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**Mid Term Evaluation of the EU-  
China Environmental  
Sustainability Program**

***MID TERM EVALUATION REPORT  
Final***

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## ABBREVIATIONS

<b>BGRIMM</b>	Beijing General Research Institute of Mining & Metallurgy
<b>BFS</b>	Beijing Forestry Society
<b>BJMSWCMC</b>	Beijing Municipal Solid Waste and Chemicals Management Centre
<b>CAEP</b>	Chinese Academy for Environmental Planning
<b>CDAES</b>	Chengdu Academy of Environmental Sciences
<b>CNWSA</b>	China National Water and Soil Conservation Association
<b>CSR</b>	Corporate Social Responsibility
<b>CREAS</b>	Chinese Research Academy of Environmental Sciences
<b>ERS</b>	Emergency Response System
<b>ESP</b>	EU China Environmental Sustainability Programme
<b>EPB</b>	Environmental Protection Bureau (provincial level)
<b>EIA</b>	Environmental Impact Assessment
<b>EU</b>	European Union
<b>FECO</b>	Foreign Economic Cooperation Office of the Ministry of Environmental Protection
<b>GIZ</b>	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
<b>HLJRIES</b>	Heilongjiang Research Institute of Environment Sciences
<b>IVL</b>	IVL, Swedish Environmental Research Institute
<b>IUCN</b>	International Union for the Conservation of Nature
<b>IWRM</b>	Integrated Water Resources Management
<b>LAD</b>	Lead-Acid Battery
<b>LFA</b>	Logical Framework Approach
<b>LEPB</b>	Liaoning Environmental Protection Bureau
<b>LHRPP</b>	Liaohe River Pollution Prevention, office of Liaoning province government
<b>LHRPB</b>	Liaohe Linghe Reserve Protection Bureau
<b>LAES</b>	Liaoning Academy of Environmental Sciences
<b>MEP</b>	(Chinese) Ministry of Environment Protection
<b>MOFCOM</b>	(Chinese) Ministry of Finance
<b>MTE</b>	Mid Term Evaluation
<b>MWR</b>	(Chinese) Ministry of Water Resources
<b>PIANO</b>	Policies Innovations And Networks for China Europe Water Cooperation Opportunities
<b>PSC</b>	Project Steering Committee
<b>SAC</b>	Sichuan Airport Company
<b>SLRB</b>	Songhuajiang-Liaohe River Basin
<b>TDMC</b>	Tanggu Drainage and Irrigation Management Centre, Tianjin
<b>TBNA EBP</b>	Tanggu Environmental Protection Bureau, Tianjin
<b>TBNAWB</b>	Tanggu Water Bureau, Tianjin
<b>TJAES</b>	Tianjin Academy of Environmental Sciences
<b>THU</b>	Tsinghua University
<b>Xinnan</b>	Xinnan Community, Chengdu
<b>ULAB</b>	used lead-acid battery
<b>UNIDO</b>	United Nations Industrial Development Organisation
<b>WRI</b>	Water Research Institute, LAES.
<b>Water Ten (10)</b>	Action Plan for Prevention and Control of Water Pollution
<b>WFD</b>	EU Water Framework Directive

## 0 EXECUTIVE SUMMARY

### Scope of the Project and Mid-Term Evaluation

The EU-China Environmental Sustainability Programme (ESP) supports the Chinese authorities in achieving the targets set in the 12th five year development plan in the field of improving water quality, waste management, heavy metal reduction and policy support based on the results obtained by the project. The basis of the project is to enhance exchange of experience, knowhow and best practices between the EU and China in the fields of water quality, waste management and heavy metal reduction prevention and control. The ESP is implemented through 9 projects managed by at least one EU and one Chinese non-profit organisations, institutions and/or associations. Three projects are focussing on water quality (Lot 1), two on waste management (Lot 2), three on heavy metal reduction (Lot 3) and one on policy support (Lot 4). Most projects started in 2013 and all have duration of 36 months. Only the Lot 4 project started in 2014.

The global objective of the mid-term evaluation is to assess the extent to which the project has achieved its purpose to date and verify the actual conditions for its successful completion. The specific objectives of the mid-term evaluation are:

- To assess the achievements and shortcomings of the ESP to date, with regard to relevance, design, efficiency, effectiveness, impact and sustainability of the various interventions under the projects under the different lots.
- To draw conclusions and lessons learned to be fed into the ongoing project implementation in order to improve the ESP's performance and to increase the ESP's prospects for achieving its objectives.

### Overall Conclusions (ESP)

The Mid Term Evaluation was undertaken in accordance with EU requirements to review progress to date and to recommend any revisions to the project implementation that may be needed during the remaining one-year period. The evaluation included field visits to the project sites, meetings with project beneficiaries and their partners and associates (see annex 1).

The evaluation found that the project has been given a high priority by the beneficiaries and their partners and associates, and more importantly by Chinese governments at various levels. This has created a high level of awareness about the ESP and its importance in China's sustainable development agenda. The interest in the ESP also reflects the growing concern in China about the environmental impacts of economic development.

The conclusions of this mid-term evaluation are overall positive. The project has made relatively good progress in completing the planned activities. The project implementation has been satisfactory in terms of outputs completed and project management, particularly recognizing the project design complexity and the new experience for most organizations with international projects. The exception is the lack of an effective project monitoring system, characterized by a general absence of reliable indicators of measurable results in the project design. Most of the reporting is based on completion of activities and outputs.

The summarized findings and recommendations on the ESP are as follows:

1. **Good progress** in implementation has been made. In all projects activities have been taken up in an active way and in general results have been achieved as foreseen in the work plans and project definition. Commitment is shown by the projects; this has been noticed in all the presentations and visits. European experience is generally well used.

2. All projects are very **relevant**, although there has been a rapid change of the external environment of the projects, e.g. the declining in use of fluorescent lamps following the promotion of the use of LED and energy saving lamps and the issue of Water 10. The latter has surely stressed the relevance of the projects. The project objectives are very valid, supported by actual policy developments like the Water 10 action plan and national wide hazardous waste management regulations being implemented. Activities and outputs are consistent with the defined goals and objectives. Activities are consistent with intended impacts.
3. The **effectiveness** of the projects is high. Generally results are in line with the proposed action. In some of the projects more emphasis has to be given on finalization of results and the policy impact of the results. Different opinions exist on the contents of concepts introduced by the project, e.g. integrated watershed/catchment management, integrated water resources management, whole lifecycle approach for heavy metal management, integrated pollution control, participatory management, financing mechanisms and so on and their practical application in the project areas. These concepts, approaches, mechanisms and tools and the extent to which they can be used by the Chinese agencies need to be further defined, discussed and assessed for potential dissemination and replication in the final year of the project. The final year of the ESP will be very important. The results of the 8 projects under Lot 1-3 are to be synthesized under the Lot 4 project. It is necessary to provide more technical support and steering to the implementation of the final year work plan of the projects under Lot 1-3.
4. **Efficiency** of the projects looks sound, in general in a cost effective way activities are taken up. Spending is in line with physical progress. For most of the projects it is a new experience to run projects according to EU management procedures. This has led to minor delays. But proper use of EU tools could have helped the projects, e.g. the use of the logical framework as a management tool is not practiced. In these aspects some guidance from EUD site could have helped, e.g. in the use of use of logical frameworks, feedback on proposals, feedback on quarterly reports, etc. For two projects there is a need for project extension, reasons being a complex institutional set up and changes in staff.
5. The potential **impact** of the ESP is high on local and national policy level. The Project Document set high expectations of providing support to the Chinese authorities in their efforts of achieving environmental sustainability by reducing water and heavy metal pollution and implementing sustainable waste policies by the end of the project. The progress toward this result has been moderate and a large part still has to be achieved in the final year of the program. So this surely requires attention of all project partners, especially those involved in Lot 4. This assessment reflects the need now to concentrate on further developing policy recommendations and key project knowledge products, and demonstrating effective replication of the project results elsewhere in China. Additional work has to be done to interpret project results so as to increase policy impacts at local level and national level. This requires extra attention of all 9 projects in the final year. Additional work is required on case studies and other technical reports to make the results easier accessible for policy development. Extra coordination and effort on this aspect is required from FECO (Lot 4 project) in the important final year (2016).
6. With regard to the **sustainability**, the sustainability of the ESP is high. In general the activities of the projects are in line with top priorities of the project partners and governments at various levels. However more work is needed for institutionalizing project results in the system. The evidence so far suggests that the increased awareness and capacity of governments, private sector and the public toward environment sustainability in the face of rapid economic development pressures will sustain interest and support for the project objectives. The critical issue of institutional uptake and operationalising the project concepts and tools will affect the sustainability after project completion in 2016.



7. The final year of the ESP will be very important. The project should focus on four priorities during the remaining one-year project period:
  - a) Further strengthening implementation of Lot 4 so that Lot 4 and participating agencies in Lot 4 are able to effectively utilize and synthesize the project outputs: (1) Developing and implementing a final year dissemination and replication plan of the project models at a national level; (2) Initiating more technical interactions with projects under Lot 1-3 for the benefits of getting better understanding to the projects and provide technical supports to implementation and consolidation of the project results; (3) provide guidance for project 1-3 results consolidation before the flagship policy synthesis report development is underway; (4) provide more technical support to the implementation of the final year work plan of the projects under Lot 1-3.
  - b) A logical framework review work plan should be prepared and implemented for the remainder of the project with an emphasis on clearly defined outcomes that are to be achieved by 2016 to reflect the changed external environment and emerging demands associated with the latest development of prospective sectors. It is expected that Lot 4 will take lead in reviewing and revising the logical frameworks of the projects under Lot 1-3 and Lot 4.
  - c) Consolidating the project concepts, approaches, mechanisms, tools, guidelines, policy recommendations and other key knowledge products introduced and developed by the project, e.g. integrated watershed/catchment management, integrated water resources management, whole lifecycle approach for heavy metal management, integrated pollution control, participatory management, financing mechanisms and so on that are to be disseminated and promoted for replication. Lot 4 should play a key role on this aspect.
  - d) In relation to inter-programme experiences sharing and EU China Exchange, it is recommended that 1) EU and leading partners of ESP find a way that is institutionally and financially practical to make wise use of experiences and knowledge cultivated from the completed EU funded projects in China in the process of consolidation of the project concepts, approaches, mechanisms, tools, guidelines, policy recommendations and other key knowledge products, e.g. EU China Environment Governance Programme, the EU-China River Basin Management Programme, and so on. 2) EU and its counterparts in China to explore opportunities and possibilities of developing policy recommendations to the EU and China for improved sales supervision of used ships from EU member states and China, environment safeguard requirements and standards, and so on.

### **Findings and Recommendations Lot 1 (Water) Projects**

1. All 3 water projects have been fortunate with the publication of the Action plan for Prevention and Control of Water Pollution (the so called water 10 action plan) in April 2015. All results are *relevant* to the concrete plans that will be worked out in the coming years to reach the goals of this Action Plan. The advice is to focus in the final stage of the projects on preparing good technical reports to make results available to a large as possible audience.
2. Concerning reporting it is advised to work closely with FECO (under Lot 4), since the reports are the basis for the preparation of the policy reports and recommendations under LOT 4. Under Lot 4 the results of the different project will be synthesized into concluding policy recommendations. In this way FECO can easier “collect” information from these projects.
3. Not all logical frameworks include useful indicators for measuring impact or progress. In none of the projects (or in a limited way) the Logical Framework was used for monitoring purposes, It is recommended to review the Logical Frameworks, that at least they will be a useful tool to be used

during the final evaluation of the project. Coordination of the Logical Framework improvement process could be taken up under the guidance of FECO (Lot 4).

4. For the *Tianjin Binhai New Area (TBNA)* the advice is to focus on reporting in the remaining period. It is of great importance that the results and lessons learned are made available through well prepared technical reports. The project can be seen as a show case for coastal areas with water shortage and water quality problems. There is no need to extend the project.
5. For the *Songhuajiang –Liaohhe River Basin Project* it is recommended to give more attention to achieve a wider policy impact especially towards the provincial Environmental Protection Bureau, Water Bureau and the River Basin Authorities. It is recommended to extend the project period with 6 month (within the budget of the project). The research as carried by the project gives a good basis to build further on towards more practical Programs of Measures, based on setting goals for the different water bodies. Achieving this would be very useful for the provincial bureaus and river basis authority (and maybe other relevant agencies), it is a basis for implementing measures and really improving water quality.
6. For the *Mega-cities and their watersheds project* it became clear that extra time is needed to finalize and close down the activities under result 2 (mega city partnership), also for some activities under activity 1 (Miyun and Jiaquan watersheds) extra time is needed. It is recommended to extend the project period with 6 month (within the budget of the project). Also in this project a focus on reporting on results and lessons learned is very necessary and relevant. Given the complex institutional arrangements and the position of IUCN as an NGO it is advised to phase out activities under activity 2 and to focus on lessons learned so far. Also an advice on how to proceed on this activity has to be formulated.

#### **Findings and Recommendations Lot 2 (Waste Management) Projects**

1. Both projects have made good progress in completing the planned activities. Project staff and subcontracting partners and stakeholders have diligently and enthusiastically fulfilled their duties. As a result, the projects have generated considerable interest in and support for sustainable solid waste management in the project areas and in China. The project remains relevant, timely and important to goals of sustainable solid waste management at national and local levels. The last year of the project implementation in 2016 will be crucial for magnifying the project impacts and there are some concerns about sustaining the commitment and momentum in the final phase.
2. The concepts, approaches, methods, mechanisms, guidelines, toolkits and other knowledge products of the two projects have been successfully introduced, and contributed to improvement of solid waste management capacity in prospective areas covered by Lot 2. But replication and the practical application of the project results require further support. The target audiences still have limited capacity to implement solid waste management as envisioned in the project design. The project objectives also needs to be better defined in the remaining project period in terms of end-results that will be achieved, e.g. further consolidation of the key project knowledge products.
3. Specific on the *China Fluorescent Lamps Collection and Treatment Demonstration Project (CFL)*, it is recommended to further review logframe, initiating additional deeper research work on case studies, development of toolkits, toolboxes for sound arrangement for WFLs collection at community level (small cities and rural communities), based on demonstration experiences. Improve further coordination of research reports with a focus on producing thematic analysis report on key issues for policy recommendations and for Lot 4 initiatives. And further fine-tune the package for replication in mega cities, small cities and rural communities, including a simple one-page toolkit that illustrates procedures and requirements for effective collection and storage.

4. Concerning the *Sustainable Ship Recycling by Adopting Integrated Waste Management Approaches in China*, it is recommended to further review logframe, initiate additional deeper research work on policy influencing, based on outstanding results of the current researches and change of the ship recycling market, further coordinate research reports with a focus on creating policy impacts, e.g. possibility of issuing Environment Safeguards Standards (MEP), a guideline documents for Association of Ship Recycling Industry in China as an internal guidelines; further synergizing technical and research reports produced by the project, and initiate exchange and dialogues with policy institutes for policy influencing and for effective implementation of analytical initiatives under Lot 4; and exploring opportunities and possibilities of developing policy recommendations to EU for improved sales supervision of used ships, environment requirements and standards.

### **Findings and Recommendations Lot 3 (Heavy Metal Pollution Prevention and Reduction) Projects**

1. All three projects are related to the current heavy metal pollution prevention and reduction policy as laid down in the 12<sup>th</sup> 5-Year Plan and hence related to each other. This should be taken into account and sharing of each other findings, progress and innovations could be worthwhile and result in win-win-win situation.
2. Based on findings in this MTE and reportedly the “policy making project” and the “LAB project” are on schedule, activity and budget wise, while for the “METALert” project a budget amendment was proposed on Nov 17, 2015. This amendment was justified in a request letter and the narrative Yr 2 report.
3. The projects were audited against the Scope of Work as described in the Addendum 1 and the Logical Framework. Some targets for some projects in the Logical Framework are outdated, for instance the number of target companies in the “LAB project” cannot be used anymore, since in the pilot area the total number of LAB factories decreased dramatically. In these cases, a reasonable approach was taken.
4. Regarding the “Prevention and control of heavy metal pollution in lead-acid battery sector in China” project, the following recommendations are made:
  - Engage more and include more LAB assembling factories in other areas than Changxing county, where practices are poorer and more progress can be made. Focus on all environmental issues and implement measures to improve them.
  - Include the production of lead plates, preferably in Zhejiang or Jiangsu province but if not present there also in other provinces.
  - Include and assess the used LAB collecting and recycling factories.
5. Regarding the “Emergency response system for heavy metal pollution (METALert)” project, the following recommendations are made:
  - Continue to improve the software among others the multiple sources module.
  - METALert users should collect sufficient baseline and monitoring data regarding contamination and other relevant data such as hydro-geology, to allow use of local data instead of general “world data”.
  - Further implement the module for soil simulations.
  - Work towards the situation that usage and further implementation of METALert in the pilot areas are secured after the project lifetime.
6. Regarding the “Support on the Development of National Strategy for the Control of Heavy Metal Emissions and its Demonstration in Key Polluted Areas” project, the following recommendations are made:

- Make sure that all relevant actions are finished in alignment with the heavy metal pollution prevention and reduction NAP that will become part of the 13th 5-year plan.
- Pay attention to the sharing of take-aways from studies, conferences and experiences not only to the inner circle of partners and associates to the project but also general public stakeholders.
- Update properly the EUD about progress made and status of the tasks of the project.

#### **Findings and Recommendations Lot 4 (Policy support) Project**

1. The need for Lot 4 to provide more technical support to the implementation of the final year work plan of projects under Lot 1-3. Some projects have requested extension of the project period, so good coordination with all projects is needed to be sure to collect the required information from the projects in an efficient way. The different projects have to know when what kind of information (e.g. on certain subjects) should be made available. This is a requirement for the final year work plan for the different projects.
2. Guarantee that Lot 4 and its experts have enough efficient technical interactions with projects under Lot 1-3 for the benefits of getting better understanding of the projects as a basis for synthesizing/consolidation of project results'
3. The need for Lot 4 to provide guidance and guidelines for project results consolidation before the flagship policy synthesis report development is underway. This remark is in line with the previous remark. This can mean that just after the spring festival FECO will prepare a first list of policy subjects to be taken up in the coming year (for water, waste and heavy metal). By indicating priorities the synthesizing process can be structured.
4. The need for Lot 4 to play a leading role in reviewing and revising the log frames of the projects under Lot 1-3; to provide technical steering to reviewing and revision of log frame of the projects under Lot 1-3, as well as overall log frame of the ESP.
5. Further strengthening implementation of Lot 4 so that Lot 4 and participating agencies in Lot 4 are able to effectively utilize the project outputs: (1) ESP to engage selected experts in thematic areas, e.g. experts in the area of policy influencing, public participation, strategy development, capacity building, and public policy and governance experts as a supplementary arrangement to support development of policy recommendations; (2) Developing and implementing a final year dissemination and replication plan of the project models at a national level; (3) Initiating more technical interactions with projects under Lot 1-3 for the benefits of getting better understanding to the projects and provide technical supports to implementation and consolidation of the project results; (4) provide guidance and guidelines for project 1-3 results consolidation before the flagship policy synthesis report development is underway. The results of the 8 projects under Lot 1-3 are to be synthesized under the Lot 4 project. It is necessary to provide more technical support to the implementation of the final year work plan of the projects under Lot 1-3.

## 1 INTRODUCTION TO THE ESP AND THE MID-TERM EVALUATION

### 1.1 General

The EU-China Environmental Sustainability Programme (ESP) supports the Chinese authorities in achieving the targets set in the 12th five year development plan in the field of improving water quality, waste management, heavy metal reduction and policy support based on the results obtained by the project. The basis of the project is to enhance exchange of experience, knowhow and best practices between the EU and China in the fields of water quality, waste management and heavy metal reduction prevention and control. The ESP is implemented through 9 projects managed by at least one EU and one Chinese non-profit organisations, institutions and/or associations. Three projects are focussing on water quality (Lot 1), two on waste management (Lot 2), and three on heavy metal reduction (Lot 3) and one on policy support (Lot 4). Most projects started in 2013 and all have a duration of 36 months. Only the Lot 4 project started in 2014.

**The specific objective** is to support the Chinese authorities in their efforts of achieving environmental sustainability by reducing water and heavy metal pollution and implementing sustainable waste policies.

The **expected results** of the programme are:

1. The improvement of the surface water, groundwater and drinking water quality in pilot areas through reduction of pollution discharge.
2. Improvement of waste management in pilot areas through integrated sustainable waste management approach to achieve more waste reduction, reuse, recycling, and recovery, thus minimizing the amount of waste to be disposed.
3. Heavy metal pollution is reduced through support to national and local policy and institutional capacity and pilots on policy implementation at local level.
4. An appropriate policy support and networking mechanism to synthesize results from lot 1, 2 and 3 for policy support, networking and dissemination.

Details of the 9 ESP projects are given in the table below.

Lot	Title Project	Overall Objective	Beneficiary
1	Better water ecological environment in Tianjin Binhai New Area (TBNA) with less pollution discharge to the rivers and Bohai Sea	The action aims to establish new water environmental management model for coastal city in Hai River Basin using engineering, ecological, management and policy measures.	Tianjin Academy of Environmental Sciences
1	Demonstration of Pollution Discharge Management for Water Quality Improvement in the Songhuajiang-Liaohe River Basin	To develop and demonstrate management tools and practices for pollution reduction in SLRB, and support water quality improvement in the demonstration areas to realize the goal of water pollution control in SLRB designated in the "12th Five-Year Plan" of China.	Chinese Research Academy of Environmental Sciences (CRAES)
1	Mega-cities and their Watersheds: Nature-based Solutions for Sustainable Drinking Water Sources	To secure long-term drinking water supply for 30 Chinese mega-cities through upstream water source protection, as a blueprint for current and future development options for China's urban growth.	IUCN Regional Office for Europe AISBL
2	Sustainable Ship Recycling by Adopting Integrated Waste Management Approaches in China	To improve the sustainability of ship recycling in China	University of Natural Resources and Life Sciences, Vienna (BOKU)
2	China Fluorescent Lamps collection and treatment demonstration project (Project CFL)	To contribute to sustainable solid waste management and heavy metal pollution prevention and control in China.	Tsinghua University

3	Prevention and Control of Heavy Metal Pollution in the Lead-Acid Battery Sector in China	To contribute to environmental sustainability through heavy metal pollution prevention and control in China.	Zhejiang University
3	Emergency response system for heavy metal pollution (METALert)	To implement a generic Emergency Response System (ERS) for accidental pollution incidents caused by key heavy metal related industries in China and thus to support China in achieving its environmental targets.	Vlaamse Instelling voor Technologisch Onderzoek N.V. (VITO) (Flemish Institute for Technological Research)
3	Support on the Development of National Strategy for the Control of Heavy Metal Emissions and its Demonstration in Key Polluted Areas	Perfecting the national and regional policy framework of heavy metal pollutant emission control of China (hereinafter referred to as policy framework) and effectively reducing heavy metal pollution so as to protect human health and environmental safety and improve sustainable development.	Chinese Academy for Environmental Planning
4	EU-China Environmental Sustainability Programme Policy Support and Networking Mechanism	The Chinese authorities are better able to achieve environmental sustainability by reducing water and heavy metal pollution and implementing sustainable waste policies.	Foreign Economic Cooperation Office (FECO), Ministry of Environmental Protection (MEP)

## 1.2 Purpose of the Mid-term Evaluation

The global objective of the mid-term evaluation is to assess the extent to which the project has achieved its purpose to date and verify the actual conditions for its successful completion.

The specific objectives are:

- To assess the achievements and shortcomings of the ESP to date, with regard to relevance, design, efficiency, effectiveness, impact and sustainability of the various interventions under the projects under the different lots.
- To draw conclusions and lessons learned to be fed into the ongoing project implementation in order to improve the ESP's performance and to increase the ESP's prospects for achieving its objectives.

## 1.3 Evaluation criteria

The mid-term evaluation has addressed the classic evaluation criteria Relevance, Efficiency, Effectiveness, Impact and Sustainability.

### EVALUATION CRITERIA

**Relevance:** *to what extent the projects is suited to the priorities and policies of the main stakeholders.*

**Effectiveness:** *To what extent the project is attaining its intended objectives in relation either to the expected results/outcomes, to what extent each project will leverage those results for wider policy impact.*

**Efficiency:** *To what extent the project is using the least costly resources possible in order to achieve the desired results.*

**Impact:** *Assess the positive and negative changes produced by the project so far, directly or indirectly, intended or unintended.*

**Sustainability:** *Measure whether the benefits of the project are likely to continue after the implementation period*

## 1.4 Methodology and time frame of the evaluation

The Mission visited China from January 7 to January 16 2016, after which the Mission had some days allocated for reporting from their home bases. Before the Mission the team members used two days to prepare themselves: setting up of work programme/ travelling plan and reading documents. During the mission all projects were visited at at least one of their field activities. The mission had two meetings at

the EU delegation; during the last meeting at 15 January the preliminary results were presented and discussed. Further details are given in appendix 1.

During the mission the individual projects were assessed using the following semi structured interview set up, as illustrated in the table below.

<b>Criteria</b>	<b>Specification/ Questions</b>
<b>Relevance</b>	<i>To what extend the projects is suited to the priorities and policies of the main stakeholders.</i>
	To what extend are the objectives still valid?
	Are the activities/outputs consistent with the overall goal and specific objectives?
	Are the activities/outputs consistent with the intended impacts and effects? Are these effects to be reached?
<b>Effectiveness</b>	<i>To what extend the project is attaining its intended objectives in relation either to the expected results/ outcomes, to what extend each project will leverage those results for wider policy impact.</i>
	What has been achieved (results/ outcomes, impacts) so far compared to what is stated in the proposed action?
	To what extend results and consequently objectives are likely to be achieved?
	What are the major factors influencing the (non) achievements of results and objectives?
	To what extend the results/outputs achieved can contribute to policy setting at either local or national level? Are the results taken up at local/national policy level? How?
<b>Efficiency</b>	<i>To what extend the project is using the least costly resources possible in order to achieve the desired results. Alternative approaches to achieving the same outputs have to be considered to see whether the most efficient process has been adopted.</i>
	Have activities been cost-efficient? How much is spent? In line with results? (% spent, % results?)
	Are objectives in track to be achieved on time?
	Is the project being implemented in the most efficient way compared to alternatives?
<b>Impact</b>	<i>Assess the positive and negative changes produced by the project so far, directly or indirectly, intended or unintended. This will involve the main impacts and effects resulting from the activity on both China and the EU (different partners/ institutions, donors) and must also include the positive and negative impacts of external factor, such as changes in terms of legal, institutional and financial conditions).</i>
	What is happening as a result of the implementations of the project?
	What real difference is the activity contributing to make to the beneficiaries?
	How many people are being affected?
	Is the project approach evolving accordingly? How the grant projects will leverage the results for wider policy impact? (so what is the influence, wider impact (more then policy??))
<b>Sustainability</b>	<i>Measure whether the benefits of the project are likely to continue after the implementation period?</i>
	To what extend are the project benefits likely to continue after EU funding ceases?
	What are major factors influencing the achievement or non-achievement of potential sustainability of the project?

## 1.5 Grading of evaluation criteria

In this report the following grading/ scoring for the different evaluation criteria is used:

- A = very good
- B = good
- C = problems
- D = serious deficiencies

Remark: A score of “C” or “D” implies that there are issues that require attention and corrective measures. This can also be issues beyond the authority of the project partners, it may be procedures, funding, etc..

## **1.6 Set up of this report**

In chapter 2, 3 and 4 the findings, progress and recommendations are discussed for each of the projects under the 3 lots. All projects will be evaluated based on the discussed evaluation criteria. Mitigation activities are defined. Recommendations will be given at Lot level and at project level. Finally in chapter 6 overall conclusions on ESP level and project level will be drawn.



## 2 LOT 1: FINDINGS, PROGRESS AND RECOMMENDATIONS

### 2.1 Introduction

The **expected results** of the Lot 1 projects are the improvement of the surface water, groundwater and drinking water quality in pilot areas through reduction of pollution discharge.

Details of the 3 projects are given in the table below:

<b>Project 1</b>	<b><i>Better water ecological environment in Tianjin Binhai New Area (TBNA) with less pollution discharge to the rivers and Bohai Sea</i></b>
<b>Overall Objective</b>	The action aims to establish new water environmental management model for coastal city in Hai River Basin using engineering, ecological, management and policy measures.
<b>Specific Objective</b>	<ul style="list-style-type: none"> <li>• To reduce pollution load and persist toxic substance in the rivers and to Bohai Sea through implementation of abatement measures based on systematic investigation;</li> <li>• To increase use of the reclaimed water from river water treatment plant for ecological, social (living) and industrial sectors;</li> <li>• To establish the 'reservoirs-wetlands-rivers' water cycling network and restore regional water ecology in TBNA by enhancing natural ecological purification capacity;</li> <li>• To evaluate health and risk of the waters and build an integrated water environmental management capacity through decision-making support system and relevant policy-making.</li> </ul>
<b>Region</b>	China: Tianjin, Binhai New Area
<b>Beneficiary</b>	Tianjin Academy of Environmental Sciences
<b>EC Contribution (€)</b>	988,962.00
<b>EC Contribution</b>	74.79%
<b>Total EUR</b>	1,322,240.00
<b>Implementation period</b>	36 months: 01/08/2013-31/07/2016
<b>Partners</b>	1. IVL Swedish Environmental Research Institute; Stockholm, Sweden 2. National Engineering Research Centre; Hexi District, Tianjin, China
<b>Project 2</b>	<b><i>Demonstration of Pollution Discharge Management for Water Quality Improvement in the Songhuajiang-Liaohe River Basin</i></b>
<b>Overall Objective</b>	To develop and demonstrate management tools and practices for pollution reduction in SLRB, and support water quality improvement in the demonstration areas to realize the goal of water pollution control in SLRB designated in the "12th Five-Year Plan" of China.
<b>Specific Objective</b>	<ol style="list-style-type: none"> <li>(1) To support sustained pollution reduction, optimize allocation of pollution load, and improve wastewater discharge management systems based on ecological function zoning in the demonstration areas.</li> <li>(2) To develop methodology for river health assessment, and water ecological restoration and management systems so as to promote water quality improvement in the demonstration areas.</li> <li>(3) To identify key risk sources and priority persistent organic pollutants in the demonstration areas, and develop a risk prevention management system for typical drinking water sources.</li> </ol>
<b>Region</b>	China: Liaoning Province and Heilongjiang Province
<b>Beneficiary</b>	Chinese Research Academy of Environmental Sciences (CRAES)
<b>EC Contribution (€)</b>	938,245.67
<b>EC Contribution</b>	62.75%
<b>Total EUR</b>	1,495,212.22
<b>Implementation period</b>	36 months: 01/09/2013 - 31/08/2016
<b>Partners</b>	1. Liaoning Academy of Environmental Sciences; Add.: No.3 Lane 88, Taishan Road, Huanggu District, Shenyang City 2. Helmholtz – Zentrum für Umweltforschung GmbH - UFZ; Germany 3. Heilongjiang Provincial Research Institute of Environmental Science (HRIES), Harbin, P.R.CHINA 4. The Natural Environment Research Council (NERC); United Kingdom
<b>Project 3</b>	<b><i>Mega-cities and their Watersheds: Nature-based Solutions for Sustainable Drinking Water Sources</i></b>
<b>Overall Objective</b>	To secure long-term drinking water supply for 30 Chinese mega-cities through upstream water source protection, as a blueprint for current and future development options for China's urban growth.

<b>Specific Objective</b>	By 2016, to improve drinking water quality through ecological restoration and protection of upstream drinking water sources in Miyun and Jiaquan Watersheds, and expansion to other 5-10 Chinese mega-cities.
<b>Region</b>	China: Beijing, Hebei, and Guangdong
<b>Beneficiary</b>	IUCN Regional Office for Europe AISBL
<b>EC Contribution (€)</b>	738,300.00
<b>EC Contribution</b>	75.67%
<b>Total EUR</b>	975,626.00
<b>Implementation period</b>	36 months: 20/07/2013-19/07/2016
<b>Partners</b>	1. Chinese Research Academy of Environmental Sciences, Beijing, China 2. China Institute of Water Resources and Hydropower research 3. Beijing Forestry Society Shen, Qianqian; XICHENG DISTRICT, BEIJING

There is interaction among these 3 projects, mainly through Lot 4 which organises regular meetings. Next to that there is some bilateral exchange, e.g. through CREAS which is involved in 2 of the 3 projects.

For all projects it took some time to get used to the EU management and reporting requirements. This has caused some delays. Projects have still question as to how the EU delegation wil deal with certain issues (e.g. the use of contingencies). During the mission questions were raised how to change a logframe without changing the contract! Also in which way the Logical Framework can be used during project implementation is new and there is a need for improvement. This has to be taken up before the final evaluation of the ESP.

## 2.2 Findings and Progress

### 2.2.1 Project 1: Tianjin Binhai New Area

#### General Information

The project is working towards its objectives through 5 activities:

1. Investigation and assessment of the varieties in water quality and pollution load and risk of water bodies.
2. Technological assistance and implementation of river water treatment plant for multipurpose re-use of reclaimed water
3. Technological assistance and implementation of ecological purification and restoration of natural wetlands and urban landscape rivers.
4. Establishment the action plan of water quality improvement and pollution load reduction
5. Analysis of current policy and putting forward policy towards pollution source control

For each of the activities deliverables have been defined. Good progress has been made, almost all activities are in its final stage but none of the activities has really been completed. Reports are in draft / concept stage.

The project has a strong linkage with the Environmental Protection Bureau, Provincial Water Bureau and the Irrigation and Drainage Research Centre. Results of the project have been used by these agencies. Already in the proposal stage these bureaus were involved.

The project is using the philosophy that the research work has to be systematic, scientific, advanced and practical. The practical setting at the Tianjin level with close cooperation with the direct beneficiaries (e.g. the Environmental Protection Bureau and the Water Bureau) gives a good basis to work according this philosophy. However some of the research activities might have gone into too much detail (e.g. the basic water technology research): through literature research in a more efficient way conclusions could have been drawn.

Practical research work has been done which is a.o. translated into an action plan for water quality improvement and pollution load reduction. In December 2015 the Tianjin Action Plan to improve water quality (based on the national "Action Plan for Prevention and Control of Water Pollution", April 2015) was approved. Results of this project have been included.

In fact the results of this project could be a show case for other coastal towns and areas with water quality problems and water shortage.

Till now 70% of the EU grant has been disbursed by the EU Delegation. Because of provincial procedures/ policies the time used for meetings has been limited, this will most probably lead to an under spending on the post "conferences and seminars" (till now only 7% of this post has been used).

### **Relevance**

The project is in line with European and Chinese water policies. From the Chinese side the in April 2015 introduced "Action Plan for Prevention and Control of Water Pollution" (the so called Water Ten) is very relevant. Also results from the EU-China River Basin Management programme were used. The Tianjin Academy of Environmental Sciences is already working together with the Swedish partner IVL Swedish Environmental Research Institute since 1986. Results from this project have been used to formulate the Tianjin Action Plan to improve water quality. Study trips were made to Europe and good use has been made of European policies and technologies (e.g. EU monitoring technologies and ecological risk models, the EU Water Framework Directive (e.g. ecological restoration)). Recommendations were formulated based on the study of the situation in Europe for instance on permit systems and cooperation in IWRM. Activities are consistent with the overall goal and specific objectives, some of the activities have been changed from the original proposal, but the Logical Framework was not changed. The activities and outputs are consistent with the intended impacts and effects.

### **Effectiveness**

The achieved results/ outcomes and impacts so far compared are lagging behind the proposed action. Activities are taken up but almost none of them are really finalized. Some activities (like the GIS based water management system) are in a very early stage of development. Results are likely to be achieved, but that requires a very strong focus on reporting from now.

Further it is not clear whether the stated water quality improvement according to the logical framework can be achieved. Still samples have to be taken in 2016 and analyzed. It is recommended to review these very precise/detailed indicators as used in the Logical Framework. Also the extent in which the results/outputs achieved can contribute to policy setting at either local or national level has to be worked out. As stated before, this project can be an example for coastal areas with water shortage and water quality problems. But this has to be worked out.

### **Efficiency**

Activities have been implemented in a cost-efficient manner, the project is managed efficiently. Some activities could have been taken up in a more effective way, but for a research oriented project implementation is done in an efficient way. The close collaboration with the Environmental Protection and Water Bureaus has also focussed the activities.

Spending is in line with the achievements. Objectives are likely to be achieved in time, but, as stated before, in the last 6 months there has to be strong focus on reporting. Help could be sought from Lot 4 (FECO) concerning this subject. In this there is also an advantage for FECO, through supporting the reporting process FECO has a chance to learn and pick up the relevant policy issues needed for LOT 4.

### **Impact**

The results of the projects are used by the provincial Environmental Protection and Water Bureaus. The project has provided the bureaus with very practical research results, ready for implementation. To have

an impact on a national scale results have to be made available. In this way FECO (Lot 4) can take up the results and use them to synthesize the results of the projects.

### Sustainability

It can be expected that the projects activities will be continued after the EU funding ceases. These activities belong to the core activities of the Tianjin Academy of Environmental Sciences. Also there will be a strong demand from the provincial Environmental Protection and Water Bureaus. The Action Plan for Prevention and Control of Water Pollution will also guarantee continuation of similar activities. As funding options Chinese funding and international funding (e.g. in cooperation with IVL Swedish Environmental Research Institute) are mentioned.

The results are summarized in the table below:

Criteria	Score	Reasoning	Mitigation
Relevance	A	<ul style="list-style-type: none"> <li>Objectives very valid (water 10)</li> <li>activities/outputs consistent with goals/objectives</li> <li>Activities consistent with intended impacts</li> </ul>	
Effectiveness	C	<ul style="list-style-type: none"> <li>Most reporting is not yet finalized</li> <li>Results will be achieved</li> <li>Outputs have contributed to local policy setting</li> </ul>	Focus on report writing, ask help from Lot 4 (in this way lot 4 can also easier synthesize information from this project)
efficiency	B	<ul style="list-style-type: none"> <li>Activities in track with proposed time, effort is needed to finalize</li> <li>Cost efficient</li> </ul>	
Impact	A	<ul style="list-style-type: none"> <li>Results are being used by the Provincial Bureaus</li> </ul>	
sustainability	A	<ul style="list-style-type: none"> <li>They will continue with these kind of projects, they are actively seeking new funding options</li> </ul>	

### 2.2.2 Project 2: Songhuajiang –Liaohe River Basin

#### General information

The project is working towards achieving its objectives through 5 work packages:

- WP1. Management methods and demonstration on pollution load of SLRB;
- WP2. River health assessment, ecological restoration and management systems;
- WP3. Management technology and strategy for environmental risk sources and persistent organic pollutants (POPs) in Liaohe River Basin;
- WP4. Sensitive groundwater sources identification and risk reduction management in SLRB; and
- WP5. Project management and dissemination.

Deliverables are defined for each of the work packages. There are seven main results expected :

1. A pollution discharge permit scheme will be developed and applied to the demonstration areas;
2. A number of management tools, including ecological function zoning map, river health assessment report cards, etc.;

3. Two sets of ecological rehabilitation and post-evaluation systems;
4. Risk source identification tool and management method;
5. Source inventory of water environmental risk;
6. A list of priority persistent organic pollutants;
7. Groundwater pollution prevention and control scheme.

As the final Beneficiaries are foreseen:

- Ministry of Environmental Protection (MEP), China;
- Ministry of Water Resources (MWR), China;
- EU DG Cooperation and Development;
- The Liaoning and the Heilongjiang Provincial Governments;
- EU Environmental Enterprises;
- The general public in SLRB.

Good progress has been made; the research has been taken up in a very professional way by committed researchers. Good use is made of European experiences (e.g. the Water Framework Directive). CREAS leads the project and maintains a good relation with the provincial research institutes (Heilongjiang Provincial Research Institute of Environmental Science (HRIES) and the Liaoning Academy of Environmental Sciences (LAES)). A number of technical reports are written by combined teams of Chinese and European scientists.

Some remarks on these reports are given in the table below:

**Some remarks on deliverables/ reports**

Before the mission took place a number of reports was made available to the mid-term evaluation team. Some comments are given on its contents.

***Aquatic Eco-function Zoning Map (deliverable D1.1)***

A four level aquatic function management system was developed and applied in the Liaohe river basin based on international experiences and an analysis of the Liaohe river basin. The reports ends with indicating in which way at these 4 levels the water quality can be improved. In fact this is a very interesting starting point to start involving the provincial bureaus and the river basin authority to start working towards action plans (or Plans of Measures as they are called under the Water Framework Directive). So a very sound basis is developed to build up towards real improvements of the water ecology and water quality. The impact of this report can be further worked out by the discussing the results and potential impacts with the relevant agencies.

***A list of priority persistent organic pollutants (deliverable D3.3).***

Also a good technical report, giving detailed information on the pollution levels of pops and heavy metals in the Liaohe river basin. This information provides a good basis for developing an efficient strategy towards control and reduction of these pollutants. It is not clear in which way this follow up action will be taken up. An introduction of the results and further discussion with the Provincial EPB's, Water bureaus are River Basin Authority seems to be a logic next step.

***Risk Source identification tool method (deliverable 3.1)***

The developed methodology includes contents, procedures and methods for the identification and classification for environmental risk sources. It is however not clear whether this tool/manual is really introduced to enterprises and whether enterprises have taken it up. It would be good to introduce this tool further the enterprises and explore in which way it can be used by these enterprises.

***Management for Water Quality Improvement in the Songhuajiang-Liaohe river basin. (deliverable 4.1)***

In this report European experiences with groundwater source risk assessment are applied in two pilot areas. The results were used to develop a guideline for groundwater protection in the SLRB. It is advisable to further introduce these guidelines to the relevant agencies and see in which way this guideline can be used in a practical way by the agencies responsible for groundwater protection.

*Executive summaries are still missing in these reports. It would be good to add them since many people only read executive summaries!*

During the field visit it became clear that the dissemination of results towards the Provincial EPB's, Water Bureaus and River Basin Authority still needed extra attention of the project. The initial idea that the dissemination of results would go through the provincial research institutes did not work in an effective way. During the field trip the Provincial EPB's, Water bureaus and the River Basin Authority in fact put forward a request to disseminate the results of the project further to them through training sessions.

Good efforts were made to disseminate the results of the project to MEP by making reports and other project products available to MEP.

Funding by the EU is lagging behind, the reason being a delay in approving the financial auditing report. Action has been taken by the project through hiring a financial specialist.

### **Relevance**

The project is in line with European and Chinese water policies. From the Chinese site the in April 2015 introduced "Action Plan for Prevention and Control of Water Pollution" (the so called Water ten) is very relevant. Also results from the EU-China River Basin Management programme were used. The activities/outputs are in line with the goals and perspectives. In the final year the activities under work package 3 and 4 (logical framework) are to be finalized. Outputs (results in the Logical Framework) are also in line with the goals and perspectives.

### **Effectiveness**

The results/ outcomes so far are in line with what is stated in the proposed action. However especially the dissemination of the results of the project towards beneficiaries is lagging behind. Given the short remaining period for the project (about 6 months) it is not likely that the dissemination of the results can be finalized in such a way that the results/outputs achieved will really contribute to policy settings, especially at provincial and river basin level. By including the agricultural sector, being one of the main polluters, in the dissemination of results could increase the impact of the project.

### **Efficiency**

Research activities have been taken up in an efficient way seeking a practical co-operation with the provincial research institutes. The type of research undertaken requires lots of time (fieldwork). Off course in line with the previous remarks, dissemination could have been taken up earlier. Funding by the EU is lagging behind, the reason being a delay in approving the financial auditing report. Spending is in line with the achievements.

### **Impact**

The impact of the results of the projects on the research institutes is very relevant. The impact on the other provincial beneficiaries however is lagging behind. To have an impact on a national scale results have to be made available in policy reports, in this field lots has been done but focus on this aspect would surely improve the impact. In this way FECO (Lot 4) can take up the results easier and use them to synthesize the results of the projects.

### **Sustainability**

It can be expected that the project activities will be continued after the EU funding ceases. These activities belong to the core activities of the CREAS. The Chinese policy, e.g. through the Action Plan for Prevention and Control of Water Pollution, will also guarantee continuation of the project activities.

The results are summarized in the table below.

Criteria	Score	Reasoning	Mitigation
Relevance	A	<ul style="list-style-type: none"> <li>Objectives very valid (water 10)</li> <li>activities/outputs consistent with goals/objectives</li> <li>Activities consistent with intended impacts</li> </ul>	
Effectiveness	C	<ul style="list-style-type: none"> <li>Generally results are in line with the proposed action</li> <li>However to regional policy impact is neglected</li> </ul>	Extension period, more time to focus on wider policy impact (especially provinces, River Basin Authority)
Efficiency	B	Expenditures in line with results, efficient	
Impact	B	Impacts on the research site are good, results were used in several provincial plans, impact on the policy impact lacks behind (see effectiveness)	
Sustainability	A	They will continue with these kind of projects (also supported through water 10);	

### 2.2.3 Project 3: Mega-cities and their watersheds

#### General information

The activities of this ambitious project are taken place under two expected results/ outputs:

1. Nature-based ecological restoration and pollution reduction approaches in Miyun and Jiaquan Watersheds demonstrate and measure improved water quality and watershed ecology;
2. Nature-based drinking water source protection initiatives are undertaken by 5-10 mega-cities, among the 30 cities joining the Mega-city Partnerships for Drinking Water Source Protection.

Under these expected results/ outputs activities are defined, as is summarized in the textbox below.

#### Activities under Result 1

**Major Activity 1.1 With the development and implementation of a Miyun Watershed Restoration and Protection Strategy, pilot and demonstrate nature-based solutions in the Miyun Watershed that provides substantial drinking water to Beijing, focusing on surface water quality and non-point pollution and erosion control**

- Activity 1.1.1: Conduct sub-basin zoning, identification and assessment according to the ecosystem functions and services, especially in terms of drinking water, based on the biophysical and socioeconomic data and information.
- Activity 1.1.2: According to the mapping and initial sub-basin identification, collect baseline data through participatory surveys, and develop specific nature-based strategies and measures, including landscape planning, ecosystem restoration and community-based pollution disposal, for pilot activities in 2-3 priority sub-basins, leading to the development, agreement and implementation of the Miyun Watershed Restoration and Protection Strategy for sustainable drinking water.
- Activity 1.1.3: Implement the Miyun Strategy and suggested pilot activities in 2-3 priority sub-basins in Beijing and/or Hebei in the Miyun Watershed.
- Activity 1.1.4 Undertake regular watershed health assessment and monitoring through the Watershed Scorecard tool.

**Major Activity 1.2 With the refinement and implementation of a Jiaquan Watershed Protection Roadmap, demonstrate nature-based solutions in the Jiaquan Watershed, which provides substantial drinking water to cities in the Pearl River Delta, focusing on ground water quality**

- Activity 1.2.1 Conduct risk assessment of pollution in the groundwater on the basis of environment baseline survey and previous primary monitoring.
- Activity 1.2.2 Based on the groundwater risk assessment, further refine the Jiaquan Roadmap, especially the zoning and planning for watershed landscape and land use management.

- Activity 1.2.3: Implement the Jiaquan Roadmap, especially ecosystem restoration and land use management to reduce non-point pollutions and erosion.
- Activity 1.2.4: Establish watershed and groundwater monitoring systems and measures, collect monitoring data and analyse groundwater situation.

#### **Activities under Result 2**

##### **Major Activity 2.1 Undertake pan-China 'Mega-cities and their Watersheds' assessment**

- Activity 2.1.1 Develop a Scope of Work for the "Mega-cities and their Watersheds" assessment based on the Pre Feasibility Study completed by IUCN and RCEES/CAS, formulating plans for several Chinese megacities and drinking water sources.
- Activity 2.1.2 Perform the assessment according to the SOW and publish the results.

##### **Major Activity 2.2 Establish Mega-city Partnership for Drinking Water Source Protection, for communications, policy advocacy and experience replications**

- Activity 2.2.1 Launch and establish Mega-city Partnership for Drinking Water Source Protection, following successful introduction of the concept to major cities and central governments.
- Activity 2.2.2 Support and facilitate regular activities under the MPDW, including supporting the organisation of the MPDW meetings and facilitating the MPDW activities such as project development, on which the megacity assessment results, experience from Miyun Strategy, Jiaquan Roadmap, and other communications and visibility of the action will be disseminated and replicated.

##### **Major Activity 2.3 Develop best practices and policy recommendations based on the experiences from the two pilot watersheds, pan-China assessment and MPDW, and outreach to key stakeholders and target audience through delivering a communications and visibility strategy**

- Activity 2.3.1 Analyze the experiences from the pilot activities and develop best practices and policy recommendations.
- Activity 2.3.2 Develop and deliver a communications and advocacy strategy to reach key audiences at city, national and international level for advocacy purposes. It will identify target audiences, the behavioral changes being sought, the key messages to be delivered, and the approaches to be used.

This project differs from the other two projects under Lot 1. It is lead by an NGO (IUCN) and it is focusing on watershed management. European experience is less used in this project as compared to the other 2 water projects.

The activities as defined under Result 1 can be undertaken successful by IUCN and its partners. These kind of activities are taken up earlier in a successful way by IUCN.

For the successful execution of the activities under result 2 IUCN depends on the willingness of the Chinese mega cities (especially activity 2.2) whether to take up or not the mega-city partnership. From an institutional point of view this activity is complex.

Implementation of these activities has been taken up in an enthusiastic way by an ambitious team. The team has worked hard in a dedicated way. Good results have been obtained and interesting and very relevant ideas on watershed protection are developed. Results are laid down in a number of technical reports.

The progress made so far is shown in the table below. These figures are assessed by IUCN and are in line with the observations of the mission.

Result	Activity	Progress (%)
1 Miyun and Jiaquan watersheds	1.1 Miyun	80%
	1.2 Jiaquan	80%
2. Mega city partnership	2.1 Pan China Megacities and their watersheds assessment	85%
	2.2 Partnership of Megacity Watershied protection	50%
	2.3 Communication and visibility strategy	60%

The project has accomplished about 65% of the planned outputs. Spending is in line with this average progress.



From this table can be seen that implementation of activity 2 (especially 2.2) is lagging behind, giving the remaining project period of about 6 months it is expected that the foreseen results cannot be achieved under result 2.

A remark has to be made on these progress figures. Indicated are averages, underlying sub activities can have higher or lower progress figures. For instance measuring the impact of an implemented riparian buffer in Miyun watershed has not yet started. However lots of efforts were made for the design and implementation of the pilot riparian buffer.

At this moment it is foreseen by IUCN that 8-12 month extra are needed to achieve the results as planned under activity 2.2. This time is especially needed for the arrangements for the "Megacity Watershed Protection Fund" launched in August 2015. Till now 7 companies from the private sector have joined the fund and promised to contribute in watershed conservation. Given the complex institutional arrangements and the position of IUCN as an NGO it is advised to phase out activities under activity 2.2 and to focus on lessons learned so far. Also an advice on how to proceed on this activity can be formulated. That would be a successful product of the project! The ambitions as formulated by the project concerning the Mega city partnership are maybe too ambitious to be realized in the given period of 3 years.

Finally a remark has to be made on a number of indicators as presented in the Logical Framework. These are not defined in a SMART way (e.g. % improvement of water quality in Miyun and Jiaquan watersheds by 2017). This requires further attention.

### **Relevance**

The project is in line with European and Chinese water policies and very relevant. This is illustrated by the fact the City of Beijing is already at this moment investing large amounts of money in the catchment of the Miyun reservoir to protect one of its drinking water sources. Also the willingness of the private sector to join programmes for protection of its water sources (in Jiaquan catchment and the Megacity Watershed Protection Fund) shows there is need for watershed protection. The results of the project are very relevant for the in April 2015 introduced "Action Plan for Prevention and Control of Water Pollution" (the so called Water ten).

### **Effectiveness**

The achieved results/ outcomes and impacts so far are lagging behind when compared the proposed action. Especially the establishment of the Megacity Watershed Protection Fund seems to be difficult to achieve within the context of this project.

### **Efficiency**

Activities have been implemented in a cost-efficient manner, the project is managed efficiently. The close collaboration with the partners in the field is working well. An omission of the project is that the agricultural sector has not joined as one of the partners. Spending is in line with the achievements. Objectives are likely to be achieved in time, except on the establishment of the Megacity Watershed Protection Fund. In the remaining time of the project it is advised to focus on reporting, also to give LOT 4 (FECO) the opportunity to synthesize the lessons learned in the final reports of the ESP.

### **Impact**

The results of the projects are to be used in the synthesization process (LOT 4). Efforts have to be made to do so. To have an impact on a national scale results have to be made available. In this way FECO (LOT 4) can take up the results and use them to synthesize the results of the projects. Help could be sought from Lot 4 (FECO) concerning this subject. In this there is also an advantage for FECO, through supporting the reporting process FECO has a chance to learn and pick up the relevant policy issues needed for LOT 4.

## Sustainability

It can be expected that the projects activities will be continued after the EU funding ceases. IUCN is committed to continue these kind of activities. In order to make it possible to take up the results of the project results have to be made available.

The results are summarized in the table below.

Criteria	Score	Reasoning	Mitigation
Relevance	A	Very relevant , activities/outputs consistent with goals/objectives	
Effectiveness	C	Very hard for the project to achieve foreseen results in the project period	Extension period of 6 months, if some goals cannot be achieved share experience
Efficiency	A	Cost efficient, efficient implementation	
Impact	B	The project has a large impact on many institutions, the wide policy impact has to be improved through LOT 4	
Sustainability	A	Also for IUCN this is an important project; most likely IUCN will continue this activity.	

## 2.3 Recommendations

### 2.3.1 Overall Recommendations

1. All 3 water projects have been fortunate with the publication of the Action plan for Prevention and Control of Water Pollution (the so called water 10 action plan) in April 2015. All results are relevant to the concrete plans that will be worked out in the coming years to reach the goals of this Action Plan. The advice to focus in the final stage of the projects on preparing good technical reports to make results available to a large as possible audience. The reports are the basis for further communication, e.g. through websites.
2. Concerning reporting it is advised to work closely with FECO (under Lot 4), since the reports are the basis for the preparation of the policy reports and recommendations under LOT 4. Under Lot 4 the results of the different project will be synthesized into concluding policy recommendations. In this way FECO can easier "collect" information from these projects.
3. Not all logical frameworks include useful indicators for measuring impact or progress. In none of the projects (or in a limited way) the Logical Framework was used for monitoring purposes, It is recommended to review the Logical Frameworks, that at least they will be a useful tool to be used during the final evaluation of the project. Coordination of the Logical Framework improvement process could be taken up under the guidance of FECO (Lot 4).

### 2.3.2 Project 1: Tianjin Binhai New Area (TBNA)

1. During the mission it became clear that most reports are in draft / concept stage. The advice is to focus on reporting in the remaining period. It is of great importance that the results and lessons learned are made available through well prepared technical reports.

2. The project can be seen as a show case for coastal areas with water shortage and water quality problems. In order to make the show case available for other coastal areas it is advised to prepare a comprehensive summary of project results and project impacts. This report should be written and laid out in such a way that coastal areas can learn from the experiences gained in Tianjin. In this way this project can have a large impact on the concrete plans following the Action plan for Prevention and Control of Water Pollution (water 10 action plan) in similar areas.
3. There is no need to extend the project.

### 2.3.3 Project 2: Songhuajiang –Liaohe River Basin

1. In order to give more attention to achieve a wider policy impact especially towards the provincial Environmental Protection Bureau, Water Bureau and the River Basin Authorities it is recommended to extend the project period with 6 month (within the budget of the project). In order to facilitate this change it is advised to review the budget, there might be a need to change the budget lines of specialist fees towards organizing workshops/ meetings.
2. In order to guarantee timely reporting to FECO (Lot 4) in the first half of 2016, it might be necessary to plan the regional policy impact meetings for the second half of 2016.
3. During the Mid-Term review mission the provincial Environmental Protection Bureau, Water Bureau and the River Basin Authorities put forward a request to pay more attention on training on the results of the project. It is recommended to go a bit further and to focus on an action plan for the bureaus and river basis authority, based on the findings of the project. The research as carried by the project gives a good basis to build further on towards more practical Programs of Measures, based on setting goals for the different water bodies. Achieving this would be very useful for the provincial bureaus and river basis authority (and maybe other relevant agencies), it is a basis for implementing measures and really improving water quality.

### 2.3.4 Project 3: Mega-cities and their watersheds

1. In order to give the possibility to finalize project activities it is recommended to extend the project period with 6 month. Extra time is needed to finalizing and closing down the activities under result 2 (Nature-based drinking water source protection initiatives are undertaken by 5-10 mega-cities, among the 30 cities joining the Mega-city Partnerships for Drinking Water Source Protection). But also for some activities under activity 1, extra time is needed (e.g. for measuring the impact of the pilot riparian buffer) in Miyun watershed.
2. As for all water projects, the results of the project are very relevant for the Chinese water sector. So also here a focus on reporting on results and lessons learned is very necessary and relevant. Given the complex institutional arrangements and the position of IUCN as an NGO it is advised to phase out activities under activity 2.2 and to focus on lessons learned so far. Also an advice on how to proceed on this activity has to be formulated.
3. Also for this project close liaison with FECO (Lot 4) in the last year of the project is very necessary. In this way timely reporting and assuring that the interesting results of this project are made available for the synthesizing process. FECO can also advice on subjects etc, to be taken up as potential policy recommendations in the policy flagship reports.

### 3 LOT 2: FINDINGS, CONCLUSIONS, RECOMMENDATIONS AND LESSONS LEARNED

#### 3.1 Introduction

The **expected results** of the Lot 2 projects are: Improvement of **waste management** in pilot areas through integrated sustainable waste management approach to achieve more waste reduction, reuse, recycling, and recovery, thus minimizing the amount of waste to be disposed.

Details of the 2 projects are given in the tables below:

<b>Project 4</b>	<b>China Fluorescent Lamps Collection and Treatment Demonstration Project (CFL)</b>
<b>Overall Objective</b>	The action aims to contribute to sustainable solid waste management and heavy metal pollution prevention and control in China.
<b>Specific Objective</b>	To demonstrate effective approaches and improve the policy environment for collection and treatment of waste fluorescent lamps in Beijing and Chengdu and disseminate successful models.
<b>Region</b>	China: Chengdu City of Sichuan Province, Beijing City
<b>Beneficiary</b>	Tsinghua University
<b>EC Contribution (€)</b>	960,521.60,
<b>EC Contribution</b>	80%
<b>Total EUR</b>	1,200,652.00
<b>Implementation period</b>	36 months, 01/09/2013- 31/08/2016
<b>Partners</b>	Key Partners: a. University of Natural Resources and Life Sciences, Vienna (BOKU); b. Beijing Municipal Solid Waste and Chemicals Management Centre; c. Chengdu Academy of Environmental Sciences Associates: 1) Chengdu Municipal Environmental Protection Bureau; 2) United Nations Industrial Development Organization (UNIDO); 3) Beijing Eco-island Science and Technology Co., LTD; 4) Chengdu Xing Rong Hazardous Wastes Treatment Centre

<b>Project 5</b>	<b>Sustainable Ship Recycling by Adopting Integrated Waste Management Approaches in China</b>
<b>Overall Objective</b>	To improve the sustainability of ship recycling in China. As a result, emissions from the certified ship recyclers sector (waste oil, heavy metals, persistent organic compounds) shall be reduced by 10% in the 2nd year and by 30% in the 3rd year of this action
<b>Specific Objective</b>	1) Development of guidelines and tools for sustainable ship recycling; 2) Implementation of sustainable procedures in 20 (8+12) participating Chinese ship recyclers; 3) Assessment of the sustainability of these procedures through a Third Party Inspection System (TPIS); and, 4) Provision of recommendations for regulations and standards.
<b>Region</b>	China: Coastal and river areas in Jiangsu and Guangdong Provinces of China, where the majority of ship recycling companies are located.
<b>Beneficiary</b>	University of Natural Resources and Life Sciences, Vienna (BOKU)
<b>EC Contribution (€)</b>	882,398
<b>EC Contribution</b>	80%
<b>Total EUR</b>	1,102,997.00
<b>Implementation period</b>	36 months, 01/08/2013 - 31/07/2016
<b>Partners</b>	Key Partners 1) National Solid Waste Management Centre of China (NSWMC); 2) China Association of Resource Comprehensive Utilization (CARCU); 3) Beijing University of Civil Engineering and Architecture (BUCEA); Associates: 1. Ministry of Environmental Protection of P.R. China (MEP); 2. National Ship Recycling Association (NSRA); 3. Jiangsu Provincial Solid Waste Management Centre; 4. Guangdong Provincial Solid Waste Management Centre.

## 3.2 Findings and Progress

### 3.2.1 China Fluorescent Lamps Collection and Treatment Demonstration Project (CFL)

#### General Information

The project was approved by the EU in 1 August 2013, the Project Document was signed in 2 August 2013, and project was launched in September 2013. The project is to last for 36 months. Tsinghua University is the beneficiary and leading partner of the project and with EU, provincial and local implementation partners.

The action aims to contribute to sustainable solid waste management and heavy metal pollution prevention and control in China. Specific objective of the project is to demonstrate effective approaches and improve the policy environment for collection and treatment of waste fluorescent lamps (WFLs) in Beijing and Chengdu, and to disseminate successful models. This will be realized through delivery of:

- (i) 8 demonstrations conducted in two Chinese megacities, which achieve an average collection ratio of separated WFLs of 60%;
- (ii) 2 demonstrations of transportation and treatment of WFLs conforming to all relevant regulations and standards regarding pollution and recycling;
- (iii) One Chinese megacity adopts a pilot policy scheme on WFLs for group consumers;
- (iv) A complete package of all required knowledge products to implement municipal-level collection and treatment schemes for group consumers;
- (v) National-level policy recommendations on collection and recycling of WFLs submitted and discussed with all relevant national policy makers;
- (vi) 6 other cities and provinces in which relevant government stakeholders are aware of project approaches.

Under these expected results/ outputs activities are defined, as is summarized in the textbox below.

#### Activities under Results 1: Project Inception

- Activity 1.1: Project Inception
- Activity 1.2: Communication materials
- Activity 1.3: Monitoring and evaluation

#### Activities under Results 2: Collection and Treatment Demonstration

- Activity 2.1: Design of Collection Demonstrations
- Activity 2.2: Implementation of Collection Demonstrations
- Activity 2.3: Transport, treatment and recycling demonstration

#### Activities under Results 3: Policy

- Activity 3.1: Policy research and consultation
- Activity 3.2: Municipal-level policy on group consumers
- Activity 3.3: National-level policy recommendations
- Activity 3.4: Liaise with Lot 4 and other ESP projects on national uptake

#### Activities under Results 4: Dissemination

- Activity 4.1: Project launch events
- Activity 4.2: Road-show to other cities seeking to better manage waste fluorescent lamps
- Activity 4.3: Dissemination conferences

#### Relevance

The project is in line with European and Chinese policies for hazardous waste management. Hazardous Waste from Household management is still one of the main problems to be solved for the solid waste management in China. In the up-coming amended National Hazardous Waste List (expected in 2016) will probably the special flexible request for the collection of Household Hazardous Waste and Hazardous

Waste from social sources including fluorescent lamps, which will promote the collection environment of fluorescent lamps.

The overall goal is to contribute to sustainable solid waste management and heavy metal pollution prevention and control in China. The specific objective is to demonstrate effective approaches and improve the policy environment for collection and treatment of waste fluorescent lamps (WFLs) in Beijing and Chengdu, and to disseminate successful models. The activities on-going and completed are in accordance with the project design and activity plan in the project proposal and directly contribute to achievement of the overall goal and specific objectives.

This project has been and is being conducted by the project team closely with partners in accordance with the project proposal including Annex 3 of Logical Framework. The closely cooperation with different partners, detailed activities and in-time outputs can be believed to guarantee that they can reach the effects expected by the project proposal.

This project includes main 3 technical parts: demonstration, policy research and dissemination.

Collection is the key section for the social source hazardous waste management. The project is being conducted in two Chinese megacities – Beijing and Chengdu, one of which is developed, and one is in the less developed west. In each of these cities, four collection demonstrations have been effectively conducted based on the practical and effective scheme after testing and modification and involving related stakeholders (such as the property management company), of which two with residential communities, and two with group users ( Jinyu Plaza and Beijing airport, Chengdu airport and subway company). The valuable collection schemes including key elements of the Clear Responsibility, WFL Collecting Measures, Collection Frequency, Design and Location of containers and Incentive Mechanism have been obtained separately in Beijing and Chengdu through the demonstrations.

The major policy component, responding to the needs expressed by Chinese policymakers to find effective ways to better manage waste fluorescent lamps on a large scale. The project finished the baseline research including china situation review and EU-China comparing study, carried out several formal and informal consulting with national and city level policy makers and stakeholders, and initial have a clear outline for the policy recommendations.

Life Cycle Assessment (LCA) methodology has been applied to support the policy research activity (see activity 3.1). The LCA based risk assessment is being conducted, including sorting analysis for collection WFLs, lamp breakage possibility test, pre-experiment and measurement of mercury content for lamp breakage experiment along with WFL collection, storage, transport and treatment based on the actual data and experiment during demonstrations in Beijing and Chengdu. The final risk assessment from the demonstration practice with LCA in this project (expected in Feb. 2016) will provide the valuable information and case study about the collection, transport, recycling and final disposal stage of WFLs in China, which will be one important supporting contents in the final policy recommendation reports and promote the understanding at the national and local levels.

### **Effectiveness**

All the activities projected till the end of 2015 have been carried out. The results of Activity 1 and 2 almost finished (project management and demonstration), the result of Activity 3 (policy) is being conducted and has active initial output, the result of Activity 4 (dissemination) plan is planned to be conducted in next month in accordance with the project plan. The status of the achievements as compared with the intended outcomes is listed as follows:

- 1) 8 demonstrations conducted in two Chinese megacities, which achieve an average collection ratio of separated WFLs of 60%: Average collection ratio achieved.

- 2) Demonstrations of transportation and treatment of WFLs conforming to all relevant regulations and standards regarding pollution and recycling: Achieved in Beijing, ongoing in Chengdu.
- 3) One Chinese megacity adopts a pilot policy scheme on WFLs for group consumers: Achieved in Beijing, Enforcement of compulsive collection for some big group, such as airport; ongoing in Chengdu, Mobile treatment facility is one option in Chengdu, and the cooperation with the municipal waste separate collection is being consulted to achieve CFL collection in Chengdu.
- 4) A complete package of all required knowledge products to implement municipal-level collection and treatment schemes for group consumers: Achieved 80%, draft version has been finished for the project implementation; the final version used for dissemination to other cities is being promoted based on the demonstration experience and will be finished soon.
- 5) National-level policy recommendations on collection and recycling of WFLs submitted and discussed with all relevant national policy makers: ongoing.
- 6) Additional 6 cities and provinces in which relevant government stakeholders are aware of project approaches: Plan in May and June, 2016

In the next months (till to 31 August 2016), this project will mainly focus on the policy recommendation drafting work of Activity 3 (policy) month in accordance with the project plan. Till now, the baseline research, EU-China comparing analysis, demonstrations and consulting with different stakeholders and the necessary related basic research have been finished. The dissemination work planned in year 3 will be conducted as planned in following months based on the output achieved through demonstration. Thus, time is enough for the project team. The expected result in the next months before the end of this project should be as follows:

- 1) One Chinese megacity adopts a pilot policy scheme on WFLs for group consumers: through the cooperation with the municipal waste separate collection to achieve in Chengdu.
- 2) National-level policy recommendations on collection and recycling of WFLs submitted and discussed with all relevant national policy makers.
- 3) 6 other cities and provinces in which relevant government stakeholders are aware of project approaches

The major factors influencing the (non) achievements of results and objectives are lack of the certified treatment equipment for the collected WFLs through Chengdu collection and treatment demonstrations. The lack of actual and certified treatment equipment influenced the further development of the pilot policy and WFLs management in Chengdu (the same situation in west area of China, because there is no facility for WFLs treatment in West provinces in China) . During the implementation of this project, the WFLs transport and treatment demonstration in Chengdu has been changed from Sichuan Zhongming Environmental Treatment Co., Ltd. to Xingrong hazardous waste Treatment Company in Chengdu because of the permit problem. Xingrong hazardous waste treatment company in Chengdu is an comprehensive hazardous waste treatment company listed in the national hazardous waste treatment facilities plan with permit of WFLs treatment, however it has hazardous waste landfill but has no recycling equipment of WFLs now. Through the implementation of this project and efforts of Chengdu partner, Xingrong plan to establish WFLs recycling equipment in 2016, the WFLs treatment facility development has also been involved into Chengdu Plan on the development of the hazardous waste treatment facility. In addition, the mobile equipment of WFL treatment has been coordinated to deal with the waste WFLs through demonstration. The permit procedure will also be researched and included into policy recommendations so as to promote solving the WFLs problems especially for the provinces/cities without certified and fixed facilities of WFLs.

The policy for WFLs management is the plan and main contents of hazardous waste and solid waste management form Ministry of Environment in China. The outputs achieved by this project (knowledge projects) will provide the related guidance and recommendations along with the whole management circle, meet the management needs of different levels (national and local) and provide almost all the

supporting research base and technical information needed by the Government to issue any policy related to WFLs management. The project knowledge products are listed as the followings:

No	Knowledge Product	Timing / Target Audience / Description	Status
<b>Target Group: All Stakeholders</b>			
1	Project brochure and website	Month 5. Targeted at all parties interested in managing waste fluorescent lamps. Activity 1.2.	Completed
2	30 monthly updates	On-going. Persons involved in the project. Monthly updates targeted at people who are involved with or interested in the project. Activity 1.2.	On-going
<b>Target Group: Collection Participants</b>			
3	Leaflets and posters for fluorescent lamp individual end-users	Month 34 (draft ready in month 9). Leaflet and/or poster for residents on safe and responsible disposal of fluorescent lamps. This will be very simple with many pictures and few words, so that anyone can quickly understand it and it's fun to read. Activity 2.2.	Completed
4	Guidance manual for residential community management companies	Month 34 (draft ready in month 9). Guidance manual for residential community management companies on how to safely collect, place and store waste fluorescent lamps; how to place and manage collection containers; roles and responsibilities of various stakeholders; etc. Activity 2.2.	Ongoing
5	Leaflets and posters for fluorescent lamp group consumer employees	Month 34 (draft ready in month 9). Leaflet and/or poster for employees of group consumers on safe and responsible disposal of fluorescent lamps. This will be very simple with many pictures and few words, so that illiterate workers can also understand it. Activity 2.2.	Ongoing
6	Guidance manual for fluorescent lamp group consumer management companies	Month 34 (draft ready in month 9). Guidance manual for group consumer companies on how to safely collect, place and store waste fluorescent lamps, and how to place and manage collection containers, how to use the 'employee leaflet / posters', how to detect leakages and safety breaches, what happens to the waste fluorescents after collection; establishing collection operation committee including the stakeholders with separate responsibilities, etc. Activity 2.2.	Ongoing
7	Technical specification of BAT/BEP of waste fluorescent lamp treatment and recycling	Month 34. Treatment and recycling companies. Activity 2.3.	Ongoing
8	Leaflets and posters for fluorescent lamp transportation workers	Month 34 (draft ready in month 9). Leaflet and/or poster targeted at transportation workers on how to safely transport waste fluorescent lamps. This will be very simple with many pictures and few words, so that illiterate workers can also understand it. Activity 2.3.	Ongoing
9	Technical manual for transportation and storage of fluorescent lamps for treatment companies	Month 34 (draft ready in month 9). Technical manual for transportation and treatment companies on safe collection, storage, transportation of waste fluorescent lamps, and how to place and manage large and small collection containers, how to use the 'transportation worker leaflet / posters', how to detect leakages and safety breaches, etc. Activity 2.3.	Ongoing
<b>Target Group: Municipal Policy Makers</b>			



10	LCA report on environmental and social impacts and human risk assessment of waste fluorescent lamps in China	Month 12. LCA report will include the situation of generation, collection and disposal, and the analysis of environmental, health and social impacts during the life circle of waste fluorescent lamps. Activity 3.1.	Completed
11	2 Proposed measures for city-wide collection and recycling of waste fluorescent lamps	Month 24 (draft ready in month 18), Municipal Governments. Basis for policy decision on city-wide collection and recycling of waste fluorescent lamps for group consumers. Activity 3.2.	Completed
12	2 Policy recommendations on fluorescent lamp collection and recycling	Month 34, Municipal Governments. The reports will provide overall policy recommendations around the time of project completion, including next steps which should be taken to further improve management of waste fluorescent lamp collection and treatment, i.e. moving towards city-wide schemes which also involve households. Activity 3.2.	Ongoing
13	Guideline for implementation of waste fluorescent lamp collection schemes	Month 34. National and local governments seeking to better manage waste fluorescent lamps. The methods, funds mechanism and operation rule and key elements of establishment and operation of collection system at city level will be included. Purpose: To summarize the project experience and methods so that local governments in other cities/provinces in can learn from and replicate the project methods. Activity 2.2.	Ongoing
14	Two videos documenting the approaches taken in and , respectively	Month 34. Targeted at local governments in which are interested in better management of waste fluorescent lamps. Each video will describe the approach taken by and respectively, allowing viewers to choose the approach most suitable for their situation. Activity 2.2	Ongoing
<b>Target Group: National Policy Makers</b>			
15	Comparative study between EU and Chinese approaches to management of waste fluorescent lamps	Month 10. Project team, and relevant academics. This includes: (i) laws/ regulations/ standards/ policies on waste fluorescent lamp management in EU and China; (ii) analysis of European take-back systems for WFL; (iii) European and Chinese approaches for collection of WFLs and other special waste; (iv) European approaches for treatment of WFLs; (v) evaluation on different funds mechanism for collection and recycling of WFL. This study is needed for the project team to gain a better understanding of the situation and to lay the foundation for the project's policy work. Activity 3.1.	Completed
16	Standard for pollution control on waste fluorescent lamps treatment, recycling and disposal	Month 34. Standard for treatment companies on safe waste fluorescent lamps treatment, recycling and disposal, and how to prevent and reduce the pollution emission during treatment, recycling and disposal of waste fluorescent lamps treatment. The standard will serve as a basis for a national technical standard on pollution control for treatment, recycling and disposal of waste fluorescent lamps. Activity 2.3.	Ongoing
17	National-level policy recommendations on fluorescent lamp collection and recycling	Month 34. Ministry of Environmental Protection, Ministry of Finance, Ministry of Housing and Rural-Urban Development, National Development and Reform Commission. The contents include: (i) organizing structure for WFLs management (ii) options of funds mechanism/financial compensation mechanisms and operation methods; (iii) the distribution plan of treatment facilities; (iv) license procedures for collection/storage/treatment; (v)incentives and penalties for relevant companies; (vi) monitoring methods and technologies etc. Activity 3.3.	Ongoing

**Efficiency**

Activities have been implemented in a cost-efficient manner, the project is managed efficiently. Spending is in line with the achievements. Total Spending of the project is €731,556.64, out of which: 1) EU Grant €566,419.57, 2) Matching funds €165,137.07.

**Impact**

Through the launching events, publicity activities, series of guidance/manuals dissemination and questionnaire survey during the implementation of collection demonstrations in Beijing and Chengdu both in communities and for group consumers, the result analysis after comparing the early stage and mid-term questionnaire survey results with the same questionnaire version shows that the relative increasing of the knowledge and awareness for the fluorescent lamps and mercury, collection demonstration and its importance.

The project has demonstrated significant influence on policy environment. At national level, the basic policy report including the key elements, such as collection system options, funds options, management mechanism and facility development has been submitted to the related departments of Ministry of Environmental Protection with the cooperation with related national project (e-waste management policy research). The policy recommendations (in a form of “Zhuan Bao”, which is an internal regular policy briefing paper to key policy makers) with full policy research report of WFLs are being drafted and will be submitted in following months.

In Chengdu, the hazardous waste treatment facilities plan has included the development of WFLs recycling equipment in Xingrong Company after coordinating and efforts of Chengdu Partner during the implementation of demonstrations. The inventory investigation program of WFLs generation in Chengdu has been approved by Chengdu government and started in Jan. 2016 so as to accompany the policy research of WFLs of Project CFL and support the development of WFLs recycling in Chengdu based on the demonstrations with the efforts of Chengdu partner.

Through the launching events, publicity activities, series of guidance/manuals dissemination and questionnaire survey during the implementation of collection demonstrations in Beijing and Chengdu both in communities and for group consumers, the result analysis after comparing the early stage and mid-term questionnaire survey results with the same questionnaire version shows that the relative increasing of the knowledge and awareness for the fluorescent lamps and mercury, collection demonstration and its importance.

So far, there are totally more than 1400 people being affected by the project, i.e. 1) more than 100 participants attended the launching dissemination conferences in Beijing and Chengdu, 2) more than 200 residents received the questionnaire survey in Beijing and Chengdu, 3) more than 60 participants attended the EU-China policy, technology and facility workshop in Chengdu, 29 Oct. 2015, around 12 medias attended the dissemination conferences and other activities, and 4) About 1100 inhabitant/family joined in the collection demonstration (The total amount of WFLs from pilot communities is around 1,100 pieces, it means about 1,100 inhabitant/family joined in the collection demonstration).

The project approach will be evolving accordingly to leverage the results for wider policy impact. The project will need to coordinate with the heavy metal and hazardous waste national planning development progress, and support complying with the implementation of Minamata Convention in China. The publication of annual strategic research of Basel Convention Regional Centre for Asia and the Pacific (BCRC China, located in Tsinghua University) will involve the research result of project CFL, which will also be delivered to high-level officials of MEP and other ministries in China and to improve further the management of WFLs in the future.

BCRC China is also planning to extend the output and experience of WFLs demonstration in China to regional level and other countries through the potential international funds mechanism.

### Sustainability

It is very likely that the project benefits likely to continue, e.g. continuation of WFLs collection and management in communities. In Chengdu Xinnan community and Beijing Huajiadixili community, the collection management of WFLs operates smoothly with the sufficient participation and attention of the residents' committees and has been involved into the daily management, such as green and eco-community development. For example, the community committee in Xinnan community stated that the collection management will continue after the end of the demonstrations of project CFL, Chengdu Environmental Protection Bureau and Chengdu Xingrong Treatment Company will also coordinate and be responsible for the arrangement of transportation and treatment.

Standardized internal management system of WFLs for the group users. Based on the demonstration experience, such as Beijing Airport and Chengdu Airport, the enhanced and standardized management system for WFLs collection has been established, including use of professional containers, more clear responsibility assignment and better interim storage request. The standardized management system of WFLs will be operated continuously along with the more strict enforcement request of fluorescent lamps as hazardous waste.

A wide range of extension of WFLs collection especially from household and west provinces depends on clear enforcement requirement at policy level.

It is foreseen that there are a couple of major factors influencing the achievement or non-achievement of potential sustainability of the project. For Chengdu city, the establishment of certified WFLs recycling facility is key for the continuous management of WFLs in Chengdu, and a wider extension of WFLs collection especially from household and west provinces depends on clear enforcement requirement at policy level.

The results are summarized in the table below:

Criteria	Score	Reasoning	Mitigation/Recommendation
Relevance	A	<ul style="list-style-type: none"> <li>Objectives very valid (nationwide hazardous waste management regulations and provincial implementation regulations)</li> <li>Activities/outputs consistent with goals/objectives</li> <li>Activities consistent with intended impacts</li> </ul>	Refer to Recommendations
Effectiveness	A	<ul style="list-style-type: none"> <li>Generally results are in line with the proposed action,</li> <li>However, more emphasis to be given on finalization of results and replications</li> </ul>	Refer to Recommendations
Efficiency	A	Spending is in line with physical progress.	Refer to Recommendations
Impact	A	High potential in influencing local policy, Chengdu EPB for example	Refer to Recommendations

Sustainability	B	In line with top priorities of local authorities, however more work in identifying target cities and measures to be used for leveraging political importance are to be done.	Refer to Recommendations
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### 3.2.2 Sustainable Ship Recycling by Adopting Integrated Waste Management Approaches in China

#### General Information

The project was approved by the EU in July 2013, the Project Document was signed in 29 July 2013, and project was launched in August 2013. The project is to last for 36 months. University of Natural Resources and Life Sciences, Vienna (BOKU) is the beneficiary and leading partner of the project and with national, provincial and local implementation partners.

The action aims to improve the sustainability of ship recycling in China. As a result, emissions from the certified ship recyclers sector (waste oil, heavy metals, persistent organic compounds) shall be reduced by 10% in the 2nd year and by 30% in the 3rd year of this action. The specific objectives are as follows: 1) Development of guidelines and tools for sustainable ship recycling; 2) Implementation of sustainable procedures in 20 (8+12) participating Chinese ship recyclers; 3) Assessment of the sustainability of these procedures through a Third Party Inspection System (TPIS); and 4) Provision of recommendations for regulations and standards. The specific objectives will be realized through delivery of:

- (i) Guideline and tools development: aims at identifying best practices in the EU and China and the way that the best practices could be replicated. This includes the development of a pre-treatment guideline, the adaptation of the existing Waste Tracking System and a third party inspection system. Results: Conducted review of best practice in ship recycling in EU and PRC; Adapted pre-cleaning and dismantling guidelines for Chinese ship recyclers; Adapted Shiprecycling-Waste Tracking System (s-WTS); Developed Third Party Inspection System (TPIS).
- (ii) Datasets in ship recycling: to develop indicators for the sustainability assessment (TPIS), 10 Material Flow Analyses (MFA) case studies are undertaken in order to show the range of composition data and the use of the resources recovered in the dismantling process. Results: 10 conducted MFA to develop indicators for sustainability assessment.
- (iii) Implementing guidelines and tools: aims at implementing the s-WTS as well as the TPIS including trainings, stakeholder workshops, technical support and networking. Results: Conducted stakeholder workshops, trainings and technical supports for Third Party Inspectors; Adapted s-WTS and TPIS implemented at 8 ship recyclers as a pilot scheme; Optimised s-WTS and TPIS are replicated in total at 20 ship recyclers.
- (iv) Sustainability Assessment in the ship recycling sectors: aims at applying sustainability assessment for ship recyclers. Results: Developed assessment indicators and improvement potential for certain ship categories; Developed checklists based on MFAs for Sustainability Assessment in Chinese ship recycling sector; Implemented Sustainability Assessment (evaluation of indicators) in Chinese ship recycling sector implemented at 10 ship recyclers.
- (v) Policy recommendations: aims at bringing together all stakeholders involved in the value chain within a designated China Shiprecycling Network in order to provide China's policy makers with expertise, findings and developed knowledge generated from this action. Results: established network of the Chinese ship recycling sector, revised policy papers and provided policy recommendations.
- (vi) Communication, visibility and dissemination: linking the China Shiprecycling Network with neighbouring and international (EU) networks and stakeholders aiming at establishing an exchange of experience via communication, visibility and dissemination of the results through networking, workshops, conferences, papers and guideline documents. Results: developed EU-China Information Sharing System, communication, visibility and implementation.

Under these expected results/ outputs activities are defined, as is summarized in the textbox below.

#### **Activities under Results 1: Guidelines and tools development**

- Activity 1.1: Conducting review of best practice in ship recycling in EU based on literature review, and on expert interviews.
- Activity 1.2: Conducting review of best practice in ship recycling in PRC based on literature review, and on expert interviews.
- Activity 1.3: Screening guidelines, e.g.: Basel Convention, OECD Decision C (92)39, EU Waste Shipment Regulation and Chinese Green Ship Recycling General Regulation. Adapting pre-cleaning and dismantling guidelines for Chinese ship recyclers. Existing waste lists are extended to ship recycling categories. In addition a review on existing Occupational Health- and Safety Assessment (OHSAS) standards in ship recycling is carried out.
- Activity 1.4: Adapting existing Waste Tracking System for ship recycling (s-WTS) based on REWIN project<sup>1</sup>: s-WTS has to be prepared, programmed and launched online. Existing guideline and user manual for s-WTS (based on REWIN) should be extended and published. The help desk should be used in initial phase for support.
- Activity 1.5: Development of Third Party Inspection System (TPIS): In context of the institutional set-up roles of players, responsibilities and procedures within the TPIS should be defined. Guidelines and checklists for inspection based on activity 1.3 and 1.4 (registration data from s-WTS) should be developed. Within the framework of this activity accreditation of inspectors will be prepared.
- Activity 1.6: Conducting an excursion to EU: A field excursion to best practice examples should be organised for the Chinese Partners in order to gather practical experience in sustainable ship recycling in EU and to foster networking.

#### **Activities under Results 2: Datasets on ship recycling**

- Activity 2.1: Conducting 1 Material Flow Analysis (MFA) for screening at one ship recycler in Jiangsu: Material flows of one representative ship category for this region should be studied. Based on MFA output, a “screening report” should sum up the range of composition data and resources recovered in the dismantling process in order to identify indicators for sustainability assessment.
- Activity 2.2: Conducting 4 Material Flow Analysis (MFA) in detail in Guangdong: Material flows of other ship categories should be studied based on outputs of activity 2.1. Indicators for sustainability assessment should be adapted to other ship categories.
- Activity 2.3: Conducting 1 Material Flow Analysis (MFA) for screening at one ship recycler in Guangdong: It’s the same activity as 2.1. Ship category should be representative for this region. Indicators for sustainability assessment should be identified.
- Activity 2.4: Conducting 4 Material Flow Analysis (MFA) in detail in Guangdong: Material flows of other ship categories should be studied based on outputs of activity 2.3. Indicators for sustainability assessment should be adapted to other ship categories.
- Activity 2.5: Evaluation and potential analysis of conducted MFAs: Based on outputs of activities 2.1-2.4 indicators for sustainability assessment (list of indicators) should be developed. These indicators should be used to derive an improvement potential for certain ship categories.

#### **Activities under Results 3: Implementation of guidelines and tools**

- Activity 3.1: Organization of 2 stakeholder workshops: This workshop should lead to link local stakeholders (e.g. ship recyclers, local EPB, NSMWC, China National Ship Recycling Association, ship owner association, scrap dealers, secondary material processors, other waste managers) in order to prepare the network (workshop 1) and formalize the network (workshop 2). In particular awareness of stakeholders will be raised according to elaborated standards (OHSAS, recycling rates). The workshops take place in month 21 and 26.
- Activity 3.2): Organization of 2 trainings and technical supports for Third Party Inspectors: Based on activity 1.5; 50 Third Party Inspectors should be trained to receive the Training Certificate in “Sustainable Ship Recycling”. 25 future Inspectors will be trained in month 21, further 25 inspectors in month 26.
- Activity 3.3): Adopting s-WTS and TPIS implemented at 8 ship recyclers as a pilot scheme: 8 ship recyclers should be selected and registered to the developed s-WTS and certified by the TPIS (cp. activity 1.4-1.5). All systems will be tested and results will be displayed in optimization reports for the s-WTS and TPIS. This pilot

<sup>1</sup> *Improving Resource Efficiency for the Production and Recycling of Electronic Products by Adopting of Waste Tracking System (DCI-ASIE/2011/263-084)*

scheme will take 3 months (month 22-24). Remark: OHSAS are included as element in the TPIS based on activities 1.3 and 1.5.

- Activity 3.4): Implementation of optimized s-WTS and TPIS replicated at 20 ship recyclers: 12 ship recyclers should be selected and registered to optimized S-WTS and in the end be certified by the TPIS. This implementation will take 9 months (month 25-33). In the end all 20 (8+12) ship recyclers will be applying this “2nd generation” of s-WTS and TPIS. Remark: OHSAS are included as element in the TPIS based on activities 1.3 and 1.5.

#### **Activities under Results 4: Sustainability Assessment in the ship recycling sectors**

- Activity 4.1): Development of checklists based on MFAs for Sustainability Assessment in Chinese ship recycling sector: The output of task 2.5 should be used to develop this checklists, which will be used by local and national authorities.
- Activity 4.2): Implementation of Sustainability Assessment in Chinese ship recycling sector replicated at 10 ship recyclers: In order to evaluate indicators for Sustainability in the Chinese ship recycling sector, 10 ship recyclers will be assessed by using checklists based on activity 4.1.

#### **Activities under Results 5: Policy Recommendations**

- Activity 5.1): Design and Implementation of the China Ship Recycling Network: Based on guidelines, tools and stakeholder workshops a network is designed. This network will be promoted, established and formalized at meetings, stakeholder workshops and final conference.
- Activity 5.2): Policy dialogue: Policy recommendation will be provided through expertise, findings and developed knowledge generated from this action. Based on the activities, a regular policy dialogue is established and policy recommendations are developed.

### **Relevance**

The project is still generally in line with European and Chinese water policies, though there is a delay of publication of EC’s technical guideline on ship recycling, which was planned to be issued in April 2015, but finally it was published in December 2015. The 1<sup>st</sup> EU list of ship recyclers will be published in December 2016. The project is considered relevant as the project intends to improve both resource efficiency and pollution control. Both aspects are of high relevance for the sector as 1) Resource efficiency, reflecting higher amount and better quality of recyclable materials will lead to improved economic competitiveness of the sector; 2) Pollution control will be subject to regulations and the preparation for compliance with further rules strengthening the sector as well; 3) Improvement of the OHS conditions (e.g. reduction of work accidents) improves the economic sustainability of the sector.

China’s ship recycling started in early 1960s, and it has been developing very fast in the past two decades. China two times was world leader in ship recycling in terms of demolished gross tonnage (in 1993 and 2003), before dropping to lower market share in 2005. In order to improve the environmental and safety performance of the ship-recycling sector, China has made great efforts that resulted in a number of good practices of how to effectively apply the sustainable production approaches in the ship-recycling sector. The following two practices are recommended and are to be tested and disseminated: 1) Pre-treatment system that requires the cooperation between end-of-life ship providers and ship recyclers for pre-treating dangerous, toxic, harmful substances, heavy metals and goods before the ship can really go into the dismantling process, and (2) involving the third-party inspection (TPI) that requires an independent organisation who should be qualified in doing inspections in the whole dismantling process.

Over recent years, due to lower prices of secondary materials (steel, etc), there have been dramatic decreasing of ship recycling industry in China, all Chinese recyclers have experienced difficult times in terms of making economic profits. Moreover, competition in ship recycling industry has been intensified in Asia. Environmental costs for Chinese recyclers are higher or much higher than those of India and Pakistan recyclers. Consequently, more end-of-life ships are sold to other Asian countries, and there are only very few ship recyclers (3-4) now remained in operations in China.

**Effectiveness**

Overall the project has made good progress towards its four major components. The findings of the evaluation teams and the data collected from the 10 evaluated districts sufficiently confirmed a good progress made by the project against the set project targets.

The achieved results/ outcomes and impacts so far compared are on track compared with the proposed action. Activities are taken up and most of results are likely to be achieved. As the point of MTE, the following tools developed and being tested: 1) Pre-cleaning guideline, 2) TPIS (third-party inspection system), 3) Ship -WTS (ship recycling waste tracking system), 4) Sustainability assessment indicators/checklist.

In order to ensure timely delivery of the project results and ensure projects impacts, the following activities will be implemented in the remaining period of project lifecycle: 1) Collecting data and completing sustainability assessment report; (to be completed in April 2016); 2) Policy recommendation report (to be completed in April 2016); 3) Final conference (Beijing, May 2016)

**Efficiency**

BUKO is the lead agency to implement this project with its implementation partners in the China. The project management system is well organized with clear roles and responsibilities. The staff of the project consists of professionals with required expertise and experiences. The required periodic reports are prepared. The project staff interviewed was well aware of the project objectives, implementation approach, activities and target communities.

There is good coordination among involved partners and associates. The regular reporting and coordination exists for smooth implementation of the project. The project staff conducted regular meetings to review project progress and plan for the future activities. The activity plans were available and followed by all the project partners and associates. The project activities were generally found well communicated to government officials, line departments, ship recyclers, SMEs, and intermediation agencies, etc.

The evaluation team observed during the evaluation and discussion with the respective project partners and associates staff that the project activities have been implemented in a cost-efficient manner, the project is managed efficiently. Spending is in line with the achievements.

**Impact**

The overall impact of the project remained good. The project was able to make reasonable progress towards the set targets in each of project components.

The role of each partners and associates in the project was observed to be very effective and had good level of understanding of the project and had close coordination with the project staff at all levels. The target audiences were in regular contact with the project staff. The participants of the project and target audiences of the project interviewed by the evaluation team clearly highlighted good understanding of behavior change in policy making and strong willingness in improving knowledge about practical approaches, mechanisms, and toolkits and instruments were witnessed by the evaluation teams. The overall status of awareness level of the people and improvement of knowledge base has been enhanced.

The evaluation team observed through interviews, that although due to lower prices of secondary materials (steel, etc), there have been dramatic decreasing of ship recycling industry in China over past a couple of years, all Chinese recyclers have experienced difficult times in terms of making economic profits, the results of the projects are still to be used by Chinese waste management authorities both at

national and local levels, Intermediary organisations, such as China National Ship recycling Association, Chinese ship recyclers, and SMEs using secondary materials.

### Sustainability

The potential for project sustainability will largely depend upon the extent to which (a) the project outputs and trained staff are formally integrated and maintained within the ship recycling sector and relevant government departments, and (b) the tools, instruments and approaches being promoted by the project are firmly adopted in the form of legislation, policy, plans, operating manuals and guidelines and/or standards and procedures of the organizations involved in ship recycling. In other words, have the project results become part of the institutional and business processes and operating practices related to ship recycling industry management.

During the project implementation, there were several policy challenges faced by the project, which were caused by a couple policy related factors, i.e. 1) delay of publication of EC's technical guideline on ship recycling, which was planned to be issued in April 2015, but finally it was published in December 2015. 2) The 1st EU list of ship recyclers will be published in December 2016. The evidence so far suggests that the increased awareness and improved knowledge base of governments, SMEs, ship recyclers, and Intermediation organizations toward Sustainable Ship Recycling in the face of change of policy environment, rapid decrease of market share by Chinese firms, the increased competition with other countries in Asia will sustain interest and support for the project objectives. The critical issue of institutional uptake and operationalizing the project concepts and tools will affect the sustainability after project completion in 2016.

The results are summarized in the table below.

Criteria	Score	Reasoning	Mitigation/ Recommendation
Relevance	B	<ul style="list-style-type: none"> <li>Objectives very valid</li> <li>Activities/outputs consistent with goals/objectives</li> <li>Rapid change of external environment, i.e. market change and need of putting a policy in place</li> </ul>	Refer to Recommendations
Effectiveness	A	<ul style="list-style-type: none"> <li>Generally results are in line with the proposed action, however less responsive to the rapid change of external environment because of time left</li> </ul>	Refer to Recommendations
Efficiency	A	Spending is in line with physical activity progress, however efficiency is to be further justified by considering real impacts Vs spending in financial term.	Refer to Recommendations
Impact	B	Will be a question mark if the target audience of project impacts are not adjusted by considering the changed external environment in the work and political will.	Refer to Recommendations
Sustainability	B	The same as above	Refer to Recommendations



### 3.3 Recommendations

#### 3.3.1 Overall Recommendations

- 1) Both two projects have made good progress in completing the planned activities. Project staff and subcontracting partners and stakeholders have diligently and enthusiastically fulfilled their duties. As a result, the project has generated considerable interest in and support for sustainable solid waste management in the project areas and in China. The project remains relevant, timely and important to goals of sustainable solid waste management at national and local levels. The last year of the project implementation in 2016 will be crucial for magnifying the project impacts and there are some concerns about sustaining the commitment and momentum in the final phase. <sup>[17]</sup><sub>[SEP]</sub>
- 2) The concepts, approaches, methods, mechanisms, guidelines, toolkits and other knowledge products of the two projects have been successfully introduced, and contributed to improvement of solid waste management capacity in prospective areas covered by Lot 2. But replication and the practical application of the project results require further support. The target audiences still have limited capacity to implement solid waste management as envisioned in the project design. The project objectives also needs to be better defined in the remaining project period in terms of end-results that will be achieved, e.g. further consolidation of the key project knowledge products.

#### 3.3.2 China Fluorescent Lamps Collection and Treatment Demonstration Project (CFL)

- 1) Further review the current logical framework, especially on outputs and activities and associated indicators, especially treatment related indicators;
- 2) Initiating additional deeper research work on case studies, development of toolkits, toolboxes for sound arrangement for WFLs collection at community level (small cities and rural communities), based on demonstration experiences;
- 3) Further coordinate research reports with a focus on producing thematic analysis report on key issues under the project, i.e. collection, transportation and treatment, for policy recommendations and for Lot 4 initiatives;
- 4) Further fine-tune the package for replication in mega cities, small cities and rural communities, including a simple one-page toolkit that illustrates procedures and requirements for effective collection and storage.

#### 3.3.3 Sustainable Ship Recycling by Adopting Integrated Waste Management Approaches in China

- 1) Further review the current logical framework, especially on outputs and activities and associated indicators, especially number of the target ship recyclers, and associated activities and indicators;
- 2) Initiating additional deeper research work on policy influencing, based on outstanding results of the current researches and change of the ship recycling market;
- 3) Further coordinate research reports with a focus on creating policy impacts, e.g. possibility of issuing Environment Safeguards Standards (MEP), a guideline documents for Association of Ship Recycling Industry in China as an internal guidelines;
- 4) Further synergizing technical and research reports produced by the project, and initiate exchange and dialogues with policy institutes for policy influencing and for effective implementation of analytical initiatives under Lot 4;
- 5) Exploring opportunities and possibilities of developing policy recommendations to EU for improved sales supervision of used ships, environment requirements and standards.

## 4 LOT 3: FINDINGS, CONCLUSIONS, RECOMMENDATIONS AND LESSONS LEARNED

### 4.1 Introduction

The overall goal of the programme related to LOT 3 is to reduce Heavy Metal pollution in China to support to national and local policy and support building of institutional capacity and conduct pilots on policy implementation at local level.

Details of the 3 projects are given in the table below.

<b>Project 6</b>	<b>Prevention and control of heavy metal pollution in lead-acid battery sector in China</b>
<b>Overall Objective</b>	<b>The overall objective</b> is to contribute to environmental sustainability through heavy metal pollution prevention and control in China
<b>Specific Objective</b>	<b>The specific objective</b> is to demonstrate effective approaches to heavy metal pollution prevention and control in industries in Zhejiang Province, with a focus on lead-acid battery producers companies in Changxing County, and to disseminate experience to national and provincial government.
<b>Region</b>	Zhejiang Province, China (with a focus on Changxing County)
<b>Beneficiary</b>	Zhejiang University
<b>EC Contribution (€)</b>	968,880.00
<b>EC Contribution</b>	80.00%
<b>Total EUR</b>	1,211,100.00
<b>Implementation period</b>	36 months: 08/08/2013 - 07/08/2016
<b>Partners</b>	1 Blacksmith Initiative UK, c/o Ferguson Maidment & Co, Sardinia House, Sardinia Street, Lincoln Inn Fields, WC2A 3LZ London, Great Britain 2 Zhejiang Province Environmental Science Research and Design Institute (usually referred as Huangke Yuan), No. 109, Tian Mu Shan Road, Xihu District, Hangzhou, Zhejiang

<b>Project 7</b>	<b>Emergency response system for heavy metal pollution (METALert) project</b>
<b>Overall Objective</b>	The <i>overall objective</i> is to implement a generic Emergency Response System (ERS) for accidental pollution incidents caused by key heavy metal related industries in China and thus to support China in achieving its environmental targets.
<b>Specific Objectives</b>	Improve the current environmental ERSs in China based on similar experiences and ERSs in the EU with regard to emergencies involving heavy metals releases from industry; Form a sound technical basis for the ERS based on environmental models for source tracking, forecast, simulation and visualisation of heavy metal pollution; Implement, evaluate and demonstrate the ERS two representative pilot sites; Set up the basis for replicating the ERS beyond the case studies of the project by training target groups in using the ERS and transferring knowledge to final beneficiaries.
<b>Region</b>	China: Hunan Province
<b>Beneficiary</b>	VITO (Flemish Institute for Technological Research)
<b>EC Contribution (€)</b>	906,308.58
<b>EC Contribution</b>	80.00%
<b>Total EUR</b>	1,132,888.72
<b>Implementation period</b>	36 months: 01/09/2013 - 31/08/2016
<b>Partners</b>	Partner 1 Chinese Academy for Environmental Planning (CAEP) (China) Partner 2 Nederlandse Organisatie voor toegepast-natuurwetenschappelijk onderzoek (TNO) (the Netherlands Organisation for Applied Scientific Research) (the Netherlands) Partner 3 Chenzhou Provincial Environmental Science Institute (CPESI) (China)

<b>Project 8</b>	<b>Support on the Development of National Strategy for the Control of Heavy Metal Emissions and its Demonstration in Key Polluted Areas</b>
<b>Overall Objective</b>	Perfecting the national and regional policy framework of heavy metal pollutant emission control of China ( <b>policy framework</b> ) and effectively reducing heavy metal pollution so as to protect human health and environmental safety and improve sustainable development.
<b>Specific Objective</b>	Supporting the Ministry of Environmental Protection (MEP) to build the policy framework and relevant emission reduction technology management mechanism by learning from EU experiences

	<p>in heavy metal pollution preventing and controlling;</p> <ul style="list-style-type: none"> <li>Evaluating the implementation of the “Twelfth Five-Year” Plan for Comprehensive Control of Heavy Metal Pollution (herein after referred to as <b>plan</b>) and give suggestions;</li> <li>Presenting the National Action Program for Heavy Metal Pollutant Emission Control in 2016-2020 (Proposal Draft) (hereinafter referred to as <b>program</b>);</li> <li>Through demonstration and promotion in Shuikoushan area, encouraging relevant parties to participate and enhance capacity building of national and local administrative institutions to improve local government’s capacity in policy implementation.</li> </ul>
<b>Region</b>	Target country: China Specific target areas: Shuikoushan Area, Hengyang city, Hunan Province
<b>Beneficiary</b>	Chinese Academy for Environmental Planning
<b>EC Contribution (€)</b>	944,950.98
<b>EC Contribution</b>	74.23%
<b>Total EUR</b>	1,273,004.15
<b>Implementation period</b>	36 months: 16/10/2013-15/10/2016
<b>Partners</b>	UNESCO-IHE Institute for Water Education; the Netherlands Kungliga Tekniska Högskolan (KTH); Valhallvägen 79 100 44 Stockholm, Sweden Beijing University, Beijing Chinese Research Academy of Environmental Sciences; Beijing, 100012 Harbin Institute of Technology; Harbin, China (People's Republic Of), 150001

## 4.2 Findings and Progress

### 4.2.1 Prevention and control of heavy metal pollution in lead-acid battery sector in China

#### General Information

For the evaluation, the representatives of Zhejiang University and Blacksmith Institute were interviewed. In a presentation, the project manager showed the progress of the project and the work to do for the third year. In addition, a representative of Changxing County EPB was also interviewed. A model lead-acid battery assembling facility, where implementation of elements of the project took place was visited and a site walkthrough took place and the responsible manager for Environment, Health and Safety was interviewed.

The project is working towards its objectives through the following activities.

#### Lead-Acid Battery Manufacturers

Providing technical support to the LAB manufacturers with upgrading of their facilities to reduce the levels of pollution to air and water and to decrease the exposure of workers (occupational) and residents living around the facilities. According to the Addendum1, 60 manufacturing companies in China are targeted; starting with 30 in Changxing and gradually expanding to Zhejiang province and Jiangsu province. (LAB companies receive hands-on guidance and make equipment or process improvements)

Thirty companies received one or more on-site visits by end of year 2; 10 by end of the project).

The number of on-site visits conducted by end of year 2 was 55 and twenty-five companies were facilitated with equipment- or process improvements.

At the time of the MTE visit, 28 lead-acid battery (LAB) manufacturers and 2 used lead-acid battery (ULAB) collectors were engaged in the demonstration projects and 30 company reports were completed. ‘Engaged’ means that a factory leader takes part in one of the CSR trainings and/or if one of its factory or production managers takes part in the environmental trainings.

The common technical problems and policy issues encountered by LAB firms were identified.

In the coming year, a Technical Environmental Protection Manual for the LAB Industry will be published by Zhejiang Provincial EPB by end of July 2016, which describes how to treat lead containing waste water, exhaust air and solid waste. Also, in year 3 a policy study will be prepared.

#### **Environmental Capacity Building and Technical Assistance.**

According to Addendum 1: company leaders will learn about CSR, and factory managers will receive training on environmental management. Those companies which provide draft action plans for improvement will receive one-on-one support to achieving the goals formulated in their action plans. Other lead-acid battery production bases in China are going through a similar process, and the project will work with other local governments in a similar way as Changxing.

The situation during MTE was as follows:

- At the end of year 2 of the project, 6 internal trainings and seminars had been organized, with an average number of 10 participants per event. This resulted in 4 selected pilot companies who had made improvements by the end of year 2 and fact sheets were prepared for these 4 model companies.
- Five trainings on Corporate Social Responsibility had been provided by end of year 2 and leaders of 60 companies were trained by the end of year 2.
- Three trainings on environmental management had been completed by the end of year 2 and managers of 90 companies were trained on environmental management.
- Four cross-training meetings have been held by the end of year 2 and thirty lead-acid battery company factory managers had taken part in these cross-training meetings.
- Two excellent case studies had been produced by end of year 2. There had been five media coverages, making reference to one or more of the case studies by the end of year 2.
- Two stakeholder consultations had been held by the end of year 2 and eight stakeholders (LEV manufacturers, technology suppliers and financial institutions) were involved

#### **Government, Monitoring and Enforcement Agencies**

According to the Addendum 1, local monitoring and enforcement agencies will be supported to improve their monitoring of emissions of LAB plants and enforce the environmental policies and regulations.

The following was completed by the end of year 2:

- Four policy consultations and/or workshops had been completed by the end of year 2. The average number of relevant government officials taking part in each workshop was four.
- In the first year, a study tour to Europe took place and six relevant officials took part in this study tour.
- A training course on heavy metal pollution prevention and control was developed for monitoring agencies developed and one training sessions held by the end of year 2. 60 monitoring agencies took part in this training by the end of year 2 and this comprised 80 staffs.
- During the project so far, there has been formal and informal communication between and working together by stakeholders such as local EPB, LAB factories and LAB production equipment manufacturers and this resulted in more improvements than acting as separate or even opposite parties.

#### **National Policy**

According to Addendum 1, the action complements a number of national initiatives, such as the implementation of the 12th FYP on Heavy Metal Pollution Prevention and Control, in which Zhejiang Province has been selected as one of 14 priority provinces. The lead-acid battery industry has been prioritized as one of five key industries causing heavy metal pollution.

This will be implemented in the 3<sup>rd</sup> year.

### **Local Policy**

According to addendum 1, Changxing County Government has limited access to expertise. During this project, Changxing County Government will be assisted as follows.

- (i) Helping companies further improve their production lines and management processes;
- (ii) Further strengthening the capabilities of environmental monitoring agencies;
- (iii) Provision of technical support for policy development;
- (iv) Support in decisions on how to allocate the government funds, and third-party evaluations of the effectiveness of government fund investments.

in addition a knowledge base will be built (see 'notably foreseen publications' below) and will be valuable institutional capacity to China.

Item (i) and (ii) have already been explained in the above. Regarding (iii), the "Guidelines for Complying with Environmental Protection Regulations for the LAB industry in Zhejiang Province were drafted, which will initially be complied by the LAB firms in Changxing and in Zhejiang Province.

After publishing the Guidelines, Zhejiang provincial EPB will report the action to the Ministry of Environmental Protection (MEP). It is anticipated that the Guidelines will be promoted by MEP as a model Guidelines for other provincial environmental agencies in China to adopt.

### **Relevance**

Based on the findings during MTE document review, visit and discussions it can be concluded that the project is highly relevant, since the production of LABs is still growing in China and the environmental practices generally are still poor, with high levels of lead pollution to air and (surface) water and workers and residents exposed to lead.

### **Effectiveness**

In the green LAB industrial parks in Changxing, where the project until now focused on, the environmental conditions are relatively well. This is because these parks were already developed with environmental sound practices in mind and each factory went through the Environmental Impact Assessment (EIA) process with permitted emission levels and the local Environmental Protection Bureau (EPB) enforcing these limits. However, in Zhejiang, Jiangsu and other provinces, there will be many LAB factories with lower environmental performance and local EPBs with lower level of enforcement practices. This comprises not only the battery assembling, but also the lead plates manufacturing.

The target of the project is the LAB industry, which also comprises the collection and recycling / waste management of the end-of-life batteries. Not much attention has been paid to this last mentioned topic until now. Therefore, it is recommended in the last year of the project to change the focus to less developed areas (factories and EPBs), including lead plates manufacturing and end-of-life batteries management. The lead plate production and end-of-life batteries management should also be included in the policy recommendations on local and national level.

### **Efficiency**

Based on document review, site visit and interviews, it can be concluded that the completed work until now has been carried out in an efficient way. However, it was not made clear which role each project partners fulfils and which is their contribution and if these are efficient. In addition, from the submitted quarterly and annual reports, it was not clear which of the task had already been implemented and there is no rationale given for the choices made.

### **Impact**

Until now, the institutional capacity has progressed for officials of EPBs, and managers and EHS staffs of LAB factories, according to the plan. This is a positive impact. In addition, environmental upgrading took place in the model factories. The air emission treatment and waste water treatment in the Changxing county factories was already on a reasonable level, but still some improvement was made. The focus

was put on reduction of occupational exposure of the workers, which has as secondary result that lower workers exposure also results in lower exposure of their family. Based on above mentioned findings, it can be concluded that the project has had a significant positive impact. However, as mentioned earlier, under effectiveness, the impact can be much more increased when areas and factories with poorer practices and experiences are included and when the whole life cycle of the LABs is focused on.

### **Sustainability**

The capacity improvement and environmental practices improvement will continue in the EPBs and factories who engaged to the project. The policy recommendations are likely to be included in the new policies for heavy metal pollution prevention and reduction policies on local and national level (provided that this task continues in the last year of the project). The project results will sustain after the project completion. Would the policy recommendations be transferred into mandatory regulations for all LAB plants in China, it will be highly sustainable.

### **Conclusions**

During the MTE, it was found that there is a focus on the LAB assembling factories in Changxing County. However, according to the addendum 1, the subject of the project is the LAB manufacturing and recycling. With the focus on assembling, the production of the lead plates is excluded, whilst this is a relevant step in the production process of LAB seen from the environmental point of view. For the same reason, the recycling of end of life batteries should be included (two used LAB collectors were engaged in the projects, but no further action was taken).

In the LAB assembling facilities, it was found that in Changxing County, the emissions of lead via air and wastewater were quite under control and also the collection and further management of lead containing dust was practiced well. Therefore, the project team focused on the mitigation of worker's exposure to lead containing dust. During discussions and site visit, it was shown that significant progress had been made in improvement of worker's conditions by reduction of exposure to lead, which will also reduce exposure of family members at home. However, to meet the goal of the project, it should be made transparent that all relevant environmental aspects (emissions to air, water) have been assessed and improvements advised and implemented where possible. In fact, in Changxing, the LAB assembling plants are located in Green Battery Industrial Parks, where environmental performance is relatively high for this sector. Besides, it can be assumed that the enforcement of environmental regulations in these green parks is more intensive and effective than in other areas. Therefore, in the 3<sup>rd</sup> year, it would be useful to focus more on facilities in the other parts of Zhejiang where practices and enforcement of regulations are poorer and hence more improvements can be made.

In summary:

- Good progress has been made with reduction of occupational exposure of workers (which is also environmental improvement);
- Engage more and include more LAB assembling factories in other areas than Changxing County, where practices are poorer and more progress can be made. Focus on all environmental issues and implement measures to improve them.
- Include the production of lead plates, preferably in Zhejiang or Jiangsu province but if not present there also in other provinces.
- Include and assess the used LAB collecting and recycling factories.

The results are summarized in the table below.

Criteria	Score	Rationale	Mitigation/ Recommendation
Relevance	B	<ul style="list-style-type: none"> <li>Objectives very valid (water 10)</li> <li>Activities/outputs in line with goals/objectives</li> </ul>	See above in text part
Effectiveness	B	<ul style="list-style-type: none"> <li>Results are in line with proposed action, though there has been a focus on most relevant issues in Changxing county factories practice situation (occupational situation improvements). Effectiveness can be improved.</li> </ul>	Effectiveness can be improved. by widening the scope, to the whole life cycle and expanding to areas where local EPB and factories environmental practices are much poorer. See also above text part.
efficiency	B	<ul style="list-style-type: none"> <li>The results are tangible and significant. This can still be improved.</li> <li>Working together between stakeholders resulted in more improvements supported by all.</li> </ul>	See recommendations in above text part.
Impact	B	<ul style="list-style-type: none"> <li>The environmental and occupational situation in the model plants has been improved; more impact can be accomplished.</li> </ul>	More impact can be accomplished by extending the action to areas with lower level of environmental practices and by extending to the whole life cycle of the LABs. See also above text part.
sustainability	B	<ul style="list-style-type: none"> <li>For the model plants the results are supported and will sustain. For public awareness and working together, this is supported and likely to sustain. More sustainability is possible.</li> </ul>	More sustainability is possible when the lessons learned from the project will be embedded in national and local policies and regulations. See also above text part.

#### 4.2.2 Emergency response system for heavy metal pollution (METALert)

##### General information

For the MTE, on the 8<sup>th</sup> of January 2016, representatives of CAEP gave a presentation about the project, its goals, stakeholders and progress results so far. After that, the Chenzhou as a pilot location was visited and Ms Ang Wang and Mr Liu Haoran of the local EPB were interviewed. These are the managers and users of the METALert system in Chenzhou pilot area.

The *overall objective* is to implement a generic Emergency Response System (ERS) for accidental pollution incidents caused by key heavy metal related industries in China and thus to support China in achieving its environmental targets.

The *specific objectives* are to:

- Improve the current environmental ERSs in China based on similar experiences and ERSs in the EU with regard to emergencies involving heavy metals releases from industry;

- Form a sound technical basis for the ERS based on environmental models for source tracking, forecast, simulation and visualisation of heavy metal pollution;
- Implement, evaluate and demonstrate the ERS in two representative pilot sites;
- Set up the basis for replicating the ERS beyond the case studies of the project by training target groups in using the ERS and transferring knowledge to final beneficiaries.

The project is working towards achieving its objectives as follows.

- Enhanced capability of our pilot areas in terms of heavy metal pollution emergency management and overall environment governance
- Improved technology levels and policy systems for dealing with environmental emergency responses in China
- A generic heavy metal pollution emergency management system that can be applied in other regions across China
- Opportunities to improve the policy system in terms of emergency management of heavy metal pollution at both central and local level

### **Improve the current environmental ERSs in China based on similar experiences and ERSs in the EU with regard to emergencies involving heavy metals releases from industry**

An Emergency Response System such as METALert is not yet available in China. The MTE team was informed that the city of Zhuzhou in Hunan tries to develop an ERS system but reportedly, this is working very poor. To fill this gap, the METALert system will be developed for China, firstly for 2 pilot areas, one of which is Chenzhou. From the project documentation, it is not clear in which way the choice was made for METALert, based on similar experiences in Europe. However, since all stakeholders have accepted the METALert ERS as the tool to continue with, this is not relevant. The METALert system is a generic tool for emergency response related to emissions to air, water and soil and applicable for incidents in the industry. The wording incidents has a wide range, since apparently, mine tailings, spills, dumps and other wide spread contaminations are also included.

Since environmental ERSs are more or less non-existing in China, the improvement goal with this project is easy to reach. Based on the experience so far in Chenzhou, and the interviews for the MTE it can be concluded that this goal is reached. However, the METALert is not able to produce what was expected. This has various causes:

- The expectations were too high. It was expected that the METALert would fit in the real situation and would provide real solutions, but this is not possible.
- The software is capable to tackle situations with up to 3 sources of contamination; however, multiple sources are present in the Chenzhou area and where possible, the software should further be optimized to deal with the situation in Chenzhou to allow for tracing back multiple sources, or to predict the migration of contaminant profiles resulting from multiple sources.
- The simulations are working reasonable for contaminants in surface water; further optimization for contaminants in air or soil is wished by the users in Chenzhou.
- In Chenzhou area, there is a lack of "sensitive" monitoring data. Without sufficient local data and by using "world data" only, it is not possible to configure, validate and run a model such like METALert and gain accurate results.
- Political causes. Not all counties in Chenzhou area are willing to cooperate and to collect monitoring data.

The following findings were also made regarding the METALert project.

- The conferences and meetings as scheduled in the Addendum 1 have been held including the overseas workshop in Europe where 9 Chinese persons took part in.



- The METALert software is available in the Chenzhou pilot area and adequate number of staff has been trained for using the software.
- The software as such is running well.
- Currently, the software is not frequently in use, since they are waiting till more data has been collected.
- The software as used in Chenzhou includes the management of air pollution and river water contamination, but not groundwater and soil.
- Users in Chenzhou pilot area, wish to have an interface to allow the METALert can be integrated with their monitoring system and in the future a GIS.
- The METALert pilot project has refreshed the mind of the responsible staffs in Chenzhou's EPB and has made them realize they need to gain control of the pollution situation in their own area and able to improve the management of their own region. Based on this, for leaders and other stakeholders, the awareness of the situation and the collaboration on the local level has been improved and there are initiatives started which will help the implementation of the METALert ERS in Chenzhou area. E.g. Chenzhou Environmental Monitoring Office implementing a monitoring system with database.
- In Chenzhou there is concern how the METALert could be continued after this project is finished. It is not clear who would be responsible to manage and update METALert and troubleshoot the software in case of bugs.
- The ownership of the METALert system is also not clear and whether or not it can be copied or used by third parties.
- The project acknowledges the delay in the interim reporting. Comments from project: the delay in the interim report does not affect the activities as detailed in the description of work. There has been a delay in interim reporting. This was mainly caused by the preparation of the audit verification report for which more time than foreseen was needed in providing the necessary statements and proofs from the Chinese partners. The interim report has meanwhile been submitted to the EU Delegation on Feb 26, 2016. The delay is not causing negative impacts on the execution of the project. A budget amendment was proposed on Nov 17, 2015 to cover the extra costs related to the external training in May 2016 and final conference in August 2016. The justification for the budget amendment was given in the request letter and in the narrative report for year 2.

Based on the above findings and the Scope of Work in Addendum 1, the a.o. the following tasks need to be further carried out in the remaining lifetime of the project.

- Full implementation of the Scope of Work in the two pilot areas.
- The scheduled trainings for a wide group of EPBs and industries on the use of the software need to be implemented.
- There is also a policy aspect in this project: ERS for heavy metal pollution in China should be institutionalized in the next 5-year plan for HM prevention and pollution control. Action needs to be taken to communicate timely with the responsible staffs for the 5-year plan. Likely, CAEP is wellfit to fulfill this task by using the connections with LOT 4 of the ESD programme.
- Reported by Chenzhou staffs working with METALert, simulations are possible for air and river water, but not for groundwater and soil. For soil, training was given in April 2015, but apparently, more attention is necessary. For groundwater, VITO considers this not a relevant pathway in this area, but if deemed necessary to simulate contaminants movement in groundwater, there is simulation software available for this purpose.
- The project owners should work towards a situation that further usage and implementation of the software is secured after the project lifetime..

### Relevance

Since currently there is no well working ERS for heavy metals in place and implemented in China, it is highly relevant to develop this for the Chinese situation. Because of this relevance, it is recommended to include 2 pilot areas in the project and to put more emphasis on embedding the use of ERS in the coming 5-year plan for heavy metal pollution prevention and control.

### Effectiveness

The effectiveness of the project has been influenced in several ways. It seems that development of the system itself based on European components has cost relatively more time than expected. Secondly, there was no sufficient data available in Chenzhou area to calibrate the model and use it for the purposes it was designed for, so that until now “world data” have been used. The positive point is that awareness growing and improvement of collaboration in Chenzhou was triggered by this project.

### Efficiency

As stated under Effectiveness, software development and calibration has apparently consumed more time and budget than scheduled. Results with the METALert are less than expected due to lack of data. The project has requested a budget amendment (to above). It seems that time and budget has been spent on not foreseen tasks and issues. Furthermore, the project includes 3 partners. It is not clear which tasks are fulfilled by each partner and if this harmonizes with the budget.

### Impact

As reported, in Chenzhou area, the project has had a significant positive impact until now. However, the project has also aspirations on the national level and it is seen as an opportunity to introduce METALert to other locations such as Qinghai, Hubei, Hunan. In the framework of this project, it is recommended to increase the impact to the level of impact as stated in the Scope of Work and to develop the policies and action plan to meet the ambitions for greater impact in China.

### Sustainability

Though the METALert is not yet properly working in the Chenzhou pilot area, it is qualified as a useful tool and Chenzhou is willing and planning to continue the further implementation of METALert. However, they are concerned about the maintenance and upgrading after the project. For a sustainable result, these concerns should be addressed during the lifetime of the project. Moreover, action to be taken to reach sustainability in other area and on the policy level.

### Conclusions

The following conclusions have been drawn.

- The METALert is not able to produce what was expected. This has various causes.
- The software still needs to be improved to make it capable to tackle multiple source situations as often occurs in China.
- In areas where METALert needs to be used, sufficient baseline and monitoring data regarding contamination and other relevant data such as hydro-geologic conditions need to be collected and made available.
- The software needs to be extended to make it applicable to groundwater and soil simulations.
- The second pilot area is not yet clear and work has not yet been started for the 2<sup>nd</sup> pilot.
- Software ownership as well as maintenance, updating and upgrading after the project lifetime needs to be made clear and secured.
- The financial budget is an issue.

The results are summarized in the table below.

Criteria	Score	Rationale	Mitigation/Recommendations
Relevance	A	<ul style="list-style-type: none"> <li>- Objectives still valid</li> <li>- activities/outputs consistent with goals/objectives</li> </ul>	Refer to Recommendations

		- Activities consistent with intended impacts	
Effectiveness	B	- Negatively influenced by lack of data and by complicated impact situation (multiple sources of Heavy Metals) - The project updated the mind of all stakeholders in Chenzhou area about tackling the soil pollution	Refer to Recommendations
Efficiency	B	Efficiency is negatively influenced by scarce data and slow data collection. Budget expenditure is higher than budgeted. Project partners need to transparently show their contribution to the project.	Refer to Recommendations
Impact	B	High potential in influencing local policy, in Chenzhou area Impact needs to be extended to other areas and to China as a whole by including ERS in national policy. Actions and recommendations are needed for this purpose	Refer to Recommendations
Sustainability	B	Initiatives are being taken to continue with the METELert and also for replication in other cities. Sustainability on the national level needs to be targeted.	Refer to Recommendations

#### 4.2.3 Support on the Development of National Strategy for the Control of Heavy Metal Emissions and its Demonstration in Key Polluted Areas

##### General information

For this project, a presentation with discussion was held in Beijing on the 8<sup>th</sup> of January and the Shuikushan demonstration area was visited several days later, including an introduction and discussion about the demonstration.

The overall objective of the project is to perfect the national and regional policy framework of heavy metal pollutant emission control of China (hereinafter referred to as **policy framework**) and effectively reducing heavy metal pollution so as to protect human health and environmental safety and improve sustainable development.

##### Specific objectives of the project are:

- Supporting the Ministry of Environmental Protection (MEP) to build the policy framework and relevant emission reduction technology management mechanism by learning from EU experiences in heavy metal pollution preventing and controlling;
- Evaluating the implementation of the "Twelfth Five-Year" Plan for Comprehensive Control of Heavy Metal Pollution (herein after referred to as **plan**) and give suggestions;
- Presenting the National Action Program for Heavy Metal Pollutant Emission Control in 2016-2020 (Proposal Draft) (hereinafter referred to as **program**);

- Through demonstration and promotion in Shuikoushan area, encouraging relevant parties to participate and enhance capacity building of national and local administrative institutions to improve local government's capacity in policy implementation.

**Task 1. Building the *policy framework***

This Task consists of field research, data collection, policy framework construction and advice seeking. Most of the first 3 mentioned topics have been completed already. The national basic data sheet still needs to be drafted. Some more data collection is needed for this. A draft of the policy framework is finished. The advice seeking process is ongoing. Task 1 shows good progress. The task includes dissemination of results with stakeholders, including the Heavy Metal office of MEP which is the main target of the project. It might be useful to pay more attention to the reporting and sharing of the takeaways from these study tours, conferences and seminars that were organized in this Task to all stakeholders in the society and to the EUD.

**Task 2. Building heavy metal pollutant emission reduction technology management mechanism**

This Task consist of a part which can be summarized as learning from European experiences including the compilation of a case analysis report and this part is almost completed. Progress is good; sharing of results by reporting to all stakeholders in the society could be a point of attention. The second part of this task is to propose a technological management system and promote this and this work is ongoing (early stage).

**Task 3. Research on EU heavy metal pollution prevention, control and management system**

The literature and field research in the EU for this task is completed. The preparations of recommendations for China's heavy Metal pollution prevention control and management system is basically completed.

**Task 4. Comparative study of China and EU heavy metal pollution prevention and control policies, regulations and standards**

This Task builds upon the results of task 3. The evolution of heavy metal standards and policies and implementation thereof in China is analysed and compared with the EU situation and this leads to suggestions for possible improvements in China. The information collection is basically finished and the comparison and suggestion phases are ongoing. This should be finished shortly and shared with MEP to be able to use the suggestions for the 13<sup>th</sup> 5-year plan.

**Task 5. Completing evaluation report of the implementation of the plan**

The assessment methods and system preparation and collection of data are completed. Investigation in the main regions and data collection and investigation for major industries has been finished and the assessment on National Planning is basically finished. For task 5, it would also be useful to share experiences with the METALert project in the same LOT3.

**Task 6. Completing the program**

This stand for preparing the proposed draft for the 2016-2020 National Action Plan of Heavy Metal Pollutant Emission Control. The survey on public opinion is ongoing. The situation analysis for 2016-2020 is almost finished. The requirements analysis is finished except for the research in Guangdong and the study related to the 13<sup>th</sup> 5-year program has been completed. Research on stage goal and industrial experts consulting as well as seminars for consulting are finished. The Framework design, first draft on National Action Plan and public stakeholder opinion seeking has party been completed.

**Task 7. Pilot demonstration**

The pilot demonstration area is Shuikoushan industrial area and this pilot was visited. A baseline study was completed for this area, with a draft report delivered. The analysis of the applicability of the current policies is ongoing. The training and education activities and round table conferences have been held. Tracking research and performance evaluation are still in progress.

### Task 8 Capacity building

This Task is embedded in Task 1-7 with the same progress.

#### Relevance

The project focuses on to perfect the national and regional policy framework of heavy metal pollutant emission control of China by assisting the MEP, drafting the National Action Program for Heavy Metal Pollutant Emission Control in 2016-2020 and capacity building for all stakeholders and especially stakeholders in Shuikoushan area. The relevance is high, since the NAP will be part of and related to the 13<sup>th</sup> 5-year plan to be published later this year. With this project, the quality of the NAP can be improved thanks to lessons learned from EU policies and practices. Also, the environmental improvements in the Shuikoushan area will be more significant due to this project.

#### Effectiveness

Capacity has been built at all stakeholders. The results during the project and the NAP preparation has been shared and discussed extensively with the main target, the heavy metal pollution prevention and reduction bureau in MEP. The draft is likely to be adopted for the NAP becoming part of the 13<sup>th</sup> 5-year plan. Therefore, the effectiveness is high. Effectiveness can even be improved by ore sharing of lessons learned with public stakeholders and reporting to EUD.

#### Efficiency

The project has been conducted in line with the Scope of Work in the Addendum 1 and the progress is according to the planning so it can be assumed to be efficient.

#### Impact

Capacity of stakeholders grew thanks to the project and the exposure to EU policies and practices as part of it. This is significant impact since this will help to increase the progress for heavy metal pollution prevention and reduction in China. Moreover, the draft NAP as prepared in this project will be the blueprint for the heavy metal NAP in the 13<sup>th</sup> 5-year plan. Policies in the next 5-year period will be according to the results of this project. This is high impact.

#### Sustainability

Since the draft NAP will be endorsed and adopted in the 13<sup>th</sup> 5-year plan the sustainability of the project is good.

The results are summarized in the table below.

Criteria	Score	Reasoning	Mitigation / Recommendation
Relevance	A	Objectives very valid. Activities/outputs consistent with goals/objectives. Results of this project will be found back in the 13 <sup>th</sup> 5 year plan.	
Effectiveness	B	Results are in line with the proposed action; the presence of a MEP staff in the team results in high effectiveness to reach the goals. The model of stakeholder involvement can result in an effective policy making process.	Effectiveness can even be improved by ore sharing of lessons learned with public stakeholders and reporting to EUD.

		Lessons learned sharing could be improved.	
Efficiency	A	Efficiency is good due to the short communication lines, especially with MEP.	
Impact	A	Recommendations of project will likely be incorporated in 13 <sup>th</sup> 5 yr plan. The improvements on the demonstration site are significant	
Sustainability	B	See above: it will be recommended to use this model in the future policy making process	

### 4.3 Recommendations

#### 4.3.1 Overall Recommendations

All three projects are related to the current heavy metal pollution prevention and reduction policy as laid down in the 12th 5-Year Plan and hence related to each other. This should be taken into account and sharing of each other findings, progress and innovations could be worthwhile and result in win-win situation.

#### 4.3.2 Prevention and control of heavy metal pollution in lead-acid battery sector in China

- Engage more and include more LAB assembling factories in other areas than Changxing County, where practices are poorer and more progress can be made. Focus on all environmental issues and implement measures to improve them.
- Include the production of lead plates, preferably in Zhejiang or Jiangsu province but if not present there also in other provinces.
- Include and assess the used LAB collecting and recycling factories.

#### 4.3.3 Emergency response system for heavy metal pollution (METALert) project

- Continue to improve the software to make it capable to tackle multiple sources.
- METALert users should collect sufficient baseline and monitoring data regarding contamination and other relevant data such as hydro-geology.
- Extend the software to make it applicable to groundwater and soil simulations.
- Start with the second pilot area
- Make clear the software ownership as well as maintenance, updating and upgrading after the project lifetime.

#### 4.3.4 Support on the Development of National Strategy for the Control of Heavy Metal Emissions and its Demonstration in Key Polluted Areas

- Make sure that all relevant actions are finished in alignment with the heavy metal pollution prevention and reduction NAP that will become part of the 13<sup>th</sup> 5-year plan.

- Pay attention to the sharing of take-aways from studies, conferences and experiences not only to the inner circle of partners and associates to the project but also general public stakeholders.
- Update properly the EUD about progress made and status of the tasks of the project.

## 5 LOT 4: FINDINGS, CONCLUSIONS, RECOMMENDATIONS AND LESSONS LEARNED

### 5.1 Introduction

The expected result of Lot 4 is an appropriate policy support and networking mechanism to synthesize results from lot 1, 2 and 3 for policy support, networking and dissemination.

Details of the project under Lot 4 are summarized in the table below.

<b>Project 9</b>	<b><i>EU-China Environmental Sustainability Programme Policy Support and Networking Mechanism</i></b>
<b>Overall Objective</b>	The Chinese authorities are better able to achieve environmental sustainability by reducing water and heavy metal pollution and implementing sustainable waste policies.
<b>Specific Objective</b>	A policy support and networking mechanism is in place to synthesize results from the EU-China Environmental Sustainability Programme for policy support, networking and dissemination.
<b>Region</b>	China
<b>Beneficiary</b>	Foreign Economic Cooperation Office (FECO), Ministry of Environmental Protection (MEP)
<b>EC Contribution (€)</b>	900.000
<b>EC Contribution</b>	79.23%
<b>Total EUR</b>	1.136.000
<b>Implementation period</b>	36 months: 02/02/2014-01/02/2017
<b>Partners</b>	<ol style="list-style-type: none"> <li>1. UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION (UNIDO), VIENNA INTERNATIONAL CENTRE, VIENNA A-1400, AUSTRIA</li> <li>2. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Dag-Hammarskjöld-Weg 1-5, 65760 Eschborn, Germany</li> <li>3. The Stockholm International Water Institute, Drottninggatan 33, 11151, Stockholm, Sweden</li> </ol>
<b>Associates</b>	<p><b>Ministry of Environmental Protection of the People's Republic of China (MEP)</b>            -Department of International Cooperation;            -Department of Pollution Prevention and Control;            -Department of Planning and Finance;            -Department of Policies, Laws and Regulations;            -Department of Science, Technology and Standards;            -Department of Environmental Impact Assessment;            -Department of Nature and Ecology Conservation.            Xizhimennei Nanxiaojie, Xicheng District, Beijing, P.R.China</p> <p><b>Ministry of Water Resources of the People's Republic of China (MWR)</b>            -Department of Water Resources, Beijing, China 100053</p> <p><b>Chinese Academy For Environmental Planning of MEP (CAEP)</b>, Beijing, China  <b>Policy Research Center for Environment and Economy of MEP (PRCEE)</b>, Beijing  <b>China-ASEAN Environmental Cooperation Center of MEP</b>, Beijing 100029, P.R.China  <b>Development Research Center of MWR</b>, Beijing  <b>Irrigation and Drainage Development Center of China of MWR</b>, Beijing  <b>The World Bank Beijing Office</b>, Dongcheng District, Beijing  <b>United Nations Environment Programme Beijing Office</b>, Chao Yang District, Beijing  <b>Regional Knowledge Sharing Initiative of ADB</b>, Chaoyang District, Beijing, China</p>

### 5.2 Findings and Progress

The project is working towards achieving its objectives through 4 work packages:

#### 1. Coordination of ESP projects

- 1.1 Networking and cross-learning meetings of ESP projects (month 3-27)
- 1.2 support to Project Advisory Committee (month 3-36)

#### 2. Synthesize results of ESP projects

- 2.1 Establish and maintain an ESP results based monitoring system (month 3-5)
- 2.2 Regularly meet ESP projects (month 4-29)
- 2.3 In depth technical support to ESP projects (month 4-30)

#### 3 Provide policy support



- 3.1 National policy conferences (month 12, 26, 34)
- 3.2 Capacity building through technical expert teams (month 12-36)
- 3.3 Facilitate individual ESP project policy workshops (month 10-29)
- 3.4 Promote ESP results through existing policy platforms (month 12-35)

#### 4 Dissemination to a broader community

- 4.1 Promote ESP results in international meetings (months 12-36)
- 4.2 Promote synergies between ESP programme and relevant projects (months 3-35)
- 4.3 Establish and maintain a web-based information sharing platform (months (2-36)
- 4.4 Other dissemination activities (month 2-36)
- 4.5 Prepare Flagship policy Reports and ESP Synthesis report (month 27-33)

As target groups of this project relevant Chinese policy making bodies (responsible for policy elaboration an implementation in the areas covered by Lot 1, 2 and 3) and the 8 ESP projects under Lot 1-3 are mentioned.

During the first year there were serious delays in contracting GIZ and UNIDO, but this has been taken up well.

Most projects under Lot 1, 2 and 3 mention that the cooperation with FECO is going well. However there are also critical remarks, like FECO is not investing time enough in the project in order to learn/see what is really going on in the projects. Illustrative is maybe also the FECO did not expect projects to ask for extension; however 2 projects have done so.

The project is implemented in a smooth way, good progress is made and activities are merely carried out as planned. Lots of meetings/ conferences were organized in which the projects were given a forum to present and discuss their results. A monitoring system was set up to collect the ESP results. Spending is in line with progress made.

It will however be a challenge for this important ESP project in the final year to synthesize the results from divergent projects under Lot 1, 2 and 3 and to make the programme more than the sum of 9 projects!

The assessment of progress made in Lot 4 is shown in the table below.

	Intervention Logic	Objectively verifiable Indicators of achievement	Progress	Assessment of Progress
<b>Overall Objective</b>	<i>What are the overall broader objectives to which the action will contribute?</i>	<i>What are the key indicators related to the overall objectives?</i>		<b>Progress:</b> <i>A: very good</i> <i>B: good</i> <i>C: problems</i> <i>D: serious deficiencies</i>
	The Chinese authorities are better able to achieve environmental sustainability by reducing water and heavy metal pollution and implementing sustainable waste policies.	(i) All policy recommendations developed under the EPS programme are presented to relevant national and local policymakers and made available in a convenient web-based platform - Y/N; (ii) Number of demonstrations under ESP programme which achieve envisioned objectives - 8	(i) Involvement of relevant policymakers has been excellent. The website is ready and the web-based platform will be finalized in 2016; (ii) The majority of ESP projects are being implemented very well	(i) B (ii) B

	Intervention Logic	Objectively verifiable Indicators of achievement	Progress	Assessment of Progress
<b>Specific Objective</b>	<i>What specific objective is the action intended to achieve to contribute to the overall objectives?</i>	<i>Which indicators clearly show that the objective of the action has been achieved?</i>		<b>Progress:</b> <b>A: very good</b> <b>B: good</b> <b>C: problems</b> <b>D: serious deficiencies</b>
	A policy support and networking mechanism is in place to synthesize results from the EU-China Environmental Sustainability Programme for policy support, networking and dissemination.	(i) Results of Lots 1-3 are summarized in three 'Flagship Policy Reports', presented and discussed with relevant national and local policymakers, giving verifiable stimulus for solution of complex problems addresses by Lots 1-3; (ii) Results of ESP Programme are summarized in one 'ESP Synthesis Report' and associated video, presented to project stakeholders and relevant national and local policymakers; (iii) All knowledge products emerging from the ESP programme are made conveniently available in a single web-based platform; (iv) Average level of satisfaction of ESP projects with the support provided by the ESP Synergy Team and Technical Expert Teams - 75%; (v) Average level of satisfaction of PAC members with the work delivered by the ESP Synergy Team and Technical Expert Teams - 80%; (vi) ESP programme's results are promoted 8 times through national policy platforms; (vii) ESP programme's results are promoted 4 times in international meetings; (viii) Number of media coverages of the ESP programme - 50	(i) The flagship reports are currently being drafted, on schedule; (ii) Many materials are coming in for the synthesis report, and the video production company has been identified; (iii) Website is ready but the database will be done in 2016. The plan is clear and the provider has been identified; (iv) No survey has been conducted but general feedback has been positive; (v) the PAC members have expressed satisfaction with lot 4; (vi) promotion of ESP results has been very good; (vii) ESP has been promoted in the world water week in Sweden and other platforms; (viii) media coverage to date has been modest but this will be boosted in 2016.	(i) B (ii) B (iii) C (iv) NA (v) B (vi) A (vii) B (viii) C
<b>Expected Results</b>	<i>The results are the outputs envisaged to achieve the specific objective. What are the expected results?</i>	<i>What are the indicators to measure whether and to what extent the action achieves the expected results?</i>		<b>Progress:</b> <b>A: very good</b> <b>B: good</b> <b>C: problems</b> <b>D: serious deficiencies</b>
<b>0.1</b>	Staff and facilities are in place soon after project start	(i) Number of full-time project staff in place - 3; (ii) ESP Synergy Team and Technical Expert Teams operational by month 3 - Y/N; (iii) number of internal training sessions held - 2 by end of year 1; 4 by end of year 2; 5 by project end; (iv) number of ESP Synergy Team staff which stay from the action's start to end - 2	(i) 3 full-time staff members are in place; (ii) there were delays in getting the international expert teams operational; (iii) 2 internal training sessions held; (iv) Li Pei, Zhang Xiaolan and Li Jia stayed throughout the project.	C
<b>1.1</b>	Networking and cross-learning meetings organized for ESP projects and programme visibility	(i) Number of networking and/or cross-learning meetings organized with all ESP project represented - 1 by end of year 1; 2 by end of year 2; 3 by project end; (ii) number of local ESP Synergy Events organized - 2 by end of year 2; 3 by project end; (iii) number of media coverages of programme launch and dissemination events - 20	(i) Good networking meetings held on schedule (Jun 2014, Nov 2014, Nov 2015); (ii) several good local events held (Jun 2014, Jan 2015, Apr 2015, Jul 2015); (iii) some media coverage (20) - plan to strengthen in 2016	B

	Intervention Logic	Objectively verifiable Indicators of achievement	Progress	Assessment of Progress
1.2	Project Advisory Committee meetings facilitated	(i) Number of PAC meetings facilitated - 1 by end of year 1; 2 by end of year 2; 3 by project end; (ii) level of satisfaction of PAC chair and co-chair with the action's facilitation of the PAC events - 80%	(i) PAC meetings held on schedule; (ii) PAC members expressed satisfaction	B
2.1	ESP Results-Based Monitoring System established	(i) Main results of all ESP projects are conveniently presented in one framework prepared by end of year 1 - Y/N	(i) Monitoring framework established	B
2.2	ESP Synergy Team regularly meets ESP projects	(i) Number of individual meetings between ESP projects and ESP Synergy Team, not counting those under activity 1.1 - 12 by end of year 1; 26 by end of year 2; 30 by project end; (ii) by project end, all ESP projects have had at least 2 individual meeting with ESP Synergy Team, not counting activity 1.1 - Y/N	(i) Very regular contact with each of the ESP projects, as well as some individual meetings (20); (ii) sufficient individual interaction with each project	B
2.3	In-depth technical support provided to ESP projects	(i) In-depth technical support facility made available and announced to ESP projects by month 5; (ii) number of ESP projects which receive in-depth technical support - 1 by end of year 1; 4 by end of year 2; 6 by project end	(i) Chinese technical experts provide in-depth support to many of the projects, as well as international experts for some; (ii) all projects have received such support	A
3.1	National policy conferences organized	(i) Number of national policy conferences organized - 1 by end of year 2; 3 by project end; (ii) highest level attendance in at least one of the policy conferences - vice-minister; (iii) minimum number of relevant policymakers present in each of the national policy conferences - 3	(i) National policy conferences organized as planned, including a launch with the minister of environment; (ii) minister and vice-minister attended events; (iii) good participation from government officials in each conference	A
3.2	Technical support to national and local policymakers through technical expert teams	(i) Number of capacity building events held - 1 by end of year 2; 2 by project end - and number of relevant participants - 40; (ii) guidelines for policymakers on approaches to jointly manage water quality, solid waste and heavy metal pollution completed - Y/N	(i) A 80-participant capacity event held for lot 1 in Nov 2015; (ii) guidelines and other tools are emerging for each of these themes	B
3.3	Individual policy workshops facilitated for ESP projects	(i) Number of individual policy workshops facilitated for ESP projects - 2 by end of year 2; 3 by project end	(i) Individual workshops facilitated for several projects (Lead-Acid Project; SUSTAIN H2O Project)	B
3.4	ESP results promoted through existing policy platforms	(i) Number of domestic policy platforms through which ESP results are promoted - 5 by end of year 2; 8 by project end	(i) Promoted through a number of domestic policy platforms (China-EU Ministerial Dialogue; 3iPET; Sino-German Environment Forum; China-Europe Water Platform, etc.)	B
4.1	ESP results promoted in international meetings	(i) Number of occasions at which ESP results are promoted in international meetings - 2 by end of year 2; 4 by project end	(i) Promoted at World Water Week in Stockholm, and UNIDO's biennial global green industry conference	B
4.2	ESP projects supported in interaction with other relevant projects	(i) Number of interactions facilitated between ESP projects and other relevant projects - 3 by end of year 1; 9 by end of year 2; 12 by project end	(i) Numerous interactions with other projects such as EGP, Switch Asia, PIANO, Sino-Norwegian Environmental Competence	A

	Intervention Logic	Objectively verifiable Indicators of achievement	Progress	Assessment of Progress
			Building Project, GEF Mainstreaming Project, etc.	
4.3	Web-based platform established with convenient database of all public materials produced through the entire ESP programme	(i) Web-based platform established by month 5 - Y/N; (ii) level of satisfaction of PAC chair and co-chair with the website and its database - 80%	(i) Website is ready but the database will be done in 2016; (ii) level of satisfaction not yet surveyed	C
4.4	ESP results promoted through other dissemination channels	(i) A set of consistent and professional communication materials prepared by month 4 - Y/N; (ii) number of quarterly updates prepared and disseminated - 12; (iii) number of media coverages achieved throughout programme (double-counting those in activity 1.1) - 12 by end of year 1; 30 by end of year 2; 50 by project end	(i) Done; (ii) excellent quarterly updates; (iii) media coverage is will be strengthened in 2016	A
4.5	Three Flagship Policy Reports and one ESP Synthesis Report prepared	(i) Three ESP Flagship Policy Reports prepared - Y/N; (ii) ESP Synthesis Report and Video prepared - Y/N; (iii) average level of satisfaction of PAC chair and co-chair with the four final reports - 80%	(i) Flagship reports on schedule; (ii) good materials for synthesis report and video; (iii) level of satisfaction not yet surveyed	B

### Relevance

The objectives of the project, i.e. to have in place a mechanism for policy support, networking and dissemination of the ESP projects, remain relevant and valid and a priority for the main stakeholders, e.g. MEP, MWR, the ESP projects, etc.

The project overall objective is that the Chinese authorities are better able to achieve environmental sustainability by reducing water and heavy metal pollution and implementing sustainable waste policies. The project specific objective is that a policy support and networking mechanism is in place to synthesize results from the EU-China Environmental Sustainability Programme for policy support, networking and dissemination.

The activities were designed specifically to fulfil these goals and objectives – they are highly consistent. The intended impacts and effects have been listed in the logical framework of the project, under ‘indicators’ for the overall goals and specific objective. Given the difficulty of quantifying a networking or policy impact, they have been worded more in terms of the key outputs, with some near-impact outcomes, such as whether policymakers have been exposed to the results, ‘level of satisfaction’ etc. The activities are highly consistent with these impacts.

### Effectiveness

The project is being implemented closely according to its original design, and is achieving the envisioned targets. There is a good basis to achieve the foreseen results and objectives. But extra effort has to be made in the final year to synthesize the results of the different projects, the staff of the project are aware of the challenging final year.

There are a few areas which require attention in the final year, such as the final policy reports, dissemination, knowledge management, and reaching out to media. There is sufficient time to achieve these remaining results and objectives. The biggest difficulty faced the project has been delays in contracting UNIDO and GIZ. There have also been some difficulties in financial management.

There is good reason to believe that the results are contributing to policy. There is a close link between FECO and MEP, and the project is frequently exposed to relevant policymakers. Lot 4 is paying special attention to ensuring that the projects produce meaningful policy recommendations, and that their policy lessons are effectively communicated to the right policymakers, whether at local or national level.

### **Efficiency**

The project implementation is generally on track in terms of results, however spending is lagging behind due to the contracting delays. The level of spending, and the total budget, are lower compared with the results achieved.

FECO is a local organization, with existing links to the right policymakers and each of the partners. All partners have long experience with these international projects in China. It is assessed that all of the project objectives will be achieved by the end of the project.

### **Impact**

As a result of the project, all stakeholders (government, the EU, the beneficiaries) in the ESP are getting more information about all of the ESP projects, and are in a better position to interact. Importantly, this benefits the uptake of the results of the projects – the lessons and experiences are much more likely to be taken into account in policymaking, and hopefully also by other areas within and outside of China, although this requires a bit more work. The beneficiaries benefited from better interaction among one another, from the inputs of the Chinese and international technical experts, and from better access to policymakers.

The grant projects (lot 1-3) each have their objectives. To them, policy impacts are usually just one of their objectives – they also seek to make a change in their particular area or industry. In many cases, the impacts of the projects are related to giving people a better understanding of a particular problem and how to deal with it. The projects are shedding light on an issue, and therefore their communications and dissemination efforts are of particular importance. It matters for them that lot 4 can help them access a broader dissemination network, and sharing their results within the ESP community helps to build their broader communications, and ultimately gets the message to more key people.

In addition, this project offers access to a specific group of national policy makers and improved alignment of the recommendations and learning from the project with key policies that are currently under development at the national level by the Ministry of Environmental Protection. The flagship reports and final recommendations from the projects will give direct inputs and support to implementation of, for example, the Action Plan on Water Pollution, the National Five Year Plans on Heavy Metal Pollution Prevention and Control, etc.

The real impact of the project has to be achieved in the final year. Preparations to reach the foreseen impact are in place.

### **Sustainability**

The networking and policy mechanism, and the ESP community, are likely to live on beyond the end of the project. Many organizations have built links, and importantly UNIDO, SIWI and GIZ work on a regular basis with FECO. Importantly, FECO has developed its 3iPET platform, which it will use to continue to keep the community together (and has made links to other EU programmes, such as PIANO).

The policy impacts from the project will likely be visible in the year or so following the implementation, and many policy impacts have a broad and lasting benefit.

In addition, this project format itself is an innovation. It will provide a format and experience in MEP-FECO (transferable to similar organizations in different ministries) to directly link EU-China programmes and the learning they achieve into the policy formation, review and implementation process in China.

The level to which ESP results are incorporated in policy, whether or not ESP beneficiaries, partners and people continue to work together in the future, whether there are means to finance future work, whether or not all the knowledge built through the project remains available in a convenient format.

The results are summarized in the table below.

Criteria	Score	Reasoning	Mitigation
Relevance	A	<ul style="list-style-type: none"> <li>Objectives very valid</li> <li>Activities/outputs consistent with goals/objectives</li> <li>Strong needs of projects for technical supports</li> </ul>	
Effectiveness	B	<ul style="list-style-type: none"> <li>Generally results are in line with the proposed action, though there had been serious delay in contracting UNIDO and GIZ;</li> </ul>	
Efficiency	A	Spending is in line with physical activity progress since substantive work started.	
Impact	B-C	It's still to be shown, in addition to the policy & knowledge sharing oriented workshops, exchanges and meetings initiated and supported by Lot 4.	Refer to Recommendations
Sustainability	B	A long standing e-platform created, i.e. 3iPET, which could be used to serve a mechanism for ensuring long term sustainability of the ESP results.	

### 5.3 Recommendations

1. The need for Lot 4 to provide more technical support to the implementation of the final year work plan of projects under Lot 1-3. Some projects have requested extension of the project period, so good coordination with all projects is needed to be sure to collect the required information from the projects in an efficient way. The different projects have to know when what kind of information (e.g. on certain subjects) should be made available. This is a requirement for the final year work plan for the different projects.
2. Guarantee that Lot 4 and its experts have enough efficient technical interactions with projects under Lot 1-3 for the benefits of getting better understanding of the projects as a basis for synthesizing/consolidation of project results.
3. The need for Lot 4 to provide guidance and guidelines for project results consolidation before the flagship policy synthesis report development is underway. This remark is in line with the previous remark. This can mean that just after the spring festival FECO will prepare a first list of policy

subjects to be taken up in the coming year (for water, waste and heavy metal). By indicating priorities the synthesizing process can be structured.

**When, what kind of information: an example for the water projects (LOT 1).** All water projects are in their final phase, so there is a pressure to finalize products and actions. It will help these projects to be clear about requirements from Lot 4, in order to plan their project activities and synthesize activities as required by Lot 4. Practically this can mean to announce immediately after the spring festival which topics the technical adviser's team wants to take up this year under Lot 4. For each topic can be indicated by when the final reporting on the results of the different projects is required. Two potential urgent topics that are very relevant in the water policy sector are pollution discharge permits and environmental targets/ approaches, which will be taken up this year and will be discussed on certain platforms outside ESP. So coordination is required to guarantee timely inputs from the different projects.

In case for instance the topic on discharge permits has to be finalized in June 2016, than there will be a need to receive reports from the projects by let's say April, and have a thematic workshop on these topics with the experts. In this workshop the steps towards a practical ESP policy recommendation on this topic can be made. In this way the results of the different ESP water projects will be very efficiently used in policy recommendations.

4. The need for Lot 4 to play a leading role in reviewing and revising the log frames of the projects under Lot 1-3; to provide technical steering to reviewing and revision of log frame of the projects under Lot 1-3, as well as overall log frame of the ESP.
5. Further strengthening implementation of Lot 4 so that Lot 4 and participating agencies in Lot 4 are able to effectively utilize the project outputs: (1) ESP to engage selected experts in thematic areas, e.g. experts in the area of policy influencing, public participation, strategy development, capacity building, and public policy and governance experts as a supplementary arrangement to support development of policy recommendations; (2) Developing and implementing a final year dissemination and replication plan of the project models at a national level; (3) Initiating more technical interactions with projects under Lot 1-3 for the benefits of getting better understanding to the projects and provide technical supports to implementation and consolidation of the project results; (4) provide guidance and guidelines for project 1-3 results consolidation before the flagship policy synthesis report development is underway. The results of the 8 projects under Lot 1-3 are to be synthesized under the Lot 4 project. It is necessary to provide more technical support to the implementation of the final year work plan of the projects under Lot 1-3.
6. Consolidating the project concepts, approaches, mechanisms, tools, guidelines, policy recommendations and other key knowledge products introduced and developed by the project, e.g. integrated watershed/catchment management, integrated water resources management, whole lifecycle approach for heavy metal management, integrated pollution control, participatory management, financing mechanisms and so on that are to be disseminated and promoted for replication.

## 6 ESP: OVERALL FINDINGS AND RECOMMENDATIONS

The *EU China Environment Sustainability Programme (ESP)* is a 4 year project funded by European Union (EU) in cooperation with the Chinese government, aiming to support China in its effort of meeting the environmental and climate change targets defined in the 12 Five Year Development Plan. The specific programme objective is to support the Chinese authorities in their efforts of achieving environmental sustainability by reducing water and heavy metal pollution and implementing sustainable waste policies.

The ESP includes four complementary components: (1) improvement of water quality; (2) sustainable solid waste management; (3) heavy metal pollution prevention and control; and (4) a horizontal policy support and networking mechanism to synthesize results for policy support and dissemination. These pollution issues addressed by component 1, 2 and 3 have been given high priorities in the beneficiaries to assist in attaining these important goals. The horizontal component 4 is designed to maximize project impact through synthesizing results, feeding to policy framework, networking and dissemination.

In addition to funding from EU, major contributions of matching funds are being provided by the beneficiaries and their partners and associates. The project is being implemented primarily through calls for proposal with participating EU and Chinese institutions.

The Mid Term Evaluation was undertaken in accordance with EU requirements to review progress to date and to recommend any revisions to the project implementation that may be needed during the remaining one-year period. The evaluation included field visits to the project sites, meetings with beneficiaries and their partners and associates.

The evaluation found that the project has been given a high priority by 12 beneficiaries and their partners and associates, and more importantly by Chinese governments at various levels. This has created a high level of awareness about the ESP and about importance of environment sustainability in China's sustainable development agenda. The interest in the ESP also reflects the growing concern in China about the environmental impacts of economic development.

The conclusions of this mid-term evaluation are overall positive. The project has made relatively good progress in completing the planned activities. The project implementation has been satisfactory in terms of outputs completed and project management, particularly recognizing the project design complexity and the new experience with international projects. The exception is the lack of an effective project monitoring system, characterized by a general absence of reliable indicators of measurable results in the project design. Most of the reporting is based on completion of activities and outputs.

In summary, the Mid Term Evaluation presents the following overall findings and recommendations:

1. Good **progress** in implementation has been made. In all projects activities have been taken up in an active way and in general results have been achieved as foreseen in the work plans and project definition. Commitment is shown by the projects; this has been noticed in all the presentations and visits. European experience is generally well used.
2. All projects are very **relevant**, although there has been a rapid change of the external environment of the projects, e.g. the declining in use of fluorescent lamps following the promotion of the use of LED and energy saving lamps and the issue of Water 10. The latter has surely stressed the relevance of the projects. The project objectives are very valid, supported by actual policy developments like the Water 10 action plan and national wide hazardous waste management regulations being implemented. Activities and outputs are consistent with the defined goals and objectives. Activities are consistent with intended impacts.



3. The **effectiveness** of the projects is high. Generally results are in line with the proposed action. In some of the projects more emphasis has to be given on finalization of results and the policy impact of the results. Different opinions exist on the contents of concepts introduced by the project, e.g. integrated watershed/catchment management, integrated water resources management, whole lifecycle approach for heavy metal management, integrated pollution control, participatory management, financing mechanisms and so on and their practical application in the project areas. These concepts, approaches, mechanisms and tools and the extent to which they can be used by the Chinese agencies need to be further defined, discussed and assessed for potential dissemination and replication in the final year of the project. The final year of the ESP will be very important. The results of the 8 projects under Lot 1-3 are to be synthesized under the Lot 4 project. It is necessary to provide more technical support and steering to the implementation of the final year work plan of the projects under Lot 1-3.
4. **Efficiency** of the projects looks sound, in general in a cost effective way activities are taken up. Spending is in line with physical progress. For most of the projects it is a new experience to run projects according to EU management procedures. This has led to minor delays. But proper use of EU tools could have helped the projects, e.g. the use of the logical framework as a management tool is not practiced. In these aspects some guidance from EUD site could have helped, e.g. in the use of use of logical frameworks, feedback on proposals, feedback on quarterly reports, etc. For two projects there is a need for project extension, reasons being a complex institutional set up and changes in staff.
5. The potential **impact** of the ESP is high on local and national policy level. The Project Document set high expectations of providing support to the Chinese authorities in their efforts of achieving environmental sustainability by reducing water and heavy metal pollution and implementing sustainable waste policies by the end of the project. The progress toward this result has been moderate and a large part still has to be achieved in the final year of the program. So this surely requires attention of all project partners, especially those involved in Lot 4. This assessment reflects the need now to concentrate on further developing policy recommendations and key project knowledge products, and demonstrating effective replication of the project results elsewhere in China. Additional work has to be done to interpret project results so as to increase policy impacts at local level and national level. This requires extra attention of all 9 projects in the final year. Additional work is required on case studies and other technical reports to make the results easier accessible for policy development. Extra coordination and effort on this aspect is required from FECO (Lot 4 project) in the important final year (2016).
6. With regard to the **sustainability**, the sustainability of the ESP is high. In general the activities of the projects are in line with top priorities of the project partners and governments at various levels. However more work is needed for institutionalizing project results in the system. The evidence so far suggests that the increased awareness and capacity of governments, private sector and the public toward environment sustainability in the face of rapid economic development pressures will sustain interest and support for the project objectives. The critical issue of institutional uptake and operationalising the project concepts and tools will affect the sustainability after project completion in 2016.
7. The final year of the ESP will be very important. The project should focus on four priorities during the remaining one-year project period:
  - a. Further strengthening implementation of Lot 4 so that Lot 4 and participating agencies in Lot 4 are able to effectively utilize and synthesize the project outputs: (1) Developing and implementing a final year dissemination and replication plan of the project models at a national level; (2) Initiating more technical interactions with projects under Lot 1-3 for the benefits of

getting better understanding to the projects and provide technical supports to implementation and consolidation of the project results; (3) provide guidance for project 1-3 results consolidation before the flagship policy synthesis report development is underway; (4) provide more technical support to the implementation of the final year work plan of the projects under Lot 1-3. The MTE mission noticed that Lot 4 already made arrangements for strengthening implementation of Lot 4, e.g. arrangements for technical experts under Lot 4 to meet with projects, site visits and provision of technical support, submission of outputs and so on.

- b. A logical framework review work plan should be prepared and implemented for the remainder of the project with an emphasis on clearly defined outcomes that are to be achieved by 2016 to reflect the changed external environment and emerging demands associated with the latest development of prospective sectors. It is expected that Lot 4 will take lead in reviewing and revising the logical frameworks of the projects under Lot 1-3 and Lot 4.
- c. Consolidating the project concepts, approaches, mechanisms, tools, guidelines, policy recommendations and other key knowledge products introduced and developed by the project, e.g. integrated watershed/catchment management, integrated water resources management, whole lifecycle approach for heavy metal management, integrated pollution control, participatory management, financing mechanisms and so on that are to be disseminated and promoted for replication. The MTE mission noticed that Lot 4 already suggested a specific action in similar regard in late 2015, e.g. producing a catalogued inventory and summary of all project reports that could be stored and shared in an online knowledge hub. This could be a good example of way forward on how Lot 4 could realize this priority in the final year.
- d. In relation to inter-programme experiences sharing and EU China Exchange, it is recommended that 1) EU and leading partners of ESP find a way that is institutionally and financial practical to make wise use of experiences and knowledge cultivated from the completed EU funded projects in China in the process of consolidation of the project concepts, approaches, mechanisms, tools, guidelines, policy recommendations and other key knowledge products, e.g. EU China Environment Governance Programme, the EU-China River Basin Management Programme, and so on. 2) EU and its counterparts in China to explore opportunities and possibilities of developing policy recommendations to the EU and China for improved sales supervision of used ships from EU member states and China, environment safeguard requirements and standards, and so on.

## **ANNEX C: Documents consulted**

### **LOT 1/ project 1 Binhai New District of Tianjin City**

- Grant Contract
- Annex 1 to the Grant Contract
- Budget for the action
- Quarterly update 1 (August - October 2013)
- Quarterly update 2 (November 2013 - January 2014)
- Quarterly update 3 (February - April 2014)
- Quarterly update 4 (May-July 2014)
- Quarterly update 5 (August - October 2014)
- Quarterly update 6 (November 2014 - January 2015)
- Quarterly update 7 (February - April 2015)
- Quarterly update 8 (May-July 2015)
- Quarterly update 9 (August - October 2015)
- Interim narrative report 2014 (November 2014)

### **LOT 1/ project 2 Demonstration of Pollution Discharge Management for Water Quality Improvement in the Songhuajiang-Liaohe River Basin**

- Grant Contract
- Annex 1 to the Grant Contract
- Budget for the action
- Interim narrative report 2014 (September 2014)
- Quarterly update 1 (September-November 2013)
- Quarterly update 2 (December 2013- February 2014)
- Quarterly update 3 (March-May 2014)
- Quarterly update 4 (September-December 2014)
- Quarterly update 5 (December 2014-February 2015)
- Quarterly update 6 (March-May 2015)
- Deliverable D4.1 (final report) (June 2015)
- Deliverable D1.1 (final report) (June 2014) Aquatic Eco-function Zoning Map
- Deliverable D3.1 (final report) (March 2015)
- Deliverable D3.3 (final report) (May 2015)
- Introduction and progress (in Chinese) (November 2014)

### **LOT 1/ project 3 Megacities and their watersheds**

- Grant Contract
- Annex 1 to the Grant Contract
- Budget for the action
- Interim narrative report 2014 (July 2014)
- Quarterly update 1 (July-October 2013)
- Quarterly update 2 (November 2013- January 2014)
- Quarterly update 3 (January-April 2014)
- Quarterly update 4 (April-June 2014)
- Quarterly update 5 (July-October 2014)
- Quarterly update 6 (October 2014-January 2015)
- Quarterly update 7 (January-April 2015)

### **LOT 2/ project 4 China Fluorescent Lamps Collection and Treatment Demonstration Project (CFL)**

- Grant Contract
- Annex 1 to the Grant Contract
- Budget for the action
- The 1<sup>st</sup> Interim narrative report 2014 (July 2014)
- The 2<sup>nd</sup> Interim narrative report 2015 (July 2015)
- Quarterly update 1 (Sept – November 2013)
- Quarterly update 2 (Dec 2013 – February 2014)

- Quarterly update 3 (Mar – May 2014)
- Quarterly update 4 (December – November 2014)
- Quarterly update 5 (December 2014 – February 2015)
- Quarterly update 6 (March – May 2015)
- Quarterly update 7 (September – November 2015)
- Annex 1 Technology Roadmap – Technology improvements and experiences based on European Experiences in WEL Treatment;
- Annex II State of the Art, BAT & BEP of WEL Treatment in Europe;
- Annex III Proposed Measures for City Wide Collection and Recycling of Waste Fluorescent Lamps to Beijing;
- Annex IV Proposed Measures for City Wide Collection and Recycling of Waste Fluorescent Lamps to Chengdu;

### **LOT 2/ project 5 Sustainable Ship Recycling by Adopting Integrated Waste Management Approaches in China**

- Grant Contract
- Annex 1 and III to the Grant Contract
- Budget for the action
- The 1<sup>st</sup> Interim narrative report 2014 (July 2014)
- The 2<sup>nd</sup> Interim narrative report 2015 (July 2015)
- Quarterly update 1 (July – October 2013)
- Quarterly update 2 (November 2013 – January 2014)
- Quarterly update 3 (February – April 2014)
- Quarterly update 4 (July – October 2014)
- Quarterly update 5 (November 2014 – January 2015)
- Quarterly update 6 (February – April 2015)
- Quarterly update 7 (July – October 2015)
- Ship Recycling Project - The modifications are all due to the change of TPIS. S-WTS will be implemented as scheduled in the proposal.

### **LOT 3, Project 6: Prevention and control of heavy metal pollution in lead-acid battery sector in China**

- Grant Contract
- Annex 1 to the Grant Contract
- Annex 1, special conditions
- Annex 1, budget
- Quarterly reports, 1 – 6
- First narrative interim report, Dec 10, 2014
- PPT, presentation during MTE visit.

### **LOT 3, Project 7: Emergency response system for heavy metal pollution (METALert)**

- Grant Contract
- Annex 1 to the Grant Contract
- Budget amendment
- Detailed Plan year 2
- Metalert general PDF
- Metalert general, PPT
- Metalert, general, revised, combined
- Quarterly interim reports, 1-7
- Interim Narrative reports, year 1 and year 2 (draft)
- Deliverable reports D2.1-D2.5

### **LOT 3, Project 8: Support on the Development of National Strategy for the Control of Heavy Metal Emissions and its Demonstration in Key Polluted Areas**

- Grant Contract
- Annex 1 to the Grant Contract
- Annex 3 Budget
- Quarterly reports nr 1-2

- PPT during meeting in Beijing

Also the prepared documents during the project implementation were available for review during the meeting in Beijing.

#### **Lot 4/ project 9 EU-China ESP Policy Support and Networking Mechanism**

- Grant Contract
- Annex 1 to the Grant Contract
- Budget for the action
- Interim narrative report 2015 (January 2015)
- Working mechanism (date not mentioned)
- Quarterly update 1 (February - April 2014)
- Quarterly update 2 (May-July 2014)
- Quarterly update 3 (August - October 2014)
- Quarterly update 4 (February-April 2015)