1. Basic Information

1.1. CRIS Number 2003/005-710.04.05  
1.2. Title: Improvement of the LPIS system drawing on the GIS technology
1.3. Sector: Agriculture
1.4. Location: Poland

2. Objectives:

2.1. Overall objective

Continuation of development of the Land Parcel Identification System (LPIS) databases using GIS techniques in order to meet the requirements laid down in Council Regulation No.1593/2000. Implementation of the tasks planned covers areas of about 150,000 km$^2$ (about 7,800,000 register parcels).

On the basis of prices from the tender documentation submitted to ARMA on vectorisation of reference parcel and non-eligible areas, it was necessary to recalculate the unit prices for an individual parcel. The market prices for vectorisation of register parcel together with non-eligible areas fluctuate by region within the range of 2 – 3 Euros. Assuming the average price at the level of 2.5 Euros (the market price) per parcel, ARMA will be able to vectorised 7,800,000 register parcels, which constitute the area of 150,000 km$^2$. The area for which the vectorisation takes place within Phare 2003, will correspond to the area covered by orthophotomaps within Phare 2001.

It shall be underlined that within Phare 2000 pilot project, ARMA is going to test the technological solution which will enable earlier utilisation of non-eligible areas within IACS in case of delays in preparing of full vectorised layer of reference parcels.

The Polish side confirms to stick to the deadlines set up for implementation of the LPIS (i.e. 1st of May, 2004), in GIS technology based on transformed raster maps with centroids of register parcels, orthophotomaps (deadline GIS: 01/01/2005). Full vectorised LPIS will be also prepared for a part of Poland by the above date.

The process of replacing raster based form of the system for full vectorised LPIS form will be carried out in 2005 and completed in 2006.

2.2. Project purpose

1. Transfer of descriptive and graphic data from the cadastre;
2. Scanning and vectorisation of the register maps obtained;
3. Vectorisation of land use areas (not eligible for direct payments) from the stereoscopic image model;
4. Verification of the Land Parcel Identification System (LPIS) database built;
5. Increase in the level of knowledge on GIS techniques among members of the system administration and co-operating institutions.

2.3. Accession Partnership and NPAA Priorities

„Preparation for implementation of the Common Agricultural Policy” or, in other words, „introduction of the Common Agricultural Policy mechanisms and organisational structure”, constitutes a midterm priority specified in the Accession Partnership. Moreover, this priority has been included in Poland's National Programme for Adoption of the Acquis (priority No. 3.4.1.6.) as requiring urgent implementation by Poland of a number of measures, including:

- setting up of the „Integrated Administration and Control System (IACS)” - ARMA's responsibility;
other tasks connected with preparing of the organisational structure for administration and control of direct aid measures, including CAP accompanying measures (earlier retirement scheme, afforestation, agri-environmental objectives), as well as aid for Less Favoured Areas (LFA), integrated with a coherent structural policy for rural development implemented in Poland - also ARMA's responsibility.

3. Description

3.1. Background and justification

According to the *acquis communautaire* each EU Member state is obliged to build before 1 of May 2004 a Land Parcel Identification System (LPIS). Council Regulation 3508/92 stipulates that the Land Parcel Identification systems should be developed on the basis of maps or cadastres, or other cartographic references, using for this purpose computerised techniques of the Geographic Information System (GIS), preferably including aerial or satellite orthoimages of uniform standard to ensure accuracy corresponding at least to the cartographic scale of 1 : 10 000. *As the deadline for completion of the project is determined by implementation of tasks within Phare 2001 (PL 01.04.08), the project must be completed in the 2nd quarter of 2005.*

The concept of the LPIS development in Poland envisages use of the existing national public register – the cadastre. At the first stage of the LPIS development, the register (cadastral) parcel, which is the basis of public registers, shall be used as a reference parcel. Within these parcels, non-functional areas shall be set off. These are areas not utilised for agricultural production coming under direct payments, i.e. areas covered with buildings, roads or lakes. Some areas such as forests shall be non-eligible areas for the direct payments system, but may constitute a functional area for the afforestation programmes under accompanying measures.

The LPIS development depends on the one hand on producing of an orthophotomap for the entire acreage of farmland, and on the other hand on generation of a digital version of the cadastre (vectorisation of register parcels' borders) as well as vectorisation of the borders of functional areas (land use areas) from stereoscopic image model. Work on drawing up of an orthophotomap for the entire territory of Poland has already started, and is financed from the budgets of the Head Office of Geodesy and Cartography (HOGC) and the Agency for Restructuring and Modernisation of Agriculture. Continuation of this process is envisaged under the Phare 2001 project. Within its scope, half of the territory of Poland shall be covered with aerial images, which shall give the basis for development of the orthophotomap.

As far as the cadastre is concerned, alphanumeric cadastral data are available at present in electronic form (in various formats) in the PGCDC (Poviat Geodetic and Cartographic Documentation Centre) offices (100%). In the graphic part of the cadastre, there are maps available covering 46% of rural areas (22% in raster form and 24% in vectorised form).

First stage of Land Parcel Identification System (LPIS) building is the transfer of data from land and buildings register to IACS system as well as their processing for the needs of the system. First transfer will take place after 30th March 2003. Data transfers in the subsequent years will be organised before 30th April each ear, slightly before the submission of aid applications by farmers – IACS beneficiaries.

It should be underlined that in the first year the data will be transferred from different IT environments that are used to keep the land and building register (both in descriptive and geographical part).

Therefore, the transfer will be done according to the following sequencing:

- import of data from different IT environments that are used to keep the land and building register;
- control of completeness and quality of cadastral data;
- control of topology of geometric data together with possible corrections;
- transformation of geometric data to the reference net used in LPIS;
- export of data to IACS structures.

This methodology may also be used in the subsequent years, depending the possibility of surveying administration to prepare the transfer of data for the needs of IACS system.

The next stage of LPIS building consists in obtaining of cadastral maps in vector format. This task will be implemented in two phases. The first of them will be scanning of cadastral maps with calibration as well as preparation of cadastral map to raster format with digitised centroids. The implementation of this task is scheduled for 4th quarter of 2003/1st quarter of 2004. Successive replacing of raster data from cadastral maps with vector data shall also take place. These tasks shall be implemented along with the work on vectorisation of land use areas (areas not eligible for direct payments) on the basis of the orthophotomap. The second phase will be done gradually, and its completion is foreseen in 2006.

In the years 2002-2006 the State surveying services and ARMA plan to fully cover the whole country with vector maps and to ensure integration of graphic data with descriptive data from land and buildings register.

However, since the process constitutes one of the priorities for the LPIS development, the Polish party, following recommendations made by EU experts – members of the IACS peer review mission held in Warsaw on 3-4 July 2002, decided to accelerate the work so as to complete vector maps of the entire territory of Poland by the end of 2004, using for this purpose Phare 2003 funds as co-financing for the Polish investment efforts.

According to the recommendations made by the experts of the above review mission, „updating of the cadastral graphic data into ‚real’ vectorised maps should be accelerated”.

Under Phare ’99, measures covering the following were implemented:

- analysis of the existing physical control mechanisms and EU requirements in relation to CAP systems and the accompanying measures
- proposals of organisational solutions for carrying out of control actions,
- development of methods and techniques (e.g. measuring, sample selection) including recommendations concerning the personnel, structure, training sessions, the IT system and outsourcing
- laying down of procedures,
- holding of training sessions aiming at transfer of knowledge to the future personnel.

Phare 2000 envisages carrying out of preparatory work, including preparation of tendering specification for realisation of a control campaign using the methods of on-the-spot inspection and remote sensing.

The Phare 2001 Programme aims at taking of new aerial pictures and development on their basis of an up-to-date orthophotomap of the country, realisation of a pilot control campaign carried out using the methods of on-the-spot inspection and remote sensing. During the campaign, verification in field conditions of the control procedures worked out under IACS and of organisational solutions for carrying out of on-the-spot control shall take place. Under the Polish conditions, the existence of a large number of farms, considerable scattering of the agricultural production area and historically formed unfavorable dispersion of the particular farms constitute a situation where solutions worked out using the EU experience require on-the-spot verification.

On the basis of the results of the above control campaign, final arrangements concerning staffing requirements and equipping of the control teams in order for the IACS system to operate correctly under the Polish conditions shall be adopted.

The programme aims also to increase the level of knowledge amongst members of the Polish administration
on photogrammetric methods of control and the methodology of control of applications for acreage and animal subsidies submitted by beneficiaries of the IACS system.

In connection to adoption of a simplified system for direct payments, carrying out of the planned scope of work within the time-lines envisaged within the schedule of this project ensures adequate outpacing in relation to the date of introduction in Poland of the standard system of direct payments.

Increase in the level of knowledge on the GIS techniques applied under the IACS among members of the system administration and co-operating institutions, mainly from the public administration, is planned to be achieved via preparation of training materials and holding of adequate training sessions. Co-operation with the Head Office of Geodesy and Cartography is planned in this respect.

3.2. Linked activities

a) Phare PL9206 project „Land Information System”.
Within the scope of the above project, aerial pictures in the scale of 1:26000 were taken for the entire territory of Poland, on the basis of which the Head Office of Geodesy and Cartography drew up digital orthophotomaps in the scale of 1:5000 for some urban areas. Orthophotomaps in the scale of 1:10,000 covering a small part of Poland's territory were also made. It should be noted that the above orthophotomaps have been developed on the basis of pictures taken before 1997 (they are more than five years old). Thus, the projections cannot be used in development of the Land Parcel Identification System (LPIS).

b) Phare PL9312-05-06 project – „Support and improvement of the cadastre in rural areas”.
The above project aimed at design of a modernisation technology for cadastral maps and the cadastral system in the rural areas of Poland. One of the objectives of the project was to carry out an analysis of use of photogrammetric methods for purposes connected with cadastral requirements. Pilot examinations were carried out on the territory of the gmina of Slupno in the Plockie voivodeship. For the entire territory of the gmina, conversion of analogue register maps into numerical maps was carried out. For part of the territory of the gmina, results of this conversion were compared with results obtained from aerial pictures using photogrametric methods. Within the scope of the project, photogrammetric materials were made on the basis of aerial pictures obtained specifically for this project in the scales of 1:10 000 and 1:26 000. The pictures have been taken by the State Company of Geodesy and Cartography in Warsaw, in co-operation with the German company S.I.G. Shroll Consult GmbH from Saarbruecken.

c) Phare PL0006.09 project – Preparing of selected CAP instruments.
The above project aims e.g. at design of a methodology for on-the-spot control and remote sensing control procedures for aid applications using the Geographic Information System (GIS);

d) Phare PL01.04.08 project – IACS and the Animal Identification and Registration System.
The project aims at development of the reference layer of the orthophotomap for the Land Parcel Identification System (LPIS). Half of the territory of Poland shall be covered by aerial pictures on the basis of which the orthophotomap shall be made.

e) Phare 2003 project proposal- Digitisation of cadastral maps in Poland
The project (to be implemented by HOGC) aims at conversion of analogue cadastral maps into vector form using data available in the state geodetic and cartographic resources. As a result, a creation of district

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1 Head Office of Geodesy and Cartography (Główny Urzad Geodezji i Kartografii GUGiK)
cadastral databases including digital description of area objects i.e. c.a. 6.5 million cadastral parcels with land use, contours of soil quality classes and buildings, will be built

3.3. Results
1. Obtaining of the following products for IACS development:
   - Central database containing full descriptive and graphic information taken over from the cadastre (digital cadastral vector layer)
   - Vectorised layer of register data integrated with raster orthophotomap image;
   - Vectorised layer of land use areas (digital eligibility layer for the area of 150 000 km²)
2. Obtaining of the following documentation relating to:
   - Results of the tests carried out, elaborated in the form of comprehensive conclusions and recommendations;
   - Best formats of the data obtained for IACS system development;
   - Usability analysis of the materials obtained qualifying them for realisation of the particular tasks;
   - Working out of models of documentation flow between the interested public administration units with respect to GIS techniques to be used under IACS;
   - Detailed technical conditions, specifying the methodology and manner of realisation, receipt and control of the particular tasks;
3. ARMA personnel trained in maintenance and exploitation of GIS products used in the IACS system.

3.4. Activities
1. Contract 1
   a. Twinning
      - Employment of a long-term expert (PAA) in Poland – 3rd quarter 2003;
      - Training of personnel in management of the newly built database based on the GIS technology;
   b. Organisation of training sessions on GIS techniques for members of the system administration and co-operating institutions, mainly from the public administration.
   The PAA responsibilities shall include:
   - General organization of the work envisaged under the contract for the twinning partner
   - Aiming and ensuring proper building database and process of integration of graphic data with descriptive data from land and buildings register.
   - Overview and verification of assumptions and procedures for LPIS quality control system (IT, safety)
   - Elaboration and testing practical examples of using GIS technology
   - Preparation and holding training programmes
   Short – terms experts will participate in preparing training programmes and carrying it out.
   Local experts will commit to the tasks concerning transfer of descriptive and graphic data from the cadastre.
2. Contract 2
   a. Transfer of data from the cadastre and their processing for the needs of the system, including
      - selected descriptive data;
      - existing vector data;
      - cyclical updating of the register data being at disposal;
   b. Obtaining of graphic data necessary for realisation of register data vectorisation process (reference parcels' borders), including:
- scanning of register maps for the purpose of vectorisation, successively before the vectorisation process, in order to develop the most up-to-date content of the map in vector form;
- transformation of the maps scanned to the co-ordinates system functioning in the IACS system;
- working out of vectorised borders of reference parcels

c. Vectorisation of land use areas (non-functional areas) on the basis of vectorisation of stereoscopic models, including successive transfer of the obtained data to the system. This task shall give in result precise marking out of areas not covered by payments (non-functional areas) and areas covered by payments (functional areas). The above land use areas shall be an important element used also in other aid programmes e.g. the agri-environmental programme;

d. Integration of the vector data obtained from register maps with the orthophotomap raster images, successively within the scope of development and receipt of partial databases.

Approximately, the territory of Poland (312 000 km$^2$) shall include about 49200 register regions and about 24 000 000 cadastral parcels envisaged for agricultural cultivation of which only 24% will be in the vector form by the end of 2003. The remaining 76% of cadastral agricultural parcels (i.e. 18.3 M cadastral agricultural parcels) will be vectorised by ARMA and HOGC in 2005. On the basis of mutual agreement between ARMA and HOGC, the task of the Agency will be to vectorise 7 800 000 cadastral agricultural parcels for the area not bigger than 150 000 km$^2$ as adopted in the fiche.

3 Contract 3
Purchase of equipment for verification of database.

Specification of the equipment and software necessary for implementation and control of this task:

I. GIS software (description of functionality) – for six graphic workstations:
   1. GIS software for processing and integration of graphic data with descriptive data;
   2. Software for analyses based on multi-spectral satellite photographs;
   3. Software enabling GRID analyses;
   4. Software for processing of binary rasters and coloured rasters;
   5. Software enabling photogrammetric control of the task;
   6. Software enabling verification of vector data;
   7. Software enabling verification of databases;

II. Software for three Photogrammetric Workstations
   1. Possibility of stereoscopic projecting of photogrammetric data;
   2. Possibility of control of photogrammetric projects;
   3. Possibility of import / export of photogrammetric data;

III. Equipment:
   1. Scanning equipment (4 pieces);
   2. Copying equipment (4 pieces);
   3. Large-format printing equipment – plotter A0 (2 pieces);
   4. Equipments for archiving of data;
   5. A3 printers (6 pieces);
   6. Graphic workstations with large size monitors – (6 pieces)
   7. Photogrammetric workstations – (3 pieces)
   8. Portable computers – (10 pieces);

ARMA will be the institution to be equipped with hardware and software to be purchased within Phare 2003 programme. The equipment will be placed in Department of Land and Farm Register – the unit responsible for building up and updating of LPIS data
3.5 Lessons learned
Under the Annual Assessment Report No. R/PL/AGR/00064 recommendations were made which are relevant to current project. The recommendations mentioned below have been taken into consideration while designing current project:
Less than satisfactory performance of some twinning teams must be predicted and additional or corrective measures should be allowed for in the project or other supplementary projects for the same sector.
Delays experienced by the Government in passing relevant legislation through the parliament, which appears indicative of conflicting views on the nature of the future Polish agriculture, must be taken into account in the project timetables.
Financing the actions in line with the Commission recommendations out of the Polish national resources must be notified to the Commission Services so as to assure the adequate level of co-ordination for accession processes.
The role of regular monitoring based on Sectoral Monitoring Sub-Committees can easily be overestimated, so additional early warning systems must be ready to react to critical threats in contracting or disbursement of funds.

4. Institutional framework:
Overall supervision of the project will be ensured by Ministry of Agriculture and Rural Development (MARD). The Agency for Restructuring and Modernisation of Agriculture (ARMA) is a leading institution in Poland with regard to implementation of structural transformation programmes in agriculture and rural areas. ARMA is playing the role of both implementing and paying institution. The role of implementing agency covers direct or indirect activities such as elaboration of principles and procedures of granting assistance, monitoring and control. Acting as implementation and paying agency of direct payments and accompanying measures necessitates considerable preparation of the Agency.
Head office of geodesy and cartography (hogc) – will ensure supervision over relevant parameters relating to the quality of the databases obtained, assessment of compliance of the databases obtained with technical standards existing in geodesy and cartography. It will participate in holding of training sessions aiming at increase in the level of knowledge on gis techniques among members of the system administration and co-operating institutions. It will participate in the training sessions as well

5. Budget

<table>
<thead>
<tr>
<th>CONTRACT</th>
<th>PHARE financing</th>
<th>National co-financing</th>
<th>TOTAL (in m Euro)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Investment aid (I)</td>
<td>Institution Building (IB)</td>
<td>Total PHARE (I+IB)</td>
</tr>
<tr>
<td>a. ARMA Twinning</td>
<td>-</td>
<td>1,350,000</td>
<td>1,350,000</td>
</tr>
<tr>
<td>b. Drawing up of training materials and holding of training sessions (contract No.1)</td>
<td>-</td>
<td>1,350,000</td>
<td>1,350,000</td>
</tr>
<tr>
<td>Obtaining of descriptive and graphic data from the cadastre along with their vectorisation, and identification of land use areas (contract No.2)</td>
<td>12,000,000</td>
<td>-</td>
<td>12,000,000</td>
</tr>
<tr>
<td>Purchase of equipment for verification of database (contract No. 3)</td>
<td>400,000</td>
<td>-</td>
<td>400,000</td>
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<tr>
<td>TOTAL</td>
<td>12,400,000</td>
<td>1,350,000</td>
<td>13,750,000</td>
</tr>
</tbody>
</table>

* national co-financing shall be included in the ARMA Financing Plan and budget

6. Implementation arrangements:

6.1. Implementing Agency
6.2. Twinning

The project envisages conclusion of one twinning contract, covering a long-term expert (PAA), specialized in cadastre and GIS techniques (who shall stay in Poland i.e. 18 months). The PAA profile:
- education: geodesist (GIS specialist);
- experience: co-operation with JRC Ispra, implementation of LPIS with reference parcel based on the cadastral parcel;
- prior professional experience in countries having similar climatic conditions;
- professional experience – at least 5 years;
- fluency in English;
- preferred experience in Central and Eastern European countries.

During his/her stay in Poland, the PAA shall be working in the ARMA, Warsaw.

The ARMA is responsible for design, management and implementation of the project.

6.3. Non-standard aspects

DIS and Twinning manual will be followed.

6.4. Contracts

Contract No. 1 - twinning and training - Phare Eur 1,350,000, Co-financing Eur 150,000
Contract No. 2 - service contract – vectorisation of register parcels' borders, identification of land use areas on the stereoscopic image model – Phare Eur 12,000,000, joint Co-financing Eur 12,000,000,
Contract No. 3 – purchase of equipment for verification of database – Phare Eur 400,000, joint Co-financing 400,000

7. Implementation schedule:
The technical specification is for equipment purchases, and TOR - for services.

7.1. Start of tendering/call for proposals - 3rd quarter of 2003
7.2. Start of project activities – 1st quarter of 2004
7.3. Project Completion – 2nd quarter of 2006

8. Equal Opportunity:
Participation of women results form the employment structure in the agencies, where about half of the personnel are women. Participation of women shall be measured using a percentage indicator of the number of persons participating in study tours, training sessions and seminars.

9. Environment: N/A

10. Rates of return: N/A

11. Investment criteria: N/A

12. Conditionality and sequencing:
The task schedule proposed envisages selection of several bodies to perform the task, and thus effective co-ordination of all the technical actions shall be a very important factor.

Vectorisation of the register maps is a difficult and complex task due to the fact that cadastres data are held by poviat offices as a task delegated within the scope of government administration, and thus a very close co-operation of the Ministry of Agriculture and Rural Development, the ARMA with the Head State Geodesist and other geodetic and cartographic services is very important for correct implementation of the task.

A precondition for timely implementation of the task schedule is also a timely completion of the development of orthophotomap of the entire territory of Poland by the end of 2004.

1. Arrival of a long-term expert (PAA) in Poland – the 4th quarter 2003;
2. Working out of technical terms of the task and selection of a contractor by way of tendering – 4th quarter of 2003
3. Transfer of the integrated vectorised database to the IACS system, successively within the scope of partial task receipts - the 1st quarter of 2004.
4. Obtaining of reference parcels’ vectorised borders, including:
   4.1. Scanning of register maps and rasters transformation for the purpose of vectorisation, successively before the vectorisation process, in order to develop the most up-to-date content of the map in vector form - from the beginning of the 1st quarter of 2004.
5. Vectorisation of land use areas (non-functional areas) on the basis of stereoscopic image model, including successive transfer of the data obtained to the system - starting from the 4th quarter of 2004 – 4th quarter of 2005.
6. Integration of the vector data obtained from register maps with the orthophotomap raster image, successively within the scope of development and receipt of partial databases – 1st quarter of 2004 – 4th quarter of 2005.
8. Completion date of contract No. 4; 1st – 4th quarter of 2004.
10. Final reporting and settlement of accounts - 2nd quarter of 2006
### Annex 1: Logframe planning matrix

<table>
<thead>
<tr>
<th>LOGFRAME PLANNING MATRIX FOR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Programme name and number</strong></td>
</tr>
<tr>
<td><strong>PL2003</strong></td>
</tr>
<tr>
<td><strong>Contracting period expires 30/11/2005</strong></td>
</tr>
<tr>
<td><strong>Total budget 26,30 MEUR</strong></td>
</tr>
</tbody>
</table>

- **Overall objective**: Continuation of development of the Land Parcel Identification System (LPIS) databases using GIS techniques in order to meet the requirements laid down in Council Regulation No.1593/2000. Implementation of the tasks planned covers areas of about 150,000 km² (about 7,800,000 register parcels).
- **Objectively Verifiable Indicators**: Database ensuing proper operation of the IACS system.
- **Sources of Verification**: Documentation of Polish government, MARD, ARMA.
- **Assumptions and Risks**: Involvement of Polish authorities in preparing the agricultural sector for integration with the EU. Assigning by the government of appropriate human and financial resources for realisation of this objective.
- **Risks**: Legislation procedure hindering; quick implementation of legal acts; involvement of Polish authorities in preparing the agricultural sector for integration with the EU.

<table>
<thead>
<tr>
<th><strong>Project purpose (Immediate Objectives)</strong></th>
<th><strong>Objectively Verifiable Indicators</strong></th>
<th><strong>Sources of Verification</strong></th>
<th><strong>Assumptions</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transfer of descriptive and graphic data from the cadastre</strong>;</td>
<td>Database ensuing proper operation of the IACS system built.</td>
<td>Documentation of Polish government, MARD, ARMA.</td>
<td>Proper selection of a twinning partner;</td>
</tr>
<tr>
<td><strong>Scanning and vectorisation of the register maps obtained</strong>;</td>
<td>Members of Polish administration have knowledge on the GIS techniques applied within the system.</td>
<td>Documents and reports of EU Commission and other EU institutions.</td>
<td>Adjustment of Community methods to Polish conditions;</td>
</tr>
<tr>
<td><strong>Vectorisation of land use areas (not eligible for direct payments) from the stereoscopic image model</strong>;</td>
<td></td>
<td></td>
<td>Timely ensuring of adequate funds, both Polish and EU, for complete implementation of the project.</td>
</tr>
<tr>
<td><strong>Verification of the Land Parcel Identification System (LPIS) database built</strong>;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Increase in the level of knowledge on GIS techniques among members of the system administration and co-operating institutions</strong>.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Results**: Database ensuing proper operation of the IACS system built. | **Objectively Verifiable Indicators** | **Sources of Verification** | **Assumptions** |
- Central database containing complete descriptive and graphic information taken over from the cadastre;
- Scanning and transforming of the cadastre map;
- Vectorised layer of register data integrated with the raster image of orthophotomap;
- Vectorised layer of land use areas.
- Working out of charts of documentation flow between interested public administration bodies with respect to GIS techniques envisaged for use under IACS;
- Working out of detailed technical terms specifying the methodology and manner of implementation, receipt and control of the particular tasks;
- Gaining of necessary knowledge on photogrametric projections, as well as the control methodology for applications for direct payments (the traditional method of on-the-spot control and the method of remote sending) by ARMA personnel, MARD and other institutions involved in development of the IACS system in Poland.

<table>
<thead>
<tr>
<th>Activities</th>
<th>Means</th>
<th>Sources of Verification</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>■ Database ensuing proper operation of the IACS system prepared</td>
<td>■ Documentation of Polish government, MARD, ARMA.</td>
<td>■ Timely implementation of the tendering procedure;</td>
<td>■ Good co-operation between institutions involved in project implementation;</td>
</tr>
<tr>
<td>■ Members of Polish administration have knowledge on the GIS techniques applied within the system.</td>
<td>■ Reports on project implementation.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
- Implementation of the measure covered by the Twinning Covenant;
- Transfer of data from the cadastre and their processing for need of the IACS system;
- Cyclical updating of the register data being at disposal
- Obtaining of graphic data necessary for implementation of the processes of vectorisation of register data (reference parcels' borders);
- Vectorisation of land use areas (non-functional) areas on the basis of vectorisation of stereoscopic models;
- Integration of the vectorised data obtained from register maps with the raster image of the orthophotomap;
- Holding of training sessions on GIS techniques for members the system administration and co-operating institutions, mainly from the public administration.

- The funds (resources) for the implementation of measures such as the twinning covenant (including one PAA, five short-term experts)
- Contract for technical assistance
- Purchase of equipment
- Documentation of Polish government, MARD, ARMA.
- Reports on project implementation.
- Proper and timely selection of a twinning partner;
- Timely ensuring of adequate funds, both Polish and EU, for complete implementation of the project.
- High quality training programmes;
- Training of a sufficient number of employees.

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** Annexes 2-4 Implementation, contracting and disbursement schedules **

<table>
<thead>
<tr>
<th>Date of Drafting</th>
<th>November 2002</th>
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<td>Planning Period</td>
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<td>Budget Allocation</td>
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<tr>
<td>Cost Estimate</td>
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</tr>
<tr>
<td>Cost Estimate</td>
<td>13.75 M EURO</td>
</tr>
</tbody>
</table>

** PLANNED **

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** Implementation schedule **

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** CONTRACTING SCHEDULE **

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** Disbursement schedule **

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** Legend:** D – preparation of sub-projects / C – tendering and contracting / I – contract implementation and payment