The European Union's IPA 2010 Programme for Kosovo

Agricultural Land Pollution Survey (ALPS) in Kosovo

CRIS Number: 2013/313-408

Final Report

from March 18th 2013 – March 17th 2015

This Project is funded by the European Union

This Project is implemented by GIZ IS (DE) and NIRAS (PL)

Report submitted by
GIZ International Services and NIRAS

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Cover Page

Name of Project:	Agricultural Land Pollution Survey in Kosovo
Service Contract No:	2013/313-408
Contractor:	A consortium led by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH – GIZ International Services, Germany and including NIRAS, Poland Project Office in Kosovo: +381(0) 38 223138 Project Email: EU-GIZ-project@ALPS-Kosovo.org
Contracting Authority:	European Union Office (EUO) in Kosovo Mr. Gazmend SELIMI. Task Manager, Operations/Agriculture and Environment Kosova Street 1, 10000 Pristina, P.O. Box 331, Republic of Kosovo Tel: 381 38 5131 515, Fax: 381 38 5131 302 Email: gazmend.selimi@eeas.europa.eu
Start/End Date:	18th March 2013 to 17th March 2015
Budget:	EUR 1 890 000
Main Beneficiaries:	Ministry of Environment and Spatial Planning (MESP) Ministry of Agriculture and Rural Development (MAFRD)
Primary Location:	Prishtina / Priština / Pristina (English spelling will be used in this report)
Secondary Locations:	17 Municipalities in Kosovo
Project Objective:	To support MESP and MAFRD in improving the land management system including assistance in establishing a permanent system for monitoring agricultural land pollution.
Purpose:	To support government institutions with conducting agricultural land pollution surveys, and to support the enforcement of local legislation related to agricultural land and environmental protection.
Summary of key results:	1. Legislation updated 2. Staff of MESP, MAFRD, KEPA, KIA and FVA trained 3. Detailed survey on agriculture land pollution completed 4. Detailed assessment of the presence of heavy metals 5. Detailed list of pollution sources prepared and follow-up action presented 6. Recommendations for monitoring and fertility control of agricultural land 7. Food chain assessment, analysis and recommendations 8. Public Information and educational campaign prepared and implemented

DISTRIBUTION LIST

Recipient	Copies	Format
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LIST OF ABBREVIATIONS

ADE	Average Daily Exposure to a chemical from soil measured in mg kg^{-1} body weight day^{-1}e
ADI	Acceptable Daily Intake
AIMALP	Administrative Instruction for the Management of Agricultural Land Pollution
AISP	Administrative Instruction for Soil Protection
ALOP	Appropriate Level of Protection
ALARA	As Low As Reasonably Achievable
ALARP	As Low As Reasonably Practical
ALPS	Agriculture Land Pollution Survey project in Kosovo
AOX	Absorbable Organic Halogens
CARACAS	Concerted Action on Risk Assessment for Polluted Sites in Europe
CORINE	Co-ordinated Information on the Environment
CLARINET	Polluted Land Rehabilitation Network in Europe
CLEA	Contaminated Land Exposure Assessment (software developed by DEFRA, UK)
DAK	Directorate of Accreditation, Kosovo
DTL	Deputy Team Leader
EA	European co-operation for Accreditation
EIONET	European Environment Information and Observation Network
EC	European Commission
ECENA	Environment Compliance and Enforcement Network for Accession
EcoFINDERS	Ecological Function and Biodiversity Indicators in European Soils (started 2011)
EIONET	European Environment Information and Observation Network
EPWG	Environmental Protection Working Group
ESBN	European Soil Bureau Network
EU	European Union
EUO	European Union Office (in Kosovo)
EUR	Euro Currency
FBO	Food (and Feed) Business Operator
FFIS	Food/Feed Intake Survey
FPXFS	Field Portable X-Ray Fluorescence Spectrometry
FSMS	Food Safety Management System
FVA	Food and Veterinary Agency
GIS	Geographical Information System
GIZ IS	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH –International Services
GPS	Global Positioning System
HACCP	Hazard Analysis Critical Control Point
HCV	Health Criteria Values
ICP-AES	Inductively Coupled Plasma – Atomic Emission Spectroscopy
IFI	International Financing Institution
ILAC	International Laboratory Accreditation Co-operation
IMPEL	EU Network for Implementation and Enforcement of Environmental Law
ISDF	Information System for Dangerous Foods
ISO/IEC	International Standards Organisation/International Electro-technical Commission
IYS	International Year of Soils

JSTE	Junior Short Term Expert
KAS	Kosovo Agency of Statistics
KE	Key Expert
KEPA	Kosovo Environmental Protection Agency
KHMI	Kosovo Hydro-Meteorological Institute
KGS	Kosovo Geological Survey (co-ordinated with the European Geological Survey (EGS)
KIA	Kosovo Institute of Agriculture (based in Peja)
LIS	Laboratory Information System
LaWG	Laboratory Working Group
LWG	Legal Working Group
MAFRD	Ministry of Agriculture, Forestry and Rural Development
MAV	Maximum Allowed Values
MESP	Ministry of Environment and Spatial Planning
MIS	Management Information System
MoH	Ministry of Health
NERP	National Economic Reform Programme
NIPHK	National Institute of Public Health of Kosovo
NPV	Net Present Value
PAC	Public Awareness Campaign
PAH	Poly aromatic Hydrocarbons
PAWG	Public Awareness Working Group
PCB	Poly chlorinated biphenyls
PCM	Project Cycle Management
PSC	Project Steering Committee
Q	Quarterly (period of the year)
RAWG	Risk Assessment Working Group
RBLM	Risk-Based Land Management
REEIS	Relevance, Effectiveness, Efficiency, Impact, Sustainability (OECD indicators)
RENA	Regional Environmental Network for Accession
RMP	Residue Monitoring Programme (for food/feed controls by FVA)
ROM	Results Orientated Monitoring (in EU projects)
SCS	Soil Contaminant Standard
SDG	Sustainable Development Goal
SoE	State of Environment Report (prepared by KEPA)
SSST	Specialised Soil Sampling Team
SSTE	Senior Short Term Expert
SSWG	Soil Survey Working Group
TA	Technical Assistance
TBA	To Be Appointed
TNA	Training Needs Assessment
ToC	Table of Concordance
TOC	Total Organic Carbon
ToR	Terms of Reference
UAT	University of Agriculture, Tirana, Albania
w/day	working day
XRF	X-ray Fluorescent Spectroscopy

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1. Executive Summary

1. Introduction

The project entitled **'Agricultural Land Pollution Survey (ALPS) in Kosovo (CRIS Number 2013/313-408)'** is part of the IPA 2010 Programme to support the Ministry of Environment and Spatial Planning (MESP) and Ministry of Agriculture and Rural Development (MAFRD). It was for a period of 24 months, i.e. from March 2013 to March 2015 and implemented by a consortium of **GIZ IS (DE)** and **NIRAS (PL).** This is the Final Report highlighting the main tasks and activities carried out by the project along with lessons learnt, conclusions and proposals for follow-up in the future.

2. Objective, purpose and results

The **overall objective** of the project is to support MESP and MAFRD in improving the land management system in Kosovo including assistance in establishing a permanent system for monitoring agricultural land pollution. The **purpose** is to support government institutions with conducting agricultural land pollution surveys, and to support the enforcement of local legislation related to agricultural land and environmental protection. A summary of the **main results** that have been achieved as given in the ToR is as follows:

- the relevant legislation drafted and the Administrative Instruction (the Kosovo List) updated;
- capacity building for the staff of MESP, MAFRD, KEPA, KIA and FVA in all aspects of the survey and presentation-interpolation of the results;
- detailed survey in 17 municipalities carried out and the results presented;
- detailed assessment of pollution in soil and food/feed products, sources identified and remediation measures recommended;
- recommendations for monitoring and fertility control of agricultural land;
- public information and education campaign on the related environmental protection measures prepared and implemented.

During the implementation of the project it became evident that there were several knowledge gaps in the information and additional activities were carried out including (i) a Food and Feed Intake Survey (FFIS) to glean information about the exposure to agricultural products by the population living in the survey area, (ii) the application and training in modern state-of-the-art software models for an assessment of the risks to public health from the consumption of agricultural products based upon the FFIS data, (iii) the measures to be adopted by the Competent Authorities to ensure that the food and feed products on the market are safe for consumption, (iv) capacity building for the MESP and MAFRD laboratories (KHMI and KIA respectively) in their accreditation process.

3. Value-added component

The value-added component of the project is that institutional mechanisms for controlling the safety of agricultural products in Kosovo to ensure they meet international food and feed safety standards have been proposed. The project also supported 'good practices' especially for the agricultural and food/feed processing sectors[1]. In addition, by promoting rural development and the agricultural community in particular, horizontal issues (e.g. employment, income generation and overall socio-economic improvements) have also been addressed.

4. Area of intervention and main beneficiaries

The geographical area to be covered includes the 17 Municipalities in Kosovo where most agricultural activities take place. These are Prishtina/Priština, Mitrovica, Leposavic/Leposavić, Zubin Potok, Vushtrri/Vućitrn, Fushe Kosove/Kosovo Polje, Drenas/Glogovac, Malisheve/Mališevo, Podujeve/Podujevo, Lipjan/Lipljan, Rahovec/Orahovac, Shtime/Štimlje, Suhareke/Suva Reka, Novo Berde/Novo Brdo, Prizren, Gjilan/Gnjilane and Ferizaj/Uroševac. The main beneficiary for this project is the population of Kosovo with particular focus upon the agricultural community. Other beneficiaries are those within the agro-environmental sector who were directly engaged in project implementation. This included MESP, MAFRD, KEPA, KHMI, FVA, KIA, NIPHK, Pristina University (faculties of agriculture and chemistry) along with the municipal administrations and their inspectorate.

[1] In co-operation with the EU funded project *'assistance in strengthening MAFRD advisory services and improving the quality of technical services provided by the MAFRD laboratories (May 2014)'.*

5. Milestones for the project

These are listed as follows:

a) A total of 44 Technical Assistance Group (TAG) meetings have been held since project start-up. These are where project administration and implementation issues are discussed and appropriate management actions taken.

b) 7 Project Steering Committee (PSC) meetings have been completed.

c) MESP, MAFRD and FVA selected senior staff to lead (as chairperson) and participate in the six (6) Legal, Soil Survey, Laboratory, Environmental Protection, Risk Assessment and Public Awareness Working Groups.

d) As part of **Task 1** *(updating the legal framework)* the final version of the Administrative Instruction for Soil Protection (AISP) has been approved by the inter-Ministerial Legal Working Group (LWG). The AISP is now ready for ratification by the Prime Minister. In addition, the project and beneficiaries have developed a revised 'Kosovo List' setting the Soil Contaminant Standards (SCSs) for agricultural land and soils.

e) As part of **Task 2** *(detailed survey on agricultural land pollution)* some 2 804 soil samples[2] have been collected from 17 Municipalities applying international (ISO) methodologies. The total area selected is 4 101 km^2 and the soil samples are in storage for future reference at KHMI should this be needed for additional analyses by 3rd Parties. In addition, all parameters to be analysed as given in the ToR including heavy metals, soil fertility and organo-pollutants have been completed. Also, 'suspicious' samples have been checked and cross-referenced by two ISO accredited EU Member State Laboratories (from Italy and Slovenia). Maps have been prepared incorporating project and KEPA data. In total, over 62 700 'point sources' have been included for the 17 Municipalities on 374 'click and read' interactive GIS maps especially prepared by the project and these are presented in electronic form for ease of access[3].

f) As part of **Task 3** *(identification of pollution sources and proposal for mitigation measures)* detailed recommendations have been provided including the strengthening of the 'good practices' already used by many farmers in Kosovo and also with options to produce non-food crops.

g) As part of **Task 4** *(food chain assessment)* a Food and Feed Intake Survey (FFIS) has been completed for the 17 Municipalities. Over 250 food and feed samples were collected from farms and markets and analysed for chemical parameters such as heavy metals and organo-pollutants and as given in the ToR. These are stored in KIA. In addition, a risk analysis software programme[4] has been applied to all soil, food and feed results to assess the risks to public health, especially from heavy metals.

h) As part of **Task 5** (capacity building) several workshops have been carried out to train the soil and food sampling team in ISO methodologies. Moreover, there is on-going training and support for KHMI in laboratory accreditation. This includes training courses in ISO methodology for laboratory standard operating procedures (SOPs), sampling, storing and analysing soil samples using XRF equipment (x-ray fluorescent spectroscopy) especially purchased by the project. This equipment will be presented to KHMI at the end of the project to assist MESP in *'establishing a permanent system for monitoring agricultural land pollution'* – a key objective of the project.

i) Support for KIA in laboratory 'good practices' and analyses of organo-pollutants has also been provided by project experts.

j) Capacity building has been carried out for MESP staff in modern risk-based analysis so they can continue the monitoring of soils and environmental 'hot spots' in the future.

k) A Study Tour for beneficiaries was completed in Italy from 25th – 31st May 2014 and another is planned in Slovenia in March 2015.

l) English language courses (4 lessons per week) have been provided for both MESP and MAFRD staff since the beginning of the project. This should improve their language skills in carrying out their day-to-day activities.

m) As part of **Task 6** *(education and public awareness)* the 1st Visibility Event disseminating project objectives and purpose was given on 2nd October 2013. Other visibility events such as Earth Day (22nd April), Environment Day (6th June) and World Soil Day (5th December) have also been supported by the project. The Workshops for dissemination of project results have been held in Prishtina (11th December 2014), Drenas (29th January 2015), Ferizaj (30th January 2015) Prizren (13th February 2015), Mitrovica (20th February 2015) and Leposavic (4th March 2015). The participants included beneficiaries, farmers and Producer Associations as well as NGOs from the region. Stakeholders from neighbouring Municipalities were also invited thus covering all the areas given in the ToR.

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[2] Over 3 000 soils samples were actually taken but some were used for cross-referencing, calibration and validation of results.

[3] A few are reproduced in hard copy for the Technical Reports but the main bulk are in electronic form.

[4] Contaminated Land Exposure Assessment (CLEA) software developed by DEFRA, UK.

n) A key output has been promoting the adoption of 'Good Agricultural Practices' (GAP) and the roles, responsibility and liability of famers, Producer Associations and Food Business Operators (FBOs) in producing and selling safe food and feed for the market.
o) Key regional Ministries from Macedonia and Albania were co-operating with the project objectives related to IMPEL, RENA and ECENA initiatives.
p) Good working relations have been established with other projects operating in Kosovo and the region, especially the World Bank and UNDP working in Obiliq, GIZ in northern Kosovo and the EU funded project to strengthen the agricultural extension services[1].

The development of the above milestones are reported in the 14 Monthly Reports and 6 Interim Reports submitted by the project during the implementation phase.

6. Main recommendations

The following recommendations are made based upon discussions and assessments with the beneficiaries, Working Groups and stakeholders:

General

1. The results of the survey show that the pollution of agricultural land in Kosovo is limited to site-specific and limited areas. There are environmental 'hot spots' and these are already identified and mapped by MESP/KEPA. But these sites are not used for agricultural crops. In addition, their impact on neighbouring agricultural land and soil and on the food/feed produced is not significant.
2. No public health risks were found in any of the food and feed products analysed by the project in the survey area. This includes crops, animal products (meat, poultry, fish, eggs and dairy products and raw milk). The Maximum Allowable Values (MAV) for local produce are also all below the limits as given in the legislation and this has been so for the last 2 years.
3. For the agricultural sector as a whole it can be seen there is an opportunity to increase production and also considerable scope in Kosovo to develop organic and specialist farming products which are in high demand in the region and EU Member States.
4. Responsibility for food and feed safety is shared by everyone involved with food from production to consumption (called the farm-to-fork' approach). The focus is upon the famers being *responsible* and the FBOs being *liable* for the agricultural products they sell on the market. In addition, the consumers are also responsible for ensuring the products they buy have been controlled by the Competent Authorities. It means that for a food and feed control system to be effective and practical there is no need for the authorities to become involved except in an 'auditing' capacity.
5. The authorities may feel that they need to act in extreme circumstances when, for example, there may be a possibility of polluted food entering the food chain. Provisions are already in place under the powers of FVA to control this and there is no need to recommend new management *tools.* Indeed, there is extensive legislation in place covering crop protection, the use of agro-chemicals, agricultural products, seeds and environmental protection issues. Implementation is thus needed of the existing legislation supported by the required budgetary allowances at central level.
6. In those situations where the polluter cannot be identified e.g. from historical sources, the cost of remediation and/or re-cultivation of the degraded land can be paid for by the Government. MESP can be approached to explore the possibilities of covering the costs. This is an example where an Eco-Fund would provide funding specifically for environmental protection issues.
7. Modern risk analysis in food and feed safety should replace the use of one-off general survey of hazards. This means (i) risk management, (ii) risk assessment, and (iii) risk communication options also need to be strengthened.
8. A permanent *and sustainable* soil monitoring system can only be accomplished when both MESP and MAFRD (i) have access to well equipped laboratories applying and complying with international standards, and (ii) can carry out the required soil analyses and monitoring on a regular basis. To meet this it is thus recommended that both KHMI and KIA should reach ISO/IEC accreditation status by the Directorate of Accreditation for Kosovo (DAK) as soon as possible.

Specific

9. The final version of the AISP[5] has now been completed and the success of the project will be through implementation and enforcement of this legislation. Prompt ratification is thus needed.
10. The Kosovo List ('Utmost Permitted Levels of Discharging and Dispersal of Pollutants in Soil') has been updated using the 'Dutch List' as a guide to define the Soil Contaminant Standards (SCSs). As new risk analyses data are introduced in the future, then these can be further reviewed to ensure practical implementation at national level. This implies additional capacity building for the monitoring services of KEPA (KHMI), MAFRD (KIA) and FVA.
11. The feasibility analyses show that non-food crops such as potatoes, hemp, cereal seed, cereals, flax, oilseed rape and aquarium/ornamental fish are attractive in terms of net production value (NPV)/ha. These should be considered not only as alternatives to food production on polluted land but also as opportunities for developing new markets and enterprises
12. To optimise the food and feed safety system then pollution should be prevented from getting into the food chain 'at source'. It means the remaining 21 Municipalities must be surveyed. It also includes developing country-wide technical and management *tools* agro-environmental protection. This includes (i) regular and systematic monitoring the soil of individual farms, (ii) the promotion of 'Good Practices' especially GAP, (iii) the use of computer models for risk-based exposure assessments to assist with decision-making, (iv) HACCP introduced into all Producer Associations and Food Business Operators country-wide, (v) farm business plans being developed in co-operation with the Agricultural Advisory Services, (vi) the development of non-food crops supported by R&D in Kosovo, (vii) the use of civil liability legislation by the consumer to protect their interests.
13. Bearing in mind para. 8 above, strengthening capacities for both KHMI and KIA are important if a permanent *and sustainable* system for monitoring agricultural land pollution is to be established. However, there are constraints upon national budgets and monitoring is not a priority at central level. To overcome these difficulties the onus of responsibility for monitoring is recommended to lay with the farmers themselves. They are responsible, with advice from the Agricultural Advisory Services and supported by MESP, to ensure their land is monitored on a regular basis by an ISO accredited laboratory. The Producer Association and FBO must ask for a valid certificate of soil monitoring to accompany all the agricultural products that they purchase. This will also support the traceability issues for food and feed safety. In this way, market forces and economic *tools* will drive the soil monitoring system and not only funds from the central budget. In other words, it will be sustainable.

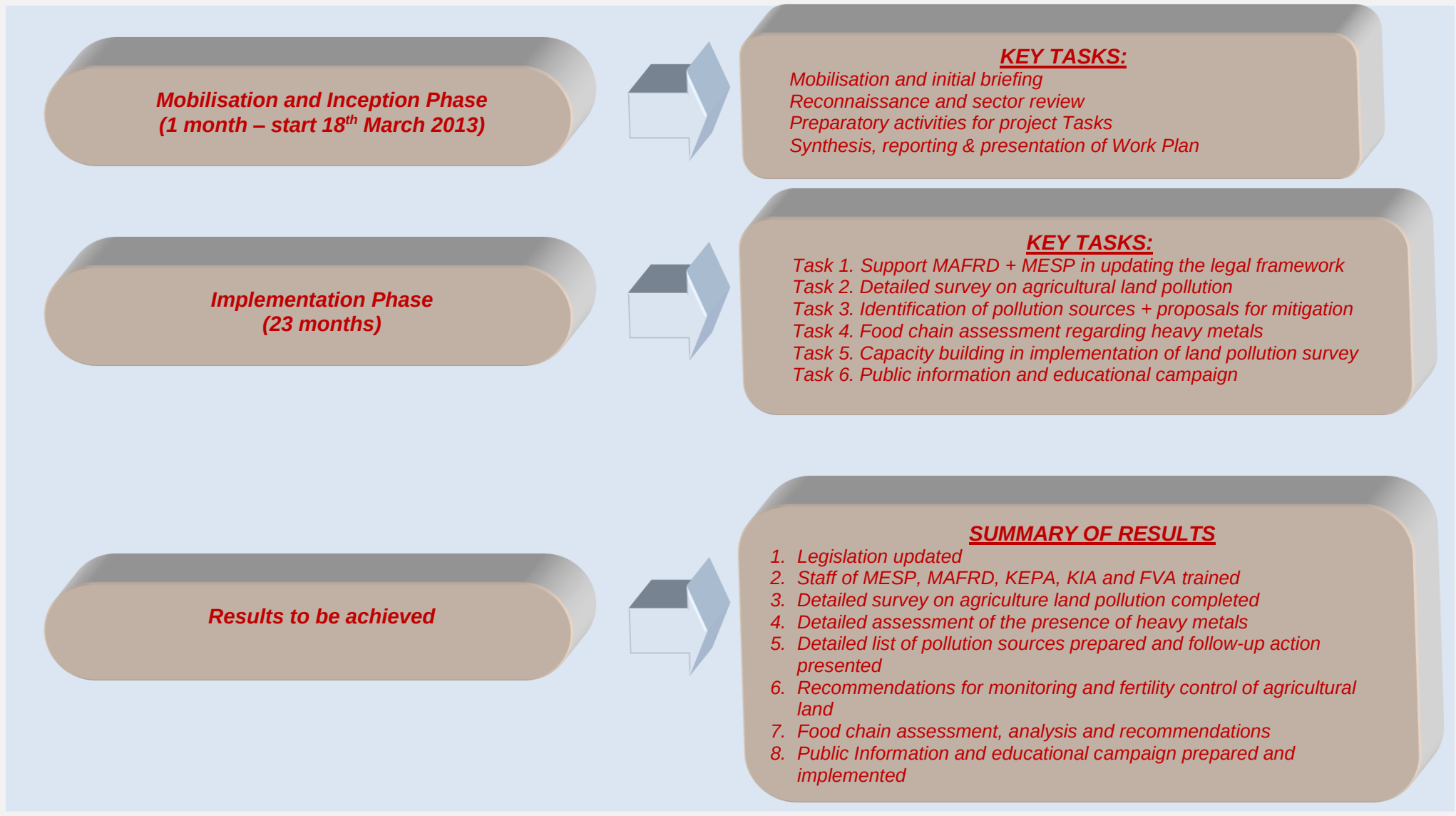
7. Conclusions

In the future Kosovo producers can adopt new technologies, practices and specialised crops. New sectors can be supported like organic farming and non-food industrial processing. All food and feed for public consumption should be controlled by market forces. Farms can compete on quality, on care for their animals, on promoting GAP, on providing a humane and environmentally concerned face for agricultural production. By extensively applying standardised controls and regulations recognised by other countries including the EU Member States, Kosovo producers will be also be given an impetus to export their products. Public confidence will be strengthened. This is the way forward for sustainable agriculture in Kosovo.

All Tasks and activities as given in the ToR have been completed including additional components that were added during project implementation. There were regular meetings held with the relevant Ministries, institutions and agencies throughout the project. Much appreciation is expressed to all those concerned for their support and assistance especially to MESP, MAFRD and FVA senior management and staff, and the EUO in Kosovo. This will support and strengthen the authorities to carry on with the project objectives and purpose in the future.

[5] See also Task 3 Technical Report for more details.

Project Overview showing key Tasks and results achieved according to the ToR



2. Background

2.1. Government/sector policy

The government policy as regards environmental protection and agricultural development is laid out in their *'Programme of the Government of Kosovo, 2011-2014'.* Kosovo has a clear perspective of joining the EU and this remains the highest priority for the Government. They fully endorse their intention of becoming and EU Member State where the principles of the market economy, open society and democratic institutions are valued and respected.

The policy towards the environment and agriculture are also clear. The priorities for a 'living environment' are given as:

- the development of the legal and institutional framework for the environment sector;
- raising awareness, education and public participation in the decision-making process for environmental affairs.

Water is the main sector of concern. The Government has identified regulating streams and anti-erosion measures, securing water for use and utilisation and further development of the water resources as priorities. Soil protection and soil pollution are not mentioned in this report although it is linked to irrigation and improving the quality of the water supplies.

As regards the agricultural sector the Government policy is stated as:

- to increase the budget for the agricultural sector and construct markets and warehouses for collection, preservation, classification and sale of products;
- to support and promotion of agricultural products for export;
- to support tourism as part of rural development;
- further institutional support for approximation with the EU.

In the past, both the Government and the EU have tended to concentrate more upon air and water issues with limited regard for soil protection. However, this is also true for the wider community world-wide. Facing on-going soil degradation at European and global level as well as new understanding that soil is important for both the environment and agriculture, the FAO suggested a *Global Soil Partnership.* Thus, in December 2013 with the support of the EU the General Assembly of the United Nations proclaimed 2015 as the 'International Year of Soils' (IYS).

Logo adopted by the United Nations

This initiative highlights the importance of sustainable soil management as the basis for food systems, fuel and fibre production, essential ecosystem functions and better adaptation to climate change for present and future generations. Besides being a key awareness raising instrument on soil as an essential, finite and non-renewable natural resource, the IYS will also be instrumental in mobilising the international community to act towards its protection. This is in context of the Rio+20 resolution '*the future we want*' and its goal for a *'land degradation neutral world*'.

The IYS was officially launched on 5th December 2014 which was the first official UN 'World Soil Day' and this was also supported by the project. Its specific objectives are to:

- raise awareness about the profound importance of soil for human life;
- educate the public about the role soil plays in food security, climate change adaptation and mitigation, essential ecosystem services, poverty alleviation and sustainable development;
- support policies and actions for the sustainable management and protection of soils;
- promote investment in sustainable soil management activities to develop and maintain healthy soils for different land users and population groups;
- support the Sustainable Development Goals (SDG) initiative and the post-2015 agenda;
- promote the improved collection and monitoring of soil information at all levels (global, regional and national).

2.2. Features of the sector

2.2.1. General

Today, a new-generation of EU information infrastructure is increasing the demand for new soil data as a key resource for a fully integrated management of land-use. The achievement of these common criteria and indicators is a central part of the support required for soil protection, as set out in the official Communication from the European Commission *'Towards a Thematic Strategy for Soil Protection' (European Commission, 2002 and 2006)*. There are two directions inherent in this strategy namely (i) trans-national soil protection at the level offered to air and water, (ii) the need for robust policy-relevant information in relation to major threats to soil.

The strategy was also the rationale for several EU funded projects including CLARINET, CASCADE, DIGISOIL, EcoFINDER, ENVASSO, iSOIL, LUCAS, MEUSIS and OSACA. These are just some of projects which are part of the CORINE network and integrated with the European Soil Bureau Network (ESBN), but it is clear how funding has been increased and there is a growing trend for new land and soil management programmes even within the last few years.

In addition, with the rising liberalisation of agro-industrial markets leading to the worldwide integration of food supply chains, the assurance of food and feed safety and quality has become an international concern. Global trading needs standardised products. Following serious and repeated incidents (e.g. melamine poisoning in China and 'mad cow' disease in the UK) consumer protection has become a priority in policy making in the large consumer markets such as the EU. As a result, not only the legal requirements for quality assurance systems and food control along the entire food chain are obligatory, the so- called 'farm-to-fork' process, but the liability of producers is also a key issue.

This is supported by EU legislation. A key EU benchmark is Directive 2004/35/EC on *'environmental liability with regard to the prevention and remedying of environmental damage, 21st April 2004'.* This establishes a comprehensive liability regime for the damage to the environment through:

- direct or indirect damage to the aquatic environment covered by EU water management legislation;
- direct or indirect damage to species and natural habitats protected at EU level by the Birds Directive (2009/147/EC) or by the Habitats Directive (92/43/EEC);
- direct or indirect contamination of the land that creates a significant risk to human health.

The Directive applies a *'polluter pays principle'*, according to which the polluter is responsible when environmental damage occurs. The liable party is an *'operator'* who carries out certain dangerous activities listed in the Directive. An operator engaged in risky or potentially risky activities identified in the Directive is strictly liable (without fault) for the environmental damage that is caused. Also under this Directive operators engaged in all professional activities are liable if negligent or at fault.

It should also be noted that this Directive covers both actual environmental damage and the imminent threat of damage resulting from occupational activities in cases where it is possible to establish a causal link between the damage and the activity in question. It provides for two different liability scenarios (i) for occupational activities

specifically mentioned in the Directive (mainly agricultural and industrial activities requiring a permit) for which the liability is strict, and (ii) for occupational activities where there is damage or the imminent threat of damage to species and natural habitats.

However, although this Directive covers the *prevention of contamination* addressed by the proposed Soil Framework Directive, it is not for contamination from historical sources.

Another feature of the sector is that as a reaction to widespread public protests following food safety scandals, the private retailers and their respective agro-business associations in the EU took the initiative to develop common 'good practices' from 'farm-to-fork' by integrating the whole supply chain into their quality concepts. This is generally referred to as an overall food safety management system (FSMS). The traceability of agro-products is a key part of this system and another reason why agricultural land pollution surveys and land-use management planning are priorities. Without 'traceability' measures in place the food and feed cannot be sold on the open market.

2.2.2. Specific

The ALPS project was focussed upon both the agro-environmental and the food and feed safety sectors. It involved 3 Competent Authorities (MESP, MAFRD and FVA), their supporting laboratories (KHMI and KIA) as well as the educational authorities who are also responsible for research and development (R&D through Prishtina University). Thus, an integrated approach was needed when technical and management *tools* were to be proposed.

Kosovo is certainty in line with EU approximation within these sectors. MESP is the Competent Authority responsible for soil protection not only developing legislation[6] but also implementing this through their central and Municipal Inspectorates. They should also apply modern risk analysis to assess the exposure of recipients to any elevated levels of pollution found with agricultural soils[7].

Currently the role of MAFRD related to food and feed safety is not defined. However, as Competent Authority they are responsible for ensuring 'Good Agricultural Practices' (GAP) and 'best available technologies' (BAT) are promoted and applied through their Agricultural Advisory Services.

The Food Law[8] identifies the FVA as being responsible for implementing an integrated FSMS i.e. from 'farm-to-fork' in Kosovo. They are thus the key Competent Authority in Kosovo for food and feed safety issues. The main objective of the legislation is to ensure that food produced or imported is safe for consumption and of the appropriate quality. The FVA are responsible to perform checks and controls of food/feed, animal health and plant health at all stages of production, import-export, processing, transport, storage and retail.

The FVA also adopt risk analysis as the main tool for improving food safety and promoting public confidence. This involves:

- an increasing reliance on science as the basic principle governing the development of food safety standards;
- shifting the primary responsibility for food safety to industry;
- adopting a 'farm-to-fork' approach to food control;
- giving industry more flexibility in implementing controls;
- ensuring the cost-effectiveness and efficiency of government control functions;

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6 a new Administrative Instruction for Soil Protection (AISP) is ready for ratification by the Prime Minister

7 capacity building in the use of the Contaminated Land Exposure Assessment (CLEA) risk analysis model has been provided by the project for MESP senior management

8 Kosovo Food Law No. 03/L-016 12 dated 12th February 2009

- increasing the role of consumers in decision-making;
- recognising the need for food monitoring;
- epidemiologically-based food source attribution;
- adopting a more 'integrated' approach to working with related sectors such as animal and plant health.

This approach was also followed by the project during the development of the proposals given in this Final Report. As with EU practices[9], the legislation places the onus for food and feed safety on the producer and food business operators (FBOs).

The National Institute of Public Health (NIPHK) represents an educational and scientific multi-disciplinary institution which is responsible for the development of the health strategy in epidemiology, health education and promotion, prevention of diseases, laboratory diagnosis and health information. The scope of NIPHK responsibilities are regulated by the Public Health Law No. 02/L-78.

Another authority relevant to food safety is the University of Pristina. This includes the Faculty of Agriculture and Veterinary (FAV), the Faculty of Geo-sciences and Technology (Department of Food Technology, FGT) and the Faculty of Natural Sciences (Department of Chemistry and Biology). They have considerable expertise in food safety and can be called upon to provide expertise in risk assessment and risk management issues.

2.3. Beneficiaries and parties involved

The ultimate beneficiary for this project is the population of Kosovo with particular focus upon the agricultural community. The specific beneficiaries are those within the agro-environmental sector which includes MESP, MAFRD, KEPA, KHMI, FVA, KIA, NIPHK and Pristina University along with the municipal administrations and their inspectorates.

The main parties involved for whom the recommendations are targeted are the farmer, Producer Associations and Food Business Operators (FBOs) as defined in the legislation[8+9]. The consumer is also responsible for what they purchases and so they too are included in the recommendations.

2.4. Problems to be addressed

The main problems identified can be divided under 3 separate issues namely (i) problems with agricultural soil protection found throughout the project area, (ii) problems associated with the presence and transmission of pollutants (mainly heavy metals) into the food and feed chain, and (iii) public confidence in the food safety management system (FSMS) in Kosovo.

The project objectives are also adapted to the achievements of other related programmes which were implemented in recent years such as the EU funded project '*Further Support to Land Use*' where land pollution surveys were carried out using a different methodology and on a smaller scale. As a response to the negative public perception created due to the misunderstanding of the results, the ALPS project addressed these by applying a sophisticated and systematic approach for surveying and analysing soil pollution covering a larger area (i.e. 17 Municipalities).

2.5. Other interventions

Agriculture is the backbone of rural development. In order to strengthen the sector, then it must be supported at the farm level. This is in part being carried out by the EU funded project entitled *'support to the Agricultural Services in Kosovo'*.

[9] there is a wide range of EU Regulations and Directives, the more important being the 'hygiene' package

For the sector as a whole it can be seen from the crop balance for 2012[10] that except for potatoes, the self-sufficiency ratio is <100%. This means the balance is made up from imports and this presents an opportunity for the sector to become more efficient to fill this gap. This is in part being met by the *'Plan for Agriculture and Rural Development 2010-2013, Measure 1'.* MAFRD have identified that vocational development and training needs to be strengthened to support modern agricultural methodologies and to mitigate the main constraints of the sector particularly the fragmented agricultural land/production. There also needs to be improvements in food safety measures. The Ministry also plans to strengthen the technical and business training as well as IT applications. This is especially targeted for young farmers so they stay employed within the sector. It is also noted that there is also considerable scope in Kosovo to develop organic and specialist farming products which are in high demand both in the region and EU Member States.

2.6. Documentation available

Of particular mention is the latest *Report on the State of Environment in Kosovo 2011-2012 (SoE),* which was published in 2013 and is a legal obligation based upon the Law on Environmental Protection No: 03/L-025 dated February 26th 2009. KEPA is the agency responsible for drafting this report. It presents up-to-date information on the state of the environment in Kosovo. It also compares previous information from monitoring institutions, companies, economic operators and different publications and reports.

Important for the ALPS project is that the SoE Report also describes the main environmental impacts and details the environmental protection policies and actions undertaken by the Government and civil society. It is thus comprehensive and also available on the KEPA website for reference.

Another important document is the latest *Green Report, MAFRD (2013)*. This presents a detailed overview of the agricultural sector and the rural economy in Kosovo. It also incorporates the Ministry policies and supporting programmes which are being implemented to increase the standard of living for the rural communities. The repot also includes data from the Kosovo Agency for Statistics (KAS). These data are comprehensive and also available on the MAFRD and KAS websites for reference.

It should also be noted that the mid-term ROM Report *(ref: MR-147048.01 dated 15th June 2014)* whilst being positive also gave useful comments and recommendations which were followed up by the project during the implementation phase. Of particular concern for the report was the sustainability of the soil monitoring system in the future. This is discussed further in Section 4.

[10] Green Report 2011-2012, MAFRD 2013

3. Intervention

3.1. Overall Objectives

The overall objective of the project is to support MESP and MAFRD in improving the land management system including assistance in establishing a permanent system for monitoring agricultural land pollution.

3.2. Project Purpose

The purpose of this project is to support government institutions into conducting agricultural land pollution surveys, and to support the enforcement of local legislation related to agricultural land and environmental protection.

3.3. Results

The final results of the technical assistance input were as given in the ToR and Inception Report. However, during the implementation of the project it became evident that there were several knowledge gaps and additional activities were carried out including (i) a Food and Feed Intake Survey (FFIS) to glean information about the exposure to agricultural products by the population living in the survey area, (ii) the application and training in modern state-of-the-art software models for the assessment of public health risks from the consumption of agricultural products based upon the FFIS data, (iii) the measures to be adopted by the Competent Authorities to ensure that the food and feed products on the market are safe for consumption, (iv) capacity building for the MESP and MAFRD laboratories (KHMI and KIA respectively) in their accreditation process as part of the '*assistance in establishing a permanent system for monitoring agricultural land pollution'* – a key project objective.

The results are shown below with the additional activities marked in *italics.* More details are presented in Annex 3.

1. Legislation covering the area of environmental protection was updated to ensure the protection of agricultural land against pollution. The Administrative Instruction in allowing 'Norms of Hazardous Substances and Harmful Presence in Soil' (the Kosovo List) was reviewed and updated as necessary.
2. Staff of MESP, MAFRD, KEPA, KIA and FVA were trained in the organisation and implementation of land pollution survey and control programmes, including design of pollution surveys, sample collection and transport, laboratory techniques and presentation-interpolation of the results.
3. Detailed survey on Agriculture Land Pollution in 17 Kosovo municipalities was carried out and the results presented.
4. Detailed assessment of the presence of heavy metals in agriculture/food products was carried out including assessment of the likelihood of transmission of heavy metals from agriculture products to humans. *This was supplemented by a FFIS survey for urban, rural and farming communities and also capacity building for MESP in the use and application of risk analysis using the latest state-of-the-art computer models.*
5. Detailed list of pollution sources was prepared and proposals made for follow up actions.
6. Recommendations were given with regard to monitoring of agricultural land and fertility control of agricultural land.
7. Following the food chain assessment and analysis, recommendations were given for the use/non-use and type of crops allowed in the areas where concentrations above allowable limits of heavy metals are detected. *This was supplemented by developing measures to be adopted by the Competent Authorities to ensure that the food and feed products on the market are safe for human consumption.*
8. Public Information and Education Campaign on Environmental Protection, with particular focus on land pollution is prepared and implemented.
9. *Capacity building for the MESP and MAFRD Laboratories (KHMI and KIA respectively) to support them in their accreditation process.*

In addition, dedicated English language courses and training material were provided for MESP and MAFRD staff for the duration of the project.

3.4. Activities

3.4.1. General

The activities included the Inception Phase and six (6) tasks covering the following topics:

Task 1:	Support MESP and MAFRD in updating the legal framework for land pollution
Task 2:	Detailed survey on agricultural land pollution
Task 3:	Identification of pollution sources and proposal for mitigation measures
Task 4:	Food chain assessment with regards to presence/transmission of heavy metals
Task 5:	Capacity building of key stakeholders in implementation of agricultural land pollution survey
Task 6:	Public information and education campaign

Project management concentrated upon providing the technical framework for the efficient and effective implementation of these Tasks.

3.4.2. Inception Phase

The Inception Report *(approved by the EUO on 8th July 2013)* included an up-dated Work Plan and Timetable of Activities. The management activities carried out are itemised below:

Description of Activities	Achievement level
Mobilisation of SSTEs and JSTEs in Kosovo	*Completed*
Permanent Project Co-ordination and Backstopping established at GIZ IS, Pristina	*Completed*
Established the necessary structures and procedures to secure a good co-ordination and communication with the Contracting Authority, beneficiaries and other relevant parties	*Completed*
Establishment and management of Legal, Survey, Laboratory, Environmental Protection, Risk Analysis And Public Awareness Working Groups to work with the inter-Ministerial Working Group for Soil Pollution	*Working Groups were established*
Continued co-operation with key regional Ministries related to IMPEL, RENA and ECENA initiatives	*Good co-operation*
Good working relations with other projects operating in Kosovo and the region, especially the World Bank, UNDP, SIDA, GIZ and the new EU funded project to strengthen agricultural services	*Good co-operation*

3.4.3. Activities for Tasks 1-6

A summary of the main activities carried out under each Task as well as their achievement level in relation to the ToR are itemised below. Supplementary and additional activities are shown in *italics.*

Task 1: Support MESP and MAFRD in updating the legal framework covering land pollution

Description of Activities	Achievement level
Assessment of current legislation on environmental protection and land pollution	*Completed*
Propose mitigation provisions on minimising pollution of agricultural land through agriculture itself and to adapt agricultural produce to existing pollution where necessary	*Completed*
Prepare Administrative Instruction to the Law on Environmental Protection with regard to soil pollution	*Completed* *AISP ready for ratification*
Review and adapt the Kosovo List	*Completed*
Review and adapt the Administrative Instruction on total soluble element content of metals and semi-metals in soil	*Completed*
Provide legal and technical support to the inter-Ministerial Working Group on Pollution of Agricultural Land (MESP, MAFRD, FVA, NIPHK and MoH).	*Completed*
Task 1 Technical Report completed	*Final Report submitted February 2015*

Task 2: Detailed survey on agricultural land pollution

Description of Activities	Achievement level
Analysis of the current reports related to environmental protection and land pollution in order to prepare a list of most common pollutants in Kosovo	*Completed*
Obtain information on the size of agricultural land per municipality and define the sampling grid	*Completed*
Prepare sampling methodology and designation and sampling locations for detailed land pollution survey	*Completed*
Collection of co-ordinates of the sampling locations and mapping. Specific references will be made to the already known 'hot spots'	*Completed*
Hire and train technicians who will be collecting samples in the field	*Completed*
Contract a laboratory to perform screening tests	*Completed*
Contract accredited laboratory to perform detailed chemical analyses of samples that are considered suspicious under the screening test	*Completed*
Supervision and quality control according to ISO standards and best EU practices during all stages of the preparation and implementation of the survey	*Completed*
Reporting of the survey results and presentation of recommendations for follow-up action	*Task 2 Technical Report submitted February 2015*

Task 3: Identification of pollution sources and proposal for mitigation measures

Description of Activities	Achievement level
Identification and inventory of point and non-point sources of pollution in Kosovo with particular focus on the heavy metals Cd, Cr, Ni, Pb, Zn and As	*Completed*
Soil pollution – total and available contents of heavy metals and potentially toxic elements including but not limited to Fe, Al, As, B, Cd, Co, Cr, Cu, Hg, Mn, Mo, Ni, Pb, Se, Sr, Zn, triazine herbicides and organic chlorine pesticides	*Completed (Task 2)*
Further develop and increase the database on pollution of agricultural land as prepared by EULIP and delivered to MESP and MAFRD	*Completed (Task 2)*
Determine the level of contribution (discharge) for each pollutant	*Completed (Task 2)*
Prepare a detailed report outlining pollution data coming from industrial sites, wastewater and sewage, flooding, agricultural activities and geogenic sources	*Completed*
Prepare and present measures to avoid and control pollution of agricultural land	*Completed*
Recommendations on establishing monitoring system on pollution on agricultural land and fertility control of agricultural land	*Task 3 Technical Report submitted February 2015*

Task 4. Food chain assessment with regards to the presence/transmission of heavy metals

Description of Activities	*Achievement level*
List of agricultural products (plant and animal origin) grown in the area under surveillance	*Completed*
Sampling scheme developed for all food products susceptible to heavy metals	*Completed (Task 2)*
Personnel fully trained on the protocol for sample collection, packaging, store and transport to the designated destination	*Completed (Task 2)*
Organised collection, packaging and transport of samples as well as testing of samples in the accredited laboratory	*Completed (Task 2)*
Report on the results of the laboratory analysis	*Completed (Task 2)*
Maps prepared of the sampled area and recommendations on the suitability of the sampled area for agricultural/food production activities	*Completed (Task 2)*
FFIS of urban, rural and farming households	*Completed*
Detailed human health risk analyses carried out for the transmission of heavy metals from agricultural products	*Completed*
Recommendations for the measures to be adopted by the Competent Authorities to ensure that safe food and feed products are on the market	*Task 4 Technical Report submitted February 2015*

It should be noted that activities mentioned as 'completed under Task 2' are linked with the *detailed survey on agricultural land pollution* where the land survey was combined also with the analyses of food and feed products. The reasoning for this was because the sampling team were already trained in collecting samples to ISO/IEC requirements. In addition, the Manual for Sampling Procedures prepared by the project includes food/feed samples. Moreover, the ISO/IEC accredited laboratories from EU Member States were already contracted by the project for soil analyses and food/feed samples. These activities are thus fully reported in the Task 2 Technical Report.

Task 5: Capacity building of key stakeholders in implementation of the agricultural land survey

Description of Activities	Achievement level
Identify key actors relevant to the tasks to be implemented by the project	*Completed*
Assessment of the availability of human resources and training needs assessment (TNA) for institutions relevant to the project assignment	*SSST TNA completed*
Assess the availability and capacities of the laboratories operating in Kosovo to perform the required laboratory analysis and tests (as from Task 2).	*Completed*
Prepare and implement tailor made training programme for staff of the stakeholders identified in designing the land pollution surveys, monitoring of surveys, data processing and reporting	*Completed*
Prepare and implement a training programme on the laboratory techniques related to the survey	*Completed*
Prepare and implement a training programme for technicians that will be involved in the sample collection process	*Completed*
Capacity building for the MESP and MAFRD Laboratories (KHMI and KIA respectively) to support them in their accreditation process.	*On-going*
Capacity building for MESP senior management involved with risk analysis	*Completed*
Dedicated English language courses for MESP and MAFRD staff for duration of the project	*Completed*

Besides intensive training for the 58 participants of the SSST who are involved with both soil sampling and food and feed collection in the southern and northern Municipalities of Kosovo, the capacity building of key stakeholders involved the following:

- capacity building for both KHMI and KIA senior management and technical staff assisting them in applying for, and receiving accreditation from the Directorate of Accreditation (DAK);
- a training programme for KHMI involving trans-boundary co-operation between experts from the University of Agriculture, Tirana (UAT)[11];
- 2 SSTEs specialised in PAH, PCB and AOX determination procedures were recruited to train both KHMI and KIA technicians in 'best laboratory practices'. This is a key element for *'establishing a permanent soil monitoring system'* in the future, and yet these compounds are most important for the 'field-to-market' risk-based assessments;
- capacity building for MESP senior management involved with risk analysis included a 4 day course with the International SSTE in the use and interpolation of the CLEA computer software model[12];

[11] The UAT laboratories have undergone similar ISO/IEC accreditation procedures and are now an accredited laboratory (January 2015). By utilizing their technical experts, lessons learnt and exchange of information provided an opportunity for KHMI to complete similar training and capacity building programmes.

[12] Contaminated Land Exposure Assessment (CLEA) as developed by DEFRA, UK

- dedicated English language courses for both MESP and MAFRD. Four (4) lessons were provided each week and this continued to March 2015.These Ministries designated staff and the number of participants that attended was as follows:

Ministry	English level		
	Elementary	Pre-intermediate	Intermediate
MESP		16	9
MAFRD	36	31	

Key regional Ministries from Macedonia and Albania co-operated with project objectives related to IMPEL, RENA and ECENA initiatives. Their senior management were also invited to the training seminars and workshops to discuss lessons learnt and to exchange information about their experiences with the management of polluted agricultural land.

Additional formal, informal and on-the-job training was conducted for each Task as indicated:

Subject	Duration	Workshop/training course participants	Training Method		
			formal	workshop	on-the-job
Task 1: to support MESP and MAFRD in updating the legal framework covering land pollution					
Review the relevant EU *acquis* with the present Kosovo Law	*1 day*	*MESP+MAFRD FVA+NIPHK+KGS+MoH*		●	
Precautionary principle, risk-based land management analysis, crisis management and the role of ISDF and RASFF	*1 day*	*MESP+MAFRD FVA+NIPHK+KGS+MoH*		●	●
Review and adapting the Kosovo List	*1 day*	*MESP+MAFRD FVA+NIPHK+KGS+MoH*		●	●
The role of GAP in the management of agricultural land pollution and soil protection	*1 day*	*MESP+MAFRD MUNICIPALITIES*		●	
Food Safety Management Systems and HACCP	*1 day*	*AGRICULTURAL ADVISORY SERVICES*		●	●
Protection of consumer interests in the EU and its application in Kosovo	*½ day*	*MESP+MAFRD FVA+NIPHK+KGS+MoH*		●	

Also, 2 regional Workshops were held. The first was in Durres, Albania from 24th–26th October 2014 and the second in Mavrovo, Macedonia from 14th–16th December 2014. During these latter workshops the AISP was transposed to take into account EU legislation. Actually two (2) Administrative Instructions (AI) were originally drafted: (i) for the Management of Agricultural Land Pollution (AIMALP), and (ii) for Soil Protection (AISP). After several workshops the AISP was chosen by the inter-Ministerial Legal Working Group (LWG) for immediate ratification leaving the AIMALP as future reference when a Law on Soil Protection is drafted and adopted by the Ministry.

The details of participants and Workshop Agenda are provided in the relevant Monthly Reports.

Subject	Duration	Workshop/training course participants	Training Method		
			formal	workshop	on-the-job
Task 2: Detailed survey on agricultural land pollution					
Review the relevant EU *acquis* and ISO/IEC standards with the present Kosovo Law	*1 day*	*MAFRD+MESP KHMI + KIA*	●	●	
Training the SSST in soil sampling, preparation and storage according to ISO/IEC 10381:2220	*10 days*	*MESP+MAFRD KHMI, KIA STUDENTS, NGOS*	●	●	●
Training the SSST in food and feed sampling and storage according to ISO 7002:1986 and 2859:1999	*1 day*	*MAFRD+MESP KHMI+KIA*	●	●	●
Training in ISO/IEC 17025:2005 and ISO accreditation procedures	*	*KHMI + KIA*	●	●	●
Training in data preparation and presentation	*1 day*	*MAFRD+MESP KHMI + KIA*	●		●
Training in XRF spectroscopy and ISO 13196:2013/E	*	*MAFRD+MESP KHMI*	●		●
Training in calibration and validation techniques using ICP/AES and XRF spectroscopy	*5 day*	*MAFRD+MESP KHMI*	●		●
Training in analyses of organo-pollutants and assessment of results	*10 day*	*KIA*	●		●

* = *continuous training by project experts*

Subject	Duration	Workshop/training course participants	Training Method		
			formal	workshop	on-the-job
Task 3: identification of pollution sources and proposal for mitigation measures					
Review the relevant EU acquis and ISO/IEC standards with the present Kosovo Law	½ day	MAFRD+MESP KHMI + KIA	●	●	
The role of GAP in the management of agricultural land pollution and soil protection	*1 day*	*MESP+MAFRD MUNICIPALITIES*	●	●	
The key elements of mitigation measures for polluted land – the role of the public and private sectors (PPP)	1 day	MAFRD+MESP KHMI+KIA	●	●	●
Recommendations for the Soil Monitoring Programme including financing options	1 day	MAFRD+MESP KIA	●	●	●
Analyses of organo-pollutants	1 week	KIA	●	●	●
SOPs in the ISO accreditation process	4 days	KHMI	●	●	

Subject	Duration	Workshop/training course participants	Training Method		
			formal	workshop	on-the-job
Task 4: Food chain assessment					
Review the relevant EU acquis and ISO/IEC standards with the present Kosovo Law	½ day	MAFRD+MESP KHMI + KIA	●	●	
The role of GAP in the management of agricultural land pollution and soil protection	1 day	MESP+MAFRD MUNICIPALITIES	●	●	
The key elements of mitigation measures for polluted land – the role of the public and private sectors (PPP)	1 day	MAFRD+MESP KHMI+KIA	●	●	●
The role of the Competent Authorities and recommendations for management tools in safe food and feed	6x1 day*	MAFRD+MESP KIA, FARMERS PRODUCER ASSOCIATIONS MUNICIPALITIES	●	●	●
Using CLEA for risk analysis	4 days	MESP	●	●	●

N.B. On-the-job training implies duration for the project implementation period
** = part of Public Awareness in the 6 Municipalities of Prishtina, Gjilan, Ferizaj, Prizren, Mitrovica and Leposavic*

It should be noted that the project produced a lot of training material and 'PowerPoint' presentations. These are thus not added as an Annex as is usual but rather in electronic form and included with the other detailed information on the results of analyses and data maps. This is available upon request from MESP.

Task 6: Public information and education campaign

The methods adopted by the project depended upon the nature of the environmental protection issue e.g. the transmission of heavy metals, present and proposed changes to agricultural practices, food safety and general public information. Some examples are given below.

Meetings/Workshops	Non-meeting techniques
Visibility Events	Television and radio
Public meetings (PAC)	Reports
Briefings with Beneficiaries	Brochures and posters
Question and answer sessions with stakeholders	Web sites
Focus groups and interested 3rd Parties	Events (e.g. Earth Day and Environment Day)
Workshops and Working Groups	Briefing with NGOs
Members of the Producer Associations	Individual farmers

Which of these approaches, or perhaps others, was the most appropriate depended upon the issue, the type and nature of stakeholder groups and the context. The 1st Visibility Event disseminating project objectives and purpose was given on 2nd October 2013. Other visibility events such as Earth Day (22nd April), Environment Day (6th June) and World Soil Day (5th December) have also been supported by the project (see also Annex 4 for exmples).

In addition, awareness materials (posters, brochures) were approved by the 6th PSC Meeting held on 11th November 2014. These are also shown in Annex 4.

The Workshops for dissemination of project results were held in Prishtina (11th December 2014), Drenas (29th January 2015), Ferizaj (30th January 2015), Prizren (13th February 2015), Mitrovica (20th February 2015) and

Leposavic (March 2015). The participants included beneficiaries, farmers and Producer Associations as well as NGOs from the region. Stakeholders from neighbouring Municipalities were also invited to attend as well thus covering all the areas given in the ToR.

PAC meetings were well attended by stakeholders

Workshops developed strategies and policies

A key output has been promoting the adoption of 'Good Agricultural Practices' (GAP) and the responsibility and liability of famers, Producer Associations and Food Business Operators (FBOs) in producing and selling safe food and feed for the market.

It should also be noted that although formal public awareness events have been limited, senior management from both Ministries were regularly consulted for their comments and advice on project management and technical issues. Their involvement and co-operation is greatly appreciated. Proposals for future communication are discussed in Section 8.

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4. Assumptions

4.1. Assumptions at different level

The project was high profile in terms of the stakeholder involvement in the agro-environmental sector and media interest. The Inception Phase developed six assumptions and these are highlighted below along with up-dated comments (January 2015).

Assumptions given in the Inception Report	Present comments
The institutions involved are sufficiently staffed to be able to carry out tasks related to the implementation and monitoring of land pollution	*The onus of responsibility is with the producer**
A clear commitment of MESP, MAFRD, KEPA and FVA to support implementation of the detailed survey	*This was positive throughout the project*
Beneficiary staff are available for intensive training related to the design and implementation of the land pollution survey	*This was positive throughout the survey*
Staff of KIA and KHMI participate in all stages of project implementation	*Good co-operation*
Unrestricted access to all relevant data present within the institutions involved	*Good co-operation*
Support from the beneficiaries to obtain relevant data from other government bodies not directly involved with the project.	*Good co-operation*

* When these assumptions were first developed, the level of polluted agricultural land was unknown. But based upon previous projects *(e.g. EULIP – further support to land-use)* it was expected to be of a sufficient magnitude to trigger immediate mitigation/remediation measures and additional monitoring by the Competent Authorities, especially through MESP for land pollution and FVA for food and feed pollution. The ALPS project was a 1st stage in this survey but assistance *in establishing a permanent and sustainable system for monitoring agricultural land pollution* thus became a key objective of the project. Sustainability was further mentioned as a constraint by the ROM Report *(ref: MR-147048.01 dated 15th June 2014*) and their concerns were also engaged by the project as well.

To accomplish such a sustainable system the project focussed upon strengthening the capacities for both KHMI and KIA. They were (and are) in the process of being ISO/IEC accredited and, although not part of the ToR, project resources were diverted to assist them in this process. The latest state-of-the-art XRF spectroscope was purchased for the soil analyses plus training in its use for KHMI staff was provided by project experts. The intention is that this equipment will be left with KHMI when the project ends. It will give them capacities to analyse 1 soil sample for over 100 elements in just 60 seconds which includes all the main heavy metals and pollutants of public concern (see also Task 3 Technical Report for more details).

However, there are two constraints identified based upon assumptions of the national budget. The first is that monitoring is costly for the national authorities to carry out for the whole of Kosovo and the funds are not available. From the NERP Report (2014) only 0.1% of total GDP is devoted to environmental protection and this barely covers the costs of existing MESP staff and their present commitments. Funds to support soil monitoring are just not forthcoming. Second, and most important, despite project proposals monitoring is not a priority at central nor Municipal level.

Now that the ALPS project has been completed, the results are overwhelmingly that pollution of land only exists in certain identified 'hot spots' and none of these are used for agricultural production. Not only this, but once

modern risk analysis is applied using the data from the results, other factors[13] for calculating the so-called Average Daily Exposure (ADE) when compared to the Health Criteria Values (HCV) are just as important[14]. The concentration of a pollutant in soil is just the 1st Stage of risk analysis. In other words, risks to public health from polluted agricultural land are site-specific and should be carried out on a site-specific basis. There is thus no public health reasoning to carry out a comprehensive (and costly) soil monitoring programme country–wide sponsored by (limited) public funds.

Nevertheless, the soil must be monitored for pollutants when considering personnel health risks to the individual farmers and their family plus for the overall food and feed safety management system in Kosovo. This is also part of the AISP legislation. To overcome these difficulties the onus of responsibility for monitoring is recommended to lay with the farmer. The farmer is responsible for ensuring their land is sampled and monitored on a regular basis by an ISO accredited laboratory. With advice from the Agricultural Advisory Services and supported by MESP, they can collect soil samples in an approved manner and send these to an accredited laboratory for analysis. This does not necessarily have to be KHMI or KIA if they are unable to compete on the open market with carrying out the required analyses at competitive prices. As explained in Task 4 *(food chain assessment)* the farmer will have to show the results of the laboratory tests in order to join the Producer Association and also if they decide to sell their products to the FBO. In this way, market forces and economic *tools* will drive the monitoring system and not funds from the central budget.

This implies the Producer Association and FBO must also ask for a valid and up-to-date certificate of soil monitoring to accompany all the agricultural products that they purchase. This will support their traceability measures for food and feed safety and should be promoted at all levels by the relevant authorities. Such a monitoring system supported by economic *tools* will then be permanent and sustainable. These proposals are recommended throughout the project Technical Reports and subsequent public awareness campaigns.

4.2. Risks and flexibility

These were also developed during the Inception Phase. The status now the project is completed is shown below.

Risk	Estimated risk level	Present status and flexibility
Insufficient availability and/or capacity of key stakeholders	**medium**	All necessary staff were made available especially for the 6 Working Groups
Difficulties in co-ordinating key stakeholders	**medium**	This risk did not occur
Lack of support at the high administrative level	**medium**	Full support was forthcoming from all Competent Authorities involved with the project
Only a partial implementation of the recommendations	**medium**	The beneficiaries are encouraged to take ownership of the results
Lack of confidence in analyses results	**high**	• all methodologies were first approved by the PSC • concerns when raised were quickly answered by project experts • modern state-of-the-art technologies were used applying ISO/IEC methodologies • all 'suspicious' results were checked in ISO/IEC accredited laboratories from 2 EU Member States • all soil samples are stored in KHMI for further analyses by 3rd parties if required

[13] such as recipient characteristics (e.g. adult or child) exposure co-efficients, physical contact and ingestion rate
[14] The ADE/HCV ratio is called the 'health quotient'.

Future financing of laboratory testing is a constraint for 'cash strapped' public organisations and the private sector	**high**	The 'assumptions' propose the private sector should pay for their own soil analyses and monitoring of their own land if they wish to sell their products on the market
The legislation, codes of practices and standards may not be implemented throughout the agricultural sector	**moderate**	Awareness must be provided to the private sector through 'carrots and sticks' to ensure this risk is not serious. More details are given in Task 4 Technical Report
'Moving goal posts' - EU and international technical standards (e.g. ALOP) are regularly up-dated and up-graded or down-graded	**moderate**	All proposals (including the revised 'Kosovo List') are visible, transparent and flexible so thy can be up-dated when new data become available.
Care must be taken not to compete with the private sector who are developing food safety policies for the FBOs	**moderate**	There was no conflict of interest and private companies were encouraged to participate in the development of proposals

The overall risks related to the ALPS project can be divided into 2 broad spectra:

A. The application of science

To the highest degree the latest state-of-the-art technologies were used by the project. World experts were employed and ISO/IEC methodologies (i.e. international standards) were applied throughout the sampling and analysis procedures. These methods are internationally approved, and also approved by the PSC. The results are confirmed by ISO/IEC accredited laboratories which are also approved to operate within an EU Member State (in our case Italy and Slovenia). The concentration of each chemical parameter was the basis for the selection of soil, food and feed samples for further detailed chemical analysis. Also, if needed, the soils can re-tested because the samples are stored to ISO/IEC standards in KHMI. Moreover, with permission from the beneficiaries and client, at the end of the project scientific papers may be submitted for publication by world-renowned organisations highlighting and promoting the technologies developed by the project for use by similar soil surveys in the future. The project will also meet the 'REEIS criteria' for results orientated monitoring (ROM).

B. The application of risk-based methodologies

Remediation measures developed by individual EU Member States represent not only science (for public health risks) but also politically motivated policies. At present there is no EU Directive for soil protection. Each EU Member State adopts their own measures which are best suited to their national priorities. In other words, besides public safety issues the measures support employment in the agricultural sector, their food and feed business operators (FBOs) and the voting public. In some countries (e.g. France) they have different Soil Contaminant Standards (SCSs) for different regions and for the same agricultural product. As mentioned above, the project developed strategies which incorporated the 'best practices'. However, the final decision and determination for which policies to adopt is for the PSC to make.

5. Implementation

5.1. Physical and non-physical means

The key data are presented in Annex 2 for Resource Utilisation. In summary, from 18th March 2013 to 17th March 2015 (i.e. to the end of the project) the following experts were utilised:

	Year 1	Year 2	
Schedule of Inputs (w/days)	Deployed	March 2015	Cumulative
Key Experts			
Sub-total	375	315	690
Deputy Team Leader			
Sub-total	81	245	326
Senior Short Term Experts (SSTE)			
Sub-total	36	329	365
Junior Short Term Experts (JSTE)			
Sub-total	231	439	670
All Experts Total	**723**	**1 328**	**2 051**

It should be noted that the Table above is for fee-based experts employed on a w/day basis. This was not practical for some activities and so contract-based inputs (i.e. completion of defined activities) were used for the following:

- some 58 staff employed contractually to carry out the soil, food and feed sampling (the Specialised Soil Sampling Team) in the 17 Municipalities from July 2013 to October 2014;
- some 10 persons employed contractually to complete the Food and Feed Intake Survey (FFIS) from August 2013 to September 2014 including the 1 SSTE recruited for adding the meta-data into Excel format for later interpolation by the Project Team. Some survey questionnaires were also completed by non-paid volunteers;
- the contracted services of two (2) ISO/IEC accredited Laboratories from Tuscia, Italy and Kova, Slovenia[15];
- the contracted services of an International Expert SSTE for the validation and calibration of the XRF methodologies;
- the 2 language experts who carried out English courses for MESP and MAFRD staff, 4 times a week for a total period of 22 months;
- the regular inputs of the Project Director who was responsible for quality and management control of the project.

The non-physical inputs included:

- the purchase of a state-of-the-art XRF spectroscope including additional equipment for the automatic analysis of 20 samples at a time with supporting hardware (2 computers + accessories) and specialised software;
- renting specialised radiation exposer meters from INKOS (Radiological Directorate) for staff working with the XRF equipment;
- the purchase of GPS equipment for the SSST to assist them in identifying the soil sample locations;
- specialised equipment for soil sampling and storage in KHMI;
- chemicals to support KIA in their ICP-AAS analyses of organo-pollutants;
- design and purchase of posters and brochures for the PAC;

[15] Tuscia University, Department of Innovation in Biological, Agro-food and Forest Systems, (DIBAF), Laboratory of Agro-chemistry, Viterbo, Italy and KOVA. d.o.o.,Agro-Food Laboratories, Teharska cesta 4, 3000 Celje, Slovenia.

- design and purchase of posters, hats and T-shirts to support Earth Day (22nd April), Environment Day (6th June) and World Soil Day (5th December).

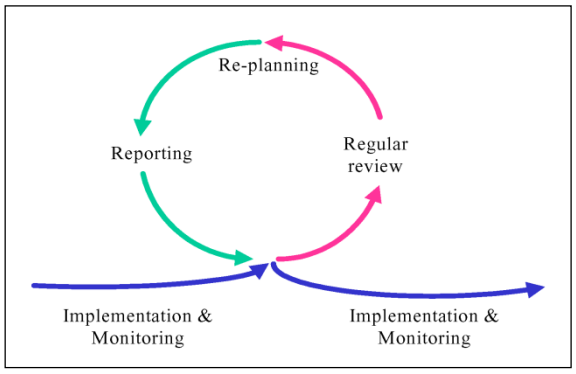
5.2. Organisation and implementation procedures

The Consultant places special emphasis on quality control, the LogFrame Analysis and Project Cycle Management (PCM). GIZ IS was responsible for the overall quality assurance of the project, to the client, beneficiaries and stakeholders. As such, the Consultant also assured that all activities carried out, are quality assessed. Such quality assurance is regarded as an integrated part of professional project management, as a dependable partner, and applied at all corporate levels – from the divisions at Head Office to programmes in partner countries.

A valuable element of the Inception Phase was a review of the LogFrame with the beneficiaries to check its validity. This was carefully monitored to evaluate the progress of the project and played an important part as part of the overall feedback in the TA process. The Measurable Indicators were also agreed with the PSC in the early stages of project implementation (see also Section 7.1.).

In addition, it was planned that the achievement of the key project objectives would lead to a sustainable strengthening of the relevant Kosovo institutions. The training of counterparts was a key component in all project activities so that they are able to continue without support at the end of the project. Indeed, it was suggested that the Project Team would involve counterpart staff and provide them with training on various issues through the Working Groups. The project endeavoured to mitigate the risk of their non-participation by providing useful, meaningful and interesting involvement and learning opportunities at every stage.

Furthermore, we placed importance on the need for sound project management skills, and appreciated using the principles of Project Cycle Management and the LogFrame as defined by EU/EuropeAid and widely used by major funding agencies. This approach to planning and managing projects is essentially 'objectives orientated'. It goes beyond simply planning a series of project activities, and focusing upon results. Implementation itself, however, is not a linear activity, but is a learning process, also following cycles of evaluation and revision:



Source: EuropeAid: Project Cycle Management (2004)

Project implementation also included a total of 44 Technical Assistance Group (TAG) meetings since project start-up. These were where project administration and implementation issues were discussed and appropriate management actions taken.

Moreover, a total 7 Project Steering Committee (PSC) meetings have been completed. In 2013 this included the 1st PSC (4th April), 2nd PSC (6th June) and the 3rd PSC (2nd October). In 2014 the 4th PSC was held on 29th January, the 5th on 20th June and the 6th on 11th November. In 2015 the 7th PSC will be held in March to finalise the project.

The project also worked through the advice and support of six (6) Working Groups. MESP, MAFRD and FVA selected senior staff to lead (as chairperson) and participate. These included:

- Task 1: co-ordinated by the Legal Working Group (LWG) which comprised of the Project Team and delegated staff from MESP (Mr. Adem Tusha), MAFRD (Mr. Idriz Gashi), FVA (Mr. Kujtim Uka) and KHMI (Mr. Shkumbin Shala);
- Task 2: co-ordinated by the Soil Survey Working Group (SSWG) which comprised of the Project Team and directed by KHMI (Mr. Shkumbin Shala) with 5 Group Leaders: 2 additional technicians from KHMI, 2 from the Agricultural Institute, Peja (KIA) and 1 from an NGO, Mitrovica. This Task also involved the Laboratory Working Group (LaWG) which comprised of the Project Team and was led by the International SSTE (Prof. Maximilliano Valentini) and local SSTE (Mr. Bujar Zanelli), Tirana Agricultural Technical University (Prof. Odeta Tota and Prof. Dana Zamira), MESP (Mr. Adem Tusha), MAFRD (Mr. Idriz Gashi), FVA (Mr. Kujtim Uka) and KHMI (Mr. Shkumbin Shala) and KIA (Mr. Badhi Begoli);
- Task 3: co-ordinated by the Environmental Protection Working Group (EPWG) which comprised of the Project Team and led by the Director of Soil Protection, MESP (Mr. Adem Tusha) with assistance from KHMI (Mr. Mentor Shala) with 5 Group Leaders not in the SSWG: 2 additional technicians from KHMI, 2 from the Agricultural Institute, Peja (KIA) and 1 from an NGO, Mitrovica;
- Task 4: co-ordinated by the Risk Assessment Working Group (RAWG) which was made up of the International SSTE and senior staff from MESP. The LaWG were also involvement of the analysis of food and feed samples;
- Task 5: was co-ordinated by the Project Team in co-operation with the beneficiaries;
- Task 6: co-ordinated by the Public Awareness Working Group (PAWG) which comprised of the Project Team and led by the Director of Public Awareness, MESP (Mr. Zymer Mrasori) with assistance from other MESP staff.

These Working Groups met on a regular basis in Kosovo. As mentioned above (Section 3.4.3. Task 5) there were also workshops for the LWG in Albania (24th-26th October 2014) and Macedonia (14th–16th December 2014).

5.3. Timetable

The Timetable of Activities was given in the Inception Report and in the subsequent 6 Interim Reports. No changes were made to the original project planning and a summary is given below:

ID	Output	Deadline (from project start date)
1.	Start date	18th March 2013
2.	Inception Phase	Inception Report approved 8th July 2013
	Implementation Phase	
3.	Monthly Progress	14 Monthly Progress Reports
4.	Quarterly Progress	6 Interim Progress Reports
5.	Task 1	January 2015* Technical Report submitted for quality control in February 2015
6.	Task 2	January 2015* Technical Report submitted for quality control in February 2015
7.	Task 3	January 2015* Technical Report submitted for quality control in February 2015
8.	Task 4	January 2015* Technical Report submitted for quality control in February 2015
9.	Task 5	Capacity building to March 2015
10	Task 6	PAC to March 2015
11.	Final and Exit Phase	February – March 2015 Draft Final Report 25th February 2015 Final Report

** Quality control was required before final translation to Albanian*

5.4. Costs and financing plan

The ALPS project is contractually a global fixed price and thus no Incidental Expenditure budget were to be reported. Nevertheless, the project management regularly updated the PSC on the number of expert days (TL, DTL, KE2, SSTEs and JSTEs) that were utilised in the Monthly and Interim Reports.

5.5. Accompanying measures taken by the Government

Since the beginning of the project there has been good co-operation between the main beneficiaries (MESP, MAFRD, KHMI, KIA and FVA) and the project. This support has included:

- participation in 6 Project Steering Committee meetings since the project start;
- approval of all (new) methodologies and reports presented by the project;
- MESP, MAFRD and FVA have selected senior staff to lead (as chairperson) and participate in the six (6) main Legal, Soil Survey, Laboratory, Environmental Protection, Risk Assessment and Public Awareness Working Groups. These were chaired by the Ministry senior management and also were instrumental in guiding project inputs;
- participation of KHMI senior staff (for accreditation) and KIA technicians (in operating procedures) as part of *'establishing a permanent system for monitoring agricultural land pollution'* – a key objective of the project;
- MESP providing the project with an office in the main headquarters to assist with day-to-day contacts with key staff for project implementation;
- MESP providing staff in the Public Awareness Working Group (PAWG) to design and develop the materials and brochures, meeting EU Visibility Guidelines;
- FVA with their Residue Monitoring Programme (RMP) assisting the project in the design of the food and feed sampling and survey programmes as well as co-operation with testing and analyses;
- MAFRD providing inputs for Good Agricultural Practices (GAP), a key management *tool* for environmental protection and safe food production.

These inputs were greatly appreciated by the project.

6. Factors ensuring sustainability

6.1. Policy support

Project activities concentrated upon (i) the Technical Assistance Process, (iii) donor liaison, and (iii) effective practical results.

6.1.1. The Technical Assistance process

The project is well aware of the risk that technical assistance can result in advice and training materials as well as reports which only reflect the expert appraisal of the situation. From the beginning the Team thus undertook the necessary consultations with the client, beneficiaries and stakeholders to ensure a careful distillation of methods and solutions that would fit into the context of Kosovo. The Inception Phase and the starting point of this knowledge was critical to this. In addition, the Team experiences in Kosovo were also invaluable in this respect. It should also be noted that recommendations from similar projects in the region have also been referenced (mostly from Macedonia, Albania and Montenegro) and also from individual EU Member States (Poland, Italy, UK, Germany, Hungary, the Netherlands, Bulgaria and Slovenia) which also represents the diverse expertise and experiences of the TA Team.

The Consultant is also aware of the fact that the EC promotes the integration of the gender perspective into every stage of the policy processes – design, implementation, monitoring and evaluation – with a view to promoting equality between women and men. This policy takes a comprehensive approach which includes legislation, mainstreaming and positive actions aiming to eliminate inequalities and promote gender equality in accordance with Articles 2, 3 and 141 of the EC Treaty.

In addition to this, the Consultant adopted a strong 'client orientation'. The Team endeavoured to build upon the good relationship between all the parties involved in project implementation in order to be aligned with their objectives as well. Moreover, the PSC meetings were instrumental in providing the framework for a useful exchange of ideas and to present solutions for possible problems that were identified.

6.1.2. Donor liaison

As mentioned in previous Sections, there are a number of projects that have been, or are being financed by various donors in Kosovo. Not only was the project aware of these projects but they also had an on-going and active dialogue with the donors themselves. The Team were aware also of the risk of duplication of effort resulting in a waste of resources. Another point is that there were several related projects identified during project implementation (e.g. from the water and waste sectors) that were consulted to ascertain their present status and how the project proposals could be co-ordinated with their results as well.

6.1.3. Effective and practical results

In order to ensure effective results, the project focussed upon a practical approach throughout and concentrated upon the development and implementation of proposals that had clear targets, were consistent with other programme outputs and were operationally achievable as set out in a LogFrame (see also Annex 1).

Indeed, the basis of the project proposals are that they must be practical. Today, all agencies involved in agro-environmental protection are developing new methods and applying a wide variety of administrative systems, infrastructures and approaches. For food and feed safety and public confidence, this is partly led by consumer demands. Whilst the main focus is upon improving the food and feed safety management system, nevertheless agencies must also consider the cost-benefits as well. In other words, proposals must be practical and within budgetary means. They should also not impose unjustified compliance costs on industry. In addition, they should keep in mind the fair trading requirements of international agreements and establish mechanisms to ensure that domestic and import standards are consistent in intent and application.

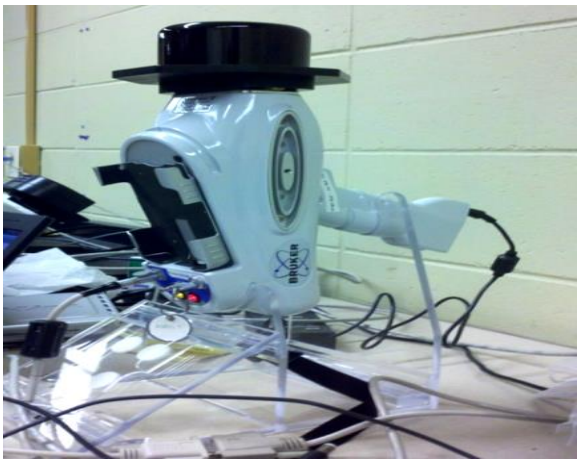
Moreover, the management *tools* must be transparent, can be seen to be fair, are open to public scrutiny and are practical to ensure the proper controls are in place. If they are impractical then there is more chance of them being side-stepped and then the food and feed safety system will be compromised.

6.2. Appropriate and advanced technologies

The project included a mixture of technical and management *tools.* It involved (i) advanced and state-of-the-art technologies applying the latest scientifically approved methodologies according to ISO/IEC, (ii) more appropriate technologies and methodologies according to 'good practices' and 'best available technologies' with more traditional and well proven applications used by the agricultural food and feed producers.

6.2.1. Advanced technologies

The screening of soil samples proposed by the project was to use either an in situ or intrusive Field Portable X-Ray Fluorescence Spectroscope (FPXFS), as given in '*Soil quality-Screening soils for selected elements by energy dispersive X-ray fluorescence spectrometry using a handheld or portable instrument (ISO 13196:2013(E)*. Using the FPXFS means that detecting and quantifying element distributions can be made within virtually any type of sample without destructive pre-treatment. Although it is not as sensitive as 'wet chemistry' techniques it has several advantages including cost, speed, ease-of-use, and portability (US EPA, 2007). Moreover, by being simple and relatively quick to use, the constraints associated with laboratory environments such as equipment failure, human error or the efficacy of reagents is reduced.



FPXFS equipment used by the project and planned to be left with KHMI

Besides heavy metals the project also determined the soil fertility parameters using ISO/IEC methodologies for the latest Inductively Coupled Plasma – Atomic Emission Spectroscopy (ICP-AES) as follows:

- general parameters such as humic content e.g. Total Organic Carbon (TOC) and pH;
- inorganic chemicals such as salts (phosphate, nitrate, chloride, sulphate) e.g. electrical conductivity;
- organic chemicals such as fuel hydrocarbons, PAHs and AOXs.

Also, the sampling grid was calculated using 'Google Maps' and the choice of sampling location was found using GPS portable equipment accurate up to 0.5m. And just as importantly, the presentation of the results included over 62 700 'point sources' for the 17 Municipalities on 374 'click and read' interactive GIS maps especially prepared by the project.

As with EU practices, modern risk analysis in food and feed safety should replace the use of a one-off general survey of hazards. This means (i) risk management, (ii) risk assessment, and (iii) risk communication options also need to be strengthened. The latter is particularly important for Kosovo as it will provide information and opinions throughout the risk analysis process concerning risk and risk perception for consumers, industry, the academic community and other interested parties. To assist with carrying out risk analysis, the project used the latest Contaminated Land Exposure Assessment (CLEA). The software was developed by DEFRA (UK) and is widely used in most EU Member States.

6.2.2. Appropriate technologies

To optimise the food and feed safety system then pollution should be prevented from getting into the food chain 'at source'. Proposals were developed that applied appropriate technologies. They included applying country-wide technical and management *tools* such as (i) the farmer sampling their own soil, food and feed, (ii) the promotion of 'Good Practices' especially GAP, (iii) HACCP introduced into all Producer Associations and Food Business Operators country-wide – this system appears to be complicated but is actually easy to introduce and self-explanatory, (iv) simple farm business plans being developed in co-operation with the Agricultural Advisory Services, (v) the use of civil liability legislation by the consumer to protect their interests. More details are provided in Task 4 Technical Report.

The project also proposed the development of non-food crops where elevated pollution levels are measured. This is a mixture of traditional farming but using new crop varieties and supported by R&D in Kosovo carried out by the technical universities.

6.3. Environmental protection measures

The aim at the end of the project is to leave behind practical outputs (as in the LogFrame) but more importantly a stronger MESP and MAFRD working in partnership with the agricultural community for environmental protection.

These have been developed in co-operation with the Working Groups and are reported in the Tasks 1-4 Technical Reports. Environmental protection is thus a key part of the project. It also should be integrated into other sectors and policies (e.g. social and economic planning). With a practical implementation of the EU *acquis* and applying 'good practices', it means there will be an efficient and well-structured management of the food and feed sectors throughout the 'farm-to-fork' chain.

6.4. Factors influencing climate change

Global temperatures are expected to increase between 1.1-6.4 °C during the 21st century and precipitation patterns will be altered. Soils are intricately linked to the atmospheric/climate system through the carbon, nitrogen, and hydrologic cycles. Because of this, altered climate will have an effect on soil processes and properties. Significantly more carbon is stored in the world's soils—including peat land, wetlands and permafrost—than is present in the atmosphere. Disagreement exists, however, regarding the effects of climate change on global soil carbon stocks. If carbon stored below the ground is transferred to the atmosphere by a warming-induced acceleration of its decomposition, a positive feedback to climate change would occur[16]. Increased temperatures, higher CO_2 concentrations near the soil surface and higher precipitation rates lead in principle to a higher formation of biomass. More crop residues and higher temperatures also stimulate the activity of soil organisms. Higher soil temperatures also stimulate chemical weathering.

Conversely, if plant-derived carbon inputs to soils exceed the decomposition rate, the feedback would be negative. In addition, changing weather patterns with wider extremes between drought and flooding, will impact the agricultural land. Higher rainfall can wash out more dissolved nutrients and cause erosion along the river banks. Despite much research, a consensus has not yet emerged on the temperature sensitivity of soil carbon decomposition.

What is clear however is that agro-environmental protection and economic development are interlinked and factors influencing this relationship will also have impacts upon climate change.

[16] Temperature sensitivity of soil carbon decomposition and feedbacks to climate change, Davidson, Janssens, 2006.

6.5. Social aspects

Interestingly, the general literature refer to most of the farms in Kosovo as being small in size and with low *yields.* The yield/ha may be low compared to northern Europe. For example, in the UK for 2012 the average yield of wheat was 8.6tonnes/ha, barley 6.1tonnes/ha and potatoes 40tonnes/ha[17]. This is compared with Kosovo for 2012 with wheat 3.35tonnes/ha, barley 3.18tonnes/ha and potatoes 10.45tonnes/ha[18].

But the data are misleading. The comparison is with subsidised agriculture and high levels of mechanisation, high inputs of agro-chemicals including pesticides, herbicides, fungicides and fertilizers[19], monoculture with specialised seeds from authorised dealers, and often contracted companies for harvesting and marketing. Very little manual labour is employed and in the UK, 1 worker/100ha for arable land and 2 workers/100ha of vegetables is common[20]. In addition, these high inputs have led in the past to considerable environmental degradation, soil compaction and water body eutrophication from fertiliser applications. The yields may thus be high but also the costs. And not necessarily the *productivity.*

In comparison the average farm in Kosovo has low yields but also low input costs. From the Food and Feed Intake Survey (FFIS - see also Task 3 Technical Report) the average farm in the survey area has 6-8 family members all working on the farm. Selling the produce in the market often employs more family members. They often have a cow and produce their own milk, cheese and yogurt. They keep goats and sheep and free-range ducks and chickens and grow a wide range of fresh vegetables. They feed the animals on their own hay/fodder and make organic bread from the cereals. Many produce grapes for the table and make their own wine and other alcoholic beverages. Many have bee hives and produce honey. Some make baskets from the willow hedgerows. In other words the *productivity/ha* is very high. Most importantly the farm is a secure source of food for all (extended) family members during difficult political and economic times. The environmental impact is also low with low levels of mechanisation and limited use of agro-chemicals. It is sustainable because these practices have existed for centuries and without subsidies from the public sector.

In addition, not only can small farms compete on productivity but also on quality, on care for their animals, on promoting GAP, on providing a humane and environmentally concerned face for agricultural production. By extensively applying standardised controls and regulations recognised by other countries including the EU Member States, Kosovo producers will also be given an impetus to export their specialised products. This is the way forward for sustainable agriculture in the future.

6.6. Institutional and management capacity (public and private)

The relationship between the public and private sectors for the agro-environmental sector and food and feed safety are shown in the Flow-chart below. It shows how the project proposals are linked with MESP, MAFRD, FVA (public institutions) and the farmers, Producer Associations and FBOs. The proposals also include the Financial Institutions (private). The aim is to recommend a food and feed safety policy integrated with environmental protection. More details are given in Task 4 Technical Report *(food chain assessment).*

[17] Department of Environment, Food and Rural Affairs, DEFRA, UK (2012)

[18] Green Report, MAFRD 2013

[19] from the DEFRA, UK (2012) and FFIS data, the average fertilizer applications in the UK is 285kg/ha, almost 6 times the level of the farms in Kosovo >2ha

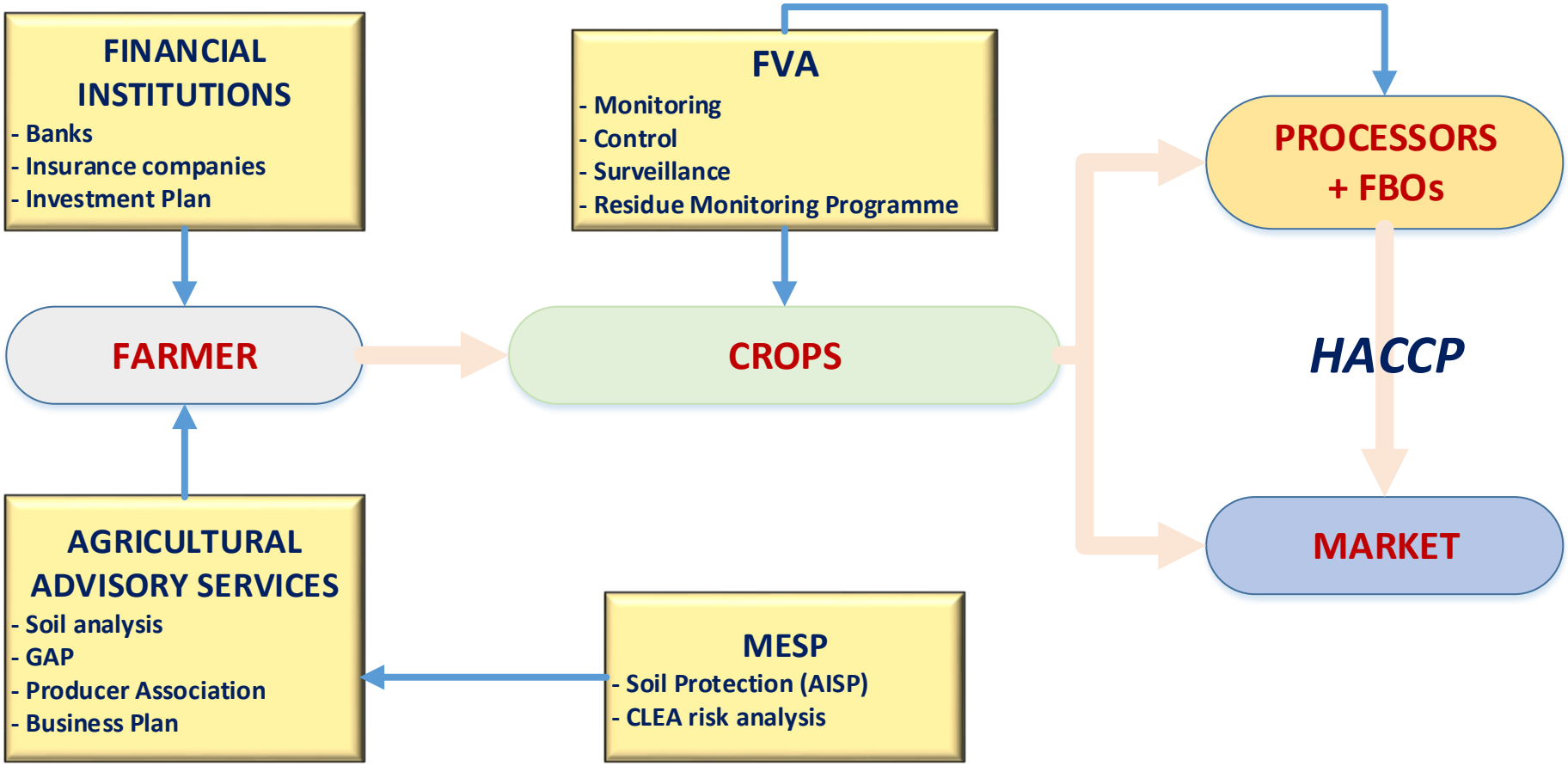
[20] it is not possible to give an exact manual labour input figures because it depends upon the crop. Wilson (Analysis of UK Farm Labour Usage, 2009) gives yearly average work input data of 18h/ha for cereals, 109-200h/ha for potatoes and 282h/ha vegetables, 42.5h/milking cow and 11.7h/ha for beef cattle which is an indication of the mechanisation of the sector as a whole

6.7. Economic and financial analysis

As mentioned above (in Section 5.4) because the project was a global fixed price there is no economic and financial analysis.

Although it was not a specific ToR activity to support KHMI and KIA, nevertheless a permanent *and sustainable* soil monitoring system can only be accomplished when both MESP and MAFRD can (i) have access to well equipped laboratories applying and complying with international standards, and (ii) carry out the required soil analyses and monitoring on a regular basis. Besides obviously being more reliable, the main reasoning is driven also by cost. To analyse just one soil sample for 22 parameters using Inductively Coupled Plasma - Atomic Emission Spectroscopy (ICP-AES) costs in the region of EUR 350. To sample and analyse soils on a national level, which is the basis of a soil monitoring system, is just too costly if carried out by non-government agencies and/or laboratories abroad.

The cost-recovery recommended by the project is for the farmer to be responsible for having their soils analysed before they can sell their products on the market. The FPXFS equipment left with KHMI at the end of the project will go some way in reducing these costs but still, the laboratories must be ISO accredited for the results to be accepted nationally and internationally.



Flowchart of food and feed safety policy integrated with environmental protection

7. Monitoring and evaluation (M&E)

7.1. Definition of indicators

Implementation of the project required achievable goals and an effective monitoring process. The methodology for the M&E enabled the Project Team to:

- remedy problems on a timely basis;
- increase effectiveness of the capacity building programmes;
- enhance project design;
- improve working practices;
- consolidate and extend partnerships.

The Project Team in co-operation with the beneficiaries developed 'measurable indicators of project achievement' during the Inception Phase. These provided specific evaluation criteria as well as their means of verification and were added to the updated LogFrame (see Annex 1.) to be evaluated during project implementation. An indicative list is given below:

Log Frame	Measurable indicators from the Inception Phase	Degree of achievement
Overall Objective	• ESBN positive about the land management of polluted lands in Kosovo • Kosovo products complying with EU legislation • EC Health & Consumer Protection Directorate General positive about agricultural products imported from Kosovo	• By soil sampling to a grid reference of 1/0.7km^2 and 1/0.5km^2 in 'hot spots' the data meet current ESBN criteria and can be added to their network; • Products already meet the EU legislation; • Recent comments (December 2014) from DG SANCO indicate the food and feed standards need to be strengthened. However, no elevated levels of pollution in agricultural products was found in the survey area.
Project Purpose	• Kosovo agro-environmental legislation harmonised with EU and international standards • Implementation and enforcement of the legislation • Positive comments from ESBN and scientific associations on reforms carried out on polluted land management • Increased revenues of producers and FBOs linked to better management and improved market access of products following implementation of both the legislation and project recommendations • Increase of share of state budget allocated to the remediation of agriculturally polluted land • Increased share of agricultural sector in total GDP of Kosovo	• Yes, approximation evident but implementation needs to be strengthened; • The actual polluted agricultural land in the survey area was negligible and no significant elevated levels of pollution were detected; • This should be the result of project intervention in the medium-term; • The environmental budget is constrained but polluted land was found only in non-agricultural areas i.e. 'hot spots' already identified by KEPA; • This is already evident over the last 2 years but needs support from the Government.
Results	• **Task 1** • Gap analysis and ToC completed • Relevant EU Directives and international standards transposed and adopted • Laboratories recognised internationally by EA and ILAC • Number of legislative acts adapted implementing EA and ILAC rules and procedures • Number of participants in training courses and Workshops +positive feedback • **Task 2** • Full implementation of the land pollution survey requirements • Laboratories are applying ISO/IEC 17000 series and contract(s) signed	**Task 1:** indicators are all met with high attendance rates for the training courses. **Task 2:** indicators are all met, also with high attendance rate for training courses.

	• Laboratory reports are positive and results obtained are within internationally acceptable confidence limits • Number of staff trained with proven knowledge about EU and other international standards adopted • Number of employees using the new data on agricultural land pollution and other soil information systems e.g. GIS-based applications • Number of participants in training courses and Workshops + positive feedback • **Task 3** • All project activities carried out • Full list of point and non-point sources of land pollution prepared • Recommendations developed to avoid and control pollution of agricultural land • **Task 4** • Number of analytical procedures in line with EU food safety requirements, number of referenced results from inter-laboratory testing exercises • Number of production regulations developed for the relevant sectors • National analysis standards harmonised with international standards • Farm extension services are extended to include polluted land management • IFIs identified to support FBOs in the agricultural sector including harmonised ISDF and RASFF system • Number of participants in training courses and Workshops +positive feedback • Number of regional representatives of consumer organisations taking part in seminars, positive feedback from consumer organisations • **Task 5** • Number of staff trained with proven knowledge about EU and other international standards • Number of participants in training courses • Workshops+ Study Tours + positive feedback • **Task 6** • Educational and awareness material prepared and delivered • Positive response by national and local media • A number of public debates completed and good participation and response • Educational material accepted by youth institutions and adopted into their curriculum • Awareness campaign material delivered to educational institutions • Positive response of the awareness materials by the target groups	**Task 3:** Completed and all indicators met. **Task 4:** Positive feed-back from trainees and regional representatives. • IFIs must be informed of the progress made but also the constraints facing the agro-environmental sector for planning further interventions; • Environmental protection needs to be prioritised by the Government and donors; • The importance of agro-environmental issues as the backbone of rural development needs to be promoted. **Task 5:** Positive feed-back. **Task 6:** Positive feed-back but more awareness is needed before it becomes part of the curriculum. Environmental protection is not prioritised by the Government. • Yes
Activities	• Approval of reports • Conclusions and recommendations taken up by MESP and MAFRD for their future implementation of surveys • Positive response from other beneficiaries • Positive response by stakeholders and especially public confidence in the results of the ALPS project • Adoption of recommendations by the agricultural communities	• Inception Report, Monthly Reports (14) and Interim Reports (6) approved; • Positive response from beneficiaries; • Initial response from (some) stakeholders positive but more economic *tools* need to be developed before adoption of the recommendations.

7.2. Reviews and evaluation

The mid-term ROM Report *(ref: MR-147048.01 dated 15th June 2014)* gave the following grading for the project:

Relevance and quality of design	A
Efficiency of Implementation to date	A
Effectiveness to date	A
Impact prospects	A
Potential sustainability	B

Grading system for the project by ROM, June 2014

Whilst being positive it also gave useful comments and recommendations which were followed up by the project during the implementation phase. Of particular concern for the ROM report was the sustainability of the soil monitoring system in the future. This is discussed in detail in Section 4. In summary, the government takes the role as 'auditor' to ensure the system is working and leaves the responsibility for soil monitoring to the farmer, Producer Association and FBOs. Market forces and economic *tools* will ensure sustainability of the system.

Also of note is that during project Implementation Working Groups were encouraged to monitor and evaluate their respective activities 'in the field'. The results were reviewd on a regular basis and reported in the (14) Monthly Reports. The participation of other key agencies and agricultural community as well as civil society were also monitored. The intention was at all times to apply recommendations from the monitoring to ensure the project was on track to meet the planned results.

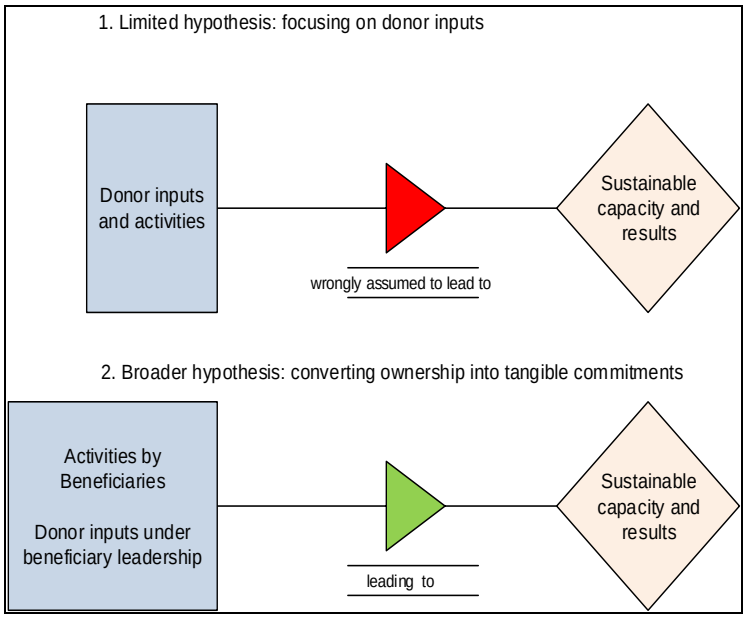
8. Lesson learnt, conclusions and proposals

8.1. Lessons learnt

8.1.1. General comments

Probably the most important part of any project is to aim for results which promote the sustainability of the original objectives. This project was no exception. At all times we were reviewing the progress (or otherwise) of activities and making the required adjustments during the Implementation Phase. Sustainability and improved capacity development were our goals.

The concept of sustainability has been revised by the EC over the last few years and the main emphasis today is for project inputs to be based upon ownership. In other words, the promotion of ownership measures which commit the beneficiaries to improving their activities in a particular sector. Very often the belief that donor-led sponsorship naturally leads to sustainability is misleading. The most important shift in EC policy today is to allow the beneficiaries to be the instigator and leader in developing the policies. This is shown in the following diagram:



Source: adapted from 'Sustainability issues for EC Technical Co-operation projects (2009)'

In the case of the ALPS proejct, the aim was for environmental management and particularly protection measures to be implemented in partnership with the agricultural community. In addition, the delivery of technical services as part of the FSMS was developed and promoted. After a considerable number of open and frank discussions during the FFIS and also the PAC, it can be said that the majority of famers and FBOs were pleased the government were reacting to the food scares in the last few years. However, it is also clear that the private sector will not invest in their sector unless the financial rewards and gains are defined and 'ring fenced'. For this reason, the project was promoting more public/private partnership with responsibilities from both sides. This requires considerable investment from the public sector in analysing agricultural land, soil monitoring and maintaining the ISO/IEC accreditation of the KHMI and KIA laboratories. Unless these are properly funded then ownership will be compromised. However, private laboratories may take the initiative and be more competitive and thus takeover the role from the state.

8.1.2. Specific comments

The specific lessons learnt in relation to the policy and programme context were as follows:

For capacity development: the project aimed for comprehensive capacity development. It required considerable dialogue and joint understanding, and considerable investment in on-the-job training. However, several topics were science based and complicated and it is unsure if these can be imparted over the short-term.

For policy/expert advice: this was of a technical nature. In this project the key and international experts were the main policy advisors but whether this added to sustainability was debatable again because of the complex science that was needed for the survey and analyses. However, the input of data involved close co-ordination with KEPA GIS experts so they will be able to add new data as they are collected. The development of SCSs into colour-coded practical measures triggering intervention in high (red) pollutant concentration levels, is also easy to interpolate.

For implementation of the FSMS: this is linked to classical investments i.e. supporting implementation through investment. The FVA need considerable support from public funds and it may mean that long-term sustainability may not be attained unless this is accompanied by adequate financing and budgeting measures. The support of the overall FSMS will be a challenge for future project initiatives (by donors, MESP, MAFRD and FVA) and should be continued if reaching the goals of the EU *acquis* is to be achieved. However, the private sector should take over their liabilities and develop their own systems as in the Dutch Co-operatives. These multi-billion euro enterprises run the whole farm-to-fork food and feed safety sectors and the traditional role of the government agency as inspector has been replaced by 'auditing' and thus checking the private sector are applying the legislation.

For the preparation/facilitation of EU co-operation: again, the take-up of the FSMS initiatives and attracting additional funding from public/private partnerships will determine the sustainability of these activities.

The Project Team played a supporting role with dialogue and support, focussing upon demand, ownership and commitment. The support was adapted to the context and to the existing capacity of the beneficiaries. All options were explored such as:

- assessing demand;
- assessing the context, particularly of the training courses;
- assessing existing capacity, paying careful attention to the scope of assessments and how they are carried out;
- harmonising TA support with other donors.

8.2. Conclusions

The project progressed broadly as planned and as detailed in the Inception Report, Monthly Reports (14), and Interim Reports (6). These reports also presented the activities carried out and those planned for the next reporting period. Several meetings and discussions were also carried out with the intention of disseminating the main project aims and objectives. Broad co-operation was achieved with existing sector projects and not forgetting the important inter-regional co-ordination for IMPEL, RENA and ECENA initiatives as well.

The original project design as given in the ToR was valid as regards relevance and feasibility. The methodology defined in the Inception Report was also valid. No changes were made only additions when knowledge gaps were identified during project implementation.

The Project Team, beneficiaries and stakeholders were involved with decision-making and problem solving on a daily basis. There were also regular meetings with other institutions, agencies and Ministries to try and involve them in environmental protection specifically related to the agricultural sector. In this way, it is hoped MESP, MAFRD and FVA can address their important sector issues in the future.

8.3. Proposals

The following is a summary of the main proposals based upon discussions and assessments made during the implementation of the project.

Task 1 *(to support MESP and MAFRD in updating the legal framework covering land pollution)*

1. The final AISP has now been completed and the success of the project will be through implementation and enforcement of this legislation. Prompt ratification is thus needed.
2. The inter-Ministerial Legal Working Group should continue to assess the impact of the legislation upon the line agencies and particularly the agricultural community in Kosovo.
3. The Kosovo authorities should also consider drafting and adopting a dedicated Law on Soil Protection that will have stronger legal enforcement implications than an Administrative Instruction.
4. The Kosovo List ('Utmost Permitted Levels of Discharging and Dispersal of Pollutants in Soil') has been updated using the 'Dutch List' as a guide to define the Soil Contaminant Standards (SCSs)[21]. As new risk analyses data is introduced in the future, then these can be further reviewed to ensure practical implementation at national level. This implies additional capacity building for the monitoring services of KEPA (KHMI), MAFRD (KIA) and FVA.

Task 2 *(detailed survey on agricultural land pollution)*

1. FPXFS is the method chosen for detecting and quantifying element distributions and should be the equipment of choice for monitoring agricultural soil pollution in the future. It can be used for virtually any type of sample without destructive pre-treatment steps. Moreover, although not as sensitive as 'wet chemistry' techniques such as ICP-AES, it has several advantages including cost, speed, ease-of-use and portability.
2. The results of the soil sample analyses show that the heavy metal concentrations (Zn, Cu, Cr, Ni, Cd, Pb, Hg, Zn, Cu, As, and Ni) for the 17 Municipalities are within the Soil Contaminant Standards (SCSs) of the revised 'Kosovo List' for the vast majority of soil samples. Where there are elevated levels (e.g. of Cr, Ni, Pb and Cd), then the field studies showed the location of the samples collected were either not in an agricultural area or used for non-agricultural and/or urban purposes.
3. There was no pollution found with any of the crops (vegetables, cereals and fruits) sampled from the 17 Municipalities either from heavy metals (in particular Cr, Ni, Pb, Zn, and As) nor organo-pollutants. It is nevertheless recommended that as part of the Food Safety Management System (FSMS) all food and feed should be regularly and systematically analysed to ensure public safety and confidence.
4. Both the farmer and Food Business Operator (FBO) are responsible and liable under the law for the agricultural products they sell on the market and this needs to be disseminated through the various public awareness campaigns (see also Task 4 Technical Report). They are responsible for monitoring their own soil for the important parameters including pollution and fertility.
5. Policies and programmes need to be adapted so that local edaphic conditions and agricultural practices are taken into account. In this way appropriate local measures can be developed for ameliorating heavy metal uptake by crops should these be produced on polluted land. These measures need to be regularly monitored to take into account factors such as the accumulation of heavy metals in the soil over time.
6. Because no widespread agricultural land pollution was detected and elevated levels when found were site-specific, there is no need at this stage to recommend large-scale mitigation/remediation measures to be applied. The decision for (high cost) site remediation depends upon land-use and public demand. Nevertheless, simple and cost-effective mitigation measure should be promoted through 'Good Agricultural Practices' (GAP).
7. To date, 17 Municipalities have been surveyed. It is recommended to continue the detailed investigation of the remaining agricultural land in the other 21 Municipalities in Kosovo in order to have a full inventory

[21] See also Section 3.6.3. and the AISP (Annex 3) for more details

of soil pollution. This will also identify the sources and pathways of pollution and include risk assessment as well as mitigation and/or remedial measures.

8. Based upon the results of the survey the following steps can be recommended for sustainable and environmentally sound management of agricultural land in the future:
   - to improve waste management in the whole of Kosovo as well as to commence the construction of wastewater treatment plants for industry and households;
   - to control and promote best available technologies (BAT) for mining and wastewater management as well as to check landfills for possible leakage;
   - carry out additional surveys to identify and ring-fence 'hot-spots' and if needed, apply the appropriate remediation using BAT.

Task 3 ***(****identification of pollution sources and proposal for mitigation measures)*

1. Kosovo faces challenges to not only monitor the point and non-point pollution sources but also to control and prevent further environmental degradation. There are environmental 'hot spots' and these are already identified and mapped by MESP/KEPA. But these sites are not used for agricultural crops. In addition, their impact on neighbouring agricultural land and soil and on the food/feed produced is not significant.
2. The key proposals to mitigate environmental and agricultural protection are through legislation, institutional support and management.
3. The Competent Authorities for environmental and agricultural protection are MESP (for land pollution), MAFRD (for 'good practices') and FVA (for food/feed controls).
4. The farmer is responsible (i) for the food and feed that they produce on their land, (ii) to ensure the soil they farm is analysed for possible pollutants on a regular basis in an accredited laboratory, (iii) to guarantee the safety of the food and feed that they sell for public consumption.
5. The Food Business Operator (FBO) is liable under law for the safety of the food and feed that they sell for public consumption.
6. The promotion of GAP are key but only one of the several management *tools* that need to be developed for avoiding and controlling the pollution of agricultural land. An integrated approach is thus needed. However, the promotion of GAP, if fully implemented, will reduce the costs and improve the effectiveness of the other *tools*. It is thus the cornerstone of the proposed mitigation measures.
7. The feasibility analyses show that non-food crops such as potatoes, hemp, cereal seed, cereals, flax, oilseed rape and aquarium/ornamental fish are attractive in terms of net production value (NPV)/ha. These should be considered not only as alternatives to food production on polluted land but also as opportunities for developing new markets and enterprises.
8. It is clear that a permanent *and sustainable* soil monitoring system can only be accomplished when both MESP and MAFRD can (i) have access to well equipped laboratories applying and complying with international standards, and (ii) carry out the required soil analyses and monitoring on a regular basis. To meet this it is thus recommended that both KHMI and KIA should reach ISO/IEC accreditation status by the Directorate of Accreditation for Kosovo (DAK) as soon as possible.

Task 4 *(food chain assessment*

1. For the sector as a whole it can be seen there is an opportunity to increase agricultural production and also considerable scope in Kosovo to develop organic and specialist farming products which are in high demand in the region and EU Member States.
2. No public health risks were found in any of the food and feed products analysed by the project in the survey area. This includes crops, animal products (meat, poultry, fish, eggs and dairy products and raw milk). The Maximum Allowable Values (MAV) for local produce are also all below the limits as given in the legislation and this has been so for the last 2 years.
3. Several factors must be taken into account when considering public health risks associated with food and/or feed produced on polluted land. Contact and ingestion data are also needed as well as the characteristics of the recipient (e.g. child, youth or adult). Data are also needed about this exposure over a period of time, the bio-availability and bio-accessibility of the pollutant and its capacity for bio-

magnification up the food chain. The actual concentration of the pollutant in the soil is only the 1st Stage of a risk-based analysis.

4. Modern risk-based analysis in food and feed safety should replace the use of one-off general survey of hazards. This means (i) risk management, (ii) risk assessment, and (iii) risk communication options also need to be strengthened. The latter is particularly important for Kosovo as it will provide information and opinions throughout the risk analysis process concerning risk and risk perception for consumers, industry, the academic community and other interested parties.
5. To optimise the food and feed safety system then pollution should be prevented from getting into the food chain 'at source'. It means the remaining 21 Municipalities must be surveyed. It also includes developing country-wide technical and management *tools* such as (i) regular monitoring the soil of individual farms, (ii) the promotion of Good Practices especially GAP, (iii) the use of computer models for risk-based exposure assessments to assist with decision-making, (iv) HACCP introduced into all Producer Associations and Food Business Operators country-wide, (v) farm business plans being developed in co-operation with the Agricultural Advisory Services, (vi) the development of non-food crops supported by R&D in Kosovo, (vii) the use of civil liability legislation by the consumer to protect their interests. These tools must be implement in line with the Law on Environmental Protection (Law No. 03/L-025) and Law on Agricultural Land (Law No. 02/L-26).
6. The authorities may feel that they need to act in extreme circumstances when for example, polluted food is entering the food chain. Provisions are already in place under the powers of FVA to control this and there is no need to recommend or instigate new tools. Indeed there is extensive legislation in place covering crop protection, the use of agro-chemicals, agricultural products, seeds and environmental protection issues. Implementation is thus needed of the existing legislation supported by the required budgetary requirements at central level.
7. In those situations where the polluter cannot be identified e.g. from historical sources, the cost of remediation and/or re-cultivation of the degraded land can be paid for by the Government. MESP can be approached to explore the possibilities of covering the costs. This is an example where an Eco-Fund would provide funding specifically for environmental protection issues.
8. Responsibility for food safety is shared by everyone involved with food from production to consumption. The focus is upon the famers being responsible and the FBOs being liable for the agricultural products they sell on the market. In addition, the consumers are also responsible for ensuring the products they buy have been controlled by the relevant authorities. This implies they should look for the label on their food items. It means that for a food control system to be effective and practical there is no need for the authorities to become involved except in an 'auditing' capacity.
9. The emphasis is to ensure that only safe and quality food are available for sale to the public and also to implement the legislation to prevent or eliminate the production of food on potentially polluted land. These are seen as short-term goals for bringing about a rapid improvement in the current situation.
10. Market forces should drive the food and feed safety system. These will naturally and unavoidably prevent those who are not applying the legislation from selling their produce. When farmers apply GAP and wish to sell safe and quality products they should do this under a 'safe and quality' label. The small farms will need assistance to do this and it should be co-ordinated within a Producer Association. Allowing market forces to prevail and enhancing product value through an Association are thus seen as a medium-term goals.
11. Applying the proposed management *tools* will enhance farm income. The sector should thus be more viable. Rural development as a whole should be seen as the common aim of civil society. This should be strengthened via public money if necessary. This is the long-term goal.
12. The incentive is that safe and quality products can attain a higher market price and indeed the customer should seek those products so the producer can increase production and the FBO can increase sales. Consumer confidence will be promoted and selling through the Producer Association, with the application of a safe and quality label coupled to public awareness campaigns are seen as important steps in accomplishing this.
13. In the future, producers can be persuaded to adopt new technologies, practices and specialised crops. New sectors can be opened like organic farming and non-food industrial processing. All food and feed for public consumption will be controlled by market forces. Public confidence will be strengthened. Small

farms can compete on quality, on care for their animals, on promoting GAP, on providing a humane and environmentally concerned face for agricultural production. By extensively applying standardised controls and regulations recognised by other countries including the EU Member States, Kosovo producers will be also be given an impetus to export their products. This is the way forward for sustainable agriculture in Kosovo.

14. Strengthening capacities for both KHMI and KIA are important if a permanent and sustainable system for monitoring agricultural land pollution is to be established. However, there are constraints upon national budgets and monitoring is not a priority at central level. To overcome these difficulties the onus of responsibility for monitoring is recommended to lay with the farmers themselves. They are responsible, with advice from the Agricultural Advisory Services and supported by MESP, to ensure their land is monitored on a regular basis by an ISO accredited laboratory. The Producer Association and FBO must ask for a valid certificate of soil monitoring to accompany all the agricultural products that they purchase. This will also support the traceability issues for food and feed safety. In this way, market forces and economic tools will drive the soil monitoring system and not only funds from the central budget. In other words, it will be sustainable.
15. A final point is that the ALPS project is making a 'point source' *survey*. The soil parameters will thus differ over time and even within the same agricultural field. They will also differ with different crops because, for example, the bio-availability of certain metals will also change depending upon the soil matrix and chemistry. That is the reason why the *monitoring* over time of the soil, food and feed parameters is crucial to safeguard the 'farm-to-fork' chain and provide public confidence in the results obtained. But as mentioned above, the onus of responsibility is upon the farmer to ensure their land is analysed. This is also a key result of the project in '*establishing a permanent system for monitoring agricultural land pollution'*.

Task 5 *(capacity building)*

Capacity building was carried out for a mixture of advanced and more appropriate technologies. These are listed under Section 6.2 and thee is no need to repeat them here. It should be noted that the English language courses were appreciated by the beneficiaries and their main comments were that they would have preferred perhaps 1 lesson/day instead of 2/week for both Ministries. It is recommended that such courses should be part of future TA inputs because even a casual observer can see that certain staff have strengthened their language skills and the benefits are long-term.

Task 6 *(education and public awareness)*

In general, large public meetings are not especially effective for eliciting the transparent dialogue that communication seeks to achieve. Involving members of the general public was one of the project aims and perhaps 'round table' discussions and call-in television and radio programmes would enable members of the general public to better share views and concerns. These would also be a preferred communication strategy to obtain information from experts and decision-makers.

The use of the project web-site was constrained because only limited information could be added. It was also noticed in the FFIS that few respondents had heard of the ALPS Project even though there was widespread coverage in the initial 1st Visibility Event (2nd October 2013) and other events such as Earth Day (22nd April 2014) and Environment Day (6th June 2014).

It is thus proposed that these traditional communication strategies could be supplemented by more media coverage in newspapers because these are widely read and referenced in Kosovo.

The above information is supplemented by detailed Technical Reports for Tasks 1-4. These are available in electronic and hardcopy. Because of the large database developed the GIS maps are in electronic form only.

The ALPS project has now concluded. Special thanks and appreciation are extended to all those who assisted in making the project a success and especially to MESP, MAFRD and FVA senior management and staff as well as the EUO in Kosovo.

Annexes

Annex 1. **Project Logical Framework**

Annex 2. **Resource utilisation**

Annex 3. **Results performance report**

Annex 4. **Public Awareness Campaign (PAC) materials**

Annex 1. Project Logical Framework

Overall Objectives	Objectively Verifiable Indicators	Source of Verification	Assumptions
To support MESP and MAFRD in improving the land management system including assistance in establishing a permanent system for monitoring of agricultural land pollution	ESBN positive about the land management of polluted lands in Kosovo Kosovo products complying with EU legislation (Regulations, Directives and Decisions) and international standards EC Health & Consumer Protection Directorate General positive about agricultural products imported from Kosovo	ESBN and EIONET Reports Official Journal of the EC EU Reports on third country imports Health & Consumer Protection Directorate General Reports SAP Reports on commitment of the Government of Kosovo to implement the project recommendations	Continuous commitment and determination of the Government of Kosovo to align with EU *acquis* and international standards Smooth development and approval of the legislation and enforcement of recommended measures Co-ordination and co-operation of the main beneficiaries and stakeholders in implementing the project tasks Acceptance of project recommendations for management and remediation of polluted land
Purpose	**Objectively Verifiable Indicators**	**Source of Verification**	**Assumptions**
To support government institutions into conducting agricultural land pollution surveys and support the enforcement of local legislation related to agricultural land and environmental protection	Kosovo agro-environmental legislation harmonised with EU and international standards Implementation and enforcement of the legislation Positive comments from ESBN and scientific associations on reforms carried out on polluted land management Increased revenues of producers and FBOs linked to better management and improved market access of products following implementation of both the legislation and project recommendations Increase of share of state budget allocated to the remediation of agriculturally polluted land Increased share of agricultural sector in total GDP of Kosovo	Official Gazette of the Republic of Kosovo Monitoring & Evaluation reports of ESBN and Kosovo authorities MAFRD and MESP own reports SoE Reports from KEPA National Statistics reports State Inspectorate reports FVA reports *Ad-hoc* EC reports	A clear commitment of MESP, MAFRD, KEPA and FVA to support implementation of the detailed survey Willingness to participate in identifying reforms and increased budget allocation for implementation and enforcement of the legislation Staff of KIA and KHMI participate in all stages of project implementation Funds are available for municipal authorities to remediate 'hot spots' and/or introduce mitigation measures Funds available to individual farmers and FBOs for mitigation measures applied to polluted land There is a positive response from government funding agencies and IFIs for providing assistance to municipalities, producers and FBOs in applying the project recommendations If EU regulations are considered as too expensive to implement by producers and FBOs, they must not just switch markets or 'cross batch' to less problematic regions and/or countries with limited consumer protection In cases where land is designated as polluted, positive cost-benefit analyses or additional benefits for participating beneficiaries by changing food crop production regimes to other production methods

Expected Results	Objectively Verifiable Indicators	Source of Verification	Assumptions
Task 1 **To support MESP and MAFRD in updating the legal framework covering land pollution**	Gap analysis and ToC completed Relevant EU Directives and international standards transposed and adopted into Kosovo legislation and Administrative Instruments concerning land pollution management and agro-environmental protection measures Laboratories recognised internationally by EA and ILAC Number of legislative acts adapted implementing EA and ILAC rules and procedures Number of participants in training courses and Workshops +positive feedback	Official Gazette of the Republic of Kosovo Monitoring & Evaluation reports MAFRD and MESP own reports EA and ILAC reports Project interim and final reports Competent Authority documentation and reviews Written manuals containing standard operating procedures Feedback reports from participants	The adoption of the relevant primary and secondary legislation to enable 'equivalent' EU and international measures to be implemented The beneficiaries have sufficient staff and budget necessary to implement the project recommendations
Task 2 **Detailed survey on agricultural land pollution**	Full implementation of the land pollution survey requirements (i.e. contracting of laboratories, agreement on methodologies) Laboratories are applying ISO/IEC 170000 series and contract(s) signed Laboratory reports are positive and results obtained are within internationally acceptable confidence limits Number of staff trained with proven knowledge about EU and other international standards adopted Number of employees using the new data on agricultural land pollution and other soil information systems e.g. GIS-based applications ESBN positive about methodology and confidence in the agricultural land pollution survey results Number of participants in training courses and Workshops +positive feedback	Official Gazette of the Republic of Kosovo Monitoring & Evaluation reports MAFRD and MESP own reports Project interim and final reports Adoption into the ESBN information network of results obtained from the project Laboratory reports Training materials prepared and feedback reports from participants	Unrestricted access to all relevant data from institutions involved and also not directly involved with the project Contracted laboratories meet international standards and project has confidence in the results A clear commitment of MESP, MAFRD, KEPA and FVA to support implementation of the detailed survey Beneficiary staff available for intensive training related to the design and implementation of the land pollution survey Adequate budget available from incidental expenditures in case additional testing is required of newly identified 'hot spots' High cost pollution controls will not disadvantage the small-scale producers and operators The beneficiaries have sufficient budget necessary to implement the project recommendations and follow-up activities

Task 3 **Identification of pollution sources and proposal for mitigation measures**	All project activities carried out Full list of point and non-point sources of land pollution prepared Recommendations developed to avoid and control pollution of agricultural land	Monitoring & Evaluation reports MAFRD and MESP own reports Project interim and final reports FVA reports Minutes of the Working Groups Project training materials prepared and delivered	Unrestricted access to all relevant data from institutions involved and also not directly involved with the project The staff of the beneficiaries and stakeholders, inspectorate, municipalities and FBOs have the basic knowledge required for further training Adequate budget available to implement the recommendations
Task 4 **Food chain assessment with regards to the presence/transmission of heavy metals**	Number of analytical procedures in line with EU food safety requirements, number of referenced results from inter-laboratory testing exercises Number of production regulations developed for the relevant sectors National analysis standards harmonised with international standards Farm extension services are extended to include polluted land management IFIs identified to support FBOs in the agricultural sector including handling and storage sites with their ancillary distribution services, marketing and processing, the animal feed industry. Harmonised ISDF and RASFF system Number of participants in training courses and Workshops +positive feedback Number of regional representatives of consumer organisations taking part in seminars, positive feedback from consumer organisations	Official Gazette of the Republic of Kosovo Project mission reports(Agricultural Advisory Services) interim and final reports Minutes of the Working Groups Quality Manuals and Handbooks adopting the recommended procedures (e.g. for HACCP) FVA reports A certificate, document or label issued by the agricultural producers and/or organisations in Kosovo will be accepted and recognised by international agencies as compliant with international standards applying internationally recognised FSMS procedures. Positive IFI reports for future investment in the agricultural industry	MAFRD and MESP ready to adopt the recommendations and assessments presented by the project The FBOs must provide adequate staffing, infrastructure and operating costs and establishments need to work at a suitable production level. Capital is available/affordable to enterprises for upgrading plant and equipment to meet international health requirements. If EU and Kosovo regulations are considered as too expensive to implement by producers and FBOs, they must not just switch markets or 'cross batch' to less problematic regions and/or countries with limited consumer protection Positive response from IFIs and clear benefits in providing assistance to FBOs. In cases where land is designated as polluted, positive cost-benefit analyses or additional benefits for participating beneficiaries by changing food crop production regimes to other production methods e.g. non-food and biofuel crops.
Task 5 **Capacity building of key stakeholders in implementation of agricultural land pollution survey**	Number of staff trained with proven knowledge about EU and other international standards Number of participants in training courses, Workshops, and Study Tours with positive feedback	Training materials for each target group Support for the key stakeholders for continuation of the implementation of the pollution survey in the future i.e. sustainability of actions Project mission reports interim and final reports, Minutes of the PSC	The staff of the beneficiaries and stakeholders, inspectorate, municipalities and FBOs have the basic knowledge required for further training All reports are available upon request

Task 6 **Public information and educational campaign**	Educational and awareness material prepared and delivered Positive response by national and local media A number of public debates completed and good participation and response by those taking part Educational material accepted by youth institutions and adopted into their curriculum Awareness campaign material delivered to educational institutions Positive response of the awareness materials by the target groups	Media reports Response of participants to the public debates Reports of educational institutions	The beneficiaries have sufficient staff and budget necessary to implement the project recommendations Adequate budget available from incidental expenditures in case additional awareness activities are needed during project implementation e.g. risk-based analysis may indicate additional target groups should be involved.
Summary of Tasks	**Input**	**Source of Verification**	**Assumptions**
✓ Phase 1: Mobilisation and Inception (1 month) ✓ Phase 2: Implementation (23 months)	▪ Team Leader = 440 w/d ▪ Deputy TL = 326 w/d ▪ Key Expert 2 = = 250w/d ▪ Pool of SSTEs = = 365 w/d ▪ Pool of JSTEs = = 670 w/d ▪ Project Manager GIZ= as needed **TOTAL INPUTS = 2 051 w/d** **Plus contracted experts (task-based) for:** **- 58 JSTEs for the SSST** **- 10 JSTEs for the FFIS** **- 1 SSTE for data entry in Excel format** **- 1 International SSTE for calibration** **- 2 JSTEs for English language courses** **- 2 contracted ISO/IEC accredited laboratories from Italy and Slovenia)**	1 Inception Report 14 monthly reports 6 Interim Reports 4 Task Technical Reports 1 Draft Final Report 1 Final Report	The beneficiaries have sufficient staff and budget necessary to implement the project recommendations Adequate budget available from incidental expenditures in case (i) additional 'hot spots' from historical sources are identified, (ii)more municipalities may require remediation and intervention measures, (iii)increased awareness activities are needed during project implementation e.g. as more 'hot spots' may be identified then risk-based analysis may indicate additional target groups should be involved

Detailed Tasks	Results
Inception Phase **Implementation Phase** **Task 1((**to support MESP and MAFRD in updating the legal framework covering land pollution) **Task 2** (detailed survey on agricultural land pollution) **Task 3**(identification of pollution sources and proposal for mitigation measures) **Task 4**(food chain assessment), **Task 5** (capacity building) **Task 6**(education and public awareness)	✓ Legislation covering the area of environmental protection is updated to ensure the protection of agricultural land against pollution. The Administrative Instruction in allowing 'Norms of Hazardous Substances and Harmful Presence in Soil' is reviewed and updated as necessary ✓ Staff of MESP, MAFRD, KEPA, KIA and FVA is trained in organisation and implementation of land pollution survey and control programmes, including design of pollution surveys, sample collection and transport, laboratory techniques and presentation-interpolation of results ✓ Detailed survey on Agriculture Land Pollution in seventeen Kosovo municipalities is carried out and results are presented ✓ Detailed assessment of the presence of heavy metals in agriculture/food products was carried out including assessment of the likelihood of transmission of heavy metals from agriculture products to humans. *This was supplemented by a FFIS survey for urban, rural and farming communities and also capacity building for MESP in the use and application of risk analysis using the latest state-of-the-art computer models.* ✓ Detailed list of pollution sources was prepared and proposals made for follow up actions. ✓ Recommendations were given with regard to monitoring of agricultural land and fertility control of agricultural land. ✓ Following the food chain assessment and analysis, recommendations were given for the use/non-use and type of crops allowed in the areas where concentrations above allowable limits of heavy metals are detected. *This was supplemented by developing measures to be adopted by the Competent Authorities to ensure that the food and feed products on the market are safe for human consumption.* ✓ Public Information and Education Campaign on Environmental Protection, with particular focus on land pollution is prepared and implemented. ✓ *Capacity building for the MESP and MAFRD Laboratories (KHMI and KIA respectively) to support them in tier ISO/IEC accreditation process* *N.B. Items marked in red are additional activities than listed din the ToR*

Annex 2. Resource utilisation report

A. Report 1

Project title: **Agricultural Land Pollution Survey (ALPS) in Kosovo**	*Contract No:* **CRIS No: 2013/313-408**	*Country:* **Kosovo**	*Page:* **1/2**
Planning period: **18th March 2013 – 17th March 2015**	*Prepared on:* **17th March 2015**	*Contractor:* **GIZ IS (DE) and NIRAS (PL)**	

No	*ACTIVITIES IMPLEMENTED*	*TIME FRAME*	*PERSONNEL INTERNATIONAL*		*PERSONNEL LOCAL*		*EQUIPMENT + MATERIAL*		*OTHER*	
			Planned	*Utilised**	*Planned*	*Utilised**	*Planned*	*Utilised*	*Planned*	*Utilised*
1.	Inception Phase (March – June 2013)		*33*	*33*	*0*	*0*				
2.	Implementation Phase (July 2013 – March 2015)			*995*		*1 056*	*See Section 5.1*	*See Section 5.1*	contracted ISO/IEC accredited laboratories *See Section 5.1*	2 ISO/IEC accredited laboratories contracted from Italy and Slovenia *See Section 5.1*
	Task 1		*75*		*230*					
	Task 2		*150*		*360*					
	Task 3		*120*		*350*					
	Task 4		*120*		*240*					
	Task 5		*147*		*240*					
	Task 6		*455*		*200*					
	TOTAL		657	**995**	1 620	**1 056**				

* A total of 2 310 expert inputs were planned and 2 051 utilised. However, this does not include contracted experts (task-based and not time-based inputs) for (i) 58 JSTEs for the SSST with inputs over 14 months for soil, food and feed sampling, (ii) 10 JSTEs for the FFIS with inputs over 6 months, (iii) 1 SSTE for data entry in Excel format, (iv) 1 International SSTE for calibration of XRF equipment + training, (v) 2 JSTEs for English language courses with inputs over 20 months Almost 51% more International SSTEs were utilised than planned because of the scientific nature of the project and use of advanced technologies.

B. Report 2

Project title: **Agricultural Land Pollution Survey (ALPS) in Kosovo**	*Contract No:* **CRIS No: 2013/313-408**	*Country:* **Kosovo**	*Page:* **2/2**
Planning period: **18th March 2013 – 17th March 2015**	*Prepared on:* **17th March 2015**	*Contractor:* **GIZ IS (DE) and NIRAS (PL)**	

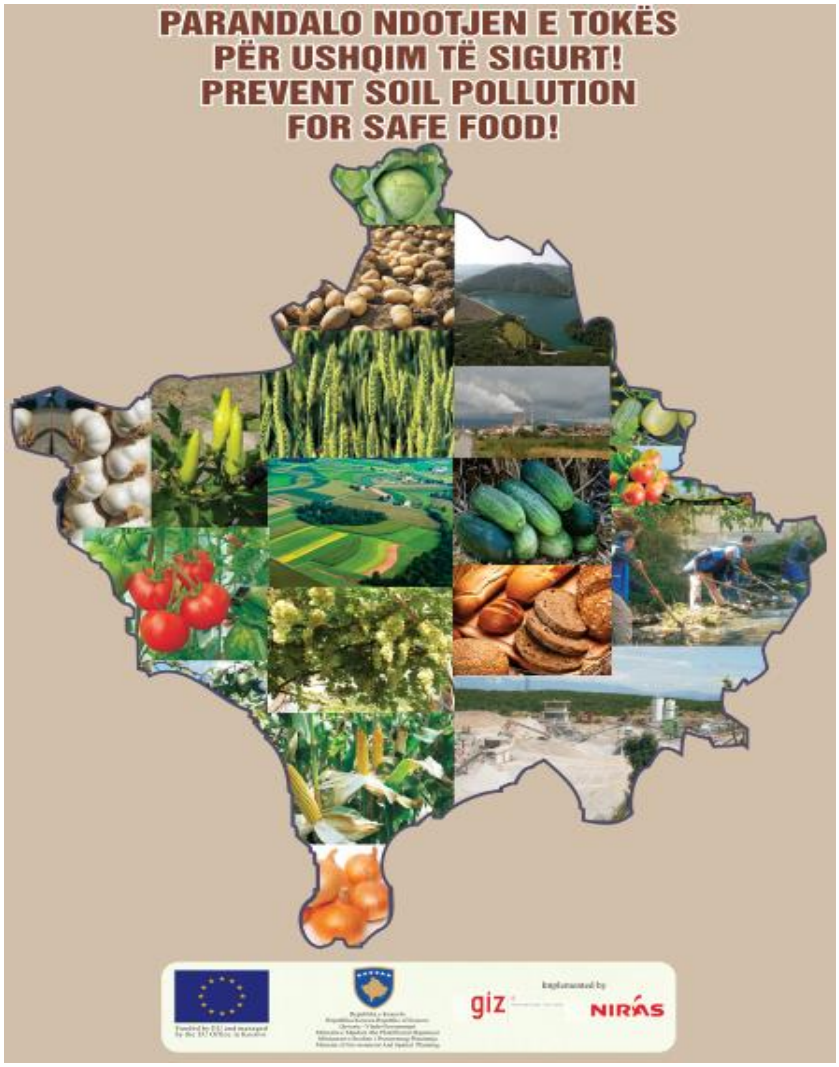
RESOURCES/INPUTS	*TOTAL PLANNED*	*PERIOD PLANNED* *PERIOD REALISED*	*TOTAL REALISED*	*AVAILABLE FOR REMAINDER*
PERSONNEL				*Contract –based inputs*
Key Experts	*690*	*18th March 2013 – 17th March 2015*	*690*	• *58 JSTEs for the SSST with inputs over 14 months for soil, food and feed sampling*
Deputy Team Leader	*440*		*326*	• *10 JSTEs for the FFIS with inputs over 6 months*
SSTEs	*520*		*365*	• *1 SSTE for data entry in Excel format*
JSTEs	*660*		*670*	• *1 International SSTE for calibration of XRF equipment + training* • *2 JSTEs for English language courses with inputs over 20 months*
Sub-total	**2 310**		**2 051**	
EQUIPMENT, MATERIAL OTHER INPUTS	• XRF spectroscope + automatic analysis + hardware + accessories + software; • radiation exposer meters; • GPS equipment; • equipment for soil sampling and storage; • chemicals to support KIA in their ICP-AAS analyses of organo-pollutants; • posters, brochures, hats and T-shirts to support PA • contracting 2 ISO/IEC accredited laboratories from Italy and Slovenia.			
TOTAL	**2 310**		**2 051**	*Inputs over 24 months*

Annex 3. Results performance report

Project title: **Agricultural Land Pollution Survey (ALPS) in Kosovo**	*Contract No:* **CRIS No: 2013/313-408**	*Country:* **Kosovo**	*Page:* **1/1**
Planning period: **18th March 2013 – 17th March 2015**		*Prepared on:* **17th March 2015**	
Results	*Deviation original plan (+ or -%)*	*Reason for deviation*	*Comment on constraints & assumptions*
Legislation covering the area of environmental protection is updated. The relevant Administrative Instruction is reviewed and updated as necessary	*0%*	-	*See Section 4 for details*
Staff of MESP, MAFRD, KEPA, KIA and FVA is trained in organisation and implementation of land pollution survey and control programmes	*0%*	-	"
Detailed survey on Agriculture Land Pollution in seventeen Kosovo municipalities is carried out and results are presented	*0%*	-	"
Detailed assessment of the presence of heavy metals in agriculture/food products including assessment of presence/transmission of heavy metals	*0%*	-	"
Detailed list of pollution sources prepared and proposals made for follow up actions.	*0%*	-	"
FFIS survey for urban, rural and farming communities and also capacity building for MESP in the use and application of risk analysis using the latest state-of-the-art computer models.	*100% extra input*	*Knowledge gap identified*	"
Recommendations were given with regard to monitoring of agricultural land and fertility control of agricultural land.	*0%*	-	"
Following the food chain assessment and analysis, recommendations were given for the use/non-use and type of crops allowed in the areas where concentrations above allowable limits of heavy metals are detected	*0%*	-	"
Developing measures to be adopted by the Competent Authorities to ensure that the food and feed products on the market are safe for human consumption	*100% extra input*	*Knowledge gap identified*	"
Public Information and Education Campaign on Environmental Protection, with particular focus on land pollution is prepared and implemented	*0%*	-	"
Capacity building for the MESP and MAFRD Laboratories (KHMI and KIA respectively) to support them in tier ISO/IEC accreditation process	*100% extra input*	*To establish a sustainable monitoring system in the future*	*Budget needs to be allocated for accreditation*

Annex 4. Public Awareness Campaign (PAC) materials

A. Poster for the PAC



B. Brochure for the PAC

C. Poster for 'Earth Day'

D. Brochure for 'Earth Day'