orthoimage acquisition and creation, quality control will commence. LPIS digitization process will begin after nine months from the beginning of orthophoto component. Total project duration will be 27 months. Detailed project implementation chart is given in Annex.6. Overlap between orthophoto creation with EQC is 23 months where the overlap with LPIS digitization is 15 months.

**3.5.4** The project is depending on the availability of images. Because not all areas of Turkey are covered by suitable images (not older than previous year from the date of contract signature), new images might be acquired. Bidders can offer existing imagery not older than one year from the date of contract, possibly supplemented by new acquisitions or they can offer a completely new coverage of the territory. The project shall be finished within 24 months in order to have the same basis for all farmers.

There are no legal limitations for orthophotos obtained from satellite imagery including no blocks on images and no need for permission on image acquisition. There are also no legal limitations for orthophotos obtained from monoscopic aerial images (excluding military forbidden areas like military bases, airports etc) including no blocks on images and no need for permissions for image acquisition. In the case of stereoscopic aerial photography, application for prior authorization of the General Command of Mapping of Turkey will be coordinated by MARA before the commencement date of image acquisition.

**3.5.5** All interactions between the contractors and MARA are given in Annex-7 with illustrative flow charts and detailed explanations.

**3.5.6** Time planning for the overall tender implementation schedule is consistent with the periods defined in Practical Guide to Contract procedures for EC external actions (PRAG) so the risk of tender failure is low.

**3.5.7** Any additional costs that occur during project implementation and have not been foreseen will be covered by the Turkish authorities, including the case where the budget allocated in the fiche is not sufficient for the contracts.

### **3.6 Linked Activities**

**Technical Assistance for the MARA for the design of a functioning IACS and LPIS;** an EU-funded project was implemented in order to define the institutional, legislative and investment requirements for the establishment and implementation of a phased functioning IACS in line with Council Regulation No.73/2009 and its integration with LPIS (TR. 0402.08/002). The project made an overall assessment, introduced the method and methodology and determined the investment requirements, aimed to increase the capacity of the MARA on legislative and institutional issues in line with EU legislation and practices. The project completed in September 2007. Further legislative and administrative actions concerning the identification of agricultural lands are recommended and assistance for the preparation of future project proposals for nationwide implementation of LPIS and IACS are provided. In this context, a preliminary methodology for LPIS digitization suited for Turkish conditions was also elaborated.

**Determination of Problematic Land and Rehabilitation Project (STATIP),** financed from the national budget, aims at preventing land deterioration as a result of misuse, through determining and solving the problems caused by patterns of use, and providing land use information for all stakeholders.

Under the project the village borders taken into account for the first time; agricultural land and its qualification are determined on the basis of villages, districts, provinces and system will be served to the users/country and nationwide agricultural land inventory will have been prepared. Thus, the first step of dountop planning is planned to be made as the basis for sustainable and viable development possible with the provision of continually updated and healthy information under macro planning arising from the local planning.

**Agricultural Basins Project;** For the purpose of solving the problems arising from improper use of the most important natural resources such as drought, soil and water; agricultural basins are determined, integrated management system for agricultural basins are established, projection of domestic and international demand and the related structure of which the agricultural supports depends, is structured. Production planning for cultivating at the right amount of right product within the right area is realized.

While creating the production pattern; soil, topography, climate (rainfall, temperature, humidity, evaporation, etc.), water existence and ecological requirements of currently cultivated products were taken into consideration. 30 agricultural basins are identified in

Turkey for the first time by evaluating data on climate, soil, topography, land classes and land-use types. Created system consists of a database, a basin model, a demand forecasting model and a decision support system. Currently, while the Farmer Registration System and STATIP projects stand first on the list, 527 million data is located.

### 3.7 Lessons learned:

Lessons learned from pilot project (TR0402.08/002) showed that the bottleneck of “Digitalization of LPIS” Project would base on timely preparation of base orthophotos so MARA will support all accelerating efforts and employ all opportunities to achieve this ultimate goal. Two measures will be taken within this scope; MARA will supply existing DTM as an ancillary data and method of image acquisition will be open to all alternatives (aerial photos, satellite images and/or composite solutions). For this part, the acquisition of satellite images, collection of ground control points as early as possible have also the importance to accelerate the process. Supplementary component for the success of the project will be the uninterrupted follow-up digitalization sub-components. As explained in Annex 7 Interaction between MARA and Contractors, MARA will have continuous/regular monitoring on all activities/components **directly** and **indirectly** (through EQC contractor) as a result of lessons learned from preceding EU project. Performance monitoring measures (minimum thresholds on the measurable indicators to be attained by all contractors) will be monitored by MARA during the project implementation period.

Another lesson learned from the preceding project was the importance of digitization methodology for the reference parcels. Existing photointerpretation guideline emerging as an output of the preceding EU project will be the basis for further work with the LPIS database. Coordination and consultation services for MARA related with development/enhancement of the existing photointerpretation guideline will be provided by EQC contractor (component 2) before the start of digitization work (sub-components 3.1 and 3.2). In case of an incoming modification feedback from digitization contractors in following stages, based on local landscape features, necessary modifications will be adapted during project implementation period by EQC contractor following the approval of MARA.

Final point which can be assumed as partially related to this project is about the implementation of the final LPIS database and consultation with farmers (which are out of the deliverables of this project in the nationwide scale; farmer consultations for the linkage with agricultural parcel location to be carried out by MARA under the supervision of the experts from Specific Activities 2 and 3 within project implementation period) were the main duties from the technical side of the project.

**4. Indicative Budget (amounts in EUR)**

*Remark:* An adjustment related to the slightly differences in the area coverage of the different Lots, was not made because at this stage it was the task to calculate the total project amount.

			SOURCES OF FUNDING										
			TOTAL EXP.RE	TOTAL PUBLIC EXP.RE	IPA COMMUNITY CONTRIBUTION		NATIONAL PUBLIC CONTRIBUTION					PRIVATE CONTRIBUTION	
ACTIVITIES	IB (1)	INV (1)	EUR (a)=(b)+(e)	EUR (b)=(c)+(d)	EUR (c)	% (2)	Total EUR (d)=(x)+(y)+(z)	% (2)	Central EUR (x)	Regional/ Local EUR (y)	IFIs EUR (z)	EUR (e)	% (3)
Activity 1 <b>Experts/TA</b>						85							
contract 1 (1)		X	22.300.000	22.300.000	18.955.000	85	3.345.000	15				-	-
contract 2 (2)		X	4.500.000	4.500.000	3.825.000	85	675.000	15				-	
contract 3.1 /3.2 (LOT 1+2) (3)		X	19.400.000	19.400.000	16.490.000	85	2.910.000	15				-	-
TOTAL IB													
TOTAL INV			46.200.000	46.200.000	39.270.000	85	6.930.000	15		-	-	-	
<b>TOTAL PROJECT</b>			<b>46.200.000</b>	<b>46.200.000</b>	<b>39.270.000</b>	<b>85</b>	<b>6.930.000</b>	<b>15</b>					

Amounts net of VAT

**5. Indicative Implementation Schedule**

Component	Start of Tendering*	Signature of contract	Contract Completion	Duration of project
<b>Contract 1</b>	QII / 11	QIV / 11	QIV / 13	24 months
<b>Contract 2</b>	QII / 11	QI / 12	QI / 14	26 months
<b>Contract 3.1</b>	QII / 11	QII / 12	QI / 14	17 months
<b>Contract 3.2</b>	QII / 11	QII / 12	QI / 14	17 months



Remark:

Detailed Project Implementation Chart is given in Annex.6

\*: Indicates the publish date of individual contract forecast in the Official Journal of the European Union, on the EuropeAid website and in any other appropriate media

## **6. Cross cutting issues**

### **6.1 Equal Opportunity**

Participation in this project will be open to both males and females involved in the sector. Records of professionals' participation in all project related activities will reflect this and will be kept with the project documentation.

### **6.2 Environment :**

The LPIS data, apart from supporting aid declaration and subsequent control can be used and by other internal or external users. The reference parcels, including the orthophotos, DTM (possibly) and the attribute information on the land use, can be used as the basis for any kind of decision related to the land management. Also the LPIS database, apart from the reference parcels themselves, may contain and other layers of information, which together could be made broadly available to many other users.

Rural Development is gaining more importance and there is a need to establish controls to guarantee the correct disbursement of all payment under both pillars. LPIS and GIS technology, linking maps with databases related to landscape features, environmentally sensitive areas or water resources is a key component of efficient control system.

The integration of cross compliance and Rural Development layers into LPIS together with some others layers like Nitrogen directive, Wild Bird protected areas, Biotop –Habitats and species, average slope, average altitude, LFA, soil quality, Sewage sludge, Groundwater directive, semi-natural and natural green lands and etc will form the basis of the needed spatial data for monitoring and evaluation.

### **6.3 Minority and vulnerable groups**

According to the Turkish Constitutional System, the word minorities encompasses only groups of persons defined and recognized as such on the basis of multilateral or bilateral instruments to which Turkey is a party. This project has no negative impact on minority and vulnerable persons. Training programs and workshops will be held in buildings where access to buildings for handicapped people is possible.

**ANNEXES****ANNEX 1 LOG FRAME IN STANDARD FORMAT**(10% National contribution has been considered for Technical Assistance)

<b>LOGFRAME PLANNING MATRIX FOR</b>		Contracting period expires 2 years after the signature of FA	Disbursement period expires 1 year after the end date for the execution of contracts
<b>Project on Digitization and Establishment of LPIS database</b>		<b>Programme number</b>	
		<b>Total budget :</b> 46.200.000 Euro	<b>EC Assistance budget :</b> 39.270.000 Euro
Overall objective	Objectively verifiable indicators	Sources of Verification	
To contribute to the objective of Turkey for having an area based agricultural support system in line with EU best practices and EU acquis through the full establishment of Integrated Administration and Control System (IACS) and establishment and implementation of Land Parcel Identification System (LPIS) in the whole country in line with EU acquis to fulfil the requirements of Council regulation (EC)73/2009 where through such system all available agricultural land in the country will be recorded, un/misclaimed areas will be identified, the payments will be directly addressed to the farmers together with creating a base for the management of environmental and rural developing actions.	<ul style="list-style-type: none"> <li>- Legislation for phased IACS implementation adopted by 2009</li> <li>- Annual agricultural support distribution checked gradually and spatially (through use of LPIS data)</li> <li>- Procurement notice for follow-up projects on IACS and LPIS published in the Official Journal of the European Union in 2011 and 2012 gradually</li> </ul>	<ul style="list-style-type: none"> <li>- EU Commission Reports</li> <li>- The reports and documents of MARA</li> <li>- Government Reports.</li> </ul>	
Project Purpose	Objectively verifiable indicators	Sources of Verification	Assumptions
Improved capabilities of the beneficiary for the implementation of an area based agricultural support system in line with EU acquis via establishing the LPIS system (EC 73/2009), where once it will be compiled it is going to be the main component of the IACS system, through providing digital orthophotos and digital geographical database of reference parcels covering the whole country which will be the basis for addressing the payments directly to the farmers, efficient and controlled management of direct payment schemes and selected Rural Development Plan (RDP) measures on behalf of farmers and the protection of food safety and environment.	<ul style="list-style-type: none"> <li>- LPIS designed in line with EU requirements by 2013</li> <li>- Technical capacity of MARA strengthened with regard to implementation of LPIS</li> <li>- Drafts for structural and legislation framework are prepared by 2010</li> <li>- Required staff has been trained in 2011</li> </ul>	<ul style="list-style-type: none"> <li>- The documents indicating the legal basis</li> <li>- Written decrees of staff</li> <li>- ToR of staff</li> <li>- Official Journal of EC</li> </ul>	<ul style="list-style-type: none"> <li>- Support of EU Institutions and Member States</li> <li>- Sufficient allocation of financial and human resources by the Government of Turkey</li> </ul>

2010-Digitization of Land Parcel Identification System (LPIS) /final

Results	Objectively verifiable indicators	Sources of Verification	Assumptions
<p><b>R1.</b> Delivery of the information covering whole Turkey concerning an updated and homogeneous orthoimages in predefined map sheet grid for the whole country to be used for LPIS generation, further implementation of the control system (IACS) and as background data for other related measures (protection, environmental assessment etc.)</p> <p><b>R2.</b> Delivery of the information covering whole Turkey concerning the need for assuring the same level of geographical data quality and consistency satisfying the technical requirements at nationwide scale. EQC contractor will deliver the detailed analysis/control/documentation regarding the quality and accuracy of the deliverables and elaborated materials used/submitted by the orthophoto and digitization contractors and deliver the consolidated outputs of the whole project.</p> <p><b>R3.</b> Delivery of the information covering whole Turkey concerning the digitization and creation of seamless geodatabase of reference parcels, (physical blocks) covering whole Turkey's agricultural surface, non agricultural areas and remaining "gaps" outside/inside the physical blocks as divided into two geographical region respecting equal amount of work eligible for different contractors.</p>	<p><b>M1.</b> The improvement in the image acquisition and processing to be controlled by the EQC contractor before the beginning of LPIS digitization process which will begin after nine months from the beginning of orthophoto component.</p> <p><b>M2.</b> The improvement in the fully working and operating WEB/GIS application to monitor and evaluate the progresses and quality of other components, submission of photo interpretation guideline before the beginning of LPIS digitization process, execution of data flow between contractors of other components, coordination and consultation services for MARA.</p> <p><b>M3.</b> Number of sq. km of land digitized per lot with the documented internal quality controls to be validated by the EQC, contributing to photo interpretation guideline upon local landscape requirements and in compliance with EU acquis, customization and implementation of SW solution for digitization, data processing and finalization in corresponding geographic database format</p>	<p>Compulsory Project Reports</p> <p>Project Monitoring Reports</p> <p>Photo interpretation Guidelines and Quality Assessment Reports</p> <p>Manuel and Guidelines of customized SW</p> <p>Training Materials</p>	<p>MARA will be responsible to take administrative permissions required from responsible institutions</p> <p>MARA will be responsible for organization of call for steering committee meetings and regular monitoring meetings with digitization contractor, EQC contractor and other involved institutions</p> <p>MARA will take all necessary steps for informing farmers and farmers organizations when required</p>
Activities	Means	Costs	Assumptions
<p>Regarding the great input of services, this project will include 4 different technical assistance contracts: One service contract for acquisition of raw images and creation of orthophotos covering whole country (Cont. 1)</p> <ul style="list-style-type: none"> <li>• One service contract for independent quality control, data flow and integration. (Contract 2)</li> <li>• Two service contracts distributed into two areas (lots) covering whole country for digitization of reference parcels (Contract 3.1 and Contract 3.2)</li> </ul>	<ul style="list-style-type: none"> <li>• Technical Assistance</li> <li>• EU Experts</li> <li>• Training activities to make use of local staff</li> <li>• Meetings</li> <li>• Workshop</li> <li>• Manuals and guidelines</li> </ul>	<p>See Annex 5 Indicative Breakdown of Budget (Personnel Costs) and Detailed Indicative Expenses (All Activities)</p>	<p>The existence of a clear and government approved strategy</p> <p>Provisional set up of a unit for implementation of IACS / LPIS in MARA.</p>

**ANNEX 2 AMOUNTS (in €) CONTRACTED AND DISBURSED BY QUARTER FOR THE PROJECT  
(IPA CONTRIBUTION ONLY)**

<b>Disbursed</b>	<b>III/2011</b>	<b>IV/2011</b>	<b>I/2012</b>	<b>II/2012</b>	<b>III/2012</b>	<b>IV/2012</b>	<b>I/2013</b>	<b>II/2013</b>	<b>III/2013</b>	<b>IV/2013</b>
<b>Contract 1</b>	11.373.000 (%60 pre-finance)								7.582.000 (%40 final)	
<b>Contract 2</b>		1.530.000 (%40 pre-finance)			956.250 (%25 interim)			956.250 (%25 interim)		382.500 (%10 final)
<b>Contract 3.1</b>				2.473.500 (%30 pre-finance)		2.473.500 (%30 interim)		2.473.500 (%30 interim)		824.500 (%10 final)
<b>Contract 3.2</b>				2.473.500 (%30 pre-finance)		2.473.500(%30 interim)		2.473.500 (%30 interim)		824.500 (%10 final)
<b>Cumulated</b>	<b>11.373.000</b>	<b>12.903.000</b>	<b>12.903.000</b>	<b>17.850.000</b>	<b>18.806.250</b>	<b>23.753.250</b>	<b>23.753.250</b>	<b>29.656.500</b>	<b>37.238.500</b>	<b>39.270.000</b>
<b>Contracted</b>	<b>III/2011</b>	<b>IV/2011</b>	<b>I/2012</b>	<b>II/2012</b>	<b>III/2012</b>	<b>IV/2012</b>	<b>I/2013</b>	<b>II/2013</b>	<b>III/2013</b>	<b>IV/2013</b>
<b>Contract 1</b>	18.955.000									
<b>Contract 2</b>		3.825.000								
<b>Contract 3.1</b>				8.245.000						
<b>Contract 3.2</b>				8.245.000						
<b>Cumulated</b>	<b>18.955.000</b>	<b>22.780.000</b>	<b>22.780.000</b>	<b>39.270.000</b>	<b>39.270.000</b>	<b>39.270.000</b>	<b>39.270.000</b>	<b>39.270.000</b>	<b>39.270.000</b>	<b>39.270.000</b>

