

Independent terminal evaluation

BAT/BEP Center for Environmentally Safe Disposal of Potentially Hazardous Consumer Products and Industrial Wastes Phases I and II

UNIDO project number: US/RUS/10/002



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

UNIDO INDEPENDENT EVALUATION DIVISION

Terminal evaluation

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Products and Industrial Wastes**

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Glossary of evaluation related terms

Term	Definition
Baseline	The situation, prior to an intervention, against which progress can be assessed.
Effect	Intended or unintended change due directly or indirectly to an intervention.
Effectiveness	The extent to which the development intervention's objectives were achieved, or are expected to be achieved.
Efficiency	A measure of how economically resources/inputs (funds, expertise, time, etc.) are converted to results.
Impact	Positive and negative, intended and non-intended, directly and indirectly, long term effects produced by a development intervention.
Indicator	Quantitative or qualitative factors that provide a means to measure the changes caused by an intervention.
Lessons learned	Generalizations based on evaluation experiences that abstract from the specific circumstances to broader situations.
Logframe (logical framework approach)	Management tool used to facilitate the planning, implementation and evaluation of an intervention. It involves identifying strategic elements (activities, outputs, outcome, impact) and their causal relationships, indicators, and assumptions that may affect success or failure. Based on RBM (results based management) principles.
Outcome	The likely or achieved (short-term and/or medium-term) effects of an intervention's outputs.
Outputs	The products, capital goods and services which result from an intervention; may also include changes resulting from the intervention which are relevant to the achievement of outcomes.
Relevance	The extent to which the objectives of an intervention are consistent with beneficiaries' requirements, country needs, global priorities and partners' and donor's policies.
Risks	Factors, normally outside the scope of an intervention, which may affect the achievement of an intervention's objectives.
Sustainability	The continuation of benefits from an intervention, after the development assistance has been completed.
Target groups	The specific individuals or organizations for whose benefit an intervention is undertaken.

Executive summary

The focus of attention of the UNIDO project presently under terminal evaluation has been the system and methods of management and disposal of two specific types of waste posing a potential hazard to the environment of the Russian Federation (RF). The RF as most developed countries, is confronted with the challenge of having to cope with ever-increasing volumes of used and discarded consumer and industrial products turned to waste; only her problem is greater and more pressing because of the large size of the country. Out of the many types of waste generated, the management of two types – rather different from one another – has been addressed by the UNIDO project: waste electronic and electrical equipment (WEEE) and so-called rubber technical goods (RTG). The choice of these two types, although arbitrarily selected from the nearly endless spectrum of the country's waste materials, proved fortunate in that it vividly demonstrated the huge scope and variegated nature of the country's waste disposal problem. The former, WEEE, come from a range of goods starting with television sets, mobile phones and other telecommunications equipment; the latter, RTG, consist mostly of worn automobile and truck tyres. In the WEEE case, valuable materials that could find use in a number of high-tech industries are getting lost, while in the RTG case, substantial volumes of relatively low-valued material could be turned into a resource, mainly in the construction industry.

The RF is yet to undertake a determined effort at applying modern methods to mitigate the environmental impact of such potentially hazardous types of waste by an adequate management of suitable systems of their collection, recycling/re-use and disposal, instead of merely dumping them in landfills and open dumpsites. It can be estimated that < 90 billion tons of waste is accumulated in Russia each year, with < 75 % thereof being neither recycled nor re-used, but simply transported to huge landfills or dumped illegally. *E.g.* the volume of municipal solid waste in Russia – which, in absence of sorting, also includes WEEE and often even RTG – has been steadily increasing in recent years and is estimated to reach 450-500 kilograms per capita per year by 2025. As at 2013, only 7-8% were recycled. While shifting perceptibly from public to private, waste management still is state-dominated. Russia's waste management infrastructure is obsolete, up to 30 % of landfill sites do not meet sanitary standards; waste collection often is non-selective, with plenty of illegal disposal of waste. Russia of course, as one of the largest providers of raw materials, also generates large quantities of industrial waste. As at the beginning of the project period, legislation did not go far enough to stimulate recycling. There is a lack of environmental education among population, and slow adoption of waste sorting and separation. All this gives ample grounds for UNIDO assistance.

The problem is becoming more urgent as time goes on. Thus the task of the ambitious UNIDO Project US/RUS/10/002 – Phase I and Phase II has been to assist the Russian Ministry of Natural Resources and Environment (MNRE) as well as potentially, other bodies of state, regional, and municipal administration, in (i) acquiring an adequate body of relevant information on these wastes and their treatment; (ii) in taking stock of the situation and, especially, of the various dumpsites as well as of the existing collection and recycling facilities; (iii) in the adoption of appropriate legislation, including suitable regulations and smart enforcement methods that would streamline the country's waste management so as to facilitate the introduction therein of advanced, especially BAT/BEP practices and to generally bring it to a higher standard; and (iv) in having the foregoing steps reflected in a resolute capacity building effort that would make it possible for new waste recycling facilities to emerge on the municipal, regional, district and even nationwide scale and for new opportunities of re-using the secondary materials thus generated to be grasped based on a firm legislative basis. This was to be modeled in two

regions of Russia: the Moscow region and Tatarstan. There also was to be a strong training and information dissemination component to the project.

By the end of the project in 2015, the main evaluation objective was to determine how far the objectives of Phase I and Phase II of the project were met. Naturally, since there has been a mid-term evaluation on conclusion of Phase I in 2013, the reviewers' attention as reflected in the present Terminal evaluation report was primarily focused on the outcomes of Phase II. Russia's Federal, regional and local government bodies concerned with the environment as well as the Russian business community constitute the principal audience, and it is believed that similar structures of the EurAsEC countries will also find use for, and inspiration in, the project outcomes. Owing to constraints of time and scope imposed by the reviewers' TOR, the evaluation methodology relied mainly on interviewing the project staff and experts, on perusing the extensive project documentation, and on checking the results obtained in Moscow and the Moscow region, largely leaving out the Kazan region which constituted the other of the two model regions of the project.

All project work, in spite of the project name referring to both consumer and industrial wastes, was focused on consumer rather than on industrial waste. The various efforts undertaken within the framework of Phase I had been rather successful, involved a number of experts on both WEEE and RTG, and considered the project tasks from both the practical and the legislative angles, as evidenced by the 2013 Mid-term evaluation report. The project also hoped for some trans-boundary impact, and indeed has attracted the interest of the Customs Union countries (EurAsEC) and some other NIS countries.

On completion of Phase I of the project at the end of 2013, the legislative effort initiated by the project was on the brink of success, and there were positive signs in practical developments in the area of waste management, too. Consequently, the project personnel asked for, and were granted, an extension (henceforward referred to as Phase II) for the 2014-2015 period, with a corresponding expansion of the project budget.

Phase II was launched in 2014 along the same lines as Phase I and eventually became crowned with complete success in the legislative arena – an amendment to the Act of Law 89 FZ having been adopted by the State Dume in 2015; a considerable success in the area of information dissemination, training and general awareness raising thanks in no small measure to the activity of two sectoral associations initiated by the project; and a moderate success in the practical aspects of tackling the problems of waste management and of both the non-commercial undertakings and the business companies active in this field.

The immediate objectives achieved included: (i) approval of an important piece of federal legislation (RF Waste Act) and a sectoral standard on RTW based on an analysis of the legal/ regulatory framework and in response to lobbying; (ii) two existing waste management centers strengthened (in Moscow and Kazan); (iii) recommendations for changes to the regulatory environment conducive to sound waste management; (iv) recommendations for governmental and local programs issuing from EU experience; (v) reviews of relevant regulations of other countries; (vi) training and consultancy support; and (vii) BAT/BEP demonstrations, promotion and assistance to local industries, waste management practices/schemes and replication programs for the EurAsEC countries.

The overall objectives of the project – to build capacity for environmentally safe management and beneficial utilization of outphased consumer and industrial products; to establish environmentally sound management practices for collection, possible recycling,

pollution prevention and environmentally safe disposal of potentially hazardous consumer and industrial products particularly focusing at the electrical and electronic wastes and used rubber tyres – have met with as much success as could realistically be expected in the face of the daunting nature of the overall waste disposal problem. The two “branches” of the project – WEEE and RTG (rubber tyre) waste – were equally successful.

Summary of main findings:

(i) The legislative efforts emanating from the project were an unqualified success, resulting in adoption of a Federal Waste Act and a RTG sectoral standard.

(ii) Legislative progress was a precondition to successful capacity building which took the form of a BAT/BEP waste technology data base and a GIS application – map of waste sites; a business plan and a financial model; a pilot project for Moscow; a cooperation proposal of waste recovery/processing; several PIFs, multiple awareness raising events, negotiations and meetings (incl. international), rather than of actually establishing any new waste treatment facilities.

(iii) A number of training programs/courses were run but their impact and potential overlaps could not be determined in absence of a synoptic list and comparison of all these programs.

(iv) While Phase I of the project was run along the lines of a detailed design as reflected in the project document, Phase II just continued along the same lines in absence of any official endorsement document and financial information that would be available to the project staff on site, except for the TORs of the experts involved; this however has not been to any detriment of the actual project results.

(v) Main project focus, in both design and implementation, was on waste collection and disposal, with less focus on recovery and processing of the wastes.

The reviewers recommended that

(i) relevant Governmental bodies and agencies of the RF be invited to continue their efforts at keeping the country's legislative framework in line with world developments, the first step in this direction being the adoption of all the ~30 implementing regulations pertaining to the Act of Law (cf. ref. [46]) already adopted;

(ii) the RF endeavor to build up the capacities capable of dealing with the ever-increasing volumes of wastes be continued and strengthened, working *e.g.*, through the two associations most closely related to the present project – the WEEE Recyclers' Association and the Shinoekologiya Association concerned with rubber tyre waste management;

(iii) Phase III of the project be seriously considered by the RF bodies, and efforts at finding a suitable source of financing be made by both the public and the private sector;

(iv) UNIDO be invited to continue extending its full support to the initiatives of the RF federal bodies as well as of the regional and even local administration bodies, the business community and the environmentalists;

(v) the National Project Coordinator should endeavor (regardless of whether or not Phase III will materialize) to induce the Phase II experts to consider a wider dissemination of the project results, drawing upon the as yet largely untapped reservoir of information contained in the various project reports and proceedings;

(vi) UNIDO should maintain lively contacts with the EurAsEC as well as other NIS countries that have expressed interest in the project, in order to foster a true international cooperation; and

(vii) the experience acquired by both UNIDO staff and the experts involved during Phase I and Phase II be further exploited for innovative solutions that could make the Phase III project as attractive as possible while directing more attention of both the relevant RF bodies and UNIDO to the productive activities comensurate with the theme of the project and on the promotion thereof, specifically to issues of reprocessing and re-use of the secondary materials gained and to the new products that could be produced, rather than to waste mitigation alone

1. Evaluation objectives, methodology and process

1.1 Evaluation objectives

These are listed in the reviewers' TOR (Annex 1) and their various aspects were expounded on in detail in the Mid-term report [2]; yet it is considered worthwhile to restate here the purpose, objectives and scope of the evaluation:

The purpose of the final evaluation was to enable the Government, donor, counterparts, UNIDO and other stakeholders to (i) assess the relevance, efficiency, effectiveness, impact, and sustainability of the project by providing an analysis of project objectives, delivery and completion of project outputs/activities, and outcome/impact based on selected indicators; (ii) assess from an environmental perspective whether gains to the individual companies were measured and reported upon, priority was given to preventive approaches wherever possible, and social and/or economic effects of environmental interventions were taken into considerations and/or measured; and, (iii) enhance similar on-going or future projects by proposing a set of recommendations.

The core period of the terminal evaluation – the field mission – took place during the week from 9 - 13 November, 2015. An international expert, Mr. Rudolf Stefec, and a national expert, Mr. Sergey Seryy, conducted the evaluation. They proceeded according to their respective Terms of Reference to meet the evaluation objectives as spelled out in the TOR (*cf.* Annex 1).

1.2 Methodology and process

The whole project was assessed from its starting date in June 2011 to its termination by the end of 2014 (with minor overlaps into 2015). As mentioned more explicitly later on, the review encompassed both Phase I and Phase II but, in view of the existence of the 2013 Mid-term report and of the (presumed but officially unconfirmed) identity of objectives and activities of the two project phases, was naturally biased in favor of the evaluation of Phase II that has not been evaluated before. Scanning the project-related documents was a major task for the reviewers as the number of documents has increased greatly since Phase I. Interviews were conducted as necessary, and a questionnaire was distributed and, to some degree, answered. The outcomes, outputs and activities envisaged by the project were examined and compared with the end-of-Phase-I situation to clearly indicate the Phase II results. Finally, the elements called for by the reviewers' TOR (sustainability, effectiveness etc.) were evaluated. The Evaluation work program is shown in Annex 2, the List of abbreviations and acronyms is in Annex 3 and the List of persons met can be found in Annex 4.

The list of documents reviewed is shown in Annex 5. Meetings were arranged with the Shinoekologiya Association; the WEEE Recyclers' Association; the Moscow Chamber of Trade and Commerce; with four out of the five Phase II project experts. These meetings proved useful.

The evaluation experts have taken pains to produce an evaluation report that is brief, to the point and easy to understand. They have striven to have a number of questions answered by the project staff and the experts involved.

The status of meeting the individual outputs and objectives and of having performed the requisite activities has been examined in detail and contrasted with the available project related documentation and with the experts' oral comments. The evaluation report is as evidence-based as possible within the time available for substantiating the findings and for making it possible to propose practical recommendations based thereon.

The evaluators used a classical evaluation/auditing methodology to meticulously contrast the plan and its actual execution, with special attention paid to the various aspects of waste management which were prominent in the project.

Finally, the evaluation experts have also attended to the recommendations forwarded by the project staff, with a view to providing an input for a future Phase III of the project.

Comments on Mid-term evaluation

The Mid-term report [2] expressed grave doubts about certain fundamental aspects of the project, while on the other hand its overall evaluation has been very positive. Specifically, it stated that

- "some of the project objectives have not been reached and yet, the size of the entire project was such as to make these deficiencies seem minor in the light of the overall achievements".

It stated that

- "the UNIDO project as designed did not build a national and local capacity in the two selected regions in Russia for conduction of E- and RTG waste inventorization and establishment of a management system for their collection and recycling ...", but "simply assisted in introducing BAT/BET for efficient recycling of E- and RTG waste; hence it fulfilled only an auxiliary role in addressing the problems".

It also stated that

- "the modest level of financing (US\$ 1.3 million) could not have contributed so much to strengthening some major components of the whole waste management framework, but only contributed to some auxiliary components associated with the amendment of local legislation on wastes and conduction of an awareness campaign in the country."

The first of these three statements is contradictory in itself. The second one, by stating that the UNIDO project has "assisted in introducing BAT/BEP ..."; has in fact acknowledged that UNIDO did a good job here, even if it had not built any sizable new waste management capacity; this is as it should be. With the third, last statement the present reviewers concur.

2. Country and project background

The project background is intertwined with the general country background. Both depend on the need of applying new legislation; no one will move forward of his own volition in the area of waste management unless there is appropriate legislative backing in place or, at the least, a suitable standard adopted.

2.1 Country background

There are two major aspects of the country background worth considering: legislation, and dumpsites/landfills instead of reprocessing/re-use.

Russian Federation changed her environmental legislation. Since 1998 when the 89-FZ (Federal Act of Law “On industrial and consumption wastes”) has been adopted, there were no major changes to the environmental legislation until recently. But the need to adopt numerous amendments was evident and imminent. There was no concept of “Extended producer's responsibility (EPR)” embodied in the Russian environmental legislation yet. The measures conducive to an economic encouragement for business companies toward using environmentally sound technologies were not – and are not – sufficient. However, by order of the President of Russia (signed on April 26, 2013), the amendments to the said Act were to be adopted by May 1, 2014.

It is also true that not a single one EurAsEC country (except Belarus) has an efficient regulatory system for EEEW and RTG. The EPR concept has not been adopted in their national legislations either. Two pilot regions (Tatarstan and the Moscow region including New Moscow *i.e.*, an area representing a substantial extension of the city), have requested UNIDO support in the development of a Comprehensive legislative system harmonized with EU directives, especially with Directives 2002/96/EC [23] and, lately, the EU Waste Directive 2012/19/EU [36]. The pilot project for Moscow is described in [47].

The situation is the same with Armenia and Kazakhstan. In spite of the expansion of the Customs Union, neither Russia nor any of the EurAsEC countries have a common logistic system for the flow of WEEE, RTG and other wastes. Knowledge on BAT/BEP is lacking. There are restrictions to trans-boundary flow of wastes. No common approach exists that would be conducive to a unified system of comprehensive waste recycling in Russia and the EurAsEC countries. The counterparts from these countries, as well as the UNIDO Secretariat and the Ministry of Foreign Affairs of Russia, have supported a Plan of project extension (having the form of a UNIDO BAT/BEP project extension). This is referred to here as Phase II of the UNIDO project.

As regards dumpsites/landfills instead of reprocessing/re-use, the RF is yet to undertake a determined effort at applying modern methods to mitigate the environmental impact of such potentially hazardous types of waste by an adequate management of suitable systems of their collection, recycling/re-use and disposal, instead of merely dumping them in landfills and open dumpsites. This can be demonstrated in the wider context: according to 2013 figures, almost 90 billion tons of waste is accumulated in Russia each year, and this amount is increasing at a rate of 3.5 billion tons per year. More than 75 percent of the generated waste is neither recycled nor re-used, but simply transported to huge landfills or, worse yet, thrown in illegal dumps. For instance, the volume of municipal solid waste in Russia has been steadily increasing in recent years and is estimated to reach 450- 500 kilograms per capita per year by 2025. As at 2013, some 93 percent was sent for disposal, only 7- 8% was recycled. While shifting perceptibly from public to private, waste management still is state-dominated, with megacity municipalities playing a key role. Compared to some neighboring countries – notably, Finland, Russia's waste management infrastructure is obsolete, up to 30 percent of landfill sites do not meet sanitary standards; waste collection often is non-selective, with plenty of illegal disposal of waste. Russia as one of the largest providers of raw

materials also generates large quantities of industrial waste. For example, open cast extraction of 1 million tons of coal requires withdrawal of 20 hectares of land for spoil dumps. It has been recognized that a greater focus on sustainable disposal or adoption of better waste recovery is needed in Russia. As at the beginning of the project period, legislation did not go far enough to stimulate recycling. There is a lack of environmental education among population, and slow adoption of waste sorting and separation.

As regards the dumpsites/landfills, situation has changed significantly during the course of the project period – not entirely due to the project, of course. Here it is especially the GIS which has to be mentioned as having made a prominent contribution to stock-taking and remedial action (*cf.* later on, in Sections 3.1.1 and, particularly, 3.1.3).

2.2 Project background

There are numerous other, sector-specific issues of relevance to the project (such as the absence of accurate data on the generation of WEEE and RTG waste in the country; financial constraints – lack of willingness on the part of the EEE producers to assume financial responsibility for environmentally sound WEEE management; illegal dumping of waste), but at least some of these again have been taken up in the Mid-term report [2] and have not experienced any substantial change since, and do not have any direct impact on the final assessment of the project.

The project started in June 2010; Phase I ended in 2013; and Phase II (and thereby, the entire project) was effectively brought to a conclusion by the end of 2014, with some ancillary activities (performed by the National Project Coordinator and, in absence of any remuneration, by the representatives of two Associations – the WEEE Recyclers' Association and the Shinekologiya Association active in the field of RTG waste management) extending into 2015. This project background was validated on site i.e., during the field mission; it could not be transcribed from the TOR – in fact, the reviewers' TOR document makes no mention at all of Phase II, nor does it mention the additional funding allocated toward the 2014-2014 period of the project.

2.2.1 Immediate objectives of the project

- Strengthen the legal and regulatory framework for ESM of WEEE and worn tires in 3 regions in Russia (Tatarstan, the Moscow region and the Ulyanovsk region) and 2 EurAsEC countries (Armenia and Kazakhstan);
- Prepare the conditions for launching and developing business projects on waste management in 3 regions in Russia and 2 EurAsEC countries (Armenia and Kazakhstan);
- Work toward the harmonization of unintentional trans-boundary movement of wastes and secondary resources;
- Establish a common expertise workspace in the sphere of waste management in the EurAsEC countries.

2.2.2 Main justification of project

The overall objective of project and its expansion is to build an operational, environmentally safe Comprehensive system for the management of RTG and WEEE. The project was to establish environmentally sound management practices for the collection, recycling, pollution prevention and environmentally safe disposal of electrical and electronic wastes and worn rubber tyres. The wastes ought to be turned into consumer goods and building materials as far as possible, that would be produced in the country and provide the supply for a demand by the state and the municipalities.

The project intended to develop proposals for the amendments to environmental legislation in Russia, the EurAsEC countries and the Customs Union countries, focused on the management of WEEE and used rubber tires.

2.2.3 Organizational arrangements

The Ministry of Natural Resources and Ecology of the Russian Federation was the country's main counterpart of the project. On the country-wide scale, the Ministry is responsible for the following issues:

- Coordinate legislative activities while making amendments and additions to relevant legislation, and develop regulations and procedures for waste management activities;
- Establish a data base of BAT/BEP in the sphere of waste management;
- Provide individuals, agencies and business companies with relevant information;
- Exchange information with international environmental organizations;
- Organize dissemination activities, trainings, workshops and seminars; and
- Monitor and assess the implementation of responsibilities and duties of stakeholders and regularly report to relevant governmental authorities and the environmental Conventions and Protocols.

The Ministries of Ecology and of Economic Development of the Republic of Tatarstan were the main counterparts at the level of regional environmental structures – they are the bodies responsible for developing a comprehensive waste management system that could be implemented in other regions in Russia.

The responsible Ministries and Agencies from Armenia, Kazakhstan and Belarus were to be identified at the beginning of the project extension period.

During the course of Phase II *i.e.*, the project extension period (effectively, the year 2014), other potential administrative and technical partners were to be defined based on the criterion of constituting professional and specialized structures willing to participate in, and co-finance, the project.

2.2.4 The remit of Phase II

The reviewers – authors of the present Terminal report – were primarily concerned with Phase II of the project which took place in 2014, Phase I up to its conclusion in 2013 having been evaluated in the Mid-term report [2]. In essence, Phase II objectives were the same as those of Phase I: (i) to build up the regulatory and institutional capacity for management of EEEW and RTG, and (ii) to acquire, promote, and disseminate practical experience and advanced practices in the collection, recycling and safe disposal of waste using advanced technologies.

This fact in itself, *i.e.*, the (supposed) identity of objectives of Phase I and Phase II need not be deprecated since the Phase I objectives (properly defined by a formal project document) left room enough to easily accommodate all the Phase II efforts, too; even in situations where some of the tasks already could be assessed as having been discharged in full there always remained enough work to be done. However, it appears that the content of Phase II has never been formally defined (at least as far as documentation available at the UNIDO Moscow office is concerned), it having always be understood that Phase II is simply a continuation of Phase I. A detailed overview of informally defined Phase II objectives and expected results can be taken from the table in Annex 6 which outlines the plan of project activities envisaged for 2014. A "plan of action revised" for Phase II as drafted by the UNIDO Moscow office [28], still having the form of a preliminary proposal, can be found in Annex 7. A total of 20 activities were planned. Thus the actual remit of Phase II was taken to be that of Phase I, plus the unofficial "Plan of action revised", plus the (official) TOR of the Phase II experts.

There apparently never has been any Phase II project document or project revision document, and the project had to be evaluated against a mix of unofficial and official documents; the sole official documents available to the evaluators were the job descriptions issued to the Phase II experts;

obviously however, it is not known, in absence of a full-fledged project document, whether these have fully covered the Phase II remit. A summary of the tasks specified for the five Phase II experts in their respective job descriptions is given in Annex 8.

For the purpose of cross-referencing these job description data, a consolidated listing of the major project activity areas as allocated to the different experts is shown in Table 1 overleaf. The numerals within each column of the table refer to the task numbers for the given expert as shown in Annex 8. The table indicates that Expert 1 was given twice as many tasks than the remaining four experts; this does not say that the volume of work done by those four was less, but it does indicate some unbalance in allocating the various tasks to the five experts when drafting their TORs.

Legislation was a topic tackled by all the experts, and so was the potential expansion of the project to the EurAsEC countries. WEEE was primarily the task of Expert 1, with some participation of Expert 4, while RTG waste was primarily the task of Expert 2, with participation of Experts 4 and 5. Training was an activity in which four experts out of the five have participated. Somewhat surprisingly, BAT/BEP was expressly mentioned in the job description of only one of the experts.

For explanation, to better understand Table 1, please refer to Annex 8 – Phase II experts' job description tasks. For instance, the workplan of Expert 1 comprises 12 tasks (of which however, Task 12 specifies that "The Coordinator will regularly inform the UNIDO Project manager on the development of the Project plan and other activities of the Project", which is not the expert's task – it is somebody else's task, and anyway it does not constitute any substantive task). The workplan of Expert 2 comprises 6 tasks (of which however, Task 6 is for the expert "to prepare a final report", which is no substantive task). Thus, in Table 1, only 11 tasks appear in the Expert 1 column and only 5 tasks appear in the Expert 2 column, allocated to the individual areas of activity. A total of 16 major areas of activity were identified as shown in the left-hand column of Table 1 (WEEE, RTG, Legislation, ...). The last line of Table 1 gives the total count which says in how many of these areas of activity the given expert's tasks (as per his/her TOR) have played a part; these counts differ greatly for the different experts.

Table 1. Cross-referenced Phase II experts' job description tasks

	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5
Area of activity	Expert task				
WEEE	1-6, 8-11				
RTG		1, 2, 3, 4, 5		4	1, 4, 5
Legislation	2, 4, 8	2, 3	1, 3	1, 4	1
BAT/BEP		3, 4			
Tyre Producers' Assn.		2, 5	4		
WEEE Recyclers' Assn.	3, 9			4	
Comprehensive mgmt. system	1, 5	1, 5			
ICBET	6, 9, 10				
IPLA	10				
PIF	11				4
EurAsEC	2, 10, 11	1, 2, 3, 5	1, 5	2	1, 4
Extended producers' responsibility	4		4		
Regional activities	5, 10, 11	1, 2, 3, 5			3, 4
Training	7	4		3	5
Clearinghouse	3				
Meetings	5, 8			4	
<i>Total count of tasks</i>	33	22	6	7	10

3. Project findings and assessment

The reviewers' TOR as well as common sense make it imperative that the terminal assessment of this basically waste management project be approached from several fundamental angles:

- Assessing project design and execution;
- determining the relevance of the project;
- evaluating its effectiveness and efficiency; and
- taking a position regarding project sustainability.

Each of these would then break down into a number of subject areas and items to be identified, determined, documented and judged – like for the first item, Design, it had to be Capacity building and Pushing for better legislation, both in the area of waste management. Most of the reviewers' judgments would be based on a detailed, validated project description (*cf.* below) which precedes the actual assessment.

3.1 Validated project description

An important component of the reasoning that underlies the entire project is the hazardous nature of the wastes subtypes chosen for the project, *viz.*, WEEE and RTG waste (see Figure 1).

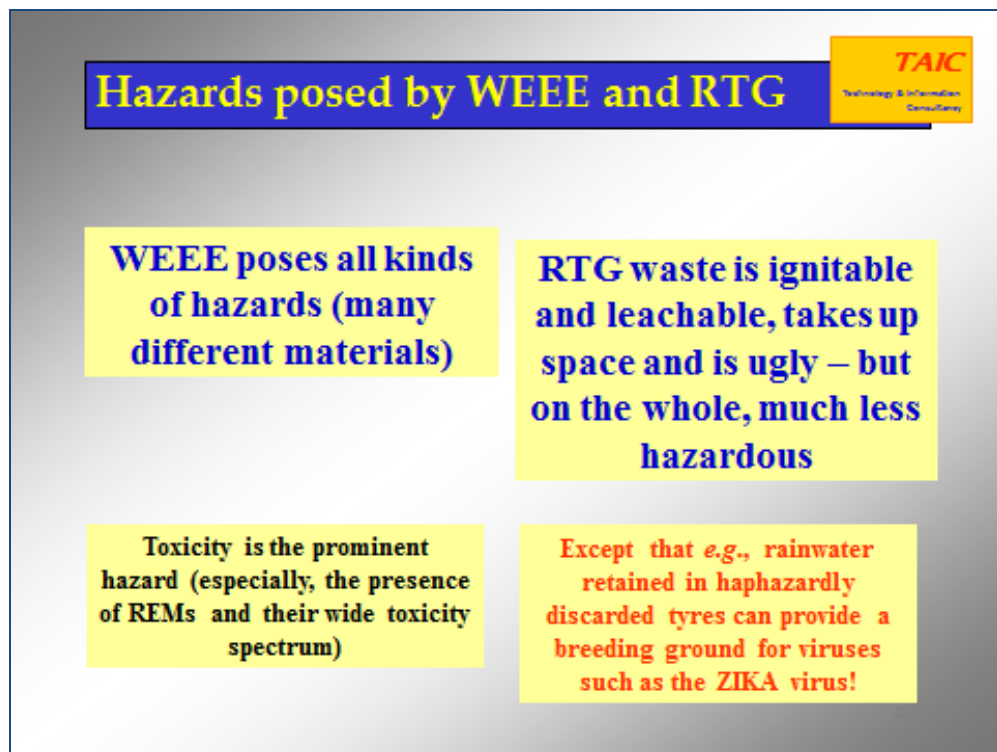


Figure 1. Nature of the waste addressed by the project

The project layout included, principally, a capacity-building component and a legislation-related component. There were, of course, numerous common aspects which involved both these components.

The description below reflects the reviewers' understanding of the project upon validation thereof by means of the various components of the final evaluation, and is intended to cover the entire project period.

3.1.1 Capacity building

The capacity building component includes two rather incongruent components: WEEE and RTG. The differences between the two are discussed below. Yet in the final outcome, combining these two into a single project has proved beneficial as it greatly expanded the span of waste management activities that the project had to cope with and that it finally has been able to demonstrate.

Elaborating reports on the existing capacities and their strengthening constituted a sizeable part of the capacity building effort but there were other components no less important (*cf.* below): notably, the GIS application – map; the BAT/BEP data base on technology as applied to natural protection; a business plan and a financial model (RTG waste); the pilot project for Moscow (WEEE); a cooperation proposal in recovery and processing (RTG waste); several PIFs (WEEE, RTG waste, POPs, PCBs); training programs; awareness raising events; and multifarious negotiations and meetings (incl. international).

WEEE processing capacities

Capacity building included work on establishing a BAT/BEP Center for WEEE. For this purpose, existing waste management practices in the area of rubber waste management were analyzed in detail [22]. This included an analysis of the practices and technologies used for worn tires and RTG recycling in Russia and EurAsEC; an analysis of existing Belarus WEEE management schemes; and the draft PIF for a regional project intended for Armenia, Belarus, Kazakhstan and Russia.

Another of the expert final reports in Phase II considered the BAT/BEP Center for Environmentally Safe Disposal of Potentially Hazardous Consumer Products and Industrial Wastes from different angles: (i) reviewing WEEE related processing facilities in Armenia, Belarus and Kazakhstan; (ii) developing the concept of a national WEEE register and potentially, (iii) a WEEE clearinghouse [23]. There were three publications relating to the clearinghouse [38-40].

RTG processing capacities

Capacity building also included work on establishing a BAT/BEP Center for RTG [24]. It was based on a review of current practices in dealing with worn tyres in the Moscow region and in Tatarstan.

The final report by A. Rudenskii report [25] (i) analyzes the practices and technologies of rubber products usage in roadbuilding in some EurAsEC countries over the past 15 years; (ii) reviews existing regulations and technological features of design work in the application of rubber in road construction in Russia, Armenia, Kazakhstan and Belarus; (iii) presents an overview of the technical requirements for rubber-bitumen binder and asphalt rubber in various states of the USA (112 pages); (iv) informs of establishing a professional working platform under the RF Government Analytical Center where professionals can share their experience and receive the latest information on innovations in the industry.

Rudenskii's study of the U.S. rubber asphalt industry was paralleled by an even more extensive study (232 p.) on basically the same subject authored by S. Amirkhanian which presented a comparative analysis of RTG related legislation in the USA [26]. An extensive study covering Europe and Asia has also been produced (authored by Maryev et al. [38]). Thus, studies are available which review the European, US, and Asian practices in this field.

The differences between WEEE and RTG

It ought to be borne in mind that, unlike the disposal and reprocessing of RTG (mainly, automobile tyres) which while complicated enough still amounts to mostly one single technology, that is, turning worn tyres into rubber crumb and using this as a component in roadway carpeting and other applications within the building industry, the disposal and reprocessing of WEEE is an entirely different, much more challenging matter: WEEE contain light as well as precious metals; plastics; REMs; and other valuable components each of which is difficult to separate from others. With RTG

the main problem is making the secondary material obtained by reprocessing sufficiently attractive for the market, but with WEEE – where because of the high price of many of its components the marketing is not the primary obstacle to re-use – it is the multitude of reprocessing technologies involved, each of them different from others, which makes it a challenge just to separate the components.

The GIS application

Under the project, a specific application has been made of the Geographic Information System (GIS), developed – with a view to multi-purpose applications – by the GIS Federal Research Institute of Moscow. The GIS application – map was initiated in 2013 and has kept being updated ever since by entering new data on enterprises involved in the WEEE and RTG waste treatment. Information is being collected on Tatarstan and on 18 regions of the Central Federal District of Russia. The system can be accessed on the website <http://msk.expert.geosys.ru>. It is a public-domain system.

The BAT/BEP data base

This is treated in at least three project-derived publications [40-42] representing an unified information and analytical system, namely, the Atlas of Best Available Technologies in the area of Natural Protection, Section on Technology (presents standard sheets; deals with processing of accumulator batteries; and evaluation methodology for technologies used in environmental protection.

The business plan

A business plan and a financial model were prepared for the Koltech-Kama Co. program aiming at the management of the collection and processing of worn tires [43].

The pilot and regional project concepts

The pilot project for Moscow aiming at the management of WEEE is described in [47]. Efforts are underway for a project that would cover the Moscow region [48].

An implementation model of inter-regional cooperation has been developed by ICBET, with participation of the project, for the collection and treatment of household waste using the example of the Central Federal District [49]. A proposal has been prepared by Shinoekologiya Association for cooperation in the field of recovery and processing of worn tyres [50]. A draft PIF for a regional project intended for Armenia, Belarus, Kazakhstan, Kirgystan and Russia [22, 23] was formulated under the project.

Training

The reviewers have satisfied themselves that the project paid ample attention to issues of education and training. This included an outline of two training courses in "Fundamental aspects of WEEE management" [22]; another training course relating to BAT/BEP [23]. A training program was developed program for RTG staff [24]. A training course was developed for professionals and for Moscow Road University (MADI) students [25]. It has been difficult to distinguish whether courses referred to in the various documents scanned were different courses or the same courses; in the reviewers' opinion there possibly were almost too many different training and educational courses; at least a synoptic list of all these would be useful. The course curricula were not submitted, and there was no opportunity during the reviewers' field mission to contact the course participants.

One word of caution regarding the courses, seminars and workshops: There has been no topic more often mentioned in all the various progress and other reports but "courses, seminars and workshops". This is all right as long as there are no unnecessary overlaps, and the existence or

nonexistence of overlaps cannot be checked unless there is a synoptic document listing all the courses and programs.

Meetings, conferences, awareness raising

The project rendered assistance to the organization of meetings and training activities [22]. Training course development and presentations thereof were given constant attention.

Meetings focused on BAT/BEP were held with Russia, Belarus and Kazakhstan experts in Belarus, Vienna, Germany and Kirgizstan [23]. Preparations were made for holding a Global Forum on WEEE management in Moscow in 2015 [23]. Discussions were held at a meeting of Environment Ministries of EurAsEC in Kirgizstan in 2015.

3.1.2 Legislation

Valuable legislative work included, *i.a.*, (i) the drafting of, and submission to the concerned Ministries of RF, Armenia, and Kazakhstan, of amendments to legislation relating to worn tyres management, as well as (ii) the drafting of, and submission to the concerned Ministries of RF, Armenia, and Kazakhstan, of amendments to legislation relating to WEEE processing and to recommendations on the use of BET technologies for WEEE recycling; (iii) efforts toward developing an operational data base for BAT/BEP in WEEE and used RTG management; (iv) work on a proposed regional program of worn tyres management in the Moscow region; and (v) work on harmonization of worn tyres management legislation in Russia and EurAsEC countries [21]. Finally, of great importance was (vi) the experts' and other partners' lobbying for the legislative amendments with the State Duma.

One of the expert's final project focused on (i) reviewing WEEE related legislation and processing facilities in Armenia, Belarus and Kazakhstan, and on (ii) work in preparation of drafting model legislation for the Customs Union countries in analogy to EU Directives 2002/96/EC and 2012/19/EU [23].

Similarly, an analysis was performed of existing legislation in Russia and the EurAsEC relative to the management of worn tyres. This included drafting, and submitting to relevant Ministries, recommendations pertaining to harmonization of said legislation [24], and specifically, presenting these various proposals to the CIS Executive Committee Board, the Ministers of Environment of the Eurasian Economic Union countries, the President of the Republic of Tatarstan, and the Minister of Transport of the Moscow region.

3.1.3 Common aspects

Project tasks had to be specified, with particular focus to obtaining information that would make it possible to build up an inventory of existing wastes and waste treatment facilities. Here among the many components, the Geographic Information System played a prominent role. Eventually, a revised plan of action was drafted and implemented.

Informal specification of project tasks

The UNIDO project extension document [31] contains an informal, indicative specification of tasks for Phase II and a recapitulation of both Phase I and Phase II results. Summaries of that document can be found in Annex 6 and, in a somewhat different wording, in Annex 7.

In contrast, the Phase II experts' TOR (*cf.* Annex 8) are official documents. Thus the tasks are in fact defined in at least three sets of documentation. However the reviewers have not found any significant discrepancies, only the multitude of documents – in absence of a clear-cut Phase II project document – made the evaluation work more cumbersome.

Stock-taking of waste dumpsites and waste treatment facilities

An application of the Geographic Information System (GIS) called "Monitoring of electronic, electrical and rubber waste" has initially become operational in Tatarstan and is extending its scope of coverage, eventually to cover all regions of Russia as a part of the national monitoring system, plus possibly some other CIS countries. This is a highly interesting development that has been boosted by the UNIDO project. As an example, Figure 2 shows the locations of landfills throughout the Moscow region; some 1,000 different landfill sites exist, of which no more than ~300 have received official registration (and thus are allowed to continue, and a 'consolidation' is planned whereby their number would eventually drop to ~15. In another example, Figure 3 lists all processors of WEEE and RTG wastes. Availability of information of this kind is a prerequisite to effective waste management.



Figure 2. Map of so-called 'polygons' and landfills containing different industrial wastes

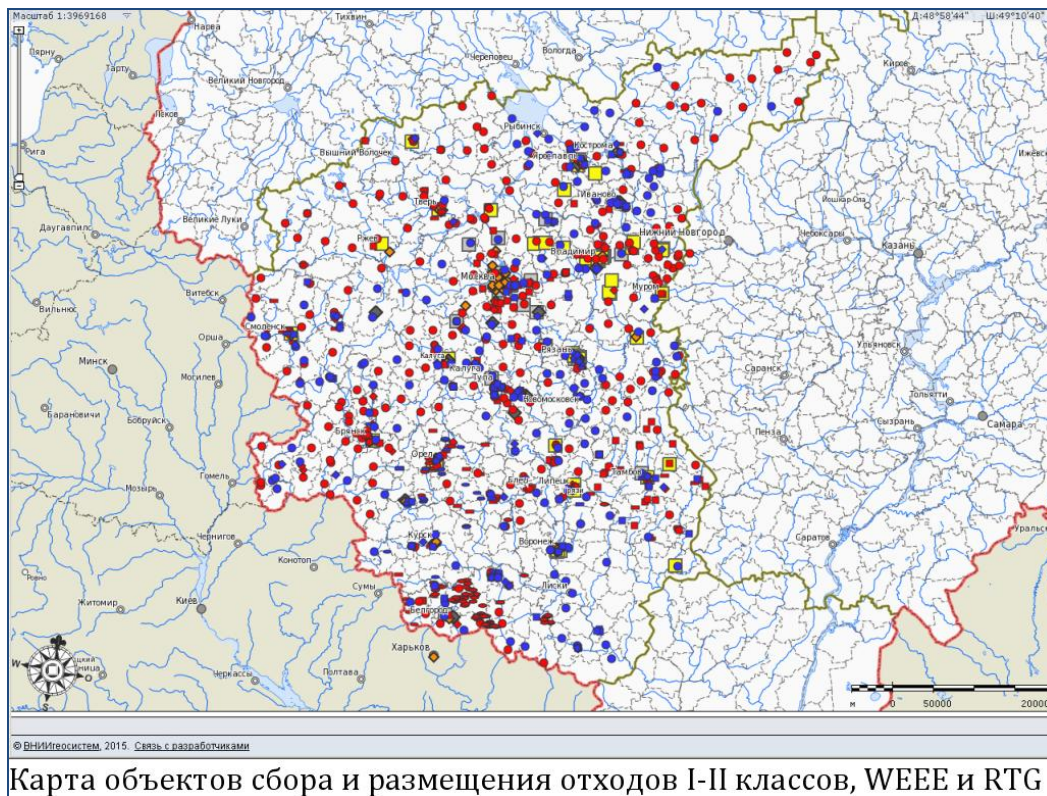


Figure 3. Map showing the locations of waste treatment processors/facilities

Plan of action revised

The Plan of action revised (for Phase II) [28] outlined the plan of project activities envisaged for 2014. (Although this was not a document officially endorsed by UNIDO, also *cf.* Section 2.2.4, but only a draft submitted by the NPC.) A total of 20 activities were planned and implemented.

In actual management of Phase II project, the tasks and results were appropriately tied together with pertinent activities [29,30]. The following outputs were produced/services were delivered as at June, 2014 [29] (as a rule, linked to with specific activities as listed in the original project document):

- Legislative amendments were drafted by experts; these drafts involved the principle of "extended producer responsibility". **Activity 1.1.1**
- Existing practices in the fields of collection, recycling and disposal of WEEE and RTG in EurAsEC countries were reviewed. **Activity 1.1.2**
- A regional project was proposed for the CIS and EurAsEC countries. **Activity 1.1.2**
- A PIF on WEEE management was formulated for Tatarstan and the Moscow region. A comparative study of a Clearing house/Register of electronic products in Europe was undertaken. **Activity 1.1.2, 1.1.3**
- Steps were taken to raise awareness of waste management. **Activity 1.1.2**
- A BAT/BEP data base for WEEE and RTG waste was set up. **Activity 1.2.1**
- Six roundtables on existing waste collection schemes and on the practices and technologies used by recycling companies were organized, with 10 major companies participating. **Activity 1.2.2**
- New waste collection and recycling schemes were developed, including the pertinent business plans. A business plan and a financial model were prepared for the "Koltech-Kama Co. program for worn tires [43]. **Activity 1.2.3**

- A program was prepared that would implement the principle of "extended producers responsibility" at Nizhnekamskshina Co. (a big Russian tyre producer identified as candidate for a pilot project). The work carried out in the Republic of Tatarstan will be extended to the other regions along the Volga. **Activity 1.2.3**
- Seven meetings involving >100 experts were held. **Activity 1.2.4**
- A specialized Internet site launched in 2013 was upgraded in February, 2014. **Activity 1.2.5**
- An application of the Geographic Information System – map was formed in 2013 and is being updated by entering new data on enterprises involved in the WEEE and RTG treatment. Information is being collected on Tatarstan and on 18 regions of the Central Federal District of Russia. **Activity 1.2.6**
- The Moscow International Center for BAT is being converted into an independent company. Four seminars on waste management and an international conference on waste management were held. Efforts at obtaining an educational license to train professionals in the field of waste management of RTG and WEEE are ongoing. The experts of the ICBET take part in examining the organization of the Russian waste management system and continue working to identify BAT/BEP methods in waste recycling. **Activity 1.2.7**
- A Project Centre is being developed in Kazan on the basis of the Volga Cleaner Production Centre registered with the present UNIDO Project. Jointly with Koltech-Kama Co. staff, the project experts assist in implementing the Comprehensive Worn Tyres Management System Project in Tatarstan. **Activity 1.2.7**
- A WEEE training course for specialists has been updated. It will allow for certification of specialists at two educational institutions. A study course on crumb rubber based modifiers for road construction professionals is under development, to be delivered at the Moscow Road Construction Institute. **Activity 1.2.8**
- Business contacts were established with the UNIDO CIIS in Armenia, with the "Belarus Waste Management Sectoral Operator ", with Erdet Co. dealing with hazardous waste management in Kazakhstan. Cooperation and exchange of information agreements were signed with countries of the Customs Union. **Activity 1.2.9**
- A BAT/BEP methodology document has been sent to the Institute of Environmental Engineering and the Chamber of Commerce of Russia, eventually to be submitted for approval to the Ministry of Natural Resources of Russia. **Activity 2.1.**
- The Comprehensive Worn Tyres Management System has been launched in Tatarstan. **Activity 2.1.2**
- Work started in January, 2014 to develop a regional WEEE management scheme with 3 private companies and the Ministry for Investments and Innovations of the Moscow region. **Activity 2.1.3**
- The international Conference "Organization of Management of Waste Electronic and Electrical Equipment in Russia: the Situation in the Industry and its Prospects" was held in May, 2014 with participation of owners of BAT and local companies –potential users of these technologies. **Activity 2.2.1**
- Materials on WEEE management were published in June, 2014 in two specialized professional journals. **Activity 2.2.2**
- Cooperation with other projects was initiated, and discussions were held with local stakeholders: Ministry of Natural Resources, Department of International Cooperation; Russian State Duma, Deputy Chairman of the Committee on Environment and Natural Resources; the RF Chamber of Commerce; the RF Government Analytical Center; the Deputy Representative of the Coordinating Committee on Waste Management of the Association of the Central Federal District (18 regions); the Ministry of Innovations and Investments of the Moscow Region; the Novosibirsk local authorities; the Department of Natural Resources and Environmental Protection of the Moscow City Government.
- Problems are listed, and measures proposed.

According to a November, 2014 report [30] the listing of activities delivered and planned has advanced as follows:

- Recommendations/comments/additions relative to the new environmental legislation, which is currently under discussion in the State Duma of Russia, were delivered. Experts cooperate with the specialists from the Association of producers and importers of tyres, the Association of tyre processors (Shinoecology), the Association for electronic equipment recycling and the Ministry of Natural Resources of Russia. **Activity 1.1.1**
- The survey entitled "Legislative and organizational aspects of the management of electrical and electronic equipment waste" was prepared. **Activity 1.1.1**
- Discussions with stakeholders were held in the Customs Union countries. **Activity 1.1.1**
- A review of the existing practices in the collection, recycling and disposal of WEEE and RTG in EurAsEC countries was prepared. **Activity 1.1.2**
- Activities from the first half of 2014 were continued (PIF; regional project; assistance to Government; letters of interest received from Belarus, Kazakhstan, Armenia and Kirgizstan.
- An overview of eco-industrial parks was prepared. **Activity 1.1.2**
- Publications in professional journals. **Activity 1.1.2**
- The comparative study of Clearinghouse/Register of electronic products in Europe was continued. **Activity 1.1.3**
- By now, 8 meetings of experts in the field of worn tyres and 6 meetings of experts in the field of WEEE were held. **Activity 1.2.4**
- The WEEE Recyclers Association finally established. **Activity 1.2.4**
- The international conference "Organization of Management of Waste Electronic and Electrical Equipment in Russia: the Situation in the Industry and its Prospects" was held in May, 2014 with more than 140 participants from the ranks of owners of BAT and local companies – potential users of these technologies. **Activity 2.2.1**
- Results of the project on WEEE management from the international conference "Organization of Management of Waste Electronic and Electrical Equipment in Russia: the Situation in the Industry and its Prospects" held in May, 2014 were presented in the EurAsEC meeting of the Ministers of environment in Kyrgyzstan in September and at the International Conference "Sankt-Petersburg Initiative" in St.-Petersburg in October, 2014. **Activity 2.2.2**
- More training courses were prepared, and presented to various audiences. **Activity 2.2.3**
- The regional project of creating a system of WEEE management for EAEU countries received a preliminary endorsement by the EurAsEC countries and was presented at the meeting of ecology ministers of EurAsEC in September, 2014 in Kirgizstan, and at the "Saint-Petersburg Initiative" conference. **Activity 2.2.3**
- Cooperation with other projects continued (incl. the Pollution "Hot Spots" within the Middle and Lower Volga River Basin)
- A PIF was prepared for GEF financing of an Environmentally Sound Management and Final Disposal of PCBs project to be launched in the Russian railroads network and with other PCB owners (relates to the Stockholm Convention).
- Cooperation was initiated with projects aiming at the phase-out of HCFCs and the promotion of HFC-free energy efficient refrigeration and air-conditioning in the Russian Federation via technology transfer (relates to the Montreal Protocol).
- The vision of a Regional (CIS) Capacity Building project for Mitigation of Global Environmental Problems was presented at a Vienna meeting in March, 2014.
- Again, problems are listed, and measures proposed.
- A forthcoming workplan has been formulated, with the following main points:
- Implement the Regulations on Asphalt rubber use regulations prepared by UNIDO experts. Improve the Draft State standard for Asphalt Rubber, and send it to Rosstandart for adoption [44,45].
- In conjunction with the Act already adopted [46], draft pertinent implementing regulations for the Pilot Project of comprehensive EEEW treatment in Russia and the EAEC.
- Continue providing consultancy support to the Koltech-Kama project in Tatarstan, aiming to identify new technologies for using crumb rubber in the construction industry.
- Cooperate with the GIS Technologies Institute in the areas of waste recycling in the EurAsEC countries (starting with Belarus, Armenia, Kazakhstan) to encourage the transfer of technologies and exchange of experience.

- Cooperate with Moscow Authorities concerned with the environment in implementing the technologies recorded in the data bank established by the Project experts.
- Involve IPLA (International Partnership for Expanding WM services of local authorities) in grasping the opportunities for establishing a comprehensive waste management system for municipalities and regions based on the 3R concept (Replacement-Reduction-Refinement) and Zero waste – the sustained development principles.
- Continue training pertinent staff in the different aspects of EEW and RTG management, so that they are able to identify and transfer BAT/BEP in the area of waste recycling and disposal.
- Continue developing the Comprehensive system of worn tyres management in Tatarstan and in the Moscow region.
- Prepare a training course for laboratory specialists of Roadbuilding organizations, especially in the Moscow region. Cooperate in establishing battery recycling facilities in the Moscow and St.-Petersburg regions.

3.1.4 Analysis of project related documentation

Out of all the documents perused,

- 14 dealt with various BAT/BEP issues [1,2,13,16,18,20-27,37];
- 6 dealt with WEEE;
- 5 dealt with plans and overviews, or were project documents and progress reports [28-31,37];
- 7 dealt with RTG and especially, rubber tyres [6,20,21,24,26,29];
- 11 dealt with the EurAsEC countries regarded as a group [6,16,21,23-25,27-29,31,37];
- 12 considered Armenia individually [13,17,18,20-23,25,27-29,31];
- 13 considered Belorussia individually [13,20-23,25,27-31,35,37];
- 11 considered Kazakhstan individually [13,20,21,23-25,28-31,37];
- 4 considered Kirgystan individually [20,21,23,35];
- 5 dealt with the activities of various Associations, especially the two Associations directly involved in waste management [20,28-30,37].

The original project document [1] addresses capacity building and legislative activities relating to the management of electronic, electric and rubber wastes. Project budget: USD 1,327,000.

The mid-term report [2] (incorrectly termed "Terminal evaluation") reviews the progress of the project until completion of Phase I in 2013.

Project extension for the 2014-2015 period is only documented by the letter [4] awarding the additional sum of USD 280,000 toward the project. Consequently, for Phase II, TORs were drafted and contract awarded to five experts [5-9], to prepare Phase II reports. Their respective foci of duties were (i) Comprehensive EEEW management [5]; (ii) RTG in Russia and EurAsEC, worn tyres recycling [6,9]; and (iii) waste-related legislation [7,8].

All the other documents scanned were evaluation tables, additional studies prepared for the project (including *e.g.*, Armenia reports and plans [17,18] which were not called for by the project document), two studies describing the situation in the USA [25,26] in the area of RTG with a view to waste legislation (plus other such documents on Europe and Asia [27,38]), and numerous progress reports.

These included:

- The Mid-term report [2] which reviews the progress reached until 2013 (outputs, activities, budget vs. spending 2012-2013, legislation, etc.). Total spending to date (until 2013) was USD 1,317,105. Annex 4 to the Mid-term report (this is not one of the Annexes attached to this evaluation report!) indicates the progress to date broken down by project activities; over-all assessment: satisfactory.
- Three 2013 project progress reports [10,11,13] and an amendment thereto [14].
- Three National Project Coordinator's 2014 reports [20,29,30].

The report [29] provides a listing of activities delivered and planned. Outputs were produced and services were delivered as already shown above.

The report [30] again, provides a listing of activities delivered and planned. The outputs produced and the services delivered have already been reported above, in the section on practical project management.

There are some repetitive statements in these reports but, on the whole, they bring forth evidence that a considerable, more than adequate volume of valuable work has been done.

The work of expert Komissarov [23] reports on (i) the presentation of project results and of proposed regional WEEE management systems for EAEU countries at various events and meetings; (ii) on reviewing WEEE related legislation and processing facilities in Armenia, Belarus and Kazakhstan; (iii) on developing the concept of a national WEEE register and potentially, a WEEE clearinghouse ; (iv) on work in preparation of drafting model legislation for the Customs Union countries in analogy to EU Directives 2002/96/EC and 2012/19/EU; (v) holding meetings with Russia, Belarus and Kazakhstan experts in Belarus, Vienna, Germany and Kirgizstan; (vi) developing a training course programme; (vii) agreeing to hold a Global Forum on WEEE management in Moscow in 2015; (viii) drafting a PIF for Belarus, Kazakhstan, Armenia and Kirgizstan, the project to be discussed at a meeting of Environment Ministries of EurAsEC to be held in Kirgizstan in 2015

The work of expert Perlina [24] reports on (i) the current practices in dealing with worn tyres in the Moscow region and in Tatarstan; (ii) analysis of existing legislation in Russia and the EurAsEC relative to the management of worn tyres; (iii) drafting, and submitting to relevant Ministries, recommendations pertaining to harmonization of said legislation; (iv) developing a training program for RTG staff; (v) presenting these various proposals to the CIS Executive Committee Board, the Ministers of Environment of the Eurasian Economic Union countries, the President of the Republic of Tatarstan, and the Minister of Transport of the Moscow region.

The work of expert Rudenskii [25] (i) analyzes the practices and technologies of rubber products usage in roadbuilding in some EurAsEC countries over the past 15 years; (ii) reviews existing regulations and technological features of design work in the application of rubber in road construction in Russia, Armenia, Kazakhstan and Belarus; (iii) presents an overview of the technical requirements for rubber-bitumen binder and asphalt rubber in various states of the USA (112 pages); (iv) informs of establishing a professional working platform under the RF Government Analytical Center where professionals can share their experience and receive the latest information on innovations in the industry. Also, (v) a training course was developed for professionals and for Moscow Road University (MADI) students.

The work undertaken by expert Shuvalov [21] reports on (i) the drafting of, and submission to the concerned Ministries of RF, Armenia, and Kazakhstan, of amendments to legislation relating to worn tyres management, on (ii) the drafting of, and submission to the concerned Ministries of RF, Armenia, and Kazakhstan, of amendments to legislation relating to WEEE processing and to recommendations on the use of BET technologies for WEEE recycling; (iii) on developing an operational data base for BAT/BEP in WEEE and used RTG management; (iv) on a proposed

regional program of worn tyres management in the Moscow region; and (v) on harmonization of worn tyres management legislation in Russia and EurAsEC countries.

The work of expert Seregin [22] reports on existing waste management practices in the area of rubber waste management; assistance rendered to the organization of meetings and training activities; in drafting the PIF; in training course development and 5 presentations thereof; with 5 attachments comprising ca. 51 p.

The work by expert Smirnova [27] reports on (i) the current legislation and WEEE management practices in EurAsEC countries; (ii) provides an overview of relevant foreign sources to be translated into Russian (86 p.); (iii) developed a training course on WEEE management incl. presentation materials; held the course at the Gubkin Russian State University of Oil and Gas and at Moscow State University of Environmental Engineering in 2014; (iv) organized electronic correspondence with representatives of Armenia and Belorussia engaged in the treatment of WEEE; (vi) prepared a report on "International experience in the certification of WEEE management systems operators" for presentation at an international.

The work of expert Amirkhanian [26] presents a voluminous comparative analysis of RTG related legislation in the USA.

The body of references also contains, or refers to, a considerable volume of correspondence: the important letter awarding Phase II extension [4]; letters of support by Analytical Center of RF Government to UNIDO Moscow office [20]; by Strategic Initiatives Agency, an autonomous non-commercial organization to RF Government bodies, on the Project of integrated management of worn tyres as implemented in the Republic of Tatarstan [20]; four letters of support to the project, by various Government bodies of Armenia, Belarus, Kazakhstan and Kirgystan (2014) [20,21]; a letter to the Minister of Transport of the Moscow region proposing a regional worn tyres management program [21]; a letter from Japan (UN Center for Regional Development) to UNIDO Moscow office regarding the 2014 IPLA Forum [23]; letters to the Minister of Transport of the Moscow region on the actions necessary for setting up the worn tyres management system, to the CEO of "TATNEFTEKHIMINVEST HOLDING Co. in Tatarstan, to the RF Minister of Natural Resources and Environment, the Minister of Environmental Protection of the Republic of Armenia, the Minister of Transport and Communications of the Republic of Kazakhstan on the same topics [24]; a letter to the President of the Republic of Tatarstan "On the Federal level significance of the ASI – Koltech-Kama Ltd. Leadership Project: "Organization of the high-tech composites, construction, rubber and plastics materials manufacturing using the products of recycling" [24]; letters of interest received from Belarus, Kazakhstan, Armenia and Kirgizia in the matter of introduction of waste management systems [30]; Letters received in support of project extension from the Ministry of Foreign Affairs of the Republic of Armenia (addressed to the Executive Committee of the Commonwealth of Independent States); from the State Agency on Environment Protection and Forestry under the Government of the Kirgiz Republic (the the same addressee); from the Ministry of Natural Resources and Environment of the Republic of Belarus (addressed to the Director of the Dept. of Int. Cooperation of the RF Ministry of Natural Resources and Environment) [35]; and other correspondence [12].

And finally, one last item to be mentioned, under the heading "Design and execution", already hinting at a potential transition from Phase II to a future Phase III of the project:

On Monday 16 November 2015 – during the week following the Terminal evaluation mission – a specialized webinar organized by ICBET together with the Federal Agency for Environmental Supervision (under the Ministry of Environment and Natural Resources) was to be held over the internet, with the participation of waste recyclers from all regions of Russia, with special focus on rubber tyres and electronic waste – one of the reasons being the recyclers' problem of acquiring licenses which are mandatory for them, according to the new Waste Act, to be authorized to collect and recycle these potentially hazardous wastes.

Recapitulating, the summary of main findings is as follows:

(i) The legislative efforts undertaken within the framework of the project were an unqualified success, resulting in adoption of a Federal Waste Act and a RTG sectoral standard.

(ii) Progress in the legislative arena was a precondition to successful capacity building which took the form of a BAT/BEP waste technology data base and a GIS application – map of waste sites conducive to a more effective waste disposal; a business plan and a financial model (RTG waste); a pilot project for Moscow (WEEE); a recovery/processing cooperation proposal (RTG waste); several PIFs, multiple training programs, awareness raising events, negotiations and meetings (incl. international), rather than of actually establishing any new waste treatment facilities.

(iii) A number of training programs/courses were run but their impact and potential overlaps could not be determined in absence of a synoptic list and comparison of all these programs.

(iv) While Phase I of the project was run along the lines of a detailed design as reflected in the project document, Phase II – which incidentally, was more successful – just continued along the same lines in absence of any official endorsement document and financial information that would be available to the project staff on site, except for the TORs of the experts involved. Fortunately, it so happened that this has not been to any detriment of the actual project results.

(v) Main project focus, in both design and implementation, was on waste collection and disposal, with less focus on recovery and processing of the wastes.

3.2 Design

A thorough review of the brief project logframe recapitulation as laid down in Annex 1 to the evaluators' TOR, but mainly of the project plan as shown in Table 1 has constituted the backbone of the detailed assessment of the project. No substantial shortcomings of design quality were found therein, with the exception of course, as discussed at length elsewhere, that no Phase II design is mentioned at all – it being assumed by the reviewers, and never disputed by the project participants or stakeholders – that this was merely an extension of Phase I. Contrasting the project plan with the actual project results is discussed in more detail in Section 3.4 where the individual outputs and activities are reviewed.

- The project matrix has clearly defined and focused development objectives, the attainment of which can be determined by a set of verifiable indicators (as long as it can be assumed, which the reviewers did, in agreement with the project personnel in Moscow, that the unofficial documents referring to Phase II can be taken as fully valid);
- The project was formulated based on a logical framework approach and was designed to include appropriate output and outcome indicators within a realistic timeframe; there was no logical framework matrix attached to the original 2010 project TOR but the key impact indicators were clear, verifiable and eventually validated;
- The outputs as formulated in the project document and in the reviewers' logframe are relevant, even if not sufficient to achieve the ultimate objectives; they are realistic and measurable. They were basically achievable and indicate a decided progress from the start-of-project to the end-of-project situation.
- The original project document (dated 2010) gives an extensive listing of project risks and assumptions (in its section C.7) but indicates no high-level risks. As it happened, all the four medium-level risks mentioned proved to be real but have been adequately treated by the project.

The reviewers have not found any evidence of a reasoned justification of why it was precisely these two areas of waste management, *i.e.*, WEEE and RTG waste, which came to be chosen for the object

of the project. However, even if these principal areas of concern happened to be fortuitously chosen, the choice has certainly proved fortunate. It has correctly been recognized that a mix of legislation related and capacity building related objectives would be the right choice, and this has been adequately attended to in the detailed design, even if at the end of the day, the degree of success in capacity building has not been very high. Also praiseworthy was the inclusion of topics such as those listed under 3.1.1 through 3.1.3 (*e.g.*, the processing capacities; GIS and the stock-taking activities; BAT/BEP; and of course, training and awareness building) as valid and essential components of the overall WEEE and RTG waste management scene.

The design of Phase II suffered (even if less than could be expected) from the unexplained absence of an authoritative project document or project document revision – an issue that can only be resolved within UNIDO HQs. Thus it has not been possible to contrast the project results, however noteworthy, with an authoritative design document. Also, Phase II experts' TOR appear to have been insufficiently balanced – although again, this need not have impacted upon the Phase II experts' performance since all of them produced respectable reports (*cf.* section 3.1.4) and engaged in multiple ancillary activities aimed at fostering modern approaches to waste management and at the utilization of synergies.

Thus on the whole, the design aspects of the project are regarded as satisfactory, reflecting UNIDO's long-term experience with environment-oriented projects.

3.3 Relevance

The start-of-project situation, the nature of the problem, and the gaps preventing appropriate treatment of the selected subtypes of waste (WEEE and RTG) were clearly identified, analyzed and documented. The case for UNIDO assistance has been presented convincingly.

The identification of end users and partners on the one hand as well as of sponsors on the other hand has of necessity been incomplete. It could not have been otherwise since the project addressed only a model situation rather than encompassing the whole or Russia. It has rightly been mentioned in the various reports that the waste processors would themselves rank among the principal beneficiaries when adopting BAT/BEP. Perhaps, it has not been sufficiently stressed how profitable waste treatment can be (WEEE) while, on the other hand, how much energy-intensive is the treatment of worn tyres – an extremely tough material difficult to break down to rubber crumbs (even though cryogenics helps).

The reviewers conclude, in complete agreement with the Mid-term report [2], that:

- The project was formulated with participation of the national counterpart and/or target beneficiaries; and
- Very reasonably, it included the stock-taking of WEEE and RTG collection sites as well as of the businesses involved in the processing of these wastes, as part of the effort at creating an adequate management capacity in the two regions upon which the project was focused.

A recapitulation of the reviewers' over-all view of the relevance of the project is expressed in Figure 4.

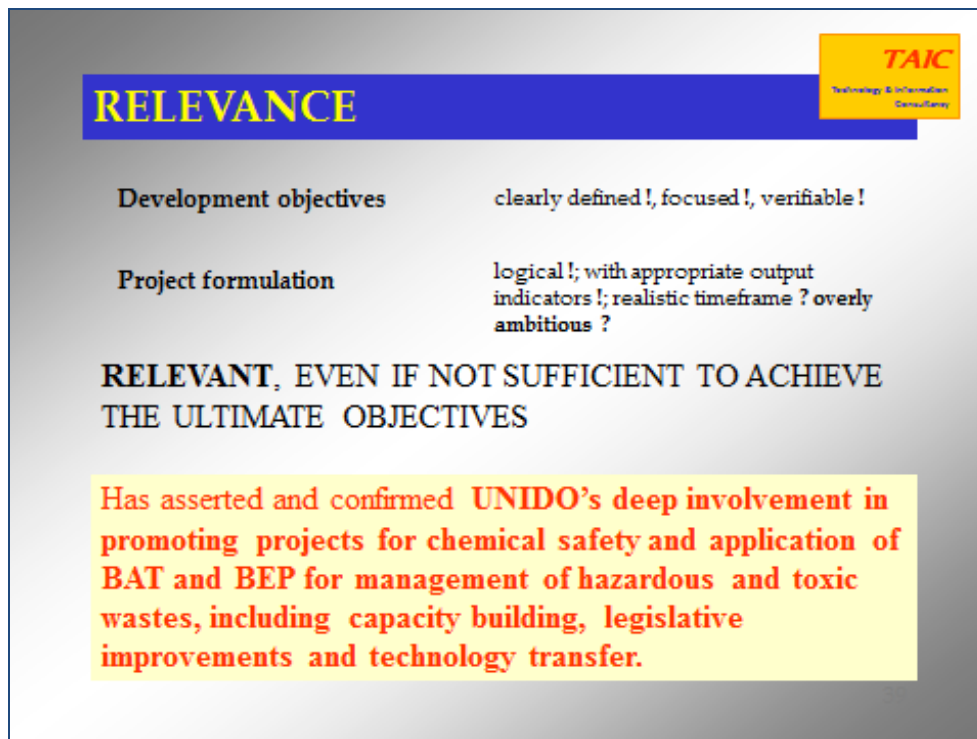


Figure 4. Overview of project relevance

The relevance of the two associations established/activated under the project, namely, the WEEE Recyclers' Association and the Tyre Processors' Association, has to be underlined. They have both been instrumental in spreading information on waste management and assisting efforts toward coordinating activities in their respective fields. As a corollary, it is worth pointing out that these Associations, rather important for the future of waste management in the two subsectors (WEEE and RTG), came into being as a direct result of the UNIDO project. Of course, they are rather virtual, still using the UNIDO Moscow office as their official address, and yet they appear to have been useful both in effectively lobbying for the new legislation and in providing a background and fall-back information base for all authorities and entrepreneurs interested in the collection and recycling of either WEEE or worn tyres (RTG).

3.4 Effectiveness and efficiency

It is worth noting right away that many of the observations described in this section apply to Relevance, too. Even though the two aspects of assessment differ, it holds, at least in the area of legislative development, that on the whole, what is relevant can reasonably be hoped also to be effective.

Effectiveness

The effectiveness (and to a degree, also the efficiency and relevance) of the various outputs obtained is documented in detail in Table 2 and synthesized over-all in Figure 5. The table provides a listing of activities planned and delivered. Simultaneously, the outputs produced / services delivered as described in the table also represent the reviewers' assessment in terms of the project performance indicators.



Figure 5. Overview of project effectiveness

Table 2. End-of-Phase-II situation (on conclusion of the project)

Planned activity (as per initial project document)	Output produced / service delivered
<p>Activity 1.1.1 Evaluate the existing regulation for management of the life cycle of the EEW and RTG in the country and make a comparative analysis with the regulation existing in the EU. Identify its elements needed and applicable for EEW and RTG management in Russia. Establish priorities for the regulation improvement. Assist in establishing the organizational mechanism for developing the regulation improvement recommendations and lead the job.</p>	<p>Legislative amendments drafted by experts; these drafts involved the principle of "extended producer responsibility". New Waste Act approved; 3 implementing regulations (of of 30 drafted) have already been adopted. New Avtodor Co. Standard (also dealing with the treatment of worn tyres) drafted and accepted.</p>
<p>Activity 1.1.2 Review the existing practice of the collection, recycling and disposal of EEW and RTG, including the used technologies and availability of facilities/companies for reprocessing, recycling and safe disposal of collected outphased and used products. Evaluate priority schemes that could be developed in Russia and work out details of their establishing.</p>	<ul style="list-style-type: none"> • A review of the existing practices in the collection, recycling and disposal of WEEE and RTG in EurAsEC countries was prepared. • Activities from the first half of 2014 were continued (PIF; regional project; assistance to Government; letters of interest received from Belarus, Kazakhstan, Armenia and Kirgizia. • An overview of eco-industrial parks was prepared. • Publications in professional journals.
<p>Activity 1.1.3 Develop a concept the Clearing House/Register of electric and electronic products to collect information from producers on toxic and potentially hazardous components of their products</p>	<p>The comparative study relating to Clearing house/Register of electronic products in Europe was continued. A concept paper has been published, based on one of the expert studies [23].</p>
<p>Activity 1.1.4 Prepare recommendations for improving the regulation at regional</p>	<p>Recommendations for improving regulation at the country level for WEEE were developed and</p>

Planned activity (as per initial project document)	Output produced / service delivered
and country levels. Discuss the recommendations with sectoral industrial associations, NGOs, research organizations. Organize a roundtable with participation of all stakeholders.	discussed at the different conferences
Activity 1.2.1 Prepare a data base of advanced BAT/BEP used for recycling and disposal of EEW and RTG.	The BAT/BEP data base focused on WEEE and RTG was set up. It comprises (i) a concept, (ii) methodology and (iii) so-called 'passports' describing different waste treatment technologies.
Activity 1.2.2 Analyze existing waste collection schemes, practice and technologies used by recycling companies. Define barriers for investments in development of the sector.	Six roundtables on existing waste collection schemes and on the practices and technologies used by recycling companies were organized, with 10 major companies participating.
Activity 1.2.3 Make assessment of the most successful scheme for waste collection and recycling and prepare business plans for developing 2-3 schemes (like product take-backs, separate collection, financial responsibility of producers, etc.) for the local conditions.	<ul style="list-style-type: none"> • New waste collection and recycling schemes were developed, including the pertinent business plans. A business plan and a financial model were prepared for the "Koltech-Kama Ltd" worn tyres. • A program was prepared that would implement the principle of "extended producers responsibility" at "Nizhnekamskshina" (a big Russian tyre producer identified as candidate for a pilot project). The work carried out in the Republic of Tatarstan will be extended to other regions along the Volga.
Activity 1.2.4 Organize expert group meetings to discuss the organizational and technical issues of EEW and RTG recycling.	<ul style="list-style-type: none"> • By now, 8 meetings of experts in the field of worn tyres and 6 meetings of experts in the field of WEEE were held. • The WEEE Recyclers Association finally established.
Activity 1.2.5 Launch a specialize internet site for the results of the project.	A specialized Internet site launched in 2013 was upgraded in February, 2014. The site is at WWW.ICBET.RU . An English version is still unavailable.
Activity 1.2.6 On the example of Tatarstan to make a digital map of allocation of technical facilities for wastes recycling, landfilling and disposal.	A GIS (Geographic Information System) application – map was set up in 2013 in cooperation with The GIS Federal Research Inst. of Moscow and is being updated by entering new data on enterprises involved in the WEEE and RTG treatment. Information is being collected on Tatarstan and on 18 regions of the Central Federal District of Russia.
Activity 1.2.7 Upgrade 2 regional centers in Moscow and Kazan (Tatarstan) capable to run the activities of the project, to manage the information exchange, to provide consultancy services in assessment, selection and application of BAT/BEP.	The Moscow International Center for BAT is being converted into an independent (non-commercial) company so it can continue operating after the termination of the project. Four seminars on waste management and an international conference on waste management were held. Efforts at obtaining an educational license to train professionals in the field of waste management of RTG and WEEE from the Ministry of Education have so far been unsuccessful because the organization lacks adequate teaching premises; therefore the experts of ICBET have started holding training courses at other institutions in Moscow.
Activity 1.2.8 Train staff of the centers in different aspects of EEW and RTG management to be able to consult and assist	The curriculum of a WEEE training course for specialists has been updated. It will allow for certification of specialists at two educational

Planned activity (as per initial project document)	Output produced / service delivered
to identify and transfer BAT/BEP for wastes recycling and disposal.	institutions. A study course on crumb rubber based modifiers for road construction professionals is under development, to be delivered at the Moscow Road Construction Institute.
Activity 1.2.9 Identify potential organizations in the countries of EurAsEC and initiate the establishing of the thematical Centers.	Business contacts were established with the UNIDO CIIS in Armenia, with the "Belarus Waste Management Sectoral Operator ", with Erdet Co. of Kazakhstan dealing with hazardous waste management. Cooperation and exchange of information agreements were signed with countries of the Customs Union.
Activity 2.1.1 Prepare a set of criteria for selecting BAT/BET applicable for local conditions, including technical, economic, environmental and other features of a technology.	A BAT/BEP methodology document has been sent to the Institute of Environmental Engineering and the Chamber of Commerce of Russia, eventually to be submitted for approval to the Ministry of Natural Resources of Russia.
Activity 2.1.2 Select 2-3 successful schemes for waste collection and recycling, and prepare business plans for their application for the local conditions.	The Comprehensive Worn Tyres Management System has been launched in Tatarstan. Here the UNIDO project is followed-up by a commercial company (Koltech-Kama) employing UNIDO experts.
Activity 2.1.3 Invite private partners for implementation of this scheme. Advertise the invitations through local media. Make selection based the Terms of Reference which includes the co-financing from private partners.	Work started in January, 2014 on the development of a regional WEEE management scheme with three private companies and the Ministry for Investments and Innovations of the Moscow region.
Activity 2.2.1 Hold an international conference devoted to BAT/BEP of EEW and RTG with participation of owners of BAT and local companies-potential users of these technologies.	The international Conference "Organization of Management of Waste Electronic and Electrical Equipment in Russia: the Situation in the Industry and its Prospects" was held in May, 2014 with participation of owners of BAT and local companies – potential users of these technologies
Activity 2.2.2 Hold introductory workshops for other regions of RF as well for interested institutions in other countries of EurAsEC with presentation of results of the project, concept of a specialized center and BAT/BEP identified and applicable for local conditions.	Materials on WEEE management were published in June, 2014 in two specialized professional journals.
Activity 2.2.3 Awareness raising campaign, including printed materials and publications, public consultations for thematic NGOs.	Steps were taken to raise awareness of waste management: <ul style="list-style-type: none"> • More training courses were prepared, and presented to various audiences. • The regional project of creating a system of WEEE management for EAEU countries received a preliminary endorsement by the EurAsEC countries and was presented at the meeting of ecology ministers of EurAsEC in September, 2014 in Kirgizstan, and at the “Saint-Petersburg Initiative” conference.
Regional project: Creation of a WEEE management system for EAEU countries	<ul style="list-style-type: none"> • Letters of support were received from Governments of Belarus, Kazakhstan, Kirgizstan and Armenia, in part in response to one of the UNIDO expert's travels to these countries.
Dissemination of project results through IPLA	<ul style="list-style-type: none"> • The Global Forum of IPLA was held in Moscow in October, 2015. During the Forum and in

Planned activity (as per initial project document)	Output produced / service delivered
	framework of it an international exhibition and several conferences and workshops will be arranged including ones devoted to WEEE and waste rubber goods. <ul style="list-style-type: none"> • Different analytical materials were worked out in the framework of the UNIDO project and distributed during the Global Forum of IPLA.
Cooperation with other projects	Cooperation with other projects continued (incl. the Pollution “Hot Spots” within the Middle and Lower Volga River Basin): <ul style="list-style-type: none"> • A PIF was prepared for GEF financing of an Environmentally Sound Management and Final Disposal of PCBs project to be launched in the Russian railroads network and with other PCB owners (relates to the Stockholm Convention). • Cooperation was initiated with projects aiming at the phase-out of HCFCs and the promotion of HFC-free energy efficient refrigeration and air-conditioning in the Russian Federation via technology transfer (relates to the Montreal Protocol). • The vision of a Regional (CIS) Capacity Building project for Mitigation of Global Environmental Problems was presented at a Vienna meeting in March, 2014.

On the whole, out of all the results produced, the Draft Federal Act amending the existing waste management legislation approved in 2014 [46] definitely represents the greatest achievement of the UNIDO project, even if it cannot be fully ascribed to the project related efforts – obviously, other legislative interests at play within and outside the Duma have also played their positive part. Still, it was to no minor degree that this success has been aided by the project extension (Phase II). The relative rapidity with which the entire legislative process related to the Waste Act has taken its course is remarkable.

The project has been less effective in the area of capacity building. This relates to the fact that WEEE treatment, even though potentially yielding highly valuable materials, is a complex, highly challenging process, while on the other hand, the treatment of RTG (mainly, worn tyres) potentially yielding great volumes of relatively low-value secondary materials faces the challenge of market acceptance'

Also, the new standard [44] is going to help a lot toward more effective waste management – without the backing of a standard there is little incentive to engage in new waste management practices. Together with the Act [46] referred to above, these are the instruments of change.

The project experts' views

Valuable data on relevance and effectiveness were derived from the national experts' answers to the questions asked according to a questionnaire prepared by the reviewers. The responses although all of them of the same tenor were too scattered however to allow for a quantitative analysis. Specifically, it has been asserted by the experts, and confirmed by the reviewers as far as possible, that –

In the areas of capacity/management, capability building and business strategy development:

- The creation of capacity for management of electronic, electrical and rubber wastes has been properly addressed by the project.
- The project has assisted developing the industrial strategy and building up the management capabilities: based on the project, a pilot concept has been developed for Moscow City, and now is being considered by the Department of Ecology of the City of Moscow.
- The regulations and the enforcement practices of waste management have been strengthened, and specialized centers have been set up such as the newly established WEEE Recyclers' Association.

In the areas of training, public awareness building and international cooperation:

- According to Phase II experts' assertions, there has been a significant shift during the project period toward alleviating the lack of experienced professionals and research and development capacities in waste management: in November, 2014 a group of WEEE professionals visited Germany (thanks to arrangements by the Moscow office of UNIDO) on a study trip. Also, information on different aspects of WEEE management was presented to professionals at three international conferences on WEEE held in Russia (in 2010, 2012, 2014). Representatives from StEP Initiative and WEEE Forum took part. All this allowed executives to better understand current tendencies in WEEE collection and recycling technologies and practices, and created an ambiance more conducive to ecologically sound recycling of WEEE. Training seminars were also of help here.
- The sectoral associations have been disseminating knowledge on waste management both to its members and to the public – through journal publications, reports, conference presentations etc., providing for an exchange of information with foreign partners *e.g.* on technologies, developing legislative amendment proposals, and assisting the federal and regional government bodies toward developing strategies and drafting proposals in support of the industry.
- Attempts have been made at introducing the project results for application in other countries of the Euro-Asian Economic Community (EurAsEC): the UNIDO Center in the RF initiated the development of a regional project focused on creating a regional WEEE management system. Five countries expressed their interest in the project. The concept was introduced to the Committee on Industry of the CIS and to the Commission on Economic Issues. Now a working group is being formed consisting of representatives from five countries. The project concept was discussed at regional seminars held by UNIDO in Armenia, Belarus, Kazakhstan and Kirgystan. In this way, a background for transfer of the environment management system or its elements to other countries of EurAsEC has been established by the project.

In the legislative arena:

- There were several amendments to the Federal Act adopted (no. 458-Φ3 of 29 December 2015, no. 111-Φ3 of 2 May 2015, no. 203-Φ3 of 29 June 2015), introducing EPR and a ban on landfilling of waste that could be recycled.
- Also, there were amendments/follow-ups to some more Acts of law or City regulations (*cf.* Section 44 of Project document [1]): Act of Moscow of 30.11.2005 no. 68 “About production and disposal of wastes in Moscow”; Decree of Moscow Government of 23.03.2004 no. 164-ПП “On the concept of handling Moscow production and consumption waste”, and the draft regulation “On handling the production and consumption waste of Moscow”; Directive of Moscow Government of 4.04.2007 no. 602-ПД “On setting up a municipal system of EEW collection, processing and recycling”; the Moscow regional council document entitled “Concept of the regional program “Handling of generation and disposal of wastes in the Moscow region in 2006-2015”.
- There were changes in the project landscape after 2013 that were described as dramatic by the project experts. The most important one has been the adoption of legislation and supporting regulations in the RF introducing the concept of Extended producer responsibility.

In the area of institutional involvement:

- The two principal Government bodies concerned with waste management have indeed played key roles in the project as envisaged by the Project document; these were the Ministry of Natural Resources and Ecology of RF responsible for environmental policies with respect to POPs management, and the Ministry of Natural Resources and Environmental Protection of Tatarstan. Other institutional participants involved included the RF Ministry for Industry and Trade and the Russian and Moscow Chambers of Trade and Commerce.
- Thanks to the project, regional authorities, particularly in the Greater Moscow area, have become more interested in waste recycling, thus providing for a reduction of the volumes of waste landfilled. However, there still is no regulatory act that would specially address the handling of WEEE.
- The project has been able to assert and confirm, in particular through events such as conferences, business meetings, successful lobbying, training courses, and negotiations with EurAsEC partners in which the presence of UNIDO has made itself felt, UNIDO's deep involvement in promoting projects for chemical safety and application of best environmentally safe technologies and best environmental practice (BAT/BEP) for management of different types of hazardous and toxic wastes, including capacity building, legislation improvement and technology transfer.

In relation to project impact:

- Project impact assessment is influenced by the circumstance that as yet there is no definite answer to the question of whether there has been any increase since 2013 in the collection rates, regularity of collection services, mixing and dumping with municipal solid wastes and burning without any pollution control, as no official statistics exist. The greater part of the WEEE generated is being collected and taken apart by private persons and "gray recycled" to withdraw valuable materials. Any hazardous substances left tend to be disposed of by dumping in municipal waste streams.
- Equally, there are no official statistics on the percentages of waste collected or recycled. Start-of-project estimates for WEEE were 8 % for steel, 21 % for plastics, 13% for non-ferrous and precious metals, 6 % for glass, 4 % for printed circuit boards, 4% for wood and 4% for other materials. The over-all percentage of WEEE reprocessed appears to be ca. 4 %. In the area of RTG waste (rubber tyres), estimates are that ca. 10-15 % is currently being re-used. But all these figures are guesses rather than estimates so it is nigh on impossible to advance any definite improvement estimates attributable to the project.

Efficiency

The present reviewers agreed with the Mid-term report [2] in that the project efficiency was moderate; see also Figure 6 and Table 2. This characteristic (of moderate efficiency) was true of Phase II as much as it had been true of Phase I. Aside from the – ultimately successful – legislative effort, the project was more focused on dissemination of information and on training, rather than on actual capacity building and on market development policies.

EFFICIENCY

MODERATE !

Aside from the – ultimately successful – **legislative effort**, the project was more focused on **dissemination of information** and on **training**, rather than on actual **capacity building** and on **market development policies**.

Occasional digressions from the Prodoc TOR ?

– but a formidable body of experience acquired abroad !

Figure 6. Overview of project efficiency

There were numerous international conferences and seminars during both Phase I and Phase II of the project, devoted to the analysis of the current waste situation in the RF and the world. Also, a formidable body of experience acquired abroad has been accumulated and is being disseminated. The aim was to draft proposals for Government bodies toward establishing a waste management industry based on world experience.

On the other hand, certain items of the project agenda could also be found which even though potentially valuable in themselves [17] and [18] have in fact detracted from project efficiency because strictly speaking, they were outside the scope of the project as defined by the project document [1].

Cumulation of reports devoted to the same topic (*e.g.*, foreign experience in waste management, notably, parallel large-sized studies of the U.S. rubber asphalt industry) has also tended to reduce the overall efficiency.

In the area of training, the reviewers were unable to determine whether or not there have been any overlaps in the contents of the various training courses as the course curricula had not been submitted, and it appeared that no synoptic document which would present an overview of all the courses existed.

On the other hand, potential overlaps of the subject matter of the conferences held were not regarded as detrimental to efficiency since the audiences tended to be different and repetitive demonstrations of the basic truths of efficient waste management could only have a positive impact.

3.5 Sustainability

The reviewers' over-all view of project sustainability is represented in Figure 7.

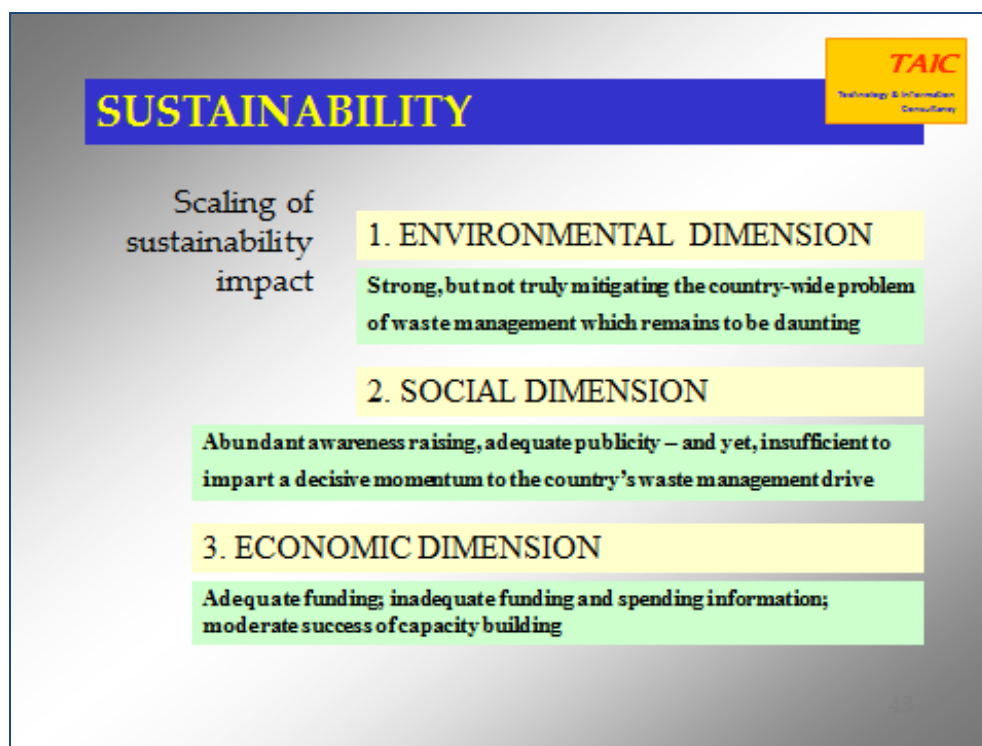


Figure 7. Overview of project sustainability

Project sustainability analyzed in more detail is documented by the following main points formulated for Phase II, with some overreach into Phase III if approved. Originally of course, these points were formulated rather as recommendations, but all of them – although retaining the nature of recommendations for Phase III if any – have been implemented and thus converted to reality, even if not always to full satisfaction, during the course of Phase I and Phase II:

- Implement the Regulations on Asphalt rubber use regulations prepared by UNIDO experts. Improve the Draft State standard for Asphalt Rubber, and send it to Rosstandart for adoption.
- In conjunction with the Act already adopted, draft pertinent implementing regulations for the Pilot Project of comprehensive EEEW treatment in Russia and the EAEC.
- Continue providing consultancy support to the Koltech-Kama project in Tatarstan, aiming to identify new technologies for using crumb rubber in the construction industry.
- Cooperate with the GIS Technologies Federal Research Institute in the areas of waste recycling in the EurAsEC countries (starting with Belarus, Armenia, Kazakhstan) to encourage the transfer of technologies and exchange of experience.
- Cooperate with Moscow Authorities concerned with the environment in implementing the technologies recorded in the data bank established by the Project experts. The data bank content is the ownership of ICBET (relates to Activity 1.2.7).
- Involve IPLA (International Partnership for Expanding WM services supplied by local authorities) in grasping the opportunities for establishing a comprehensive waste management system for municipalities and regions based on the 3R concept (Replacement–Reduction–Refinement) and Zero waste – the sustained development principles.
- Continue training pertinent staff in the different aspects of WEEE and RTG management, so that they are able to identify and transfer BAT/BEP in the area of waste recycling and disposal.
- Continue developing the Comprehensive system of worn tyres management in Tatarstan and in the Moscow region.

- Prepare a training course for laboratory specialists of roadbuilding organizations, especially in the Moscow region. Cooperate in establishing battery recycling facilities in the Moscow and St.-Petersburg regions.

Out of all these contributive items, it has – in the first place – clearly been the legislative progress reached that makes the project sustainable, and also some activities and outputs initiated by the project or related to the project: the two Associations devoted to waste management, and the GIS application mapping out the siting of waste collection sites and processors; this application is bound to grow in importance

In view of the National Project Coordinator, a novel factor that also is supportive of the project has been the involvement as of recently of the Chamber of Trade and Commerce of the Russian Federation which, partly in consequence of the UNIDO project, has initiated steps to become involved in waste management [51,52]. The steps it took were aimed at the highest levels of RF Government. It was impossible though for the reviewers to quantify the contribution by the project to this development.

Thus, it would be preposterous to ask whether anything will remain from the project even without any Phase III; quite a lot will remain as evidenced by this entire evaluation report. But a degree of fade-out has to be reckoned with for the future: experts will be re-directed to other tasks, waste treatment companies will tend to revert to their old ways, and politicians will have other causes to argue and support. This is why effectively, sustainability will very much depend on whether any funding will be forthcoming for the proposed future Phase III of the project.

Phase III

It is only natural, and it also is the view supported by the reviewers, that the sustainability of the project appears to gravitate on Phase III. This is regarded as likely but it would be asking too much to specify the degree of likelihood here. Although it may reasonably be expected that quite a few of the items suggested for Phase III (see below) may in fact be taken up and eventually come true by action of other bodies, too – among which the two sectoral associations may be prominent if they are accorded proper support. As regards the envisaged project extension to Phase III, there are two documents outlining the proposal [32,37].

The document [32] is the actual proposal for Phase III of the project, containing:

1. Summary of results achieved in Phases I and II, and the rationale for Phase III
2. Proposals for Phase III
3. Phase III description
4. List of outcomes, outputs and activities
5. A proposed budget to the tune of USD 750,000.

The document [37] is a draft project document for Phase III, according to which, in order to capitalize on the results achieved by the project during Phases I and II, the work proposed to be done during Phase III worth USD 750,000 is to include in particular:

1. To establish a Working Group on hazardous waste management in the Customs Union (CU) in order to initiate the process of creating a body of harmonized environmental legislation for the CU. This will bolster and further develop previous activities directed towards creating a modern system of hazardous (WEEE, RTG) waste management. The Working Group will contribute toward implementing this system in the CU countries.
2. To implement the regulations on asphalt rubber usage, which were prepared and translated by UNIDO experts, and to improve the draft State standards for asphalt rubber that were also prepared by UNIDO experts. The final version of the Standard has already been approved by the Rosstandard. Implementation of these regulations will bolster the development of the RTG management system and will serve as an example of practical use of BAT/BEP in roadbuilding.

3. To continue support of the Koltech-Kama project in Tatarstan by providing consultancy services. To search for new technologies of using crumb rubber in various types of construction work (another example of the use of BAT/BEP identified within the framework of the project).
4. To continue, jointly with the WEEE Recyclers Association and other project partners, activities toward creating a WEEE management system in Russia and the CU countries, comprising sets of legislative and technical regulations and guidelines.
5. To establish pilot facilities for WEEE recycling, to create subregional centers for deeper WEEE recycling and to optimize their distribution in the CU. This will contribute to the establishment of a harmonized system (both within the CU and with the EU) of ecologically sound and more effective management of WEEE based on BAT/BEP.
6. To ensure, jointly with the Moscow Government Dept. of Environment, the practical application of technologies sourced from the data bank in the area of solid waste (in particular, WEEE and RTG). The main objective is to reduce the amount of waste landfilled in the Moscow region and to expand the accumulated positive experience to the CU countries.
7. To continue, jointly with the Institute for GIS Technologies, conducting activities on the GIS in the field of waste recycling, by getting involved in deeper levels of analysis. This will encourage transfer of technologies to, and exchange of experience and information in waste recycling with, the CU countries (starting with Belarus, Armenia, Kazakhstan).
8. To make IPLA actively involved in the design and buildup of the comprehensive waste management system for municipalities and regions based on the '3R' and 'zero waste' principles thanks to accessing the GIS system.
9. To continue activities in preparation for the IPLA Global Forum - 2015 in Russia (this has in fact been held already).
10. To engage the staff trained in EEW and RTG management in providing consultancy services aimed at identifying and transferring BAT/BEP in the area of waste recycling and disposal.
11. To continue, together with project partners (Shinoecology Association and Koltech Co.), developing the comprehensive system of worn tyres management in the Central Federal District of Russia.
12. To prepare a training course for specialists from the roadbuilding companies' laboratories and to offer this course in the Moscow Region Training Center.
13. To create, jointly with Promothody Co. (of the Moscow City Authorities, active in the treatment of industrial wastes), conditions that will be conducive to setting up an enterprise that will undertake battery recycling in Moscow and St.-Petersburg regions. This should include specialized training and retraining as well as awareness raising activities focused on the necessity of separate collection of WEEE, RTG and other hazardous wastes.
14. To develop training and educational programs for professionals in hazardous waste management who are active in state and regional environmental structures at different levels.
15. To develop educational programs for schools and basic materials for ecological activists to assist in early ecological education and to raise public awareness of the necessity of separate waste collection.

As a corollary to a potential Phase III design, it is noted that according to a 2013 estimate, the top 10 recycled cell phones in the USA have a recycle value of \$35-178 apiece, averaging \$87 in terms mainly of precious metals and rare elements. Not just in the US but in other countries as well including Russia, this value hidden in WEEE is waiting to be recovered. This problem requires a dedicated systemic solution.

The situation is less advantageous but not hopeless at all in the area of RTG. Waste tyres can be used as construction materials; for artificial reefs; and in civil engineering applications (shredded, ground and crumb rubber, also known as size-reduced rubber, used in both paving type projects such as Rubber Modified Asphalt – RMA, Rubber Modified Concrete, and in moldable products).

3.6 Project coordination and management

This section of the evaluation report addresses the issues of

- project management proper;
- project funding and spending;
- evaluation specifics relating to legislation and to WEEE or RTG waste management;
- overall project rating.

3.6.1 Project management

Coordination and management issues are reflected in a report [20] on the progress for 11 project activities (coordination; consultancy; start of implementation of regional concepts for recycling of worn tires and EEEW management in the Moscow region and in Tatarstan in cooperation with Associations of tire producers and recyclers and Sectoral Association of electronic equipment processors; preparations for project extension; attracting new project partners; the PIF for WEEE; drafting of legislation; and training.

The various relevant federal and regional ministries of the Russian Federation (as well as of several EurAsEC countries) took all of them a highly positive and supportive view of the entire project [20,21,30,35]: they appreciated the facts that the project was conducive to strengthening the federal legislation concerning EEE and RTG waste as well as to improving the management capacities available for environmentally safe disposal and recycling of decommissioned and worn/used electrical, electronic and rubber technical goods. The relevant RF Government bodies as well as the regional authorities have all of them endorsed both the project and its results.

Indeed, the work undertaken under the project has resulted in strengthening the capacity of the participating institutions and placed them in a good position to carry on in the future. Some of these institutions have also actively channeled their own funds to waste recycling tasks and improvements [2]. Efforts aimed at updating the national legislation were given the highest priority in the project, in order to contribute to stimulation and enforcement of safe methods of disposal and recycling of WEEE and RTG in those regions of the Russian Federation that had been selected for the project, and have had their positive impact also on the EurAsEC.

An analysis is also available on existing Belarus WEEE management schemes [22].

3.6.2 Project funding and spending

The evaluators were baffled somewhat by the following circumstance: Effectively, the original project document [1] referred to what today we term the Phase I of the project and, indeed, virtually the entire project budget of USD 1,327,000 (also mentioned as if constituting the sole and entire project budget in the evaluators' TOR) was spent on Phase I alone (already described and assessed in the Mid-term evaluation report [2]). The evaluators – authors of the present Terminal report were fully satisfied with the Mid-term report statements regarding Phase I budget and spending.

However, apparently, there never has been (in Moscow, at least) any official and authoritative project document extension (or a new project document) that would cover Phase II of the project. The tasks to be performed in Phase II are only described in two informal documents originating from the UNIDO Moscow office [28,31] and, of course, in the official, UNIDO Terms of Reference [5-9] for the five experts who worked on the project during 2014. As for the Phase II budget (to the tune of USD 280,000), this was authorized, as an additional project input, in a letter by the Department of International Organizations of the RF Government [4], possibly in absence of (and certainly not referring to) any official project document that would specify the tasks to be performed.

Thus it appears that a budget breakdown for Phase II was only known to UNIDO HQ (not to the UNIDO Moscow office).

Equally, according to an oral communication by the National Project Coordinator, all Phase II spending was controlled (and disbursed) from Vienna. Based on the NPC's telephone conversation with UNIDO HQ in Vienna and also based on an e-mail by the project backstopping officer [53], the pertinent data were available in Vienna. Indeed, the only formal documents forwarded to the UNIDO Moscow office were the JDs of the Phase II experts.

Thus conclusively, we have three sums total of Phase II project budget which do not tally: the letter [4] of which a copy was furnished by the NPC mentioning the sum of USD 280,000; the statement by the backstopping officer [53] referring to the sum of USD 398,230 (excl. the project support cost surcharge, "psc", of 13%); and the budget and spending table received from UNIDO HQ [54] indicating a total budget for 2014 and 2015 of USD 258,978.72. These figures can only be reconciled at UNIDO HQ.

In fact, the table [54] covered the period from 2012 (*i.e.*, from approximately mid-Phase I of the project) until 2015. Having extracted and considered the 2014-2015 data from the said table, we arrive at a summary shown in Table 3.

Clearly, the most substantial amounts were spent on the national consultants and staff who produced a range of substantive reports and have performed a number of other tasks as described elsewhere in this report. Also, their work – combined with the work of internal consultants and staff – included, among other tasks, a comparative analysis of legislation in EurAsEC countries relating to the destruction and/or recycling of hazardous waste etc. [53]. The volume of training and studies was considerable and constituted the third largest budget and spending component.

Travel expenses were reasonable. The cost of equipment and other direct costs were inconsiderable. There were no subcontracts in Phase II.

The bulk of spending was in 2014 (89,7%). The remainder was spent in 2015. Total Phase II spending according to Table 3 was 97,12% of the released budget.

As a matter of fact, the terminal evaluators' TOR does not even mention the existence of any Phase II budget. Thus the reviewers were unable to issue any more definite statement regarding the relevance of Phase II budgeting and spending, and can only comment on the material substance of the Phase II outputs. Therefore, if this assessment may appear somewhat inconclusive it cannot be

otherwise, in absence of positive and proven inputs from UNIDO HQs – and that is from where, rather than from the authors of the present project evaluation, any more conclusive statements on financial management of the project have to be sought.

Table 3 – Phase II budget and spending summary

<i>Year</i>	<i>BuLine</i>		<i>Budget</i>	<i>Spending</i>	<i>Rem</i>
2014	1100	Staff & Intern Consultants	18879,03	18879,03	0,00
2015	1100	Staff & Intern Consultants	14466,74	12755,07	1711,67
			<i>33345,77</i>	<i>31634,10</i>	<i>1711,67</i>
2014	1500	Local travel	6789,61	6789,61	0,00
2015	1500	Local travel	91,24	91,24	0,00
2015	1500	Local travel	252,31	76,53	175,78
			<i>7133,16</i>	<i>6957,38</i>	<i>175,78</i>
2014	1600	Staff Travel	3789,35	3789,35	0,00
2015	1600	Staff Travel	0,00	0,00	0,00
			<i>3789,35</i>	<i>3789,35</i>	<i>0,00</i>
2014	1700	Nat.Consult./Staff	178512,68	178512,68	0,00
2015	1700	Nat.Consult./Staff	13115,42	8831,35	4284,07
			<i>191628,10</i>	<i>187344,03</i>	<i>4284,07</i>
2014	2100	Contractual Services	0,00	0,00	0,00
2015	2100	Contractual Services	0,00	0,00	0,00
			<i>0,00</i>	<i>0,00</i>	<i>0,00</i>
2014	3000	Train/Fellowship/Study	12798,48	12798,48	0,00
2015	3000	Train/Fellowship/Study	550,82	550,82	0,00
			<i>13349,30</i>	<i>13349,30</i>	<i>0,00</i>
2014	4500	Equipment	0,00	0,00	0,00
2015	4500	Equipment	51,83	51,83	0,00
			<i>51,83</i>	<i>51,83</i>	<i>0,00</i>
2014	5100	Other Direct Costs	4791,06	4791,06	0,00
2015	5100	Other Direct Costs	4890,15	3605,13	1285,02
			<i>9681,21</i>	<i>8396,19</i>	<i>1285,02</i>
		Total 2014+2015	258978,72	251522,18	7456,54
		of which:			
		Total 2014	225560,21	225560,21	0,00
		Total 2015	33418,51	25961,97	25961,97

3.6.3 Evaluation specifics

There were factors of importance to the assessment which were primarily tied to legislative work, or were either WEEE-specific, RTG-specific, or pertaining to both these „branches“ of the project.

Specifics relating to legislation

The requisite legislative improvements (having the form of a new Act of law, of amendments to existing legislation, or of new standards being formulated) transpired from a comparative analysis of the Russian, EU, US and Japanese legislations relating to waste management and especially to the management of harmful, potentially hazardous wastes. This process has resulted in identifying what was believed, on the basis of the analyses performed, to be legislative improvements well adapted and acceptable to the Russian Federation. Eventually, the recommendations for amending the national legislation in the area of waste management of generated waste, which were submitted to the RF Government, took a form based on the so-called “extended producers' responsibility” (EPR) principle. The new draft legislation incorporating the project proposals was submitted for consideration by the RF National Parliament (Duma) which passed the first reading as early as during Phase I of the project, in 2011. The process took its time but finally was crowned with complete success: the Duma adopted the new act (in fact, an amendment to Act no. 89 RF) on 29 October 2014, and as of the beginning of 2015, three regulations (out of the 30 to be issued under the amended Act) have already been approved, too.

This constitutes one of the highlights of the UNIDO project, bearing witness to its success. It has to be regarded as a valuable, unusual achievement to have any act of Parliament initiated by a project approved as early as within the project life. This statement would apply to virtually all countries and projects and, therefore, it applies no less to this Act adopted in the RF concerned with recycling and disposal as proposed by the project team.

Specifics relating to WEEE management

The legislative action described above can be expected to be regarded as a 'go-ahead sign' by the country's entrepreneurial community, possibly inducing its members to invest in the WEEE recycling sector.

A training program – one of many contemplated within the framework of the present UNIDO project – was developed and implemented by ICBET, with focus on WEEE management. The course was run *e.g.*, by environmental organizations and waste disposal companies in Moscow (see Annex 4 of [2]), and is also to cover other regions of Russia as well as the other EurAsEC countries. The Center also provided information on BAT/BEP technologies to some Russian companies participating in the governmental waste disposal program implemented on several islands in the Arctic region, in the Barents and White Seas. Also, a "Digest of BAT/BEP for collection, processing and elimination of WEEE" has been compiled and published containing a body of information on advanced technologies well-suited for the safe disposal and recycling of WEEE.

A WEEE Recyclers Association has been founded under the project. This allows to mobilize the waste disposal business community for joint actions by stimulating their interest in information sharing and the adoption of advanced technologies.

A detailed inventory of the subsector needs to be made, to take stock of

- the current and future WEEE that will have to be assessed and treated;
- the current state of WEEE recycling across the RF;

- the technical and economic feasibility of WEEE deriving from different types of products and equipment; and
- available appropriate policies promoting the recycling of WEEE from old products already accumulated in all regions of the country.

Specifics relating to RTG waste management

A regional data base of worn tyre collection sites and recycling facilities in Tatarstan has been set up and is being expanded to eventually cover the whole of Russia. In cooperation with the Russian Ministry of Regional Development, the project has initiated the creation of a GIS, to provide the backbone of a monitoring system that would encompass the entire waste recycling industry. The project has also been instrumental in helping to establish a Rubber Tyre Recyclers Association.

Technical meetings and workshops with representatives of the biggest tyre manufactures were held in collaboration with, or under the auspices of, the Association for Recovery and Recycling of Tyres (Shinoekologiya). Initial steps were taken, on the initiative of the UNIDO project, to have a national industry operator for worn tyre processing. It should become an important part of the country-wide tyre recycling system, and is being transformed into a Governmental program for creating the regulatory and legislative framework for this industry in the Russian Federation. Again, the proposal was submitted to the State Duma for consideration.

Evaluation aspects common to WEEE and RTG

A Geographical Information System (GIS) called "Monitoring of electronic, electrical and rubber waste" was established within the project framework is now in operation in Tatarstan. This data base is to be expanded so as eventually to cover all Russia's regions. Then it will become part of the envisaged country-wide monitoring system. It has also been proposed that this system could extend to other CIS countries as well. ICBET cooperates with the Moscow Technical University of Automotive and Road Construction (MADI) and with other partners on a joint pilot project concerned with worn tyres, so as to establish a production chain to implement the 'zero waste principle' in Russia.

Within the framework of the present project, UNIDO was the first subject in Russia and the EurAsEC which has come up with a vision of a federation-wide, comprehensive system for collecting and recycling industrial wastes such as both worn tyres and WEEE. Also, the project was the first to start convening conferences and conducting workshops for producers, collectors and recyclers of worn tyres in coordination with the pertinent regional ministries, with legislative structures such as the State Duma and the regional parliaments, and the commercial undertakings involved in the use of comminuted rubber in roadbuilding and in the construction of sports facilities.

3.6.4 Overall project rating

On the whole the project activities were conducive to improving the country's environmental standards and to bringing them in line with the international standards. Also, they helped developing a legislative base for the application of BAT/BEP techniques. As already mentioned in the mid-term evaluation report [2], this is particularly important with regard to Russia's accession to the WTO.

An "International Center for Best Environmental Technologies" (ICBET) was established as an independent, non-profit organization. Here the UNIDO project has made a contribution to fostering the exchange of information among the country's businesses, providing a vehicle for the provision of consulting services aiming at assessment, selection and application of BAT/BEP as well as on delivering environmental training. As of 2012, ICBET has been acting as IPLA's sub-regional secretariat for Russia and the EurAsEC countries.

Under the ICBET umbrella, a number of international conferences, seminars and round tables were conducted in conjunction with the UNIDO project, aiming to analyze the current situation faced in waste generation, collection and disposal. This has also provided opportunities for the formulation of proposals to be submitted to Government bodies and regional/local authorities concerned with different aspects of setting up suitable waste management facilities, drawing on international experience.

The overall rating of the project as seen by the reviewers is shown in Table 4.

Table 4 – Overall rating of UNIDO project US/RUS/10/002 – Phases I and II

Criterion	Evaluator's summary comments	Reviewers' rating*
Attainment of project objectives and results		
Design	Principal areas of concern – the management of WEEE and RTG waste – probably fortuitously chosen but the choice proved fortunate. Equally, the mix of legislation related and capacity building related objectives and results was well chosen and adequately attended to, even if the degree of success in capacity building has not been very high. Phase II experts' TOR insufficiently balanced.	S
Relevance	Relevant to the environmental programs of both the RF and UNIDO. Conducive to mitigating the volumes of waste left unprocessed and dumped at landfills. National legislation more in line with world trends. Steps taken toward developing a country-wide waste management strategy. In line with UNIDO's priorities and general trends in managing potentially harmful wastes. Stress laid on waste processing and re-use.	HS
Effectiveness	Outputs were delivered in good quality. Legislative action excellent, outcomes achieved – though a follow-up is needed still to approve and implement all the lower-tier regulations. Capacity building moderate but fully commensurate with any reasonable expectations; high replication potential and manifold achievements, see <i>e.g.</i> Table 2.	S
Efficiency	Phase I delays generally attended to during Phase II. Adequate project management, multiple workplans, potential overlaps especially in the area of training courses.	S
Sustainability of project outcomes		
Economic dimension	Adequate Phase I funding; information on Phase II funding and spending inadequate at UNIDO Moscow office. Therefore, the contention that the achievements were worth the investment – although supported by the reviewers based on their analysis and their general perception of the project atmosphere as exuded by the project staff – could not be verified in full.	MS
Social dimension	Abundant awareness raising activities, adequate project publicity – and yet, insufficient to impart a decisive momentum to the country's entire waste management drive; more sustained action, incl. potential project extension to Phase III, will be needed. At the end of Phase II the country is better poised to tackle her waste management problem.	S
Environmental dimension	The contribution of the project, however important, cannot be regarded as truly mitigating the country-side problem of waste management which remains to be daunting. The legislative improvements achieved raise high hopes but more projects and activities will be needed – in the legislative arena as well as in practical development of waste collection and processing facilities, in the area of general waste management, and in searching for new outlets of the reprocessed secondary materials.	HS
Project management		

National management	The project was well managed at the national level through the two Ministries involved, <i>i.e.</i> the MNRE and Ministry for Industry and Trade.	S
UNIDO management	Quality work by the Phase II national consultants. Contributions by other experts. Total volume of documentation prepared with focus on waste management is high; those docs listed in Annex 5 exceed the total of 2,600 pages. Some concerns relative to Phase II budgeting. No official Phase II prodoc, no Phase II in evaluators' TOR.	S
Monitoring and self-evaluation	Good project monitoring and self evaluation, mid-term evaluation and reviews, annual project review meetings, ministerial meetings. A somewhat complicated management structure: in addition to the National Project Coordinator, there was a National Steering Committee and a Technical Coordination Group. National Expert review meetings held were useful.	S
Synergies	High synergy throughout.	HS
UNIDO specific ratings		
Quality at entry and termination	Both the start-of-project and the end-of-project situations regarded favorably and enjoying good acceptance.	HS
Implementation approach	Relatively smooth project implementation. At the end of Phase I, approved for Phase II follow-up. Fortunately, implementation has not suffered greatly from UNIDO's managerial shortcomings, <i>e.g.</i> , the absence of any Phase II project revision document.	HS
Overall rating		S

***NOTE:**

- Highly Satisfactory (HS): The project had no shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency;
- Satisfactory (S): The project had minor shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency;
- Moderately Satisfactory (MS): The project had moderate shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency;
- Moderately Unsatisfactory (MU): The project had significant shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency;
- Unsatisfactory (U) The project had major shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency;
- Highly Unsatisfactory (HU): The project had severe shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

In summary, notwithstanding the reservations expressed and the deficiencies referred to at various points throughout this Terminal report, the project objectives were achieved and the expected outputs were delivered. Hence initially, the reviewers were prepared to award an over-all rating "HS" to the project. Eventually however, after considerable soul searching, they were swayed in favor of the "S" rating not by any conspicuous deficiencies on the part of all the staff actually involved in project execution but primarily, by the lack of oversight by UNIDO HQs demonstrated (i) in the absence of transmitting, prior to Phase II implementation, any official Phase II project document to the field; (ii) in the absence of transmitting, prior to the evaluation exercise, such an official Phase II project document or any revision thereof to the reviewers; and (iii) in ambiguous information on Phase II budget specification – all of which, it is worth noting, had little if any negative impact on the final project outcome.

4. Conclusions, recommendations and lessons learned

4.1 Conclusions

The overall objectives of the project – to build capacity for environmentally safe management and beneficial utilization of outphased consumer and industrial products; to establish environmentally sound management practices for collection, possible recycling, pollution prevention and environmentally safe disposal of potentially hazardous consumer and industrial products particularly focusing at the electrical and electronic wastes and used rubber tyres – have been achieved, with some reservations. It is the evaluators' professional opinion that a complete success could not realistically be expected; the problem is daunting and its comprehensive solution – if ever achieved, paralyzed as it often is by the ever-increasing volumes of waste generated – will take decades, or even generations. The waste localization and collection issues were given preference over the productive activities issue which in fact would be more rewarding, particularly in the area of WEEE.

The immediate objectives have on the whole been achieved in their entirety: the evaluation of the legal and regulatory framework and strengthening of two existing centers in Moscow and Kazan through the use of targeted technical transfer activities, to apply and disseminate BEP in the management of WEEE and RTG waste; the drafting of recommendations for appropriate changes of regulatory, policy enabling environment needed to assure the sound management of the electronic and rubber wastes; the submission of, and lobbying for, recommendations regarding governmental and local programs (using the experience of the EU countries and in particular, Directive 2002/96/EC on WEEE) for assessing and improving the existing regulatory mechanism in Russia; the reviews and consideration of relevant regulations of other countries; the provision of assistance to local industries in identification of BAT/BEP for electronic and rubber waste management, as well as of training and consultancy support; the identification, demonstration and promotion of appropriate waste management practices and technologies on the collection, recycling and safe disposal of waste; assistance to the implementation of collection schemes and recycling/disposal technologies for the management of WEEE and RTG waste; and finally, initiation of replication programs to disseminate BAT/BEP to other countries of the EurAsEC.

The two “branches” of the project, *i.e.*, that concerned with WEEE and that focused on RTG (rubber tyre) waste, were equally successful. What may have appeared incongruous at the beginning – combining the management of high-technology wastes (WEEE) with that of relative low-value wastes (RTG) under the umbrella of a single UNIDO project has in the final outcome proved beneficial as it demonstrated the width of the environmental problem faced.

4.2 Recommendations

The recommendations presented here stem principally from the validated project description (section 3.1 and Annex 9 – Main project outputs/activities validated) and from the evaluators' overall assessment. Thus they are founded on solid evidence backed by a detailed review of the results achieved – as reflected *i.a.*, in the numerous reports, publications and other documentation produced under the project project (see *e.g.*, section 3.1.4).

First and foremost, relevant Governmental bodies and agencies of the RF are invited to continue their efforts at keeping the country's legislative framework in line with world developments. Initiative by these federal bodies themselves as well as by regional and even local administration bodies, the business community, the environmentalists as well as by UNIDO is welcome.

The first step in this direction should be the adoption of all the ~30 implementing regulations pertaining to the Act of Law (*cf.* ref. [46]) already adopted.

Endeavors by the RF to build up the capacities capable of dealing with the ever-increasing volumes of wastes have to be continued and strengthened while striving to further reduce the number of the waste collection sites so that the technology employed therein can be utilized efficiently.

The two professional associations most closely related to the present project (WEEE Recyclers' Association and Shinekologiya Association) as well as ICBET, should receive more recognition and some tangible support (including, *e.g.*, a domicile of their own so that they would not have their registered place of residence at the UNIDO Moscow office) by RF authorities, especially by the RF Ministry for Ecology and National Resources, in order to be able to effectively work toward mitigating the country's problem of dealing with potentially hazardous wastes. Future tangible support by an appropriate body of either the federal or the regional government will be the best evidence of the Associations' adequate recognition.

The National Project Coordinator, together with the Phase II experts, should consider an even wider dissemination of the project results via *e.g.*, popular magazines and the daily press (in addition to professional or semi-professional journals), drawing upon the reservoir of information contained in the various expert reports and conference proceedings as yet largely untapped for the purpose of educating the public (as well as the administration bodies at all levels) in modern waste management.

Without demeaning in any way the dissemination efforts made under the project, it can be said that there never is enough dissemination in the area of environmental protection – by the way of the sectoral associations or otherwise. Without excessive expense and effort, quite a few of the project reports and publications produced could be posted on the internet, even in full, taking care of course not to disclose any confidential information and/or to consult the posting of such materials with the organizations mentioned therein.

Phase III of the project is worth a serious consideration by relevant RF bodies, and efforts at finding a suitable source of financing should be made by both the public and the private sector

The experience acquired by both UNIDO staff and the experts involved during Phase I and Phase II of the project should be tapped for innovative solutions that could make the Phase III project as attractive as possible.

UNIDO is invited to continue extending its full support to the initiatives of the RF federal bodies as well as of the regional and even local administration bodies, the business community and the environmentalists.

A synoptic listing of all available courses specifying their mission, audience and contents/curricula should be kept up to date. As a guideline for future activity, it would appear reasonable to reduce the number of different courses. Available courses should be clearly labelled and posted, to achieve maximum implementation.

In the meantime, UNIDO should continue maintaining lively contacts with the EurAsEC as well as other NIS countries that have expressed interest in the project, in order to foster a true international cooperation.

While the problem of waste collection – including the problem of continued operation of a multitude of dumpsites – remains pressing, both the relevant RF bodies and UNIDO should direct more attention to issues of reprocessing and re-use of the secondary materials gained and to the new products that could be produced. Such technological issues are more likely to attract the engineering community as well as administrators who have not yet been 'converted' to the faith of

environmental improvement based on waste mitigation alone. In other words, refocusing future efforts so as to include profit on top of ecology would be desirable (seeing that there is considerable potential for profitability with the types of waste tackled by the present project).

Finally, UNIDO should consider allocating some minor budget to facelift the premises of its Moscow office, to catch up with the image of UNIDO as a reputed international organization. This is relevant to the project as long as project-related organizations other than UNIDO (the Associations) maintain their official address at the UNIDO Moscow office site.

4.3 Lessons learned

It has been held unanimously by all to whom the evaluation experts talked in Moscow that in the area of waste management, „no one will do anything until and unless there is pertinent legislation in place“. The evaluation experts concur with this opinion. Thus, legislative work cannot be underestimated.

No one can expect any sudden change in a huge country to be effected by a single project however useful, or even by a succession of projects – which is not to say that such projects are not urgently necessary, to bring the overall scene in motion.

Project funding and spending information should be made easily accessible to all responsible project personnel, for reasons of transparency and also as an inducement to greater efficiency. This lesson should be remembered when managing future projects.

When drafting the Phase III project document or indeed when designing any future project devoted to WEEE and/or RTG waste, attention should be paid to including productive activities, especially those connected with reprocessing which offers rewards in the form of recovery of precious metals and rare elements that can be converted to financial profit, as an additional inducement for implementation.

In Phase III, the experience acquired under the present project can be extended beyond WEEE and RTG waste, to other subtypes of harmful waste clogging the country.

Annex 1 – Terms of reference

FINAL EVALUATION OF THE UNIDO PROJECT

US/RUS/10/002

SAP ID 104121

**BAT/BEP Center for Environmentally Safe disposal
of Potentially hazardous Consumer Products
and Industrial
Wastes**

Vienna
28 September 2015

1. Project background and context

1.1 Project summary

Russian Federation faces the challenge with the ever-increasing volumes of used consumer and industrial products and needs to undertake strong efforts to apply modern methods to reduce the negative environment impact and make possible the recycling and environmentally safe disposal of these products after their decommissioning.

The project will address the creation of capacity for management of electronic, electric and rubber wastes. These products being safe during their utilization could become hazardous and toxic if recycled and disposed after their utilization by environmentally unsafe methods.

The project will assist in developing of the industrial strategy and building up the management capabilities at several demonstration regions for introduction of BAT/BET for efficient recycling of these wastes, thus preventing the additional creation of toxic and hazardous wastes and saving of natural resources through reusing and recycling of valuable components of electronic, electric and rubber wastes.

It will be done by improving and strengthening the regulation and the regulation enforcement practices; by creating organizational and technical capacities through training and strengthening of specialized centers; by collecting information and developing information systems for assessment of possibilities of application of BAT/BEP on recycling and disposal of the wastes; and by pilot applications of the several BAT and working out selected BEP for recycling and disposal of electric and electronic wastes (EEW) and rubber technical goods (RGT).

The results of the project will be introduced for application in other countries of the Euro-Asian Economic Community (EurAsEC).

1.2 Project objective

The overall objective of the project is to build capacity for environmentally safe management and beneficial utilization of out-phased consumer and industrial products. The project is to establish environmentally sound management practices for collection, possible recycling, pollution prevention and environmentally safe disposal of potentially hazardous consumer and industrial products particularly focusing at the electrical and electronic wastes and used rubber tyres. It will be done by:

- by strengthening the regulation and the regulation enforcement practices,
- by building capacity through training and strengthening of specialized centres,
- by collecting information and developing information systems for assessment of possibilities of application of BAT/BEP on recycling and disposal of the wastes, and
- by pilot applications of several BAT and working out several BEP (take back schemes) for recycling and disposal of EEW and RTG.

The immediate objectives of the project are:

a) Evaluate the legal and regulatory framework and strengthening two existing centres in Moscow and Kazan through the use of targeted technical transfer activities to apply and disseminate BEP in the management of EEW and RTG. The recommendations for appropriate changes of regulatory, policy enabling environment needed to assure the sound management of the electronic and rubber wastes will be prepared. Governmental and local programs will be recommended. This will be done using the experience of the EU countries and in particular the Directive 2002/96/EC of the European Parliament on waste electric and electronic equipment (WEEE) for assessing and improving the existing regulatory mechanism in Russia. The relevant

regulations of other countries will be reviewed and considered.

b) Provide assistance to local industries in identification of BAT/BEP for electronic and rubber waste management, provide training and consultancy support. The appropriate waste management practice and technologies on the collection, recycling and safe disposal of waste using the advanced technologies will be identified, demonstrated and promoted. The implementation of collection schemes and recycling/disposal technologies for the management of EEW and RTGs will be assisted. The replication programs to disseminate BAT/BEP to other countries of the Euro-Asian Economic Community (EurAsEC) will be initiated.

Finally, the lessons learned during the project will be disseminated.

The logical framework of the project is attached in Annex 1.

1.3 Implementation status

The project started in June 2010. The first priority was given to updating the national legislation to stimulate and enforce the introduction of safe methods for disposal and recycling. The comparative analyses of the Russian, EU, US and Japanese legislation related to the management of the hazardous wastes allowed to identify the required legislation improvements and preparation the recommendations to the Russian Government for amending the national legislation governing the management of generated wastes in particular and utilizing the extended producers' responsibility (EPR) principle. Many project activities allowed to improve national standards and to a certain degree, to harmonize them with the international standards. The independent non-profit organization "International Centre for the best environmental technologies " (ICBET) was established in the framework of the project, which manages the exchange information with the main task of providing the consulting services for assessment, selection and application of BAT/BEP as well as delivering environmental training. The project also assisted in establishing of the Association of WEEE recyclers.

The Ministry for Ecology and National Resources of the RF approved the complex strategy for the management of solid household wastes

http://www.ozoneprogram.ru/novosti/kompleksnaya_strategiya

A Geographical information system (GIS) for monitoring electronic, electrical and rubber waste was established and under function in the Tar republic of Russia. The government requested UNIDO to consider the project extension in 2013.

1.4 Budget information

The overall budget as in the approved Project Document is presented hereafter:

Project Budget

Outputs	Budget lines	Description	Year 1		Year 2		Year 3		TOTAL	
			US\$	w/m	US\$	w/m	US\$	w/m	US\$	w/m
Output 1.1	11-50	International consultants	12,000	1.0	12,000	1.0			24,000	2.0
	16-00	Staff travel	5,000		5,000				10,000	
	17-50	National consultants	20,000	5.0	20,000	5.0	10,000	3.0	50,000	13.0
	33-00	In-service training	15,000		15,000				30,000	
	Sub-total			52,000	16.0	52,000	16.0	10,000	U.0	114,000
Output 1.2	11-50	International consultants	24,000	2,0	24,000	2,0	24,000	2,0	72,000	6,0
	15-00	Project travel	30,000		30,000		30,000		90,000	
	17-50	National consultants	80,000	20	80,000	20.0	80,000	20.0	240,000	60.0
	33-00	In-service training	20,000		55,000		55,000		130,000	
	45-00	Equipment	10,000		10,000				20,000	
	50-00	Miscellaneous	5,000		5,000		5,000		15,000	
Sub-total			169,000	22.0	204,000	27.0	194,000	27.0	1567,000	166.0
Output 2.1	11-50	International consultants	12,000	1.0	24,000	2.0	24,000	2.0	60,000	5.0
	15-00	Project travel			10,000				10,000	
	16-00	Staff travel					10,000		10,000	
	17-50	National consultants			40,000	10.0	40,000	15.0	80,000	25.0
	21-00	Subcontracts			35,000		135,000		170,000	
	33-00	In-service training			20,000		20,000		40,000	
	45-00	Equipment			30,000		90,000		120,000	
	50-00	Miscellaneous			5,000		10,000		15,000	
Sub-total			12,000	1.0	164,000	12.0	1329,000	17.0	K05,000	U0.0
Output 2.2	15-00	Project travel			5,000		25,000		30,000	
	17-50	National consultants	8,000	2.0	16,000	4.0	24,000	6.0	48,000	12.0
	33-00	In-service training			10,000		10,000		20,000	
	51-00	Miscellaneous					11,000		11,000	
	Sub-total			8,000	2.0	31,000	4.00	70,000	6.0	109,000
Monitoring and evaluation	11-50	International consultants					24,000	2.0	24,000	2.0
	17-50	National consultants					8,000	2.0	8,000	2.0

	Sub-total					32,000	4.0	32,000	4.0
	Grand-Total	241,000	31.0	451,000	39.0	635,000	57.0	1,327,000	127.0

The following table presents the project expenses by main cost categories at the end of 2015.

2013 Project Budget vs Commitment/Actual

Budget line	Released Budget (a)	Commitments (c)	Payments (d)	Expenditure (c+d)	Funds Available (a-b-c-d)
	\$	\$	\$	\$	\$
1100	16,794.83				16,794.83
1500	0.00				0.00
1600	0.00				0.00
1700	37,657.37	3,151.01	29,596.90	32,747.91	4,909.46
2100	0.00				0.00
3000	0.00				0.00
3500	0.00				0.00
4500	0.00				0.00
5100	0.00				0.00
Result	54,452.20	3,151.01	29,596.90	32,747.91	21,704.29
1100		-5,425.00	5,425.00	0.00	0.00
1500		-4,622.90	4,622.90	0.00	0.00
1750	4,883.27	543.25	4,729.41	5,272.66	-389.39
Result	4,883.27	-9,504.65	14,777.31	5,272.66	-389.39
1700			0.00	0.00	0.00
Result			0.00	0.00	0.00
1700	4,340.69	482.91	4,207.49	4,690.40	-349.71
Result	4,340.69	482.91	4,207.49	4,690.40	-349.71
1700			0.00	0.00	0.00
Result			0.00	0.00	0.00
Result	63,676.16	-5,870.73	48,581.70	42,710.97	20,965.19
Overall result	63,676.16	-5,870.73	48,581.70	42,710.97	20,965.19

1. Objective and scope of the evaluation

The purpose of the final evaluation is to enable the Government, donor, counterparts, UNIDO and other stakeholders to:

- Assess the relevance, efficiency, effectiveness, impact, and sustainability of the project by providing an analysis of project objectives, delivery and completion of project outputs/activities, and outcome/impact based on selected indicators;
- Assess from an environmental perspective whether (i) gains to the individual companies were measured and reported upon, (ii) priority was given to preventive approaches wherever possible, and (iii) social and/or economic effects of environmental interventions were taken into considerations and/or measured; and,
- Enhance similar on-going or future projects by proposing a set of recommendations.

2. Evaluation parameters and key evaluation questions

A rating system associated with the selected evaluation parameters, described in the following sections 3.1 to 3.5, will be presented in the form of a table with each category rated separately and a brief justification for the rating based on findings in the main analysis. An overall rating for the project should also be given. The proposed rating system is specified in Annex 2. The following is a list of guiding questions for the assessment of the different parameters.

2.1 Project design

The extent to which:

- The project had a clear thematically focused development objective and immediate outcome, the attainment of which can be determined by a set of verifiable indicators;
- The project was formulated based on the logical framework approach and was designed to include appropriate output and outcome indicators within a realistic timeframe;
- The outputs as formulated in the project document are relevant and sufficient to achieve the expected outcomes and objectives;
- The project was formulated with participation of the national counterpart and/or target beneficiaries; and,
- The project takes account of and reflects national and local priorities and strategies.

2.2 Effectiveness

Assessment of:

- Outputs produced and how the target beneficiaries use the outputs; and,
- Achievement of outcomes or are these likely to be realized through utilization of outputs.

2.3 Efficiency

The extent to which:

- UNIDO and counterpart inputs have been provided as planned and were adequate to meet requirements; and,
- The quality of UNIDO inputs and services (expertise, training, methodologies, etc.) was as planned and led to the production of outputs.

2.4 Sustainability of project outcome

To capture long term developmental changes (economic, environmental, social) have occurred or are likely to occur as a result of the intervention, the following questions are asked to ensure project sustainability:

- Is the project likely to be replication? If not, what is needed for replication?
- Was any sustainability strategy formulated?
- What is the prospect for technical, organizational and financial sustainability?

2.5 Project management

The extent to which:

- National management and overall field coordination mechanisms of the project have been

efficient and effective;

- UNIDO management, coordination, quality control and technical inputs have been efficient and effective;
- Monitoring and self-evaluation were carried out with indicators for outputs, outcomes and objectives and if that information was used for project and adaptive management;
- Synergistic relationships can be identified and beneficial connections established in relation to other UNIDO activities in country or elsewhere.

3. Methodology

The evaluation will be carried out as an independent and in-depth assessment using a participatory approach. UNIDO staff associated with the projects will be kept informed and regularly consulted throughout the evaluation. UNIDO Evaluation tools like Terms of Reference for Evaluations: Guidance and Template will be used for evaluation.

The methodology will be based on the following:

1. A desk review of project documents including, but not limited to:
 - The original project document, monitoring reports (such as progress reports), and relevant correspondence;
 - Notes from the meetings of committees involved in the project (e.g. approval and steering committees); and,
 - Other project-related material produced by the project.
2. Interviews with project management and technical support including staff and management at UNIDO HQ and in the field and - if necessary - staff associated with the project's financial administration and procurement.
3. Interviews with project partners including Government counterparts, and selected participating companies;
4. On-site observation of results achieved in demonstration projects, including interviews of actual and potential beneficiaries of improved technologies or management tools;
5.
 - Interviews and telephone interviews with intended users for the project outputs and other stakeholders involved with this project will also be conducted. The evaluator shall determine whether to seek additional information and opinions from representatives of any donor agencies or other organizations;
 - Interviews with the relevant UNIDO Country Office and the project's management and PSC members dealing with project activities as necessary; and,
 - Other interviews, surveys or document reviews as deemed necessary by the evaluator and/or UNIDO EVA.

5. Evaluation team, timing and deliverables

5.1 Team

The evaluation team will be composed of one international evaluation consultant acting as team leader and one national evaluation consultant.

The UNIDO Office for Independent Evaluation will be responsible for the quality control of the evaluation process and report. The evaluators and the responsible project manager will keep the ODG/EVA informed and share correspondence and draft documents for review.

The evaluation consultants will be contracted by UNIDO. Their tasks are specified in the job descriptions attached to these terms of reference in Annex 3 and 4.

Members of the evaluation team must not have been directly involved in the design and/or implementation of the project.

5.2 Timing

The evaluation is scheduled to take place in the period of October to November 2015. The field mission for the evaluation is scheduled in October 2015.

After the field mission, the evaluation team leader will come to UNIDO HQ for debriefing. The draft evaluation report will be submitted 6 weeks after the debriefing at the latest.

5.1 Deliverables

EVALUATION REPORT

The evaluation report should be brief, to the point and easy to understand. It must explain the purpose of the evaluation, exactly what was evaluated and the methods used. The report must highlight any methodological limitations, identify key concerns and present evidence-based findings, consequent conclusions, recommendations and lessons. The report should provide information on when the evaluation took place, the places visited, who was involved and be presented in a way that makes the information accessible and comprehensible. The report also should include an executive summary that encapsulates the essence of the information contained in the report to facilitate dissemination and distillation of lessons.

Evidence, findings, conclusions and recommendations should be presented in a complete and balanced manner. The evaluation report shall be written in English; the Executive Summary shall be written also in English, and follow the outline given in Annex 5.

Review of the Draft Report: Draft reports are shared with the Project Officer for initial review and consultation. They may provide feedback on any errors of fact and may highlight the significance of such errors in any conclusions. The consultation also seeks agreement on the findings and recommendations. The evaluators will take the comments into consideration in preparing the final version of the report.

Quality Assessment of the Evaluation Report: All evaluations are subject to quality assessments in accordance with the quality criteria established by the UNIDO Office for Independent Evaluation. The quality assessments are used as a tool for providing structured feedback to the evaluators. The quality of the evaluation report will be assessed and rated against the criteria set forth in the Checklist on evaluation report quality (annex 6).

The draft report will be delivered to UNIDO and circulated to UNIDO staff associated with the project, including the UNIDO office latest by end of November 2015.

PROJECT LOGFRAME - US/RUS/10/002

UNIDO - Logical Framework			
Objectives & activities	Indicators	Means of verification	Important assumptions
Objective 1			
Comparative analysis of EurAsEC countries legislation as well as current waste management practices to prepare proposals for amending legislation in the field of management of different kinds of wastes in EurAsEC	Legislation updated and guidelines elaborated. Normative and regulatory documents under development by the Ministries	The comprehensive WM industry is functioning according to the amended legislation	lack of national support for enactment of proposed legislation. standards and guidelines
Objective II			
Developing the UIAS including BAT/BEP databases and unified expertize space to create the Integrated comprehensive waste management system in the EurAsEC countries	Recommendations on BAT/BEP implementation in EurAsEC countries. International panel established. The unique methodology for BAT/BEP selection for implementation in EurAsEC countries	Implementation of GIS in Belarus. Armenia, Kazakstan. Improvement of the GIS system. The number of technology implemented.	Lack of interests and capabilities from EurAsEC countries? The proper partners are attracted on the stage of development.
Outcomes			
Environmental protection. NR saving and decreasing risks for humans health in Russia and EurAsEc	Budget inflows. Decreasing quantities of legal and illegal landfills	National reporting	See above
Economic development in in Russia and EurAsEc as a result of development of secondary raw materials market	Increased level of employment. PPP projects implementation	Statistic data.	
Meeting obligations within Stockholm and Montreal Conventions	Decreasing pollutions		
Outputs			
Development of the joint PIF and attracting funding from the GEF for a sub -regional project on WEEE management to Implement the BAT/BEP and meet obligations under the ongoing International agreements Attracting IPLA's opportunities for construction of comprehensive waste management system for regions	PIF developed and launched, implemented in Russia, Belarus and Armenia	PIF. Indicators within the framework of international agreements	Lack of financing from counterparts
Key activities:			
<ul style="list-style-type: none"> - Identification, assessment and prioritization of pollution hot spots - Selection of enterprises and preparation of capacity building material - Improved domestic legislation - Evaluation, procurement and implementation of BAT/BEP technologies - Expert panel established and Unified Information System developed 			

ANNEX 3 JOB DESCRIPTIONS

BAT/BEP Center for Environmentally Safe Disposal of Potentially Hazardous Consumer Products and Industrial Wastes (US/RUS/10/002 - SAP 104121-1-01-01)

Title:	International evaluation consultant / Team Leader
Main Duty Station and Location:	<p>The assessment of the results/achievements of the project. The final evaluation will review impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals.</p> <p>The consultant will be a national member of the team for final evaluation of the project achievements. The consultant will work in close coordination with the national project team. The consultant should assist the team leader to prepare the report, outlining the results achieved by the project, including conclusions and recommendations. The report should be a looking forward assessment, basing its conclusions and recommendations on the results obtained by the project during its activities and the possibilities of future sustainability/replication, once the project is completed. The final version of the report, after having discussed in draft with the UNIDO Project Manager, shall be submitted to UNIDO.</p>
Duty station:	Home-based
Mission/s to:	Moscow, Russian Federation
Start of Contract (EOD):	05 October 2015
End of Contract (COB):	22 November 2015
Number of Working Days:	21 days, including 5 days in Moscow

The Ministry of Natural Resources and ecology of Russian Federation is the main Counterpart of the Project. It is responsible for the following issues:

- Coordinate legislative activities while making amendments and additions to relevant legislation and develop regulations and procedures for waste management activities;
- Establish a database of BAT/BEP in the sphere of waste management;
- Provide individuals, agencies and companies with information;
- Exchange information with international environmental organizations;
- Organize proliferation activities, trainings, workshops and seminars; and
- Monitor and assess the implementation of responsibilities and duties of stakeholders and regularly report to relevant governmental authorities and the environmental Conventions and Protocols.

Ministry of Ecology of the Republic of Tatarstan is the main counterpart as a regional environmental structure, responsible for developing complex waste management system, which could be implemented in other regions in Russia and EurAsEC countries.

PROJECT CONTEXT

The Project „BAT/BEP Center for Environmentally Safe Disposal of Potentially Hazardous Consumer Products and Industrial Wastes" was launched in June 2010. The project team worked in Moscow and Kazan (Republic of Tatarstan). As a result of the Project it was prepared the Plan to implement the Project results in Armenia, Belarus and Kazakhstan (EurAsEC countries). The counterparts from these countries supported this Plan, it was also supported by UNIDO Secretariat and the Ministry of Foreign affairs of Russia as the Project Prolongation.

Project objective: The overall objective of the project is to build capacity for environmentally safe management and beneficial utilization of out-phased consumer and industrial products. The project is to establish environmentally sound management practices for collection, possible recycling, pollution prevention and environmentally safe disposal of potentially hazardous consumer and industrial products particularly focusing at the electrical and electronic wastes and used rubber tyres.

The project has to develop the proposals for the amendments to the environmental legislation in Russia in respect of management of E-waste and used rubber tires.

The immediate objectives of the project are:

- > Strengthen the legal and regulatory framework for ESM of EEW and worn tires;
- > Improve institutional capacity at all levels of hazardous and consumer wastes management and disposal;
- > Prepare the conditions for developing 2-3 business Projects of wastes management in an environmentally sound manner;
- > To establish contacts with the Counterparts in EurAsEC countries for implementing the results of the Project in 2-3 countries

MAIN DUTIES

The international evaluation consultant/team leader is expected to conduct the following duties:

Main duties	Expected duration w/m	Location	Expected Results
1. Study project documentation, including experts and progress reports, work plans, relevant notes of meetings, specific project plan, meeting notes etc. The project staff in the field as well as the UNIDO project manager will facilitate to the team the available information. Review the mission plan and suggest eventual adjustments if needed. Discuss mission strategy with the Project Manager. Consider the elements of UNIDO evaluating procedures to be observed during the exercise.	During the assignment	Home-based	Expert briefed and fully provided with the project documentation. Mission in the Russian Federation started.
2. Hold briefing/meetings in the field with project authorities and selected stakeholders on relevant issues related to the project: validity in local context, development, ownership, relevance to the future development and sustainability of the activities undertaken. Examine project impact and relevance. Discuss the elements of the report with the other team members	During the assignment	Moscow Russian Federation	Assessment completed.
3. Visit some sites of project components, especially selected enterprises. Meet local counterpart authorities. Assess the achievements and possible needs for improvement within the available financial and human resources.	During the assignment	Moscow, Russian Federation	Assessments done. Achievements and possible shortcomings documented
4. Preparation of the first draft of the report in cooperation with the other members of the team. Discuss with UNIDO project manager the draft of findings and subsequent possible recommendations. Prepare jointly this draft for submission to UNIDO, before the preparation of a final version.	During the assignment	Home-based	Draft document including findings, conclusions and recommendations submitted to UNIDO PM
5. Prepare the final report including findings, conclusions and recommendations and submit it to UNIDO.	During the assignment	Home-based	Mission completed. Final report presented

REQUIRED COMPETENCIES

Core values:

1. Integrity
2. Professionalism
3. Respect for diversity

Core competencies:

1. Results orientation and accountability
2. Planning and organizing
3. Communication and trust
4. Team orientation
5. Client orientation
6. Organizational development and innovation

Managerial competencies (as applicable):

1. Strategy and direction
2. Managing people and performance
3. Judgement and decision making

MINIMUM ORGANIZATIONAL REQUIREMENTS

Education and Technical and Functional Experience: Advanced university degree in environmental science, engineering or other relevant discipline. Qualified expert experienced in project results assessment, monitoring and evaluation, with knowledge of waste management, environmental problems and familiar with the UNIDO project activities. The consultant should be familiar in assessing achievements, success and shortcomings of technical cooperation projects. The consultant should be capable to perform objective evaluations and presenting recommendations. Minimum 10 years of experience in implementing of UNIDO projects.

Languages: Fluency in written and spoken English is required.

Absence of Conflict of Interest:

According to UNIDO rules, the consultant must not have been involved in the design and/or implementation, supervision and coordination of and/or have benefited from the programme/project (or theme) under evaluation. The consultant will be requested to sign a declaration that none of the above situations exists and that the consultants will not seek assignments with the manager/s in charge of the project before the completion of her/his contract for this evaluation.

BAT/BEP Center for Environmentally Safe Disposal of Potentially Hazardous Consumer Products and Industrial Wastes (US/RUS/10/002 - SAP 104121-1-01-01)

Title:	National evaluation consultant
Main Duty Station and Location:	<p>The assessment of the results/achievements of the project. The final evaluation will review impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals.</p> <p>The consultant will be a national member of the team for final evaluation of the project achievements.</p> <p>The consultant will work in close coordination with the national project team. The consultant should assist the team leader to prepare the report, outlining the results achieved by the project, including conclusions and recommendations. The report should be a looking forward assessment, basing its conclusions and recommendations on the results obtained by the project during its activities and the possibilities of future sustainability/replication, once the project is completed. The final version of the report, after having discussed in draft with the UNIDO Project Manager, shall be submitted to UNIDO.</p>
Duty station:	Home-based
Mission/s to:	Moscow, Russian Federation
Start of Contract (EOD):	26 October 2015
End of Contract (COB):	08 November 2015
Number of Working Days:	10 w/days over period

The Ministry of Natural Resources and ecology of Russian Federation is the main Counterpart of the Project. It is responsible for the following issues:

- Coordinate legislative activities while making amendments and additions to relevant legislation and develop regulations and procedures for waste management activities;
- Establish a database of BAT/BEP in the sphere of waste management;
- Provide individuals, agencies and companies with information;
- Exchange information with international environmental organizations;
- Organize proliferation activities, trainings, workshops and seminars; and
- Monitor and assess the implementation of responsibilities and duties of stakeholders and regularly report to relevant governmental authorities and the environmental Conventions and Protocols.

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The Project „BAT/BEP Center for Environmentally Safe Disposal of Potentially Hazardous Consumer Products and Industrial Wastes" was launched in June 2010. The project team worked in Moscow and Kazan (Republic of Tatarstan). As a result of the Project it was prepared the Plan to implement the Project results in Armenia, Belarus and Kazakhstan (EurAsEC countries). The counterparts from these countries supported this Plan, it was also supported by UNIDO Secretariat and the Ministry of Foreign affairs of Russia as the Project Prolongation.

Project Objective: The overall objective of the project is to build capacity for environmentally safe management and beneficial utilization of outphased consumer and industrial products. The project is to establish environmentally sound management practices for collection, possible recycling, pollution prevention and environmentally safe disposal of potentially hazardous consumer and industrial products particularly focusing at the electrical and electronic wastes and used rubber tyres.

The project has to develop the proposals for the amendments to the environmental legislation in Russia in respect of management of E-waste and used rubber tires.

The immediate objectives of the project are:

- > Strengthen the legal and regulatory framework for ESM of EEW and worn tires;
- > Improve institutional capacity at all levels of hazardous and consumer wastes' management and disposal.
- > Prepare the conditions for developing 2-3 business Projects of wastes management in an environmentally sound manner
- > To establish contacts with the Counterparts in EurAsEC countries for implementing the results of the Project in 2-3 countries`

MAIN DUTIES: Under the leadership of the Team Leader (International Evaluation Consultant), S/he will perform the following tasks:

Main duties	Expected duration w/m	Location	Expected Results
1. Jointly with the team leader study project documentation, including experts and progress reports, work plans, relevant notes of meetings, specific project plan, meeting notes etc. The project staff in the field as well as the UNIDO project manager will facilitate to the team the available information. Review the mission plan and suggest eventual adjustments if needed. Discuss mission strategy with the Project Manager. Consider the elements of UNIDO evaluating procedures to be observed during the exercise.	During the assignment	Moscow	Expert briefed and fully provided with the project documentation. Mission started.
2. Participate in briefing(s)/meetings in the field with project authorities and selected stakeholders on relevant issues related to the project: validity in local context, development, ownership, relevance to the future development and sustainability of the activities undertaken. Examine project impact and relevance. Discuss the elements of the report with the other team members	During the assignment	Russian Federation	Assessment completed.
3. Visit some sites of project components, especially selected enterprises. Meet local counterpart authorities. Assess the achievements and possible needs for improvement within the available financial and human resources.	During the assignment	Russian Federation	Assessments done. Achievements and possible shortcomings documented.
4. Contribute to formulation of the first draft of the report. Assist in introduction of comments/changings for submission to UNIDO, before the preparation of a final version.	During the assignment	Home-based	Draft document Including findings, conclusions and recommendations, discussed with other team members and submitted to UNIDO PM.

Core values:

1. Integrity
2. Professionalism
3. Respect for diversity

Core competencies:

1. Results orientation and accountability
2. Planning and organizing
3. Communication and trust
4. Team orientation
5. Client orientation

MINIMUM ORGANIZATIONAL REQUIREMENTS

Education and Technical and Functional Experience: University degree in economics or engineering sciences. At least 10 years of working experience, including project management. Qualified expert experienced in project results assessment, monitoring and evaluation, with knowledge of waste management, environmental problems and familiar with the UNIDO project activities. The consultant should be familiar in assessing achievements, success and shortcomings of technical cooperation projects. The consultant should be capable to perform objective evaluations and presenting recommendations.

Languages: Fluency in written and spoken English is required.

Absence of Conflict of Interest:

According to UNIDO rules, the consultant must not have been involved in the design and/or implementation, supervision and coordination of and/or have benefited from the programme/project (or theme) under evaluation. The consultant will be requested to sign a declaration that none of the above situations exists and that the consultants will not seek assignments with the manager/s in charge of the project before the completion of her/his contract for this evaluation.

Annex 2 – Program of the Evaluation mission

Late October to early November	Preparations for the field mission, independently by International Consultant and National Consultant
<i>Field mission</i>	
7.11.2015	International Consultant arriving in Moscow; inception meeting with National Project Coordinator
8.11.2015	Inception meeting of International Consultant and National Consultant
9.11.2015	Meeting with UNIDO Moscow office staff and with Project Team at UNIDO Moscow office; presentation of project background and achievements/ results by the NPC. Collection of documentation.
10.11.2015	Meeting with Project Team; discussion of project in the light of Project Questionnaire; collection of documentation relating to project evaluation; meetings with the Presidents of Associations relevant to the project; meeting with the Director of UNIDO Moscow; meeting with ICSTI Director General
11.11.2015	Terminal report writing, project-related discussions
12.11.2015	Terminal report writing, project-related discussions; extensive discussions with NPC
13.11.2015	Wrap-up meeting with UNIDO Moscow office staff and Project Team; visit to Chamber of Trade and Commerce
14.11.2015	Departure of International Consultant from Moscow
15.11.2015	onwards
	Final touches to Terminal report, in cooperation by International and National Consultant

Annex 3 – Acronyms and abbreviations

BAT	Best Available Techniques
BEP	Best Environmental Practices
EAEU	The Eurasian Economic Union
EPA	Environment Protection Agency
EurAsEC	Euro-Asian Economic Community
EVA	Evaluation Unit, UNIDO HQ Vienna
GEF	Global Environment Facility
GIS	Geographic Information System
HCB	Hydrochlorobenzene
IMS	Information Management System
ICBET	International Center for Best Environmentally Technologies
INC	Intergovernmental Negotiating Committee
IPLA	International Partnership for Extending the waste management services supplied by local authorities
KWMC	Kazan Waste Management Center
MADI	Moscow Technical University of Automotive and Road Construction
MIT	Ministry of Industry and Trade of the RF
MNRE	Ministry of National Resources and Environment of the RF
MSW	Municipal Solid Waste
NGO	Non-Governmental Organization
NIP	National Implementation Plan
NPC	National Project Coordinator
NPD	National Project Director
NSC	National Steering Committee
ODS	Ozone Depleting Substances
OP	Operational Programme
PCBs	Printed Circuit Boards
PIF	Project Identification Form
PMU	Project Monitoring Unit
POPs	Persistent Organic Pollutants
RATEK	Association of Producers and Importers of Electrical and Electronic equipment
RF	Russian Federation
RTG	Rubber Technical Goods
UNIDO	United Nations Industrial Development Organization
WB	World Bank
WEEE	Waste of Electrical and Electronic Equipment

Annex 4 – List of persons met

1. Mr. Sergey Korotkov, Director of the UNIDO Office in Moscow
2. Mr. Vladimir Maryev, Director of International Center for Best Environmental Technologies (ICBET), UNIDO Project Director, National Project Coordinator
3. Mr. Mikhail Nikiforov, National consultant assigned by UNIDO for mid-term evaluation of project
4. Mr. Jurii Shuvalov, Deputy Director of ICBET, responsible for RTG program of the project
5. Mr. Vladimir Komissarov, Deputy Director of ICBET, responsible for E-waste program of the project
6. Mrs. Zhanna Perlina, Director of “Shinoassotsiyatsiya”
7. Mr. Yevgenii Ugrenovich, Director of International Center for Scientific and Technical Information (ICSTI)
8. Ms. Ekaterina Ivanova (National Environmental Consultant on PCBs disposal project)
9. Mr. Mikhail Nikiforov (National Project Coordinator on PCB project)
10. Ms. Anna Zakharevich, Senior Specialist, IPLA Sub-regional secretariat for Russia and other EAEU countries

Annex 5 – List of documents reviewed

- [1] Project document US/RUS/10/002 BAT/BEP Centre for environmentally safe disposal of potentially hazardous consumer products and industrial wastes. UNIDO, revised version, 14 April 2010, 52 p.
Addresses capacity building for the management of electronic, electric and rubber wastes.
Project budget: USD 1,327,000.
- [2] Shatrauka, Viktor; Nikiforov, Mikhail: Mid-term report (incorrectly termed "Terminal evaluation". *Reviewers' note:* It appears however that its designation as "Terminal evaluation" was no mistake at that time, in 2013; it had appeared by the time of that report that 2013 indeed was the end year of the project. In spite of the rather cheerful tenor of the report praising the achievements, the decision was taken – no doubt supported by a document not revealed to the present reviewers – to carry on with the project by adding Phase II.) UNIDO project US/RUS/10/002 Phase I: BAT/BEP Centre for environmentally safe disposal of potentially hazardous consumer products and industrial wastes. UNIDO, November 2013, 85 p. (incl. 7 annexes).
- [3] Terms of reference: Final evaluation of the UNIDO project US/RUS/10/002SAP ID 104121. UNIDO, 2015, 22 p.
TOR for the International consultant/Team leader, Rudolf Stefec, and the National consultant, Sergei Sergeevich Seryy.
- [4] Project extension for Phase II. Letter dated 29 November 2013 by V. Sergeev, Director of the Dept of International Organizations, RF Ministry of Foreign Affairs, to Korotkov Sergei Anatolevich, Director of UNIDO International Industrial Cooperation Center, Moscow, awarding the sum of USD 280,000 toward the project (Phase II).
- [5] Terms of Reference under ISA for Project Phase II, Vladimir Komissarov (2014), 6 p.
Focus of duties: Comprehensive EEEW management
- [6] Terms of Reference under ISA for Project Phase II, Zhanna Perlina (2014), 5 p.
Focus of duties: RTG in EurAsEC, worn tyres recycling
- [7] Terms of Reference under ISA for Project Phase II, Yurii Shuvalov (2014), 5 p.
Focus of duties: waste-related legislation
- [8] Terms of Reference under ISA for Project Phase II, Tatyana Smirnova (2014), 5 p.
Focus of duties: waste-related legislation
- [9] Terms of Reference under ISA for Project Phase II, Ivan Seregin (2014), 5 p.
Focus of duties: RTG collection, recycling and disposal
- [10] Progress report on UNIDO project Centre for environmentally safe disposal of potentially hazardous consumer products and industrial wastes for the period from 1.11.2012 until 31.1.2013 (in Russian). UNIDO, January 2013, 8 p.
- [11] Maryev, Vladimir. and Shuvalov, Yurii: Progress report for the period from 01.01.2013 to 30.06.2013. UNIDO, July 2013, 11 p.
Report by Outcomes/Outputs/Activities.
- [12] Letter by Vladimir Maryev to Carmella Centeno (UNIDO), 11.07.2013, 1 p.
Informing the addressee of the intention to start a new industrial cooperation project in Russia, entitled "Reduction of ODS, POPs and RTS release and GHG emissions ..."
- [13] Maryev, Vladimir: Progress report on UNIDO project "BAT/BEP Center for Environmentally Safe Disposal of Potentially Hazardous Consumer Products and Industrial Wastes", May - July 2013, 3 p.
Reports on drafting a one-year workplan for project extension; on negotiations with 8 experts; on the PIF and the discussion thereof with UNIDO, Belorussia, Armenia and Kazakhstan; on preparations for a visit to Koltech Co. in Tatarstan; and on discussions with Russian government.
- [14] Amendments to the evaluation report - 3 p., attachment to [13]
Project coordinator's response to a 2013 critical report by British consultants

- [15] Plan of action (Project extension ['prolongation']), 4 p., attachment to [13]
- [16] PIF – Project identification form, "Establishing BAT/BEP waste recycling in EurAsEC Countries" - draft, attachment to [13]
- [17] Armenia interim report no. 1, UNIDO, Yerevan 2014, 19 p.
Preliminary Armenia country report on waste and waste disposal.
- [18] Armenia interim action plan, "BAT/BEP Center for environmentally safe disposal of potentially hazardous consumer products and industrial wastes" US/RUS/10/002 PLAN OF ACTION. UNIDO CIIC in Armenia, 3 p.

The activities planned included briefing the Armenia Ministry of Nature, various information dissemination activities, establishing an environment-dedicated BET center, performing a comparative analysis of waste-related legislation, and organizing expert group meetings.

- [19] UNIDO presentation on Setting up the Center for the implementation of advanced practices and nature-friendly technologies in the use of potentially hazardous products and industrial wastes (in Russian), 31 slides, 2014
- [20] Maryev, Vladimir: Final report on the project BAT/BEP Center for Environmentally Safe Disposal of Potentially Hazardous Consumer Products and Industrial Wastes, UNIDO 2014, 6 p. plus 11 attachments.

Attachments include:

1. Letter of support by Analytical Center of RF Government to UNIDO Moscow office
 2. Draft amendment no. 584399-5 by RF Duma of RF Wastes (Production and Consumption) Act, Attachment 2 (in Russian), 54 p., November 2014
 3. Implementation model of a comprehensive system of worn tyres management in Russia (Moscow region and Tatarstan) and in the Customs Union countries (EurAsEC = Belarus, Armenia and Kazakhstan). Attachment 3, (Implementation in the Volga-adjointing regions and the Moscow region (in Russian), undated, 7 p.
 4. Letter by Strategic Initiatives Agency, an autonomous non-commercial organization to RF Government bodies, on the Project of integrated management of worn tyres as implemented in the Republic of Tatarstan, 4.08.2014, 8 p.
 5. Agreement no. 233/2014/FTsPF on an R&D project on the Development of an implementation model of integrated management in the field of solid waste treatment, Attachment 5 (in Russian), 2.09.2014, 20 p.
 6. Four letters of support to the project, by Armenia, Belarus, Kazakhstan and Kirgystan, 2014
 7. Concept of improvement of Federal legislation in the area of Waste management and use as secondary materials in roadbuilding, Attachment 7 (in Russian), 7 p.
 8. Avtodor State Co., standard on the design, construction, and use of automobile roads, Rational management of natural resources and energy efficiency. Technical conditions applicable to asphalt-concrete mixtures and resin modifier containing bituminous concrete. Attachment 8 (in Russian). Moscow 2014, 20 p.
 9. Program of specialist seminar "Fundamental aspects of the use of wastes from the manufacturing industries as secondary materials for roadbuilding" (in Russian). November/December 2014, 3 p.
 10. Program of seminar for a wide audience, "Fundamental aspects of WEEE management" (in Russian), 2014, 1 p.
 11. Presentation of Russian Federation project Setting up the Center for environmentally safe disposal of potentially hazardous consumer products and industrial wastes (in Russian), Attachment 11. Moscow 2014, 30 p.
- [21] Shuvalov, Yurii: Final report on the project BAT/BEP Center for Environmentally Safe Disposal of Potentially Hazardous Consumer Products and Industrial Wastes, UNIDO 2014, 4 p., plus 9 attachments comprising a total of ca. 33 p., plus a Final presentation (30 p.).

Attachments include:

1. Recommendations for harmonization of RTG related legislation
 2. Legislation proposals relating to worn tyres management
 3. Four letters of support to the project, by Armenia, Belarus, Kazakhstan and Kyrgyzstan, 2014
 4. A letter to the Minister of Transport of the Moscow region proposing a regional worn tyres management program
 5. the Final presentation (*cf.* above).
- [22] Seregin, Ivan: Final report on the project BAT/BEP Center for Environmentally Safe Disposal of Potentially Hazardous Consumer Products and Industrial Wastes, UNIDO 2014, 3 p., plus 5 attachments comprising a total of ca. 33 p., with 5 attachments comprising ca. 51 p.

Attachments include:

1. An analysis of the practices and technologies used for worn tires and RTG recycling in Russia and EurAsEC
 2. An analysis of existing Belarus WEEE management schemes
 3. The draft PIF for a regional project intended for Armenia, Belarus, Kazakhstan and Russia
 4. Outline of two training courses in "Fundamental aspects of WEEE management"
- [23] Komissarov, Vladimir: Final report on the project BAT/BEP Center for Environmentally Safe Disposal of Potentially Hazardous Consumer Products and Industrial Wastes, UNIDO 2014, 9 p., plus 14 attachments comprising a total of ~40 p.

Attachments include:

1. Report on a mission to Minsk relative to the recycling of refrigeration equipment
 2. A WEEE management system project proposal
 3. Four presentations (in Moscow and Kirgystan)
 4. A PIF proposal for the reduction of POPs and RTS release by environmentally sound management throughout the life cycle of electrical and electronic equipment
 5. A collection of St. Petersburg conference papers
 6. A letter from Japan (UN Centre for Regional Development) to UNIDO Moscow office regarding the 2014 IPLA Forum
 7. A report on Germany study trip
 8. Outline of a Minsk seminar on WEEE management (in Russian)
 9. Articles for the Russian Waste Recycling J. dealing with the issues of National Registers of electrical and electronic equipment manufacturers and with the Asian experience in the area of WEEE (in Russian)
- [24] Perlina, Zhanna: Final report on the project BAT/BEP Center for Environmentally Safe Disposal of Potentially Hazardous Consumer Products and Industrial Wastes, UNIDO 2014, 4 p., plus 13 attachments comprising a total of ca. 180 p.,

Attachments include:

1. Report on current practices in worn tyres and RTG waste management, and the Matrix of Regional Complex worn tires management schemes in the Moscow region and in Tatarstan (19 p.);
2. Letters to the Minister of Transport of the Moscow region, to the CEO of "TATNEFTEKHIMINVEST HOLDING Co. in Tatarstan, to the RF Minister of Natural Resources and Environment, the Minister of Environmental Protection of the Republic of Armenia, the Minister of Transport and Communications of the Republic of Kazakhstan on the same topics;
3. Recommendations for the harmonization of worn tyres management legislation in Russia and the EurAsEC (13 p.);
4. Round table resolution on the "Collection, recycling of worn tyres and of commercial products", July 2014, Krasnogorsk, Moscow region (5 p.);

5. Letter to the President of the Republic of Tatarstan "On the Federal level significance of the ASI – Koltech-Kama Ltd. Leadership Project: "Organization of the high-tech composites, construction, rubber and plastics materials manufacturing using the products of recycling" (7 pages);
6. A specialist seminar program on "Key aspects of application of industrial wastes as secondary materials in roadbuilding", November 2014 – December 2014 (3 p.)
7. Project of a comprehensive system of worn tyres utilization in Russia (Tatarstan and the Moscow region) and the EurAsEC. Implementation in the Volga region municipalities and in the Moscow region (7 pages);
8. Letter to the Minister of Transport of the Moscow region on the actions necessary for setting up the worn tyres management system (2 pages)
9. Another attached Final Report with findings and recommendations (73 pages).
- [25] Rudenskii, Andrei: Final report on the project BAT/BEP Center for Environmentally Safe Disposal of Potentially Hazardous Consumer Products and Industrial Wastes, UNIDO 2014, 3 p., plus 5 attachments comprising a total of ca. 140 p.,

Attachments include:

1. The USA rubber asphalt study document
2. The training course documents
3. A presentation on asphalts – innovations and experience (52 slides).

- [26] Amirkhanian, Sergi: Final report on the project BAT/BEP Center for Environmentally Safe Disposal of Potentially Hazardous Consumer Products and Industrial Wastes, UNIDO 2014, 1 p., plus 2 attachments comprising a total of 232 p.

Attachments include:

1. Paper on US RTG related legislation entitled "Introduction to laws and regulations of scrap tires in the United States", 66 p.
2. Paper on US RTG related methodology entitled "Rubberized asphalt specifications for various states in the United States ", 166 p.

- [27] Smirnova, Tatiana: Final report on the project BAT/BEP Center for Environmentally Safe Disposal of Potentially Hazardous Consumer Products and Industrial Wastes, UNIDO 2014, 5 p., plus 2 attachments 5 comprising a total of ca. 200 p.

Attachments include:

1. An overview of the "Legislative and organizational aspects of the management of EEEW " (125 p.)
2. A list of materials for translation (29 p.)
3. A calendar of events dedicated to refining WEEE and usage of secondary resources (45 p.)
4. Article "Extended producer responsibility – a new paradigm in the waste management system" (12 p.)
5. Two training course outlines on the "Fundamental aspects of WEEE management" (5 p.)

- [28] Plan of action revised. Drafted by the UNIDO Moscow office. January 2014, 5 p.

- [29] Maryev, Vladimir: UNIDO project progress report January-June 2014. June 2014, 17 p.

- [30] Maryev, Vladimir: UNIDO project progress report July-December 2014. November 2014, 21 p.

- [31] UNIDO project extension document (2014).

Contains an Informal specification of tasks for Phase II and a recapitulation of both Phase I and Phase II results.

- [32] Proposal for Phase III of the project.

Annex 1: Logical framework analysis

Annex 2: Workplan.

- [33] Proc. Int. sci-practical conf. *Contemporary approaches to electric and electronic waste recycling and disposal*, UNIDO, undated (est. 2010), 30 p.
Introductory addresses; Conf. program; leading paper on Contemporary approaches (in Russian and English); list of participants.
- [34] Proc. Int. conf. *Organization of management of waste electronic and electrical equipment in Russia: The situation in the industry and its prospects*. UNIDO project US/RUS/09/001, 2014, 34 p.
Introductory addresses (in Russian); Outline of General data; Conf. program (in Russian and English); abstracts of papers (in Russian); Final document (in Russian and English); list of participants.
- [35] Letters received in support of project extension:
- from the Ministry of Foreign Affairs of the Republic of Armenia (addressed to the Executive Committee of the Commonwealth of Independent States)
 - from the State Agency on Environment Protection and Forestry under the Government of the Kirgыз Republic (addressed to the Executive Committee of the Commonwealth of Independent States)
 - from the Ministry of Natural Resources and Environment of the Republic of Belarus (addressed to the Director of the Dept. of Int. Cooperation of the RF Ministry of Natural Resources and Environment)
- [36] EU Waste Directive: Directive 2012/19/EU of the European Parliament and the Council of 4 July on Waste electrical and electronic equipment (WEEE), 34 p.
- [37] Draft project document "BAT/BEP Center for Environmentally safe disposal of potentially hazardous consumer products and industrial wastes", SAP ID 104121 (US/RUS/10/002), Proposal for Phase III (2015, 18 p.)
- [38] V. Maryev, T.S. Smirnova, V.A. Komissarov, Yu.A. Shuvalov: Legislative and organizational aspects of WEEE management (in Russian). Publication by MCNPT (International Center for scientific environmental protection technologies), 2014, 127 p.
- A comparative study within the framework of the UNIDO project "BAT/BEP Center for Environmentally Safe Disposal of Potentially Hazardous Consumer Products and Industrial Wastes", on legislation pertaining to WEEE. Surveys the situation in Sweden, Austria, France, Germany, UK, Italy, Finland, The Netherlands, Asia (overview), China, Japan, India, South Korea, Malaysia, Tai-wan and the USA.
- [39] V.A. Komissarov: The Manufacturer's responsibility: Registration as an important aspect of implementation (in Russian). *Recikling otkhodov* J., no. 3(51) 2014, 5 p.
- [40] S.V. Meshcheryakov, V.A. Maryev, Zh.V. Perlina, Yu.A. Shuvalov: An unified information and analytical system: Atlas of Best Available Technologies in the area of Natural Protection, Section on Technology standard sheets (in Russian). UNIDO Moscow office / ICBET publication (2012), 17 p.
- [41] An unified information and analytical system: Atlas of Best Available Technologies in Environmental Protection, Section on processing of accumulator batteries (in Russian). UNIDO Moscow office / ICBET publication (2012), 174 p.
- [42] S.V. Meshcheryakov, V.A. Maryev, S.V. Ostakh, B.B. Boravskii, Yu.A. Shuvalov: An unified information and analytical system: Atlas of Best Available Technologies in the area of Natural Protection, UNIDO, Section on Development of evaluation methodology for technologies used in environmental protection technologies (in Russian). UNIDO Moscow office / ICBET publication (2012), 91 p.
- [43] A.V. Dudchenko: Business plan relative to a Project on establishing regional productions of high-tech composite, structural, polymer-resin materials using recycled products. Phase 1 (in Russian). Koltech-Kama Co., Moscow 2014, 73 p.
- [44] Avtodor State Co.: Standard STO AVTODOR XX.XXX-201X, draft standard Design, construction and use of automobile roads. Rational exploitation of the environment

- and energy effectiveness. Technical conditions for asphalt-concrete mixtures and resin modifier containing asphalt-concrete (in Russian). Moscow 2014, 27 p. [Already approved by the Rosstandart]
- [45] Protocol of an enlarged session of the Technical Council of the Company with the participation of the members of the Committee on General ecological control in the construction and exploitation of highways destined for high-speed travel in Russia under the State Company "Russian Automobile Roads" (in Russian), 14.4.2014, 3 p.
- [46] RF Federal Act of 24.06.1998 no. 89-FZ as amended on 13.08.2015 "On production and consumer wastes". 2015, 33 p.
- [47] UNIDO national experts: Concept of pilot project (in Russian) – Development and implementation of a WEEE collection and utilization project in Moscow City. 2014, 54 p.
- [48] Decree no. 65 RG by the Governor of the Moscow region on the Establishment of an Inter-ministerial Working Group for setting up a system of collection, utilization and processing of worn tyres and launching an industrial facility for processing of secondary materials in the Moscow region (in Russian). 6.3.2015, 1 p. + attachment: Time plan for the Working Group.
- [49] ICBET: Report on research and development work "Development of an implementation model of comprehensive projects in the area of household waste using the example of the Central Federal District: ecological, technological and logistic aspects" (in Russian), Moscow 2014, 11 p. Introductory chapter only; the entire report comprises >400 p.
- [50] Tyres – Proposal by Shinoekologiya Association for cooperation in the field of recovery and processing of worn tyres (in Russian), 2015, 5 p.
- [51] Letter by Chamber of Trade and Commerce of the Russian Federation to the Prime Minister D.A. Medvedev, of 30. 10. 2015, on WEEE management (in Russian), 2 p.
- [52] Proposals by Chamber of Trade and Commerce of the Russian Federation on the enhancement of the system of collection and processing of WEEE in the Russian Federation (in Russian). 2015, 5 p.
- [53] Tamara Babayan Bohdjalian: E-mail communication of 30.11.2015
- [54] Budget and spending table 2012-2015 (furnished by UNIDO HQ)

Annex 6 – Indicative recapitulation of project tasks and results

Informal specification of tasks for Phase II [31]:

- Perform a comparative analysis of EurAsEC countries' legislation, homogenizing the legislation to facilitate cooperation and cross-border trade for disposal and/or recycling; expansion of advanced waste management practices to other countries of the region.
- Develop a Joint Information Analysis System including BAT/BEP data bases and information deriving from expert reports; create an Integrated comprehensive waste management system for Russia and the EurAsEC countries which constitute a common market for recycled materials.
- Cooperate with IPLA (International Partnership for Extending the WM services supplied by local authorities) to establish a comprehensive waste management system for municipalities and regions based on the '3R' and 'zero waste' principles.
- Develop a PIF for a regional UNIDO/GEF WEEE management project (with the participation of Russia, Belarus and Armenia) aiming at abatement of POPs, ODS and greenhouse gases.
- Provide training and conduct educational seminars on different WEEE and RTG treatments and on the development of 'eco-town' projects.
- Set up hazardous waste management centers in two EurAsEC countries.
- Promote advanced waste management practices in EurAsEC countries through the ITPO UNIDO offices in Belarus, Armenia, Kazakhstan.
- Create a special vocabulary of environmental protection and waste recycling terms (in the languages of the EurAsEC countries).

Phase I results:

The project started in June 2010 with the aims to help the relevant federal and regional ministries of Russia in the development and implementation of industrial strategy and management capacities for the environmentally safe disposal and recycling of decommissioned and used electronic and rubber goods.

In Phase I (2010-2012), priority was given to analyzing the existing situation in Russia with potentially hazardous wastes (such as WEEE and worn tyres); updating the national legislation to stimulate and enforce the introduction of safe methods for disposal and recycling. The comparative analysis of the Russian, EU, US and Japanese legislations related to the management of the hazardous wastes permitted to identify the required legislation improvements and to prepare the recommendations to the Government for amending the national legislation governing the management of generated wastes, in particular utilizing the extended producers' responsibility (EPR) principle. The experts of the Project formulated the proposals as amendments to the environmental law for improvement. The proposals have been included in the draft legislation, which passed the first reading in the Russian Parliament (Duma) in 2011. The final reading must be passed by the end of 2014. The EPR principle is the main point of the amendments.

Phase II results:

The independent nonprofit organization “International Center for the best environmental technologies” (ICBET), established within the framework of the project (and continuing its function even after project termination), manages the exchange of information, where the main tasks are the provision of consulting services for assessment, selection and application of BAT/BEP and the delivery of environmental training. In September 2012 ICBET became IPLA's (International Partnership for Expanding WM services of local authorities) sub-regional secretariat for Russia and EurAsEC countries. In May 2014 during the IFAT Conference in Munich, Germany, ICBET announced the IPLA Global Forum – 2015 in Russia which indeed has taken place in October 2015, with more than 200 participants from 45 countries participating.

Another independent nonprofit organization established under the project, the WEEE Recyclers’ Association, was officially registered in June 2014. Its main task is to provide information on the BAT/BEP policy for the regions of Russia and for the EurAsEC countries. The Association has already organized a number of events devoted to implementation of the project results both in Russia and in EurAsEC countries (*i.e.*, the Customs Union countries).

ICBET has prepared a training program on WEEE management which is being implemented for environmental organizations and waste disposal companies in Moscow.

Together with the Tyre Producers’ and Importers’ Association and in collaboration with the Tyre Recovery & Recycling Association “Shinoekologiya”, ICBET has been working toward the establishment of a national industry operator, to focus on the processing of worn automobile and truck tyres. Initiated by the UNIDO project, it now constitutes an important part of the national tyre recycling system. A similar national industry operator could be established by the WEEE Recyclers’ Association together with RATEK – the Association of Producers and Importers of Electrical and Electronic equipment.

Annex 7 – Phase II plan of action revised

(as drafted by the UNIDO Moscow office [28])

Tasks	Expected results:
1. Review the existing practices of collecting, recycling and disposal of EEEW and RTG in EurAsEC countries, incl. current technologies and approaches, available reprocessing, recycling and safe disposal facilities/companies. Evaluate and develop priority schemes for the region. Expand the advanced waste management practices to Belarus, Armenia, Kazakhstan.	1. The Joint Unified System Base for BAT/BEP.
2. Prepare recommendations for standardizing the legislation of Russia and EurAsEC countries as well as the regulations governing EEEW and RTG treatment – to facilitate cooperation and cross-border transportation and trade within the common customs area.	2. The comparative analysis of Russian and EurAsEC legislation. Listing of acceptable options of cooperation and cross-border transportation and trade within the common customs area.
3. Discuss the possibilities of establishing common rules with industrial associations, NGOs, research organizations in the Moscow region and in Tatarstan. Organize roundtables with stakeholders.	3. Two to three roundtables dealing with common rules, regulations and recommendations.
4. Continue work on the GIS and its extension to the EurAsEC countries (starting with Belarus, Armenia, Kazakhstan) to encourage the transfer of technologies and exchange of experience in waste recycling activities and information. Establish the data bank of secondary materials deriving from wastes for the EurAsEC countries.	4. Start of operation of the GIS matrix (created in Phase I) and its expansion to the EurAsEC countries.
5. Create a common area for sharing expert information by organizing a community of experts and providing the tools for collaborative work and exchange of expertise.	5. Common area for expert information (under the Analytical Center of the RF Government).
6. Analyze the existing waste collection schemes, practices and technologies. Develop BAT/BEP data bases of the regions. Define barriers for investments into the waste recycling sector.	6. Preparations for establishing the BAT/BEP Atlas.
7. Develop an Unified Information Analysis System to create an Integrated comprehensive waste management system for Russia and the EurAsEC countries (starting with Belarus, Armenia, Kazakhstan).	7. The matrix of an Unified Information Analysis System. Should observe the requirements of the Russian Ministry of Natural Resources and Ecology as well as those of the Customs Union.
8. Make use of IPLA (International Partnership for Extending the WM services supplied by local authorities) for setting up a comprehensive waste management system for municipalities and regions based on the 3R	8. Actions by IPLA to increase the level of waste management in Russia and EurAsEC countries. Administrative support by ICBET to creating IPLA centers in two EurAsEC countries (Belarus, Armenia).

and Zero waste principles.	
9. Organize international expert group meetings to discuss the organizational and technical issues of EEEW and RTG recycling.	9. Five to 10 international meetings in support of the activity of these two Associations (WEEE Recyclers and Shinekologiya).
10. Assist the creation of affiliated ICBBT centers in two EurAsEC countries (Armenia, Kazakhstan). Organize procedures for information exchange and for consultancy services on assessing, selection and application of BAT/BEP.	10. Options examined for establishing centers of ICBBT in two EurAsEC countries (Armenia, Kazakhstan). Confirmation in writing obtained from the relevant organizations in support of the creation of the ICBBT affiliated centers in two EurAsEC countries (Armenia, Kazakhstan).
11. Train staff of the affiliated centers in EEEW and RTG management so that they will be able to act in a consultative capacity and to identify and transfer BAT/BEP relating to wastes recycling and disposal.	11. Initiation of affiliated centers' staff training (at Gubkin University, University of Engineering Ecology, Peoples' Friendship University of Russia) and in the EurAsEC countries.
12. Develop the Over-all Project Identification Form (PIF) and make efforts to attract funding from the GEF for the regional project (Russia, Belarus, Armenia), in compliance with the Montreal and Stockholm Conventions.	12. Two PIFs supported by the GEF Focal Points of Belarus, Armenia, Kazakhstan.
13. Prepare a set of criteria for selecting BAT/BET applicable under the local conditions in EurAsEC countries, including technical, economic, environmental and other features.	13. Definition of the criteria for selecting BAT/BET applicable under the local conditions of the EurAsEC.
14. Invite private partners (3 companies) to take part in project implementation.	14. Invitation of two groups of private partners (EEEW and RTG recycling) to participate in GEF Projects.
15. Together with project partners (Association Shinoecology and Koltech Ltd.), develop the Comprehensive system for worn tyres management in Russia and the EurAsEC countries.	15. Continuation of the regional project (Tatarstan, the Moscow region). Project presentation in Armenia, Kazakhstan and Belarus.
16. Together with the Rubber Recycling Technologies Institute (USA) and the Road Construction Research Institute (Russia), secure translations and adaptation of technical standards relevant for road construction.	16. Translations of the technical regulations (ongoing). Proposals for the use of Crumb Rubber in different spheres of construction.
17. Establish and develop the WEEE management Association.	17. The WEEE management Association officially established and working.
18. Provide training and educational seminars in the fields of WEEE treatment and recycling of worn tires.	18. Three seminars focused on WEEE and RTG (Moscow, Moscow region, Tatarstan).
19. Conduct business trips to EurAsEC countries.	19. Business trips to EurAsEC countries.
20. Engage in an awareness raising campaign.	20. Documentation relating to the establishment and work of the Associations made ready for the EurAsEC countries.

Annex 8 – Phase II experts’ job description tasks

1) Mr. Vladimir **Komissarov** (National expert in waste management)

Main duties	Expected results
1. Lead the activities in the Project concerning the block of the Complex system for WEEE management.	Accomplishment of defined tasks in WEEE management according to the working plan adopted by the Steering committee
2. Review legislation and practices for electrical & electronic equipment wastes collection, sorting, processing/disposal, availability of facilities/companies in EurAsEC countries	Report on acting legislation, existing waste management practices for WEEE in EurAsEC countries
3. Development of a concept of national register/clearinghouse for WEEE	Concept developed. Proposals delivered to and discussed by members of Sectoral WEEE Recyclers’ Assn. and national associations of EEE producers and importers. Results delivered to specialized state bodies, published in specialized journals.
4. Prepare proposals to further develop the existing legislation on WEEE management in Russia, harmonized with EC Directives and US legislation, as well as technical regulations that need to be developed in connection with the introduction in Russia of the Extended producers’ responsibility.	Proposals for legislative bodies of RF and the MNRE developed, discussed with national associations of WEEE recyclers, EEE producers and importers, and sent to specialized state bodies (in particular, the Min. of Natural Resources and Environment and the Ministry of the Industry and Trade)
5. Arrange regional meetings on WEEE management with participation of representatives from Armenia, Byelorussia and Kazakhstan.	Meetings arranged, the final resolutions from these events sent to the Governments and Parliaments to set up the Complex systems for EEW management in those countries.
6. Arrange translation and editing of papers (reports, working and technical papers, articles) on WEEE management in the world to be used as a reference material in Russia. Publish their translations or abstracts in Russian mass media and at ICBET website	Papers translated, abstracts published in specialized magazines
7. Develop upgraded training course for the environmental aspects of electronic equipment waste management.	Program and presentations of training course developed
8. Organize business meetings with govt. officials, recyclers, technology developers to discuss legislative, organizational & techn. issues of WEEE management and joint projects in Russia, Belarus, Kazakhstan and Armenia.	Business meetings organized.

<p>9. Organize cooperation between the CIIC UNIDO and ICBET with WEEE Recyclers' Assn. to establish & undertake registration procedures for said Association.</p>	<p>Defined tasks met according to Working plan adopted by Steering committee. WEEE Recyclers' Assn. is organized and operating.</p>
<p>10. Arrange practical activities of ICBET as the Sub-regional IPLA Secretariat for Russia and EurAsEC countries. The main direction of the cooperation – exchange the experience on WEEE recycling. Prepare a report for the 2014 IPLA Global Forum on WEEE recycling in Russia and other EurAsEC countries.</p>	<p>Implementation of ICBET activities as IPLA Sub-regional Secretariat within the project framework Dissemination of information on the results of the UNIDO project among IPLA members. Report on the Global Forum prepared</p>
<p>11. Participate in the development of the PIF for GEF financing - for WEEE recycling and providing necessary procedure steps aimed at including the Project into GEF-6. To authorize the PIF by EurAsEC partners.</p>	<p>Project Implementation Form (PIF) for regional project on WEEE management ready to pass through UNIDO control. Letters from GEF Regional Focal Point received by the Russian GEF Focal Point. Endorsement letters to UNIDO from the GEF Russian Focal point are ready to be sent.</p>
<p>12. The Coordinator will regularly inform the UNIDO Project manager on the development of the Project plan and other activities of the Project.</p>	<p>Reports on project implementation produced.</p>

2) Mrs. Zhanna **Perlina** (National expert in waste management)

Main duties	Expected results
<p>1. Review the existing practice of the collection, recycling and disposal of RTG in EurAsEC countries, including the current technologies and approaches used, availability of facilities/companies for reprocessing, recycling and safe disposal of collected outphased and used products.</p> <p>Evaluate priority Complex management schemes that could be developed in the regions and work out details of their establishing.</p>	<p>Report on existing waste management practice relatively to rubber wastes and worn tyres.</p> <p>The matrix for Regional Comprehensive management schemes for worn tyres management is prepared for Moscow region and Tatarstan.</p>
<p>2. Together with the specialists from Russian State Duma (Parliament), Trade Chamber of Commerce and the Tyres producers Association prepare recommendations for homogenizing the worn tyre management legislation in EU and US and Russia and EurAsEC countries and improving the regulation for RTG treatment to facilitate cooperation and cross-border transportation and trade within the common customs space of the region.</p>	<p>Recommendations for harmonization of Russian and EurAsEC countries legislation are prepared and sent to the profile Ministries and Agencies in Russia and Armenia and Kazakhstan for adaptation.</p>
<p>3. Analyze the existing waste collection schemes, practice and technologies used by worn tyres recycling companies in the regions of Russia and EurAsEC. Assist in developing worn tyre management based on BAT/BEP in 2-4 regions of Russia.</p>	<p>Report about worn tyres management schemes is prepared;</p> <p>BAT/ BEP for worn tyres management database is under development.</p> <p>The proposals for legislative development of the worn tyres Management schemes in two regions in Russia are prepared and sent to the profile Ministries.</p>
<p>4. Train staff of the affiliated centers in different aspects of RTG management to be able to consult and assist to identify and transfer BAT/BEP for wastes recycling and disposal.</p>	<p>Training program for specialists is prepared to be implemented.</p>
<p>5. Together with Project partners (Agency for Strategic Initiatives, Association Shinoecologiya and Koltech Ltd.) develop the Complex system for worn tyres management in Russia (Tatarstan and Moscow region) and EurAsEC (Belarus, Armenia and Kazakhstan) countries.</p>	<p>Report on the necessary actions for creating of worn tyres management system is done. The complex system project is ongoing in Volga region municipalities and in Moscow region.</p>
<p>6. The expert will prepare a final (extension) report with findings and recommendations</p>	<p>Final (extension) report</p>

3) Mr. Yuri **Shuvalov** (National expert on waste management)

Main duties	Expected results
1. Comparative analysis of legislation in EurAsEC countries, as well as current practices in waste electrical and electronic equipment (WEEE) and waste rubber products (WRP).	Review of problems in legislation on management of waste electrical and electronic equipment (WEEE) and rubber products (WRP). A special thesaurus of terms related to industrial and municipal waste based on EU legislation for use in Russia is created
2. Comparative analysis of the application of producer (importer) responsibility in the disposal of WEEE and WRP in the Russian Federation, Republics of Belarus, Kazakhstan	Survey of the application of producer (importer) responsibility in disposal of WEEE and WRP in the Russian Federation, the Republics of Armenia, Belarus and Kazakhstan.
3. Preparation of recommendations for harmonization of Russian and Eurasian Economic Community countries legislation, improving regulation of management of WEEE and in Russia, to facilitate trade of waste within a single customs space.	Draft regulations on management of waste electronic, electrical equipment, technical rubber goods in the countries of the Customs Union based on the international experience
4. Organization of interaction with national associations of manufacturers (importers) and recyclers of waste electronic and electrical equipment and waste rubber products, preparation of regulatory and technical documents for the implementation of the principle of Extended producer responsibility in the Russian Federation.	Joint activities with the Association of Trading Companies and Manufacturers of electronic and computer equipment, Sectoral association of recyclers of electrical and electronic equipment, Association for the recovery and recycling of tyres. Draft regulatory and technical papers discussed.
5. Promotion of advanced waste management practices in the EurAsEC countries through branches ITPO.	Conducting joint video-conferencing with centers UNIDO and other interested organizations in Armenia, Belarus, Kazakhstan
6. Preparation of the final report with findings and recommendations	The final report has been prepared.

4) Mrs. Tatiana **Smirnova** (National expert in waste management)

Main duties	Expected results
1. Prepare the review legislation and existing practices for electric and electronic equipment wastes: collection, sorting, processing/disposal availability of facilities/companies for it in EurAsEC countries.	Report on acting legislation, existing waste management practices for WEEE in EurAsEC countries will be prepared.
2. Develop a list of papers (reports, working and technical papers, articles) on WEEE management in the world to be translated for the use as a reference material in Russia.	The list of papers (reports, working and technical papers, articles) on WEEE management in the world to be translated for the use as a reference material in Russia will be prepared.
3. Develop upgraded training course for the environmental aspects of electronic equipment waste management. To start teaching the course in several Universities.	The program of training course and presentations to training course will be prepared.
4. Organize business meetings with government officials, recyclers, technologies developers to discuss legislative, organizational and technical issues of WEEE management and joint projects in Russia, Belarus, Kazakhstan and Armenia.	Business meetings will be organized.
5. Consult in preparation of final report with findings and recommendations.	Final report will be prepared.

5) Mr. Ivan **Seregin** (National expert in waste management - environmental consultant)

Main duties	Expected results
1. Review the existing practice of the collection, recycling and disposal of RTG in EurAsEC countries, including the existing environmental legislation, current technologies and approaches used, availability of facilities/companies for reprocessing, recycling and safe disposal of collected outphased and used products.	Report on existing waste management practice relatively to rubber wastes
2. Assist in organizing the procedures for managing the information exchange, providing consultancy services in assessment, selection and application of BAT/BEP.	Accomplishment of defined tasks
3. Analyze the existing waste collection schemes, practice and technologies used by recycling companies in the regions, especially in the framework of the EPR (Belarus).	Report on waste collection schemes and technologies
4. Assist in development of the joint Project Identification Form (PIF) for regional project (Russia, Belarus, Armenia) on WEEE and RTG management and setting of criteria for selecting BAT/BET applicable for local conditions in EurAsEC countries.	Project Identification Form (PIF) for regional project on waste management; list of criteria for BAT/ BEP selection
5. Provide support in developing and organizing of training and educational activities on different waste management practices in the fields of WEEE treatment and recycling of used tyres.	Accomplishment of defined tasks
6. The consultant will prepare a final report with findings and recommendations.	Final report

Annex 9 – Main project outputs/activities validated

Activity	Activity/output produced or service delivered	Output/activity observed (at the end of Phase II)
Activities for Output 1.1	Output 1.1 A concept of the safe and efficient regulatory system of handling electronic wastes and RTG of handling electronic wastes and RTG, envisaging collection, sorting out, recycling and final disposal.	The amendment to Act 89 FZ of the Russian Federation, containing sections essential for waste treatment and management, finally adopted in December 2014.
Activity 1.1.1 Evaluate the existing regulation for management of the life cycle of the EEW and RTG in the country and make a comparative analysis with the regulation existing in the EU. Identify its elements needed and applicable for EEW and RTG management in Russia. Establish priorities for the regulation improvement. Assist in establishing the organizational mechanism for developing the regulation improvement recommendations and lead the job.	Results of the evaluation were reported to the Committees of the Russian Parliament on Environment, discussed during public hearings at the Public Chamber of the Russian Federation, and at the Chamber of Commerce and Industry of the Russian Federation Research work entitled “Development of Proposals on Amending and Creation of Legal Bases in the Sphere of Recycling and Utilization of Used Tires in Russian Federation”, “Digest of WEEE Recycling Technologies” were undertaken upon the request from the Ministry of Industry and Trade. A comparative analysis of Russian legislation with the regulation existing in the EU completed.	The legislative process has been completed on 29 Dec 2014; also, 3 out of a total of 30 implementing regulations under this Act have already been adopted (in 2015). The most important resultant documents are the amended Act [46] and the new Avtodor standard [44,45].
Activity 1.1.2 Review the existing practice of collection, recycling and disposal of EEW and RTG, including the used technologies and availability of facilities/companies for reprocessing, recycling and safe disposal of collected out-phased and used products. Evaluate priority schemes that could be developed in Russia and work out details of their establishing	1.Existing waste collection schemes and technologies used by recycling companies were studied within the frames of research work held: “Digest of WEEE Recycling Technologies”, “Development of Proposals on Amending and Creation of Legal Bases in the Sphere of Recycling and Utilization of Used Tires in Russian Federation”, and “Technologies for Primary and Secondary Batteries recycling” 2. On-site visits were arranged to recycling facilities in the Netherlands, Portugal and other countries for representatives of Russian recycling companies. 3. In October 2012 a group of experts and executives from RTG recycling companies participated in the International Conference “Rubber Asphalts – 2012” Six articles were published in the Russian magazines “Solid Wastes”, “Wastes	Two design concepts of waste collection, processing and recycling schemes have been formulated and adopted: a WEEE scheme for the Moscow government and a RTG scheme for the government of the Moscow region.

Activity	Activity/output produced or service delivered	Output/activity observed (at the end of Phase II)
	Recycling”, “ Ecological Digest of Russia” on existing practice of collection, recycling and disposal of EEW and RTG in 2011 - 2013	
Activity 1.1.3 Development of a concept of the Clearing House/ a register of electric and electronic products, collection of information from producers of toxic and potentially hazardous components in their products	1. The clearinghouse proposals were made by the project to the MNRE but due to lack of domestic legislation (expected to be approved only in May 2014), it is too premature in developing such guidelines. 2. Data base for advanced recycling technologies has been developed at ICBET. This data base will be used by the future Financial Operator, which responsibility will be to report data on wastes and make their financial estimate.	The clearinghouse concept was developed for a Moscow-based pilot project, and published in a scientific journal [cf. 23].
Activity 1.1.4 Prepare recommendations for improving the regulation at regional and country levels. Discuss the recommendations with industrial associations, NGOs, research organizations. Organize a round table with participation of all stakeholders.	See also Activity 1.1.1. Proposals on improving the regulation at regional and country level were discussed at several conferences (Moscow, June, 2011 “Contemporary Approaches to Rubber Goods and Tires Recycling and Disposal” at the Russian Gubkin State University of Oil and Gas; Moscow, July, 2011 - the International conference of the Waste Recycling Association; April, 2012 - "Problems of Waste Recycling Industry in the Russian Federation" at the Council of the Federation of the Russian Parliament; Moscow, May, 2012 - “European Union: Partnership for Modernization in Waste Treatment” at the Ministry of Natural Resources and Environment), workshops (March 2011, April 2012, June 2012, August 2012) and expert round table meetings with participation of industrial associations of producers and recyclers of EEE and RTG and other stakeholders (retailers, researchers, NGO); Roundtable meetings on improvement of local legislation were organized at the Russian Chamber of Trade and Commerce – June, 2012, at the Committee on Environment of the Moscow Chamber of Trade and Commerce – September, 2013.	Proposals on improving the regulation (including waste RTG and WEEE) at the country level were partially incorporated in the new Waste Act. Further legislative proposals follow in 2015,

Activity	Activity/output produced or service delivered	Output/activity observed (at the end of Phase II)
Activities for Output 1.2	Output 1.2 Strengthen institutions capable to apply and disseminate BAT/BEP in the management of EEW and RTG. At least two regional centers will be capable to identify, develop and demonstrate organizational and technical systems of management of electronic and RTG wastes.	<i>cf.</i> below
Activity 1.2.1 Prepare a data base of advanced BAT/BEP used for recycling and disposal of EEW and RTG.	Setting up a database of advanced technologies for WEEE/e-waste and RTG waste recycling completed Research work was done to select BAT/BEP technologies for RTG, WEEE and batteries recycling.	Gathering of data on advanced waste recycling technologies continued during Phase II.

Activity	Activity/output produced or service delivered	Output/activity observed (at the end of Phase II)
<p>Activity 1.2.2 Analyze existing waste collection schemes, practice and technologies used by recycling companies. Define barriers for investments in development of the sector.</p>	<p>Existing waste collection schemes and technologies used by recycling companies were studied and recommended to private companies in the following project published documents. They are: “Digest of WEEE Recycling Technologies” (2011) “Development of Proposals on Application of Purification Technologies to Territories from Wastes in Conditions of Negative Temperatures” in the frameworks of “Development of the Program and the Project to Eliminate the Sources of Negative Impact in the Contaminated Territories of the Islands Franz – Joseph” (2011) "Development of a Concept of a Regional Waste Management System. Stage 1. Analysis of Documents on Creation of Eco-Techno-Parks" (2011) “Development of Proposals on Amending and Creation of Legal Bases in the Sphere of Recycling and Utilization of Used Tires in Russian Federation” (2011) “Recycling of Waste Batteries. International Experience” (2012) Members of the project team participated in missions to different countries during which different aspects of international experience, BET in waste management (Portugal - 2011, Germany - 2011, 2012, Japan - 2011). International BAT/BEP were studied during participation in international conferences and exhibitions (Orlando, USA - October, 2011, Japan - November, 2011, Bahrain - 2012, Moscow, Russia - October, 2011, October, 2012, Munich, Germany - October, 2012). Results of the studies were reflected in six articles published in the Russian specialized magazines.</p>	<p>ICBET developed a model of inter-regional cooperation in the field of waste collection and management (~400 p.) based on scanning and analyzing 18 regions in terms of the logistics of collection, processing and recycling.</p>

Activity	Activity/output produced or service delivered	Output/activity observed (at the end of Phase II)
<p>Activity 1.2.3 Make assessment of the most successful scheme for waste collection and recycling and prepare business plans for developing 2-3 schemes (like product take-backs, separate collection, financial responsibility of producers, etc.) for the local conditions.</p>	<p>Three schemes for waste collection selected and described. They are: 1. "Digest of WEEE Recycling Technologies" (2011) 2. "Development of Proposals on Amending and Creation of Legal Bases in the Sphere of Recycling and Utilization of Used Tires in Russian Federation" (2011) 3. Recycling of Waste Batteries. International Experience" (2012)</p>	<p>same as above</p>
<p>Activity 1.2.4 Organize expert group meetings to discuss the organizational and technical issues of EEW and RTG recycling.</p>	<p>An international conference "Contemporary Approaches to Rubber Goods and Tires Recycling and Disposal" was held in June, 2011 An international workshop "WEEE recycling" was held in April, 2012 An international conference on use of rubber asphalts in Russia was held in March, 2013 An international conference on legislative, organizational and technical aspects of management of used tires was arranged in May, 2013</p>	<p>The number of meetings held, and of the participants therein, has further increased. Some of the propositions made by participants of all these workshops and conferences were already adopted by Government bodies. The Russian WEEE Recyclers Association has been established at the beginning of 2014.</p>
<p>Activity 1.2.5 Launch a specialized internet site for the results of the project</p>	<p>Results of the project were distributed through an internet site of CIIC Russia and specialized magazines. A specialized project site started its work in 2013 at www.icbet.ru</p>	<p>The website continues operation.</p>
<p>Activity 1.2.6 On the example of Tatarstan to make a digital map of allocation of technical facilities for wastes recycling, landfilling and disposal.</p>	<p>GIS has been launched and now is being spread to other regions of Russia</p>	<p>The GIS continued expanding during Phase II.</p>
<p>Activity 1.2.7 Upgrade 2 regional centers in Moscow and Kazan (Tatarstan) capable to run the activities of the project, to manage the information exchange, and to provide</p>	<p>The two project centers, i.e. International Center for Best Environmental Technologies (ICBET) and Kazan Center for Waste Management (KCWM) were upgraded within the frame of the project. They provided for consultancy services on advanced technologies for waste recycling to regional</p>	<p>Two Associations now are active in Moscow: The already existing association concerned with worn tyres was</p>

Activity	Activity/output produced or service delivered	Output/activity observed (at the end of Phase II)
consultancy services in assessment, selection and application of BAT/BEP technologies.	governments and private companies.	upgraded, and the WEEE Recyclers Association was founded.
Activity 1.2.8 Train staff of the centers in different aspects of EEW and RTG management to be able to consult and assist to identify and transfer BAT/BEP for wastes recycling and disposal.	The staff training was conducted through international consultants, study tours and participation in international/local conferences.	The ICBET Center in Moscow continues operating.
Activity 1.2.9 Prepare a generic concept of a Waste Management Center, a set of documentation required for registration of a center, and training programs for its staff.	The ICBET Center in Moscow as well as the KCWM center in Kazan have gone through the formal procedures of companies registration in Russia	An agreement was reached between CCWM (Kazan) and ICBET (Moscow); CCWM will represent ICBET's interests in Tatarstan.
Activity 1.2.10 Identify potential organizations in the countries of EurAsEC and initiate the establishing of the thematical centers.	Talks were held by the team of ICBET in Armenia, Belarus and Kazakhstan on this issue with the Ministry for Environment in 2012	Meetings continued; the best progress was reached in Belorussia (Minsk).
Activities for Output 2.1	Output 2.1 Demonstration projects carried out on the collection, recycling and safe disposal of waste using the advanced technologies	<i>cf.</i> below
Activity 2.1.1 Prepare a set of criteria for selecting BAT/BET applicable for local conditions, including technical, economic, environmental and other features of a technology.	A draft set for selecting BAT/BET applicable for local conditions, including technical, economic, environmental has been developed by the ICBET.	Two demonstration projects were launched: in Kazan (RTG; Koltech-Kama Co.) and in Lobnya (WEEE; Moscow region, by Petro/Max).
Activity 2.1.2 Select 2-3 successful schemes for waste collection and recycling, and prepare business plans for their application for the local conditions.	2-3 successful schemes for waste collection and recycling have been selected (see Activity 1.2.2) although no business plans have been prepared for their particular application at some selected private companies due to the delay with Federal Law.	Two business plans were drafted: for Tatarstan (RTG) and for tyhe Moscow region (WEEE).
Activity 2.1.3 Invite private partners for implementation of this scheme. Advertise the invitations through local	The results of the project were requested from some Russian regions (Moscow Region – Project experts worked with the Regional Joint Commission for Waste Management, Ulyanovsk Region – the	ICBET has embarked on good cooperation with several Russian companies (<i>e.g.</i> ,

Activity	Activity/output produced or service delivered	Output/activity observed (at the end of Phase II)
media. Make selection based the Terms of Reference which includes the co-financing from private partners.	Governor sent a letter to UNIDO CIIC Russia on the agreement to start the work on the complex system for RTG and EEW, Primorsky Region – Project experts prepared the proposals on a waste management system in the region, Sverdlovsk region – this region began using rubber modifiers in the road construction). Contacts with a Japan company on the issue were established.	Petro-Max, GazEnergoStroy and Koltech-Kama).
Activities for Output 2.2	Output 2.2. Experience distribution and training programs for creating awareness and capabilities in other regions of Russia as well as in other countries of EurAsEC.	A number of courses and training seminars were developed and run at Gubkin Univ., Peoples' Friendship Univ. and MADI (= Moscow Roadbuilding Inst.) [25,27].
Activity 2.2.1 Hold an international conference devoted to BAT/BEP of EEW and RTG with participation of owners of BAT and local companies-potential users of these technologies	An international conference “Contemporary Approaches to Rubber Goods and Tires Recycling and Disposal”;was held in June, 2011 An international workshop “WEEE recycling” was held in April, 2012 An international conference on use of rubber asphalts in Russia was held in March, 2013	Activity continues, with more conferences. For instance, one held in 2014 at the Govt' Analytical Center, another – the IPLA Forum – held in 2015 in Moscow.
Activity 2.2.2 Hold introductory workshops for other regions of RF as well for interested institutions in other countries of EurAsEC with presentation of results of the project, concept of a specialized center and BAT/BEP identified and applicable for local conditions.	In the workshop on “WEEE recycling” representatives from commercial companies and regional government offices from more than 30 regions of Russia participated. Workshops on WEEE and RTG were also conducted in Armenia and Kazakhstan	Phase II experts and the NPC confirm continued interest on the part of the EurAsEC partners, but lack of funding has prevented holding more workshops there.
Activity 2.2.3 Awareness raising campaign, including printed materials and publications, public consultations for thematic NGOs.	Eight articles were published in specialized magazines, a TV interview was broadcasted in October, 2012 on “Solid Wastes”, “Wastes Recycling”, and “Ecological Digest of Russia”	The Chamber of Trade and Commerce is among the organizations that supported awareness raising.
	Monitoring and evaluation	
Activities for Output 3		
Activity 3.1	The workshop was held in 2010	Already completed

Activity	Activity/output produced or service delivered	Output/activity observed (at the end of Phase II)
Prepare and hold the Inception Workshop with presentation of the details of the project, the project team, the work plan for the first 12 months of the project implementations		during Phase I.
Activity 3.2 Measure impact indicators	Impact indicators are considered as practical results coming from project activities implementation	no change here
Activity 3.3 Prepare Annual Project Reports and Project Implementation Reviews	Annual reports and Project Implementation Review have been prepared	The project continued to be well monitored.
Activity 3.4 Hold annual tripartite review meetings	The last meeting was held in May, 2012	Annual tripartite review meetings were held as before. The participants were the RF Ministry of Foreign Affairs, the RF Ministry of Natural Resources and the NMational project team (comprising UNIDO Moscov office staff + experts).
Activity 3.5 Complete Project Terminal Report	Will be prepared after the project is finished	the present document

Annex 10 – The RF Act of Law 89 FZ (cover sheet)



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Annex 11 – The Avtodor Standard (cover page)



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ПРОЕКТИРОВАНИЕ, СТРОИТЕЛЬСТВО, ЭКСПЛУАТАЦИЯ АВТОМОБИЛЬНЫХ ДОРОГ		

**РАЦИОНАЛЬНОЕ ПРИРОДОПОЛЬЗОВАНИЕ И
ЭНЕРГОЭФФЕКТИВНОСТЬ. ТЕХНИЧЕСКИЕ УСЛОВИЯ НА
АСФАЛЬТОБЕТОННЫЕ СМЕСИ И АСФАЛЬТОБЕТОН,
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Москва 2014

