



## EUROPEAN COMMISSION

### TWINNING LIGHT PROJECT EE06-IB-TWP-ESC-03

### FINAL REPORT

**Project Title:** Estimation of concentrations of radio-nuclides in  
Estonian  
ground waters and related health risks

**Partner:** CGIAM  
ARPA Lombardia  
ARPA Veneto  
ARPA Basilicata

**Date:** September 10, 2009

## Section 1: Project data

<b>Project Title:</b>	Estimation of concentrations of radio-nuclides in Estonian ground waters and related health risks	
<b>Project No:</b>	EE06-IB-TWP-ESC-03	
<b>Financing Memorandum</b>	2006/18111.05.01	
<b>Project Approval date</b>	8.12.2008	
<b>Start date of activities</b>	20.01.2009	
<b>Project activities duration</b>	January 2009 to September 2009	
<b>Project Partners</b>	Local Partner: Estonia	MS Partner: Italy
<b>Name:</b>	Health Protection Inspectorate	CGIAM
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<b>Project Leaders:</b>	Dr Tiiu Aro	Dr. Maurizio Forte (ARPA Lombardia)
<b>Signatures:</b>		
<b>Report n.</b>	Final Report	
<b>Date of report:</b>	September 10, 2009	
<b>Reporting period:</b>	January - September 2009	

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## **2A - EXECUTIVE SUMMARY**

The overall objective of the project is the minimization of health risks caused by chemical substances and specifically by natural radionuclides in drinking waters in Estonia.

The partnership team has been committed to provide targeted, up to date, and fully tailored technical support and training to its Twinning counterparts to fully implement the project requirements.

The project results will lead to full implementation of the requirements under the following EU Directives:

- Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration;
- Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy;
- Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption.

The scope of the project has been addressed providing technical support to Health Protection Inspectorate (HPI) and other relevant institutions responsible for risk assessment and management of chemicals substances in Estonian waters, according to the current regulation and related EU legislation.

## **2B - BACKGROUND**

The amount of natural radionuclide contained in ground waters in Estonia is due to geological reasons.

"Requirements for the quality and control of drinking water and analysis methods" are defined by contents in the Decree of the Minister of Social Affairs No. 82 from 31.07.2001.

This was amended with the Decree of the Minister of Social Affairs No. 94 from 28.06.2002, which defined the parameter as an indicator. However, the exact extent of the problem is not clear.

Concentrations of such substances were analysed and reported occasionally by laboratories in Estonia and abroad, in the frames of different studies. Estonian Radiation Protection Centre is taking regular samples only from two survey points 2 times per year. Data from studies are available only as reports, compiled by OÜ Geoloogiakeskus (the Geological Survey of Estonia LLC) showing that the calculated total indicative doses of radio-nuclides in Cambrian-Vendian water bearing complex exceeded 2.7 times the indicator value of 0.1 mSv/year. Such water is consumed by 177 thousand people (14.7 % of the total population of Estonia).

The data from other water bearing complexes is rather limited but able to suggest that annual indicative doses from the water of Ordovician-Cambrian water bearing complexes might be even higher, as it is in contact with dictyonema shale.

Also in 1994-1998 with the purpose of finding the most appropriate methods for decreasing indicative dose levels in water, EC initiated project "TENAWA" (Treatment Techniques for Removing Natural Radio-nuclides from Drinking Water) including experts from Finland, Austria, Germany and Sweden.

## **2C - IMPLEMENTATION PROCESS**

In the first phase of the project, an assessment of available data and available technologies was performed.

It was thus clear that the staff of Italian experts should be reorganized and integrated to better fulfil the goals of the beginning activities. Two more experts joined the group: Dr. Realini, in charge of plants devoted to water purification and Dr. Serena Risica as a specialist in health effect of radiations.

In the second phase of the project the following activities have carried on:

- Compiling of sampling plan;
- Analysing of concentrations of radionuclides in Estonian waters;
- Finding the most appropriate method for removal of radionuclides;
- Working out and releasing guidelines concerning surveillance and analysis methods;
- Working out and releasing recommendations for setting threshold levels and taking measures for minimising of health risks.

No specific problems were encountered during the implementation of the project activities due to the effective support of Estonian counterparts and the high commitment of the experts involved. This allowed facing successfully the key topics of the project.

Several workshops including Estonian authorities and institution concerned in radionuclides and drinking water control and have been organized in order to provide relevant information to all the stakeholders involved about the outcomes of the twinning project activities.

## **2D - ACHIEVEMENT OF MANDATORY RESULTS**

At the final stage of the twinning light project it was possible to state that the following tasks have been achieved:

- Concentrations of radionuclides in Estonian ground waters and related health risks have been assessed and detailed;
- Appropriate methods for removal of radionuclides from water have been provided;
- Guidelines concerning surveillance and analysis methods and threshold safety levels have been developed.

Estonian database was fully examined and conclusions were drawn about health effect on populations. It was also possible to devise the upgrade of the monitoring plan for a better knowledge of the collective dose and increase the representativeness of data.

Proper analytical methods were identified and detailed procedures were provided. A priority order for radiometric parameters was also suggested.

Methods for radium removal from drinking water were considered together with their applicability to Estonian aqueducts. The efficiency of experimental treatment plant presently operating in Vimsii aqueduct was tested through a specific analysis. Criteria for a cost-benefit analysis on water treatment system have been discussed though a choice should be done by public authorities and water supplier.

During the extent of the project it has been also provided and high level expertise aimed to provide the Estonian counterparts the needed knowledge and skills on the specific subject of assessing the risks related to radionuclides in drinking water.

All the activities defined and scheduled in project designing stage according to Estonian needs and to appointed goals have been performed through an accurate work-flow.

Here below are summarized the achievement of proposed benchmarks (Tab. 1) In Tab 2 Mandatory results, related activity (from Project Fiche) and the obtained results are reported.

Tab. 1: Benchmarks:

<b>Proposed in the Project Fiche</b>	<b>Output</b>
Sampling and analyses of ground waters have been carried out and reported	Radiometric data have been fully analyzed from a dosimetric point of view. Statistical analyses were also performed ( <b>Annex 1</b> and <b>Annex 2</b> )
Results of tests for removal of radionuclides have been published	Removal tests were performed on 5 treatment plants. Results are reported in <b>Annex 3</b>
Guidelines concerning surveillance methods, analysis methods and threshold safety levels have been published	Analytical methods have been provided ( <b>Annex 6</b> ). Criteria for surveillance (choice of analytical parameters, features of sampling requirements for representatively) are given ( <b>Annex 1 Annex 2, Annex 5</b> ). International guidelines on water safety are discussed and proposal are given ( <b>Annex 4</b> and <b>Annex 5</b> ).

Tab. 2: Activities, mandatory results and their achievement

Mandatory results	Activities	Obtained results
Concentrations of radionuclides in Estonian ground waters and related health risks are known and recorded	Reviewing of existing data and resources	Available radiometric data were collected review and interpreted ( <b>Annex 6, Annex 1 and Annex 2</b> )
	Compiling of sampling plan	Critical points of former monitoring was examined and requirements for a new monitoring plan were given, <b>Annex 1 , Annex 2, Annex 5.</b>
The most appropriate method for removal of radionuclides from water found	Analysing concentrations of radionuclides	Analyses of efficiency on existing treatment plants were performed. ( <b>Annex 3</b> )
	Finding the most appropriate method for removal of radionuclides	Methods for removal of radionuclides have been described and fully discussed. Every item useful for a proper choice (including economic ones) have been reported. ( <b>Annex 3</b> )
Guidelines concerning surveillance methods, analysis methods and threshold safety levels have been developed	Working out guidelines concerning surveillance methods and analysis methods	Useful analytical methods have been provided ( <b>Annex 6</b> ). Criteria for surveillance (choice of analytical parameters, features of sampling requirements for representatively) are given ( <b>Annex 1, Annex 2, and Annex 5</b> ).
	Working out recommendations for setting threshold levels and taking measures for minimising of health risks	Safety standards have been discussed on the basis of International Guidelines. Countermeasure for reducing risks to population have been proposed ( <b>Annex 4 and Annex 5</b> ).

## 2E - IMPACT

As a result of the project Estonian authorities have been now provided with the appropriate knowledge and tools in order to successfully face the problem of radioactivity in drinking water through different and complementary pathways.

During the project time span, efforts were made to involve all the concerned Estonian authorities in order to present the results of the ongoing activities. Several technical meetings were organized (Annex 7 and 9) involving different institutions and a full report of the outcomes was shown in the kickout meeting (Annex 9).

Furthermore aims and results of the project were presented to the Ministry of Social Affairs, in charge of establishing national regulations (private meeting, see Annex 7) and to the Conference of Estonian Society of Health Protection, at Tartu University (two presentations, Annex 7).

Since the problem of drinking waters has technical, sanitary, economic and social implication, a wide and deep involvement of different public institutions certainly was a key point for the successful outcome of the project.

Some unexpected results were also found:

- 1) The problem of water radioactivity goes beyond previously identified risk areas;
- 2) A potential higher risk related to younger population (lactants, teenagers) should be taken into account.

## **2 F - FOLLOW-UP AND SUSTAINABILITY**

The outcomes of the project will allow to Estonian authorities to:

- establish a proper regulation tailored on national situation;
- carry on a complete and representative monitoring;
- set up local scale remedial actions according to their sustainability.

The improvement of drinking water monitoring related to radionuclides presence and all corrective actions could be quickly undertaken in a gradual way according to the current economic sustainability.

Italian team proposals have been fully presented and discussed in the kickout meeting (Annex 7) and have been reported in Annexes from 1 to 5.

## **2G - CONCLUSIONS**

The results of the project should be considered satisfactory. A complete analysis of Estonian situation and all possible intervention pathways have been extensively discussed in three technical reports.

Two workshops and the participation of Italian expert to the Estonian Health Society conference helped in getting aware of the dimension of the problem and the necessity to involve every stakeholder.

The cooperative attitude of both public institutions and private enterprises (aqueducts operators) gave the possibility of having a fruitful discussion that allowed considering the problem from several point of views and taking into account different requirements.

Besides, the proper execution and organization of the project allowed the full achievement of mandatory results in the terms defined by the twinning contract. During all the stages of Project implementation, satisfactory cooperation between BC and MS work-teams has been reached ensuring the utter attainment of the Twinning Light goals.

A high commitment from short term experts as well as a valuable cooperation with qualified Estonian specialists permitted to avoid any failures in the achievement of the mandatory results.

Moreover, the twinning partnership allowed all relevant knowledge and expertise to be utilized in the most appropriate way through the whole project cycle.

## **2H – RECOMMENDATIONS**

A strict follow-up of the project is recommended to Estonian authorities in charge since the simultaneous action of public and private stakeholders is requested for a successful result.

## 21 – ANNEXES

- [ANNEX 1: ANALYSIS OF ESTONIAN DATABASE: WATER SUPPLY ZONES, AQUIFERS AND DOSE](#)
- [ANNEX 2: ANALYSIS OF ESTONIAN DATABASE: RADIOMETRIC DATA](#)
- [ANNEX 3: REMEDIAL ACTIONS](#)
- [ANNEX 4: LEGISLATIVE ASPECTS AND PRINCIPLES FOR LIMITING RADIONUCLIDES IN DRINKING WATER](#)
- [ANNEX 5: CONCLUSIONS](#)
- [ANNEX 6: GUIDELINE ON DRINKING WATER SURVEY](#)
  - [ANNEX 6.1: MEASUREMENT OF GROSS ALPHA AND BETA ACTIVITY CONCENTRATION IN DRINKING WATERS – LIQUID SCINTILLATION COUNTING METHOD](#)
  - [ANNEX 6.2: MEASUREMENT OF <sup>226</sup>RA ACTIVITY CONCENTRATION IN DRINKING WATERS – LIQUID SCINTILLATION COUNTING METHOD](#)
  - [ANNEX 6.3: CONCENTRATION OF WATER SAMPLES FOR GAMMA SPECTROMETRY ANALYSIS](#)
- [ANNEX 7: LIST OF MEETINGS WITH ESTONIAN EXPERTS](#)
- [ANNEX 8: KICK-OFF WORKSHOP PROGRAM](#)
- [ANNEX 9: KICK-OUT WORKSHOP PROGRAM AND INVITATION](#)
- [ANNEX 10: QUESTIONNAIRE N.1](#)
- [ANNEX 11: INVOLVED EXPERTS](#)
- [ANNEX 12: PRESENTATION OF ITALIAN AND ESTONIAN EXPERTS AND OTHER](#)

**Overview mandatory results achieved**

Component n.	ACTIVITY	MANDATORY RESULTS (Components)	Deadline	Delay +/- [months]	BENCHMARKS (Activities)
<b>1) Drinking water survey</b>					
	Reviewing of existing data and resources	Concentrations of radionuclides in Estonian ground waters and related health risks are known and recorded.	March 2009	0 month	The Estonian database on water radioactivity has been fully analyzed
	Set up of analytical procedures		March 2009	0 month	
<b>2) Mitigation tests of radioactivity in the drinking water</b>					
	Reviewing and investigating the methods for removal of radionuclides in scientific literature taking into account any possible experience already gained in Estonia;	The most appropriate method for removal of radionuclides from water found.	March 2009	0 month	Methods suitable for radioactivity mitigation were fully discussed and a cost/benefit analysis was performed. Results of tests for removal of radionuclides have been published;
	Selecting one or more water distribution system for the effective testing of proposed removal methods; the system to be tested should be selected on the basis of its actual representativeness of the Estonian situation, both from the point of view of the technological plants and of the water chemical and physical properties;		March 2009	0 month	
	Testing chemical and physical characteristics in the selected water samples may be needed for a proper choice of the treatment method. Water radioactivity content must be fully characterized;		July 2009	2 months	
	Assessing the effectiveness of reduction of radionuclides in the different treatment methods through the analysis of water		September 2009	2 months	

	samples at different stages of the removal process.				
<b>3) Training and informing about the products of the project</b>					
	Working group including all the Institution involved in the Project addressed to the critical evaluation of results obtained in Component 1 and Component 2.	Guidelines concerning surveillance methods, analysis methods and risk evaluation developed.	September 2009	2 months	<p>Meeting with all relevant Estonian stakeholders were organized. Outstanding results of the Twinning Project were fully presented and discussed.</p> <p>A report was drawn and the following points were thoroughly analyzed:</p> <ol style="list-style-type: none"> <li>1) evaluation of water radioactivity and doses to population.</li> <li>2) strategy for a complete and representative monitoring</li> <li>3) effectiveness of existing treatment plants and evaluation of possible new technologies in water treatment.</li> </ol> <p>Evaluation of problems rising from plant effluents.</p> <ol style="list-style-type: none"> <li>4) analysis of international regulatory system, risk assessment, proposals for new national regulations.</li> </ol>
	Drawing up guidelines concerning surveillance methods: monitoring network, sampling frequency and analysis, EU Recommendation screening parameters and total indicative dose are dealt. Moreover a proposal of the derived activity concentration values for specified radionuclides is provided. Finally in order to make water radioactivity information available on national drinking water quality monitoring system and compatible with European format, data modeling schedule for data acquisition is suggested.		September 2009	2 months	
	Drawing up guidelines concerning analytical procedures or revising the existing ones.		September 2009	2 months	
	Drawing up a report concerning a proposal of the derived activity concentration values for specified radionuclides and radioactivity mitigation methods, also on the basis of the most recent suggestion of the EU.		September 2009	2 months	

**Section 3: Expenditure**

Following the Summary and the details of expenditure.

<b>FINANCIAL REPORT</b>		<b>N. 2 and Final Report</b>									
<b>PERIOD COVERED:</b>		<b>8/12/2008 - 15/09/2009</b>									
<b>PROJECT LEADER</b>		<b>MAURIZIO FORTE</b>									
<b>COVENANT NO.</b>		<b>EE06-IB-TWP-ESC-03</b>									
<b>Section No.</b>	<b>Name of services / goods purchased or direct costs</b>	<b>SPENT 8/12/2008- 31/03/2009</b>	<b>Amount charged to contingencies 8/12/2008- 31/03/2009</b>	<b>SPENT 1/04/2009- 30/06/2009</b>	<b>Amount charged to contingencies 1/04/2009- 30/06/2009</b>	<b>SPENT 1/07/2009 - 15/09/2009</b>	<b>Amount charged to contingencies 1/07/2009 - 15/09/2009</b>	<b>Amount foreseen in original budget</b>	<b>Amount after Side Letter n. 2</b>	<b>BALANCE</b>	<b>Percentage</b>
<b>1</b>	<b>Project Co-ordination Costs</b>										
	Total Project Co-ordination/Management Costs	-	-	3.547,37	-	8.639,77	-	20.745,00	12.847,00	659,86	94,86%
<b>2</b>	<b>PROJECT ACTIVITIES</b>										
	<b>Component 1 - Drinking water survey</b>										
		14.935,97	663,97	-	-	-	-	14.634,00	14.272,00	0,00	100,00%
	<b>Component 2 - Mitigation tests of radioactivity in the drinking water</b>										
		3.679,80	111,80	13.779,50	422,76	3.704,80	136,80	17.508,00	20.658,00	165,26	99,20%
	<b>Component 3 - Training and informing about the products of the project</b>										
		-	-	-	-	20.935,65	412,93	15.815,00	20.801,00	278,28	98,66%
	<b>ORGANIZATION OF MEETING/TRAINING/WORKSHOP</b>										
		-	-	-	-	750,00	-	3.120,00	3.244,00	2.494,00	23,12%
	<b>ACTUAL COST</b>	18.615,77		17.326,87		34.030,22		71.822,00	71.822,00	1.849,14	97,43%
	<b>of which from CONTINGENCIES (2,5%)</b>		775,77		422,76		549,73	1.795,55	1.795,55	47,29	97,37%
	<b>TOTAL BUDGET</b>	18.615,77	775,77	17.326,87	422,76	34.030,22	549,73	73.617,55	73.617,55	3.644,69	95,05%

Financial Report N. 2 and Final Report  
 Period covered 8/12/2008 - 15/09/2009  
 Project Leader MAURIZIO FORTE  
 Project Number EE06-IB-TWP-ESC-03

No.	Services / goods purchased or direct costs	Date(s) of services	Supporting document/Invoice no.	Date of invoice	Breakdown and clarification	Original budget	Foreseen budget (SL 2)	SPENT 8/12/2008 - 31/03/2009	SPENT 1/04/2009 - 30/06/2009	SPENT 1/07/2009 - 15/09/2009	Balance	Amount paid in local currency (if applicable)	INFO EURO Exchange rate	Amount charged to contingencies 8/12/2008 - 31/03/2009	Amount charged to contingencies 1/04/2009-30/06/2009	Amount charged to contingencies 1/07/2009 - 15/09/2009
1	<b>Project Co-ordination Costs</b>															
	<b>PL working days in Estonia, fees Dr. Maurizio Forte - ARPA Lombardia</b>															
	Fees				9	5.250,00	3.150,00		1.050,00	2.100,00	-					
	'Project Management Costs'				9	7.875,00	4.725,00		1.575,00	3.150,00	-					
	Flights				2	2.000,00	800,00		379,37	260,77	159,86					
	Per diems				12	3.620,00	2.172,00		543,00	1.629,00	-					
	Visibility cost					500,00	500,00				500,00					
	<b>Audit Certificate</b>				1	<b>1.500,00</b>	<b>1.500,00</b>	-		<b>1.500,00</b>	-					
			Dott. Vito Maria Romaniello - Invoice n. 62/2009	30/09/2009	Audit certificate					1.500,00						
	<b>Mr. Maurizio Forte - ARPA Lombardia - MC n. 10</b>	06-09/04/2009	Mission certificate n° 10		Arrival 28/03/2009 flight n.LH 3953 - 17:30 Departure 09/04/2009 flight n.LH 3179 18:40											
	Experts fee				3*350 €				1.050,00							
	'Project Management Costs'								1.575,00							
	Flights		Ticket, boarding cards and Istar Agency statement of account n. 209 invoice n. 54	04/03/2009	Economy class ticket Milan/Tallinn/Milan 379,37 €				379,37							
	Per diems				3*181 €				543,00							

	<b>Mr. Maurizio Forte - ARPA Lombardia - MC n. 11</b>	01-10/09/2009	Mission certificate n°11		Arrival 01/09/2009 flight n.LH 3178 - 18:10 Departure 10/09/2009 flight n. LH 3179 18:40												
	Experts fee				6*350 €					2.100,00							
	'Project Management Costs'									3.150,00							
	Flights		Ticket, boarding cards Expedia receipt	21/08/2009	Economy class ticket Milan/Tallinn/ Milan 260,77 €					260,77							
	Per diems				9*181 €					1.629,00							
<b>2</b>	<b>PROJECT ACTIVITIES</b>					<b>20.745,00</b>	<b>12.847,00</b>	<b>-</b>	<b>3.547,37</b>	<b>8.639,77</b>	<b>659,86</b>						
	<b>Component 1 - Drinking water survey</b>																
	<b>n. 4 MSP experts for 12 m/d</b>																
	MSP Experts from ARPAs and CGIAM : R. Airoldi, M. Forte, R. Rusconi, F. Trotti Cat II																
	Cat I (experts 5 - 8 yrs experience and civil servants)					-	-										
	Cat. II (senior experts 8-18 yrs experience)				12	4.200,00	4.200,00	4.200,00				-				-	
	Cat III (special counsellors with > 18 years of experience)					-	-					-					
	project management costs				12	6.300,00	6.300,00	6.300,00				-					-
	air tickets				4	1.600,00	1.600,00	2.263,97				-					663,97
	per diems				12	2.534,00	2.172,00	2.172,00				-					-
	<b>Mr. Maurizio Forte - ARPA Lombardia - MC n. 1</b>	20-22/01/2009	Mission certificate n°1		Arrival 19/01/2009 flight n.LH 3953 - 17:30 Departure 22/01/2009 flight n. LH 3179 18:15												
	Experts fee				3*350 €				1.050,00								
	'Project Management Costs'								1.575,00								
	Flights		Ticket, boarding cards and Istar Agency statement of account n. 29 invoice n.	23/04/2009	Economy class ticket Milan/Tallinn/ Milan 537,47 €				537,47								137,47

			105														
Per diems					3*181 €			543,00									
<b>Ms. Rossella Rusconi - ARPAL - MC n. 2</b>	20-22/01/2009		Mission certificate n°2		Arrival 19/01/2009 flight n.LH 3953 - 17:30 Departure 22/01/2009 flight n. LH 3179 18:15			-									
Experts fee					3*350 €			1.050,00									
'Project Management Costs'								1.575,00									
Flights			Ticket, boarding cards and Istar Agency statement of account n. 29 invoice n. 105	23/04/2009	Economy class ticket Milan/Tallinn/Milan 537,47 €			537,47								137,47	
Per diems					3*181 €			543,00									
<b>Mr. Riccardo Airoidi - CGIAM - MC n. 3</b>	20-22/01/2009		Mission certificate n°3		Arrival 19/01/2009 flight n.LH 3953 - 17:30 Departure 22/01/2009 flight n. LH 3179 18:15			-									
Experts fee					3*350 €			1.050,00									
'Project Management Costs'								1.575,00									
Flights			Ticket, boarding cards and Istar Agency statement of account n. 29 invoice n. 105	23/04/2009	Economy class ticket Milan/Tallinn/Milan 537,47 €			537,47								137,47	
Per diems					3*181 €			543,00									

Mr. Flavio Trotti - ARPAV - MC n. 4														
20-22/01/2009		Mission certificate n°4		Arrival 19/01/2009 flight n.LH 3943 - 17:30 Departure 22/01/2009 flight n. LH 3948 18:15										
Experts fee					3*350 €			1.050,00						
'Project Management Costs'								1.575,00						
Flights			Ticket, boarding cards and Istar Agency statement of account n. 29 invoice n. 105	23/04/2009	Economy class ticket Verona/Tallin n/Verona 651,56 €			651,56					251,56	
Per diems					3*181 €			543,00						
<b>Component 2 - Mitigation tests of radioactivity in the drinking water</b>														
<b>n. 5 MSP experts for 18 m/d</b>														
MSP Experts from ARPAs and CGIAM : L. Minervini, R. Rusconi, F. Trotti, F. Realini Cat II, E. Caldognetto Cat I														
Cat I (experts 5 - 8 yrs experience and civil servants)					<b>3</b>	1.750,00	750,00		750,00		-			-
Cat. II (senior experts 8-18 yrs experience)					<b>15</b>	3.150,00	5.250,00	1.050,00	3.150,00	1.050,00	-		-	-
Cat III (special counsellors with > 18 years of experience)						-	-				-			
project management costs					<b>18</b>	7.350,00	9.000,00	1.575,00	5.850,00	1.575,00	-		-	-
air tickets					<b>6</b>	2.000,00	2.400,00	511,80	1.857,50	536,80	165,26		111,80	422,76
per diems					<b>18</b>	3.258,00	3.258,00	543,00	2.172,00	543,00	-		-	-

<b>Mr. Leonardo Minervini - CGIAM - MC n. 5</b>	20-22/01/2009	Mission certificate n°5		Arrival 19/01/2009 flight n.LH 457 - 21:40 Departure 22/01/2009 flight n. LH 3179 18:15												
Experts fee				3*350 €				1.050,00								
'Project Management Costs'								1.575,00								
Flights		Ticket, boarding cards and Istar Agency statement of account n. 29 invoice n. 105	23/04/2009	Economy class ticket Warsaw/Tallinn/Warsaw 511,80 €				511,80						111,80		
Per diems				3*181 €				543,00								
<b>Mr. Franco Realini - CGIAM - MC n. 6</b>	06-09/04/2009	Mission certificate n°6		Arrival 06/04/2009 flight n.LH 3953 - 17:50 Departure 09/04/2009 flight n. LH 3179 18:40												
Experts fee				3*350 €				1.050,00								
'Project Management Costs'								1.575,00								
Flights		Ticket, boarding cards and Istar Agency statement of account n. 217 invoice n. 57	05/03/2009	Economy class ticket Milan/Tallinn/Milan 317,37 €				317,37								
Per diems				3*181 €				543,00								
<b>Ms. Rossella Rusconi - ARPAL - MC n. 7</b>	06-09/04/2009	Mission certificate n°7		Arrival 06/04/2009 flight n.LH 3953 - 17:50 Departure 09/04/2009 flight n. LH 3179 18:40												
Experts fee				3*350 €				1.050,00								
'Project Management Costs'								1.575,00								
Flights		Ticket, boarding cards and Istar Agency statement of account n. 210 invoice n. 55	04/03/2009	Economy class ticket Milan/Tallinn/Milan 317,37 €				317,37								

Per diems				3*181 €				543,00							
<b>Mr. Flavio Trotti - ARPAV - MC n. 8</b>	06-09/04/2009	Mission certificate n°8		Arrival 06/04/2009 flight n.LH 3949 - 17:50 Departure 09/04/2009 flight n. LH 3179 18:40				-							
Experts fee				3*350 €				1.050,00							
'Project Management Costs'								1.575,00							
Flights		Ticket, boarding cards and Istar Agency statement of account n. 211 invoice n. 56	04/03/2009	Economy class ticket Verona/Tallin n/Verona 611,38 €				611,38						211,38	
Per diems				3*181 €				543,00							
<b>Ms. Elena Caldognetto - ARPAV - MC n. 9</b>	06-09/04/2009	Mission certificate n°9		Arrival 06/04/2009 flight n.LH 3949 - 17:50 Departure 09/04/2009 flight n. LH 3179 18:40				-							
Experts fee				3*250 €				750,00							
'Project Management Costs'								1.125,00							
Flights		Ticket, boarding cards and Istar Agency statement of account n. 211 invoice n. 56	04/03/2009	Economy class ticket Verona/Tallin n/Verona 611,38 €				611,38						211,38	
Per diems				3*181 €				543,00							
<b>Mr. Leonardo Minervini - CGIAM - MC n. 16</b>	07-10/09/2009	Mission certificate n°16		Arrival 07/09/2009 flight n.SK 8408 - 17:35 Departure 10/09/2009 flight n. SK 8411 18:10				-							
Experts fee				3*350 €					1.050,00						
'Project Management Costs'									1.575,00						

Flights		Ticket, boarding cards and Istar Agency statement of account n. 711 invoice n. 224	21/08/2009	Economy class ticket Warsaw/Tallinn/Warsaw 536,80 €					536,80						136,80
Per diems				3*181 €					543,00						
<b>Component 3 - Training and informing about the products of the project</b>															
<b>n. 6 MSP experts for 18 m/d</b>															
MSP Experts from ARPAs and CGIAM : R. Airoldi, R. Rusconi, F. Trotti, L. Minervini, F. Realini Cat II, E. Caldognetto Cat I															
Cat I (experts 5 - 8 yrs experience and civil servants)				3	750,00	750,00			750,00	-					-
Cat. II (senior experts 8-18 yrs experience)				15	3.850,00	5.250,00			5.250,00	-					-
Cat III (special counsellors with > 18 years of experience)					-	-			-	-					-
project management costs				18	6.900,00	9.000,00			9.000,00	-					-
air tickets				5	1.600,00	2.000,00			2.134,65	278,28					412,93
per diems				21	2.715,00	3.801,00			3.801,00	-					-
<b>Ms. Rossella Rusconi - ARPAL - MC n. 12</b>	01-10/09/2009	Mission certificate n° 12		Arrival 01/09/2009 flight n.LH 3178 - 18:10 Departure 10/09/2009 flight n. LH 3179 18:40											
Experts fee				6*350 €					2.100,00						
'Project Management Costs'									3.150,00						
Flights		Ticket, boarding cards Expedia receipt	21/08/2009	Economy class ticket Milan/Tallinn/Milan 260,77 €					260,77						
Per diems				9*181 €					1.629,00						

	<b>Ms. Serena Risica - ISS - MC n. 13</b>	01-15/09/2009	Mission certificate n°13		Arrival 01/09/2009 flight n 3178 - 18:10 Departure 15/09/2009 flight n. 3179 18:50										
	Experts fee				3*350 €					1.050,00					
	'Project Management Costs'									1.575,00					
	Flights		Ticket, boarding cards Expedia receipt	20/08/2009	Economy class ticket Rome/Tallinn/Rome 260,95 €					260,95					
	Per diems				3*181 €					543,00					
	<b>Mr. Flavio Trotti - ARPAV - MC n. 14</b>	07-10/09/2009	Mission certificate n°14		Arrival 07/09/2009 flight n.LH 3178 - 17:40 Departure 10/09/2009 flight n. LH 3179 18:40										
	Experts fee				3*350 €					1.050,00					
	'Project Management Costs'									1.575,00					
	Flights		Ticket, boarding cards and Istar Agency statement of account n. 708 invoice n. 220	20/08/2009	Economy class ticket Verona/Tallinn/Verona 668,69 €					668,69					268,69
	Per diems				3*181 €					543,00					
	<b>Ms. Elena Caldognetto - ARPAV - MC n. 15</b>	07-10/09/2009	Mission certificate n°15		Arrival 07/09/2009 flight n.LH 3178 - 17:40 Departure 10/09/2009 flight n. LH 3179 18:40										
	Experts fee				3*250 €					750,00					
	'Project Management Costs'									1.125,00					

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Flights		Ticket, boarding cards and Istar Agency statement of account n. 708 invoice n. 220	20/08/2009	Economy class ticket Verona/Tallinn/Verona 668,69 €. Amount charged to contingencies is over the availability so it was charged on the Project only 544,24 €					544,24						144,24
Per diems				3*181 €					543,00						
<b>Mr. Franco Realini - CGIAM - MC n. 17</b>	07-10/09/2009	Mission certificate n°17		Arrival 07/09/2009 flight n.LH 3178 - 17:40 Departure 10/09/2009 flight n. LH 3179 18:40											
Experts fee				3*350 €					1.050,00						
'Project Management Costs'									1.575,00						
Flights		Ticket, boarding cards and Istar Agency statement of account n. 722 invoice n. 226	26/08/2009	Economy class ticket Milan/Tallinn/Milan 540,77 €. Amount charged to contingencies is over the availability so it was charged on the Project the cost max budgeted for flight					400,00						
Per diems				3*181 €					543,00						
<b>ORGANIZATION OF MEETING/TRAINING/WORKSHOP</b>															
Translation and interpretation		SC PERSEO EUROPEAN CONSULTING Invoice n. 5	14/09/2009	Translation	3.000,00	3.124,00			750,00	2.374,00					
Local transport for PL and STEs (within Estonia)					120,00	120,00				120,00					
Analysis of samples										-					
Other costs (seminar facilities etc)										-					
<b>Total Project Activities</b>					<b>51.077,00</b>	<b>58.975,00</b>	<b>18.615,77</b>	<b>13.779,50</b>	<b>25.390,45</b>	<b>2.937,54</b>	<b>-</b>	<b>775,77</b>	<b>422,76</b>	<b>549,73</b>	
<b>PROJECT SUB-TOTAL</b>					<b>71.822,00</b>	<b>71.822,00</b>	<b>18.615,77</b>	<b>17.326,87</b>	<b>34.030,22</b>	<b>3.597,40</b>					
Provision for changes in prices (at maximum 2.5% of sub-total)					1.795,55	1.795,55	775,77	422,76	549,73	47,29					
<b>PROJECT TOTAL</b>					<b>73.617,55</b>	<b>73.617,55</b>	<b>18.615,77</b>	<b>17.326,87</b>	<b>34.030,22</b>	<b>3.644,69</b>					