PACE

Partnership for Action on
Computing Equipment

Report on project experiences and lessons learned

13 March 2017

Table of Contents

Acknowledgements

Abbreviations

BCRC	Basel Convention Regional Centre
COP	Conference of the Parties to the Basel Convention
EC	European Commission
EPR	Extended Producer Responsibility
ESM	Environmentally sound management
E-waste	Waste Electrical & Electronic Equipment
NGO	Non-governmental organization
MoU	Memorandum of Understanding
OEM	Original equipment manufacturer
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme

Project group participants

Co-chairs:

1. Isabelle Baudin, Switzerland
2. John Adefemi Adegbite, Nigeria
3. Patricia Whiting, Sims Recycling Solutions

Participants:

4. Aboejoewono Aboeprajitno, Basel Convention Regional Centre, Indonesia
5. Ahmad A Khan, Basel Convention Regional Centre, Trinidad and Tobago
6. Aisha Mahmood, Nigeria
7. Andreas Manhart, OKO Institute
8. Atsushi Terazono, National Institute for Environmental Studies, Japan
9. Aya Yoshida, National Institute for Environmental Studies, Japan
10. Curtis Stewart, International Lead and Zinc Study Group
11. Dadan Wardhana, BRS SSB
12. Dana Lapešová, Basel Convention Regional Centre, Slovakia
13. Eric Harris, ISRI
14. Erica Logan, ITI
15. Flor de María Perla, Basel Convention Regional Centre, El Salvador
16. Francesca Cenni, BRS TAB
17. Ibrahim Shafii, BRS SSB
18. Idrissa Semde, Burkina Faso
19. James Mulolo, Basel Convention Regional Centre, South Africa
20. Jean Marie Vianney Minani, Rwanda
21. Jim Puckett, BAN
22. Joanna Huang, IER
23. Jonelles Jones, Basel Convention Regional Centre, Trinidad and Tobago
24. Kimberly M. Cochran, USA
25. Klaus Tyrkko, UNDP
26. Llorenc Mila I Canals, UNEP DTIE
27. Magnus Ek, Boliden
28. Marco Buletti, Switzerland
29. Marcos Pimentel, Brazil
30. Marie-Noel Bruné, WHO
31. Mathias Schluep, EMPA
32. Matthias Kern, BRS TAB
33. Melisa Lim, BRS SSB
34. Meredith Block, Blacksmith Institute
35. Michael Vanderpol, Canada
36. Michikazu Kojima, JETRO, Japan
37. Michel Seck, Basel Convention Regional Centre, Senegal
38. Miguel Araujo, Basel Convention Regional Centre, El Salvador
39. Moono I. M. Kanjelesa, Zambia
40. Mostafa Kamel, Basel Convention Regional Centre, Egypt
41. Mushtaq Ahmed Memon, UNEP/IETC
42. Oladele Osibanjo, Basel Convention Coordinating Centre, Nigeria
43. Ole Thomas Thommesen, Norway
44. Patrick Micheli, Consultant to SBC
45. Renee St. Denis, Sims Recycling Solutions
46. Richard Fuller, Blacksmith Institute
47. Richard Goss, ITI
48. Rick Picardi, USA
49. Ridwan Tamin, Basel Convention Regional Centre, Indonesia
50. Ross Bartley, BIR
51. Sanaz Sabeti Mohammadi, Basel Convention Regional Centre, Iran
52. Sarah Westervelt, BAN
53. Shiri Garakami, Basel Convention Regional Centre, Iran
54. Shunichi Honda, Japan

55. Tatiana Terekhova, BRS TAB
56. Theo Lehner, Boliden
57. Wen-Ling Chiu, IER
58. William Noggle, USA
59. Willie Cade, PCRR

Invited Technical Experts:

1. Maksim Surkov, UNDP
2. Mike Waston, DELL

I. Executive summary

1.   The objective of the report on project experiences and lessons learned is to review the pilot projects and activities implemented by the Partnership for Action on Computing Equipment (PACE) in terms of their overall impacts; to assess the challenges encountered by the project teams as they developed and implemented the pilots and activities geared towards used and end-of-life computing equipment; to discern whether and how the PACE guidelines were used; to assess the impacts of the pilots on the ground and to determine the long-term sustainability elements or necessary follow-up activities. It is hoped that the lessons learned from executing these pilots and activities will inform future pilot activities regarding used-and-end-of-life computing equipment.

2.   The PACE was initiated in 2008 by Decision IX/9 of the ninth meeting of the Conference of the Parties to the Basel Convention to tackle environmentally sound refurbishment, repair, material recovery, recycling and disposal of used and end-of-life computing equipment and agreed with the mission, scope, working principles and activities of the partnership.

3.   The PACE activities initiated by the COP decision included, among other things, the development of the guidance document on environmentally sound management of used and end-of-life computing equipment, guidelines on the environmentally sound testing, refurbishment and repair of used computing equipment and on the environmentally sound material recovery and recycling of end-of-life computing equipment as well as the development and promotion of pilot schemes for environmentally sound management of used and end-of-life computing equipment towards the achievement of the Millennium Development Goals.

4.   Four survey pilots were selected from 35 proposals based upon weighted criteria. Subsequent to surveys carried out on collection and management of used and end-of-life computing equipment that were completed in Burkina Faso, El Salvador, Jordan and Serbia, three pilot projects were initiated following a selection process established by the PACE. Additionally, four pilot activities on specific aspects of collection and management of end-of-life computing equipment were approved. The first activity was implemented by the Basel Convention Regional Centre (BCRC) Trinidad and Tobago in Suriname, the second activity was implemented by BCRC El Salvador in the Central American region, the third activity was implemented in South Africa, Namibia and Lesotho by BCRC South Africa and the fourth activity was implemented in Moldova by BCRC Slovakia.

5.   To support the development of this report, an external evaluation of the three projects and four activities was conducted by Zoï Environment Network, who analyzed all the project and activity proposals, their final reports and conducted interviews with the project proponents.

6.   The main findings are the followings:

        (a)   Innovation: The PACE pilot projects can be considered as pioneering in addressing the issues of e-waste in the partner countries, due to the propagation of guidelines, legislation and e-waste policy and implementation of concrete activities towards implementation of the guidelines in countries previously not exposed to the issues of e-waste;

        (b)   Leverage: Most of the PACE pilot projects were able to leverage considerable support both in funding (synergies with other development assistance projects, governments, national green funds) and through partnerships, in particular with the private sector;

        (c)   Awareness-raising: The guidelines and the PACE projects and activities had a high impact in creating awareness and in contributing to legislation and technical solutions where these previously did not exist;

        (d)   Private sector engagement: In most of the pilot projects, private sector participation was substantial, and opened highly interesting avenues and commitments for e-waste management;

        (e)   se of the guidelines: The projects produced versions of the guidelines in French, Spanish, Serbian and Romanian language. The translation of the guidelines promoted awareness in contributing to legislation and technical solutions where these previously did not exist;

        (f)   Specific actions: Concrete and tangible e-waste efforts, such as the installation of collection points, events at schools and training in technology, have greatly enhanced the visibility of the issue and triggered action. Such activities also helped gain insights into what actually does and does not work. On the other hand, the purpose of a global partnership should not be to establish collection points or disseminate waste bins, unless these activities are linked to a wider national or regional programme ensuring sustainability in one way or another.

7.	The Report on project experiences and lessons learned seeks to analyze g the different projects and activities by summarizing the projects' management schemes, implementation and outcomes in terms of achieving the Environmentally Sound Management (ESM) of e-waste. Most of the projects were implemented by the BCRCs involving national focal points in the countries.

8.	With regard to the ESM of e-waste, the projects covered a wide range of activities: from regional awareness-raising and partnerships; to support of the development of national legislation; to the engagement and capacity-building of the private sector; and finally to local activities on awareness-raising, education and waste collection.

9.	None of the projects and activities addressed directly the issue of the informal sector which is to a large extend involved in waste handling in most of the developing countries and which was one of the target groups clearly spelled in the call for proposals. This can be explained by the fact that e-waste management is a complex and multi factorial process that has to consider the role of both the informal and the formal sector. The PACE pilot projects and activities worked through the BCRCs and national Basel Convention contact points to find ways of factoring in, and actively involving, the informal sector in the national approaches to ESM of e-waste.

10.	Five projects and activities, have delivered the expected outputs. The project in Jordan had to scale down its workplan due to lack of expected co-financing. The activity in the Southern African region is still ongoing. Most of the pilots leveraged additional resources and almost all of the PACE-initiated activities continued after the end of the pilots in one way or another, ranging from the development of regional strategies; sustainable partnerships with the private sector; the development and adoption of national legislation including Extended Producer Responsibility (EPR);rapid growth in systematic e-waste collection; and in general, increased awareness of the issues posed by end-of-life computing equipment, also in remote parts of the countries. It should be noted, however, even though enormous progress was made in all the regions with regard for example to policy frameworks, legislation, strategy and EPR during the period of the PACE partnership, quantifying the direct impact of the PACE is rather difficult.

(a)	Based on the review of the implementation of the pilot projects and activities, of their outputs and of the feedbacks and experiences from the project proponents, the main lessons learned can be summarized as follow:

(b)	Implementation: The involvement of the BCRCs and national focal points was successful in terms of identification of the needs in the countries, implementation of the projects and mobilization of experts. In several cases, unexpected situations in countries affected the planned project implementation, such as changes within national administration due to new government in place. However, almost all the projects could achieve their goals when the implementation timeline was extended. The role and responsibilities of the regional centres' and their impact on country activities was not uniform across regions, some countries have indicated that they would prefer to work directly with the Secretariat in Geneva. In any case, e-waste is an issue to be dealt with at different levels from national to global and in this respect, the BCRCs are an invaluable asset for project delivery;

(c)	Use of the guidelines: Through the projects and activities, the guidelines have been widely used and useful to have concrete directions for work in the countries and regions readily available. Moreover they have also widely been used for raising awareness ;

(d)	Efficiency of the pilot projects and activities: The feedback from the regions and countries was very positive on how a lot can be achieved with modest funding. The PACE projects and activities were able to raise awareness, to create leverage of additional resources and to trigger follow-up actions and projects. It also shows the current importance of e-waste management in developing countries and countries with economies in transition. The partnership approach strongly assisted all involved stakeholders, mainly governments and the private sector, in a much better understanding of the whole problem, different positions and helped closing gaps in one's knowledge.

11.	Based on the evaluation of the projects and activities and the lessons learned, it is recommended for future pilot activities and partnerships regarding used and end-of-life computing equipment:

(a)	To continue to involve the BCRCs in the implementation of e-waste projects at the national and regional level;

(b)	To have a clear call for proposals with reasonable and achievable objectives coherent with the available budget and a detailed table of criteria for the evaluation of the proposals to ensure the proposals are realistic and in line with the objective of the partnership;

(c)	To define a scope reflecting the needs of the countries;

(d)   To address informal sector, one should involve local non-governmental organizations that have direct access to and work with local communities;

(e)   To involve the national authorities and the private sector at an early stage of the project development to ensure its implication and the sustainability of the project;

(f)   To rather facilitate awareness raising and triggering activities on national level, than directly establishing collection points or disseminating waste bins, unless these activities are linked to a wider national or regional programme ensuring sustainability in one way or another;

(g)   To develop concise, visual "advocacy kits" for further dissemination at an early stage.

II.   Introduction

13.   The Partnership for Action on Computing Equipment (PACE) was launched on 2008 at the ninth meeting of the Conference of the Parties to the Basel Convention (COP IX), which took place in Indonesia in June 2008. The PACE is a multi-stakeholder partnership that provides a forum for representatives of personal computer manufacturers, recyclers, international organizations, academia, environmental groups and governments to tackle the environmentally sound management (ESM), refurbishment, recycling and disposal of used and end-of-life computing equipment. The Partnership was intended to increase the ESM of used and end-of-life computing equipment, taking into account social responsibility and the concept of sustainable development, and promoting the sharing of information on life cycle thinking.

14.   The Partnership aimed to provide new and innovative approaches for addressing emerging issues. It also aimed to:

(a)   Promote sustainable development for the continued use, refurbishment and repair of used personal computers in developing countries and countries with economies in transition;

(b)   Find incentives and methods to divert end-of-use personal computers from land disposal and burning into environmentally sound commercial material recovery/recycling operations;

(c)   Develop technical guidelines for proper repair, refurbishing and material recovery/recycling, including criteria for testing, labelling of refurbished used equipment and certification of environmentally sound repair, refurbishing and recycling facilities;

(d)   End shipments of end-of-life computing equipment to countries, in particular developing countries and countries with economies in transition; which are illegal to import under their domestic laws.

15.   Two project groups were created to develop the guidelines, which were field tested and approved at COP 11 in 2013:

(a)   The guideline on environmentally sound testing, refurbishment and repair of used computing equipment sets out to promote re-use in a manner that is consistent with the Basel Convention, and benefits the environment, without compromising either product integrity or public health and safety. The guideline is aimed at supporting capacity building and the transfer of know-how to developing countries and countries with economies in transition so they can build infrastructure to manage electronic waste generated in-country, and to enable informal refurbishment operations to improve their operation for the protection of their workers and the environment.

(b)   The guideline on environmentally sound material recovery and recycling of end-of-life computing equipment aims at describe the chain of steps that should be taken in order to ensure environmentally sound management in material recovery facilities that recycle electronics, and to encourage operators at each step to know about, work with, and take their responsibility for human health, safety and the environment, so that the entire value chain works in both an economically and environmentally sustainable manner.

16.   In addition, a third Project Group was established with the objective to identify and select pilot projects, mechanisms and tools, to divert end-of-life computing equipment from environmentally unsound landfill, open-pit burning and harmful recycling operations to environmentally sound and efficient recycling operations locally and globally in a manner that is sustainable and mindful of improving the health and welfare of the informal sector. The pilot projects were also intended to test the ESM Guidelines produced by the PACE.

17.   The major activities of the Pilot Project group included the selection of four countries where national e-waste surveys were carried out building upon, where possible, work already being done or underway in other programs. From the national surveys, three pilot countries were selected for the development of environmentally, economically and socially sustainable means to collect and further process electronic wastes in cooperation with and to the benefit of informal sectors and small repair, refurbishment enterprises including supporting educational programs. When additional funding became available additional activities were carried out in four other regions to further study specific tasks on national and regional policy development, awareness raising and involvement of the private sector.

18.   This report summarizes the process of the identification and organization of PACE pilot project and activities, the experiences and lessons learnt from the implementation of the projects and activities, and some conclusions and recommendations. Annex A provides the list of criteria for selection of activities. The summary of projects and activities in section IV is based on the compiled final progress reports from the pilot

projects and activities (Annex B) and detailed project documents which are available on the PACE website.[1] Annex C sets out the report of the evaluation of PACE pilot projects carried out by an independent consultant.

III.   Background

19.   In 2009, the PACE initiated a call for country nominations, for special study on the management of end-of-life computing equipment. Based on the funds available, the PACE financed and organized in cooperation with national partners four national e-waste surveys in Jordan, Burkina Faso, El Salvador and Serbia to assess the current situation in four different regions regarding the legal background, stakeholder involved, material flows and potential social, environmental and economic impacts of the e-waste management in pilot countries in different regions. Three projects were selected out of a pool of 35 proposals, based upon weighted criteria, and implemented in **Burkina Faso**, **Jordan** and **Serbia** with budgets of up to USD 100,000 each.

20.   Additionally, when more funding became available, a call for proposals was opened for four activities with a budget of up to USD 25,000 each on the basis of a table of criteria (see Annex A). The four selected activities in the **Central American region**, **Moldova**, **Suriname** and the **Southern African region** were submitted and implemented by BCRC-Slovakia, BCRC-El Salvador, BCRC-Trinidad and Tobago and BCRC-South Africa respectively.

IV.   Summary of projects and activities

A. Objectives and components

21.   Three projects and four activities have been implemented from 2012 to 2017. As of February 2017, five projects and activities have implemented their activities and delivered their expected outcomes. However, the project in Jordan and the activity in the Southern African region had to scale down their workplan due to lack of expected co-financing.

22.   The approach followed by the projects and activities was very different depending on the needs and situation within each country. One of the projects developed feasibility studies and plans for putting in place a collection system in pilot areas, while others have put in place concrete actions for a collection system. Country assessments were supported by three activities due to the necessity to have updated data on e-waste management within the countries. Training activities were also a component or objective of three projects and activities. The aspect of developing a national legislation on e-waste management and awareness raising and education activities were included in two projects. Finally, two workshops were organized to update national guidelines and share experiences on e-waste management. All details on the activities and project outcomes can be found in Annex B.

B. Project management

23.   All projects and activities have been implemented through BCRCs with the exception of Jordan, which was implemented by the Ministry of Environment through UNDP-Jordan. Half of the BCRCs implemented the projects themselves and the other half implemented the projects through a local partner, namely an academic institution or Ministry of Environment. All the projects followed the UN rules in terms of implementation and reporting.

24.   The three projects in Burkina Faso, Jordan and Serbia had a Steering Committee composed of different national experts to give strategic direction and support the project manager. The four activities in the Central American region, Moldova, Suriname and the Southern African region were managed directly by the BCRCs in cooperation with the national partners.

C. Priority setting and project follow-up

25.   The call for proposals for pilot projects and activities were broad with the objective to find and pilot mechanisms and tools that can assist countries to divert end-of-life computing equipment from environmentally unsound landfill, open-pit burning and harmful recycling operations to environmentally sound and efficient recycling operations in a manner that is sustainable and mindful of improving the health

---

[1] http://www.basel.int/Implementation/TechnicalAssistance/Partnerships/PACE/Pilotprojects/tabid/5381/Default.aspx

and welfare of the informal sector. In that context, all projects and activities reflected the individual needs of the countries focusing on different aspects of e-waste management. The difference between projects and activities was that the projects were financed at a higher level than activities and were more ambitious task-wise. (See section III. above).

26.   Even though the scope of the call for proposals was about used and end-of-life computing equipment to reflect the PACE mandate, all the projects and activities covered not only used and end-of-life computing equipment but e-waste in general.

27.   The pilots focused mainly on e-waste collection as collection and the informal sector was the emphasis of the mission of the pilot project group. Nevertheless, all activities related to collection were very different from one another depending on the context in the pilot countries. They were implemented as planned but one activity faced an issue when it came to contract a local partner from private sector for collection activity. The local partner changed its strategy for profitability reasons, which created a delay and a situation, as it was the only solution envisaged to take care of collection operations.

28.   A number of project proponents indicated that activities initiated and/or strengthened by the PACE will continue beyond the end of the support provided by the partnership, therefore the PACE pilot activities resulted   in the longer-term sustainability of the ESM of e-waste on the country level.

29.   Not all project proponents submitted recommendations on e-waste management. However, all projects and activities that produced an assessment or collected data on e-waste formulated recommendations. For more detailed information, please refer to Annex B and section V below.

V.   Lessons learned

30.   The chapter on lessons learned is based on findings and lessons learned of the evaluation report, which was developed by an external expert, who conducted interviews of the project proponents. Its objective was to study the overall impacts the PACE activities, how the PACE guidelines have been used and what are the long-term sustainability elements or follow-up activities.

31.   The external evaluation provided lessons learned which could be directly used and integrated as well as findings, which are analysed in this chapter. The whole evaluation report is presented in Annex C.

A. E-waste management at national level

32.   In reviewing the projects and activities submitted to the PACE on the basis of the needs of the countries, the proposals covered the following steps of ESM of e-waste: assessment/data collection, legislation, collection models or putting in place collection systems. Considering that all the countries are at a different level of development, infrastructures and policies specific to e-waste management, it appears that most of these countries or areas focused on early stage activities for putting in place an ESM of e-waste. None of the selected proposals were about refurbishment, repair, material recovery and recycling, or business models of e-waste management. Finally, according to the call for proposals, the pilot projects and activities should have focused on computing equipment, instead of e-waste. However, the PACE projects and activities were used as an entry point to address the ESM of e-waste in general and reflect the need of the countries.

33.   None of the proposals directly addressed the informal sector which is to a large extend involved in waste handling in most of the developing countries and which was one of the target groups clearly spelled in the call for proposals. This can be explained by the fact that e-waste management and the development and initiation of e-waste projects is a complex and multi factorial process that has to consider the role of both the informal and the formal sector. The PACE pilot projects and activities worked through the BCRCs and Basel Convention contact points to find ways of factoring in, and actively involving, the informal sector in the national approaches to ESM of e-waste. For example, one of the projects initiated a system rewarding consumers with a charger or a hands-free kit when they bring back their old mobile phone. They noticed that some actors of the informal sector started collecting rather than repairing mobiles. However, we don't have enough data, neither at a larger scale nor on a longer period to evaluate its sustainability.

34.   Regarding legislation and policy frameworks, two projects had activities to assess and improve existing legislations in their countries. However, with policy frameworks and legislation being the essential elements for addressing e-waste, partnerships like PACE can be expected to get the most traction in this area. But then, these legislative and policy processes take longer to unfold than the scope of a typical PACE pilot project. Thus, quantifying the direct impact of the PACE in this area is rather difficult. Still, during the period of the PACE partnership, enormous progress was made in all the regions with regard to policy frameworks, legislation, strategy and extended producer responsibility. These catalytic efforts need to be continued, in one

way or another, to achieve sustainability. Existing legislation needs to be analyzed for potential impacts on the generation and handling of e-waste (the importing of second-hand electronic goods, for example). This should, however, not be seen as a reason to prolong the PACE pilot projects, since their main intention is to stimulate innovation and catalyze change.[2]

35. Specific actions implemented by projects and activities were mainly about collection, concrete and tangible e-waste efforts, such as the installation of collection points, events at schools and training in technology, have greatly enhanced the visibility of the issue and triggered action. Such activities also help to gain insights into what actually does and does not work. On the other hand, the purpose of a global partnership, whose existence is limited duration should not be to establish collection points or disseminate waste bins, unless these activities are linked to a wider national or regional programme ensuring sustainability in one way or another. Moreover, these activities are complicated to implement with economical components. For example, one of the projects on collection faced competition with the informal sector who is buying e-waste, while the project proponent was raising awareness to get e-waste for free. This issue was temporarily addressed by contacting the ministry of environment to get e-waste from national administration for free.

36. In addition to the four country assessments that had been conducted by UNDP at the early stage of the PACE and which led to the PACE projects, the two PACE activities in Suriname and Moldova focused on assessments and were developed in close collaboration with national authorities. The choice of this topic can be explained by the fact that dealing effectively with e-waste in a country requires relatively precise estimates of volumes, and information for decision-makers and the public needs to be based on simple, understandable facts and figures. The design of appropriate collection facilities, and investments in assembly and refurbishment depend on good information, as well as plans for full metal recovery whether in-country, in-region or through appropriate export. Some of the PACE projects have contributed to this effort.[1] Assessments and precise data are needed for national authorities, as well as for the private sector to set up or have an efficient system of e-waste's ESM in place.

B. Use of the PACE guidelines

37. One of the purposes of the evaluation was to examine the use of the guidelines developed under the PACE to support the pilot projects. Based on the interviews that were conducted and reflected in the evaluation report[1], the guidelines had a broad impact. They created awareness, contributed to legislation and technical solutions, and provided directions for their work in the countries and regions.

38. Producing the guidelines in local languages was an essential first step of many projects and activities. By doing so, it helped the target audiences – in the case of the PACE this covers a very wide range of stakeholders from government officials (local, national, regional), private enterprises as well as a more general public audience engaged in waste collection 'on the ground' - understand the guidelines. Some of the pilot projects produced excellent spin-off products that have contributed considerably to the spread of the concepts and guidelines.[1] The translation of the guidelines has already been taken into account in the drafting of the Follow up Partnership to PACE document[3]. Nevertheless, another element that could be integrated in the Follow up Partnership to PACE could be to develop concise, visual 'advocacy kits' using cartoons, animated movies or other media for further dissemination and awareness raising at an early stage of introduction of a comprehensive system for ESM of e-waste.

39. The guidelines, which were translated into English, French, Spanish, Serbian and Romanian, served as a reference in most of the projects and activities. They supported the development of project proposals, served as references and models for national guidelines and as models for the implementation of project activities. Finally, they have been key tools for awareness raising activities, which were carried out by the BCRCs.

40. Despite the use of the guidelines through the different PACE projects and activities, no feedback on the understanding or on the clarity of the guidelines was provided. This may be explained by the fact that the guidelines have been mostly used as awareness raising tools or served as references and models as indicated above, rather than being analyzed, compared or questioned.

C. Implementation of projects: organizational aspects

41. The BCRCs played a central role by implementing most of the projects and activities. This project structure is efficient in terms of identifying the regional needs and mobilizing expertise and project

---

[2] Evaluation report, Annex C.

[3] UNEP/CHW.13/INF/31, Annex II.

implementation. The BCRCs also play an important role for the sustainability of activities. One drawback of this project structure maybe the longer project pathways that may be responsible for some of the project delays. In addition, the role and responsibilities of the regional centres and their impact on country activities was not uniform across regions, some countries have indicated they would prefer to work directly with the Secretariat in Geneva. In any case, national e-waste management is interlinked with regional and global waste management issues and in this respect, the BCRCs are an invaluable asset for project delivery.[2]

42.   The implementation of the projects varied. The implementation through a national partner, being a ministry, an academic institution or a non-governmental organization (NGO) was often due to the fact that they had drafted the project or the activity proposal. Therefore, the proposals reflected a need in the country articulated by a proponent with good knowledge of the local or national situation.

43.   As indicated previously, almost all projects and activities faced problems in implementing activities in the agreed timeframe. The reasons are multiple and different from project to project. In several cases, funds transfer from UNEP to the partners took longer than expected due changes of the UN administrative and financial programme in 2015 which generated delays. Once the funds were transferred to the implementing BCRCs, in most cases, they had to transfer the installments to the country thereafter. Therefore, it created a long chain taking a lot of time. However, extending the timeframe of the projects could be done on a cost neutral basis and allowed the project proponents to complete the implementation of all planned activities. The revised schedule of activities was developed by the project proponent and/or the BCRC and submitted to the Secretariat.

44.   Further, unexpected situations in relation with project's partners occurred. In one case, a change within national administration resulting from new governments had limited consequences. The project was kept on hold until the new hierarchical chain was fully operational again and the project could be pursued in good cooperation with the new administration with activities undertaken on new agreed timelines on a cost neutral basis. In two other cases, the withdrawal of partners from public and private sectors delayed dramatically the projects due to the difficulties to find alternative partners. In these two cases, the external partners had not been involved in the development of the project proposals and were brought in at a later stage. All actors should be clearly identified and involved when the proposal is developed.

45.   Concerning the collection activities implemented on the ground, two out of the three projects, namely in Burkina Faso and in Jordan, supported already existing collecting programmes. The only one which started from scratch, in South Africa, Namibia and Lesotho faced many problems and delays, mainly in finding sustainable and reliable partners from the private sector or from municipalities for the collection of e-waste. To avoid facing such problems, one of the criteria for the evaluation of the proposals was the ability of the PACE pilots and activities to leverage, as well as to contribute to existing projects or programmes. With regard to leverage, it is interesting to note that most of the projects and activities were able to leverage considerable support both in funding (synergies with other development assistance projects, governments, national green funds) and through partnerships, particularly with small and medium enterprises with a business interest in e-waste recycling at the local level, . This is encouraging and a strong factor for sustainability. It is also the result of an aspect that was highly emphasized while selecting the project and activity proposals requesting commitment and contributions which counted as 45% of the total points in the selection of the proposals (Annex A).

46.   The involvement of the private sector was included in the evaluation table for the selection of the proposals. In most of the pilot projects, private sector participation was highlighted, and opened highly interesting avenues and commitments for e-waste management. Here the multinational producers and their representatives in the countries (importers, national associations), as well as the local private sector engaged in waste collection and recycling, all play crucial roles. Extended Producer Responsibility (EPR) has become part of the legislation of many countries, and, Corporate Social Responsibility standards have become commonplace for many industries. The direct impact of the PACE on the developments in the countries is difficult to quantify, but many interlocutors mentioned their work with the private sector as innovative and effective.[1] Even though the involvement of the private sector didn't substantiate in all projects and activities, the PACE projects and activities, by bringing seed funds and involving the national authorities, created an enabling environment to bring in the private sector, which is an integral part of the ESM of e-waste. The partnership approach strongly assisted all involved stakeholders, mainly governments and the private sector, in a much better understanding of the whole problem, different positions and helped closing gaps in one's knowledge.

VI. Conclusions and recommendations

47.   The BCRCs played a key role in identifying local experts, in implementing the projects and activities through national focal points, and for the paving the ground for the sustainability of the activities. E-waste is an issue to be dealt with at different levels from regional to global, and in this respect, the BCRCs are an invaluable asset for project delivery. It is recommended to continue to involve the BCRCs in the implementation of e-waste projects at the national and regional level.

48.   The PACE projects and activities have been a mixed basket of activities covering a wide range of different steps of the ESM of e-waste – from regional awareness-raising and partnerships; to support for the development of national legislation; to the engagement and capacity-building of the private sector; and finally, to local activities on awareness-raising, education and physical waste collection. While such a comprehensive and integrated approach can be a powerful vehicle to spread innovation, there was a risk of spreading resources too thin and leaving a lot of work undone. In this context, leveraging additional resources with various other initiatives and actors was key. In this respect, the evaluation report concluded that the PACE has done an excellent job. One factor for this success was good timing: Given the consumer electronic boom, the PACE was surfing on the e-waste wave. Another factor, that was included as a criterion for selecting project proposals, was the specific emphasis on ensuring the involvement of local actors. It is recommended to have a clear call for proposals with reasonable and achievable objectives coherent with the available budget and a detailed table of criteria for the evaluation of the proposals to ensure the proposals are realistic and in line with the objective of the partnership.

49.   The PACE projects and activities addressed e-waste aspects, instead of focusing on computing equipment as requested in the call for proposals. According to the proposal, it was clear that e-waste should be tackle as a hole. Focusing only on computing equipment was not adapted in these countries.

50.   None of the pilot projects and activities has targeted the informal sector even if it was one of the objectives of the call for proposals. The informal sector was not easy to address through the official channels, moreover when it comes from the international level, like PACE was operating. E-waste issue has to be addressed in its hole and the informal sector is part of the puzzle. It can be expected that when addressing the other aspects like legislation, collection and awareness raising, it can indirectly have an influence on the informal sector. To address this issue, it is recommended to involve local non-governmental organizations that have direct access to and work with local communities.

51.   Almost all of the PACE activities have found continuation in one way or another, ranging from the development of regional strategies; sustainable partnerships with the private sector; development and adoption of national legislation including EPR, rapid growth in systematic e-waste collection; and, in general, increased awareness about the issue, even in remote parts of the countries. Therefore, despite limited funding, the PACE projects and activities brought the PACE guidelines to action. It is recommended to involve the national authorities and the private sector at an early stage of the project development to ensure its implication and the sustainability of the project.

52.   The PACE projects and activities included concrete and tangible e-waste efforts, such as the installation of collection points, which have greatly enhanced the visibility of the issue and triggered action. However, it is recommended that a partnership should rather facilitate awareness raising and triggering activities on national level, than directly establishing collection points or disseminating waste bins, unless these activities are linked to a wider national or regional programme ensuring sustainability in one way or another.

53.   The evaluation report confirmed that the PACE guidelines were used, translated and had a high impact on creating awareness and in contributing to legislation and technical solutions in the countries where these previously did not exist. In addition to having the guidelines translated, it was also recommended to use cartoons, animated movies or other media to make the guidelines more accessible. Some of the pilot projects produced excellent spin-off products that have contributed considerably to the spread of the concepts and guidelines. Future, partnerships may want to develop concise, visual "advocacy kits" for further dissemination at an early stage.

54.   Quantifying the direct impact of the PACE projects and activities is difficult. On the short term, the feedbacks from the project proponents are positive, mainly because the pilots created awareness raising and triggered some follow-up activities. However, another evaluation would be needed at a later stage to assess the real impact and sustainability of the projects and activities.

Annex A

Activities proposals: Criteria for selection

Activity name:
Country:

Criteria	Points	Your Score
1. Is the amount of used and end-of-life computing equipment arising in the country from any source seen as a significant?	*10*	
2. Is used and end-of-life computing equipment/waste believed to be causing health and safety or environmental impacts?	*10*	
3. Would the country serve as a model for other countries in the same region, be representative of the entire and unique region?	*10*	
4. Is there room for significant improvement in the formal or informal e-waste collection and management systems in the country?	*10*	
5. Is there significant room for improvement needed in educating stakeholders including government officials, customs, etc.?	*5*	
6. Is the Activity proposal part of a national e-waste management strategy	10	
7. Is there significant national government interest and commitment toward this project (e.g., will government officials be part of the project team?)	*15*	
8. Is there significant interest and likely assistance available from the Basel Convention Regional Center (BCRC) in the region (e.g., a likely "champion" that will ensure project viability and sustainability)?	*10*	
9. Is there significant interest from NGOs, OEMs, or businesses?	*5*	
10. Is there any guaranty on the co-funding (e.g., a MoU or a declaration of intension)from other donors? (UN, EC, OEMs, etc) and/or from the government in the country?	*15*	
TOTAL SCORE	*100*	

Annex B

Compiled Final Progress Reports

A.   Jordan

1.   Background information

1.1   Project title: Pilot project on the environmentally sound management of used and end-of life computing equipment in Jordan

1.2   Project starting date: June 2013

1.3   Project completion date: Oct. 2015

1.4   Overall objective(s) of the project: Improve collection and materials recovery practices in an environmentally sound manner in Jordan

1.5   Total budget (US$): USD 93,000

1.6   Partners and leveraged resources:

The Jordanian Ministry of Environment, with UNDP support, is leading the implementation of this component. As part of its co-funding, the ministry has assigned one of its staff as a project manager to this project, this person is responsible of delivery of anticipated outputs and follow up day-to-day related work. The Ministry provides the necessary administrative support to the project, by means of offering offices, meeting rooms, computers, internet, printing, etc.

2.   Project status

2.1 Information on the delivery of the project		
Activities / Outputs *(as listed in the project document)*	**Status** *(complete / ongoing)*	**Results/Impact** *(measured against the performance indicators stated in the project document)*
Output 1: Policy and legislations		
Conducting a baseline study to assess the current legislation that is indirectly and directly related to e-waste management.	completed	Initial baseline study has been carried out. Included in the technical report, attached.
Propose a mechanism through which the national hazardous waste dumping site of SWAQA is activated as a treatment and disposal site for all types of hazardous waste including e-waste and establish a monitoring mechanism for the site	completed	Delivered Included in the technical report, attached.
Formulate a national technical specification including a testing mechanism and a policy for importing used computers, into the country.	completed	The existing national legislations cover importing the used electronic and electrical equipment. However, through the new proposed legislation, it is suggested that the MoEnv does a validation role before getting these equipment entering the country.
Formulate a national policy that defines the responsibilities and obligations of all stakeholders.	completed	A national policy framework has been developed, consulted with and agreed by the ministry of environment
Share knowledge and experience garnered through the project in cooperation with BCRC-Egypt at the regional level.	nothing done yet in this regard	Pending guidance (contact details) to establish communication with BCRC-Egypt
Propose draft legislation for E-waste.	completed	Legislation has been finalized after extensive consultation with all relevant stakeholders.

		Once endorsed by the minister, the legislation will be published in the official gazette and a launching ceremony will be held.
Output 3: Technology and Skills		
Develop collection (and possible recycling) technology and infrastructure suited to the e-waste volume generated and assess the local operational costs.	completed	o 200 containers for e-waste collection of the computers and its accessories, cell phones, bulbs and batteries were distributed among the governorates of the Kingdom. The distribution included schools, trade centers, municipalities and environmental directorates. o Meetings were held with recycling companies for collaboration in the collection process and potential recycling. This type of consultation with private sector is expected to take time, and should be continued in drafting the new legislations and policies. The project managed to open a discussion platform with private sector, and relevant companies are now aware of the project and its agenda with regard to changing the legislations particularly o Collection of e-waste has been initiated. It starts from collection points all over the country and ultimately goes to swaqa dump site. o Extra 220 plastic containers) 100 pcs 240L, 100Pcs 120L, 20pcs 770L distributed in all directorates of environment in the governorates) and many other places such as schools, GAM and environmental police.
Output 5: Awareness and education Develop and implement a national awareness and education campaign addressing all Jordanians with focus on: • Knowledge Points dealing with information and electronic devices • students at both universities and schools; • national enforcement authorities; consumers (with respect to the existing take-back e-waste collection system).	On going beyond the end of the project	o A comprehensive plan for awareness has been finalized and implemented throughout year 2014 started at schools, 100% of containers were distributed to schools for e-waste collection, and lectures were given by the ministry officials to raise awareness about the improper disposal and processing of e-waste that will cause serious health and pollution problems, also the scrap components of the e-waste contain contaminants such as lead, cadmium, mercury,…etc. o Number of publications were printed, and few other are being prepared, the brochure has been designed and first set of brochure was printed out and disseminated o Press conference for launching the project was held at the Ministry of Environment. o The Minister of Environment has been hosted on TV on the most popular show in Jordan, so called YesaadSabahak(يسعد صباحك). The aim of that interview was to shed light on e-waste issues in Jordan and the ministry's plan in treating e-waste and changing the legislations o Containers distribution event for the schools was held at the Ministry and covered in

	press	
Develop a mechanism for implementation of "take back" program for e-waste	On going beyond the end of the project	o An online database for E-Waste management has been developed and under validation by the Ministry of Environment officials o An MoU was signed between the ministry of environment and orange company for the take back solution for cell phones as a pilot project o Questionnaire was prepared and distributed to all governorates for data collection. o A preliminary situational analysis study is done to Amman in collaboration with Jo-Cycle Company.

All activities have been implemented according to the workplan though awareness sessions, collection process as well as E-Waste take-back programs will continue beyond the end of the project to ensure the sustainability of the project`s activities.

B. Burkina Faso

1. Background information

1.1   Project title: Pilot project management of Waste Electrical and Electronic Equipment (WEEE) in Ouagadougou and Bobo-Dioulasso

1.2   Project reference: CRCBS-AF/BURKINA FASO/2015/001

1.3   Project executing agency (if any): BCRC-Senegal

1.3   Project responsible officer: General Direction of the Preservation of the Environment and Sustainable Development / Ministry of the Environment and Sustainable Development

1.4   Project starting date: June 2015

1.5   Project completion date: May 2016

1.6   Reporting period: From: June to December 2016

1.7   Project objective:

- To promote sanitation through the consistent and concerted development and implementation of sub-sector actions;
- To significantly improve populations' sanitation practices and behaviors;
- To create conditions conducive to increased and sustainable funding of the sanitation sector.

2. Project status: Information on the delivery of the project

	Activities / Output	Dates	Status	Outcome/Output	Compliance with workplan	Remarks
1	To raise awareness and train importers, resellers, consumers and recyclers of e-waste in Ouagadougou	19 to 20 January 2016	completed	40 stakeholders trained	Yes	
	To raise awareness and train importers, sellers, consumers and recyclers of e-waste in Bobo - Dioulasso	13 to 14 July2016	completed	44 stakeholders trained in Bobo-Dioulasso	Yes	Strong actors' commitment to the pilot project
3	To rent a warehouse to store e-waste for the NGO « les Ateliers De Bocage » in Ouagadougou and Bobo Dioulasso	October 2015 to December 2016	completed	- Contract with the association « Action Défi Victoire » (ADV) signed	No	Procurement of the warehouse delayed the signing of the contract.
4	To collecte e-waste in Ouagadougou and Bobo-Dioulasso	October 2015 to December 2016	completed	- Contract for collection signed with « Association Burkinabé pour la Promotion des emplois Verts », - 44,685 tons of e-waste collected.	Yes	Collection of e-waste has stopped for this project ; Difficulties encountered due to some stakeholders buying e-waste from consumers.
	To transportation collected e-waste in Ouagadougou and Bobo-Dioulasso	October 2015 to December	completed	- e-waste transportation contract signed with TEFA-OMEGA	Yes	Collection and transportation are concurrent.

Pilot project management of WEEE in Ouagadougou and Bobo-Dioulasso

	2016		SERVICE - 44,685 tons of e-waste transported		
To dismantle, segregate and recover what can be locally processed	October 2015 to December 2016	completed	- contract on collection signed with « Association Burkinabé pour la Promotion des emplois Verts » ; - 44,685 ton of e-waste dismantled.	Yes	Conditioning and transfer of the waste to foreign countries have not been considered within the project budget.

4. Project Delivery

4.1 Summary of the Problems Encountered in Project Delivery (if any)

We are facing competition, with some informal sector stakeholders buying WEEE for artisanal dismantling, while we are conducting awareness to collect waste free of charge, which complicates the collection across Ouagadougou and Bobo-Dioulasso.

4.2 Actions Taken or Required to Solve the Problems (identified in section 4.1 above)

These actions include the following:
- The Minister of Environment wrote to the Minister of Economy, Finance and Development regarding the identification and removal of waste electric and electronic equipment from Government institutions for their environmentally sound management.
- The Minister of Environment wrote to parastatal companies regarding the identification and removal of waste electric and electronic equipment from Government institutions for their environmentally sound management.

The correspondence was positively welcomed, impacting the project for the better, especially during the extension phase, as evidenced by the quantity of WEEE collected in the last semester of 2016 (about 30 tons).

C. Serbia

Partners Name:

- The Basel Convention Regional Centre for Training and Technology Transfer for Central Europe in Bratislava
- Mr. Predrag Jovanic, National Team Leader, Serbia

Expected Accomplishment(s):

- Improved legislative framework
- Proposal for the feasibility study
- Proposal for sustainable and profitable e-waste collection model
- Proposal for the establishment of independent institution for the monitoring and control of e-waste management

Output(s):

- Draft legislation and/or regulatory measures including in particular collection system and recycling requirements and a financial system
- Proposal for a model for sustainable and profitable e-waste collection
- Analysis of e-waste potential market in Serbia
- Feasibility study of e-waste 3R potential in Serbia
- Report on the implementation and the activities of the monitoring and control body
- Public website with relevant information
- Trained state administration

Title of the approved PRC project: Capacity building for e-waste management in Serbia
SSFA starting date: 01/01/2014

1. Activity delivery status

Activity	Description of work undertaken during reporting period	Deliverables	Delivery date	Status of Activity (completed or not completed
Legal component	draft legislation and/or regulation, concerning in particular collection system and recycling requirements and setting out a financial system, as well as successful organization and conduct of a workshop	Draft law	1.7.2015	Completed
Establish the model for sustainable and profitable e-waste collection and recycling	Report on the results of the national e-waste survey	report	7.1.2015	Competed
	Proposal of a model for sustainable and profitable e-waste collection	report	27.1.2016	Competed
	Organization and conduct of a Workshop on e-waste collection system	report	Nov/dec.2015	Competed
	Report on the implementation of the e-waste collection system	report	14.3.2016	Competed
	Successful organization of training for e-waste collectors	report	Nov.2015	Competed
Proposal to establish	Analysis of e-waste potential market in Serbia	report	11.12.2015	Completed

regional e-waste material treatment facilities	Feasibility study of e –waste 3R potential in Serbia	report	6.12.2015	Completed
	Organization and conduct of a Workshop			Completed
Proposal to establish independent monitoring and control body	Report with analysis of current situation on monitoring and control body for e-waste management	report	4.8.2015	Completed
	Proposal report for monitoring and control body	report	February 2015	Completed
	Organization and conduct of a Workshop	Report	March 2015	Completed
	Report on the implementation and the activities of the monitoring and control body	Report	July 2014	Completed
Public notification and education		www.e-otpad.rs	Oct.2014	Completed
Training state administration		report	2016	Completed

D.   Suriname

1.1   Project title: Assessment of Waste Electrical and Electronic Equipment for the Republic of Suriname

EXECUTIVE SUMMARY

This report documents the outcomes of an assessment executed by the Basel Convention Regional Centre for Training and Technology Transfer for the Caribbean (BCRC-Caribbean) on the waste electrical and electronic equipment (WEEE) waste stream in the Republic of Suriname. This study attempted to identify the local stakeholders involved in WEEE generation and management, the relationships between these stakeholders and the contribution that these stakeholders make to the overall e-waste generation and management in Suriname. It also sought to highlight current management practices to deal with WEEE as well as the extent of stakeholder knowledge and data management with regards to this waste stream within the local context.

The study was a continuation of the BCRC-Caribbean's WEEE assessments following similar work conducted in Trinidad and Tobago. The present assessment sought to work within the broad scope of WEEE items categorised under the original European Union WEEE Framework Directive (2002/96/EC), which characterised the waste stream and its precursor electrical and electronic equipment (EEE).

At present, WEEE generated in Suriname is largely mismanaged as a result of a non-harmonised system to handle these wastes and the lack of facilities to adequately treat such wastes. This scenario has led to a large and increasingly complex hazardous waste stream in Suriname being indiscriminately disposed of in the country's landfills and public spaces, and adding significantly to the issue of air, water and land pollution by POPs and other contaminants nationwide. Furthermore, the situation has led to the wastage of resources that have the potential to be recycled, recovered and re-used.

In the execution of this assessment, import and export data for EEE were analysed and interviews were conducted with distributors and consumers of EEE, waste collectors, and recyclers of WEEE, and the respective agencies involved. The data collected was analysed, summarised and assessed in order to examine the flows and management of these pieces of equipment. It was found that gaps in knowledge and practices exist across different sectors and that there are significant weaknesses in this respect as it relates to EEE consumption and WEEE generation.

The collection of WEEE is being done primarily on an as-needed basis or to facilitate the sale of metal components for revenue by private individuals and organisations. However, such collection is not necessarily being done with the end point of the environmentally sound management of the waste stream being taken into consideration. Furthermore, the existing practices for salvaging metals of value to local dealers and others operating in the country do not necessarily amount to the wise re-use or recovery of these resources within the local system. Therefore, there is a need to ensure that more sustainable collection efforts as well as the sensitisation of the WEEE issue and the development of ESM practices among local stakeholders, including in the area of collection and storage, are fostered.

Based on the findings of this assessment, the BCRC-Caribbean developed a series of recommendations which, if addressed, can significantly aid in the achievement of the environmentally sound management of WEEE in Suriname. Some of these recommendations, presented in order of priority, include the following:

   1.   The establishment of a national WEEE management coordinating body comprising of membership from the various stakeholder groups with roles throughout the life cycle management of EEE.

   2.   Roll-out of a well-developed awareness and public education campaign. The campaign can initially target key stakeholders involved in the life cycle management of EEE and WEEE followed by a broader public awareness campaign.

   3.   The development of appropriate regulations and standards either stand alone or under any enacted national environmental or waste management legislation.

   4.   The establishment of formal collection systems to support the timely and sound collection of WEEE from commercial entities and households. This can include the development of formalised take-back programmes among retail and distribution stakeholders.

   5.   Development of a national data capture and management system for imported EEE products and flows in the country, with a view towards supporting monitoring and enforcement and decision-making.

   6.   Capacity development of the informal collectors, salvagers and scrap dealers to improve existing practices and ensure the ESM of valuable, non-valuable and hazardous components of WEEE.

   7.   The establishment a dismantling facility in the country to formally bridge the gap between the generators and downstream dealers and users of metals.

8.   The consideration of further development recovery operations to support the recovery of precious metals from WEEE supported by existing skills and experience in the population due to participation in the local gold mining industry.

These recommendations in addition to the findings of this study can provide a foundation from which a national strategy for WEEE can be developed and implemented in order to achieve the ESM of WEEE in Suriname. Furthermore, they can assist in the enhancement of the existing operations and practices to ensure that realization of the resident potential in business development for the valuable fractions of WEEE are achieved and beneficial to the local economy.

E. Central American Region

1. Identification:

Partner's Name: The *Centro Regional del Convenio de Basilea para Centroamérica y México*/ the Basel Convention Regional Centre for the Central American sub-region including Mexico

Expected Accomplishment(s): assistance provided to participating countries of the region and to El Salvador to enable them to raise awareness on the environmentally sound management of waste electronic and electrical equipment

Output(s): organization and conduct of 2 (two) Workshops, review and validation of draft Guidelines for ESM of WEEE

Title of the approved PRC project: "Workshops for sharing regional advances in guidelines for the collection, temporary storage, transportation, testing, repair and refurbishment, disassembly, recycling and export of WEEE, as well as the Revision and validation of draft WEEE Guidelines",

SSFA starting date: 2-3-2016

Completion date: January 15, 2017

2. Activity delivery status

Activity	Description of work undertaken during reporting period	Deliverables	Delivery date	Status of Activity (completed or not completed	If activity not completed, please describe the reason why and indicate mitigation actions that were taken.
Activity 1 – Hire the project Coordinator	1.1 An add was published on the Webpage of BCRC-CAM www.siva.int/crcbc am sharing the opening of the temporary position as Project Coordinator, with its TOR. 1.2 One application was received from Manuel Martinez, which was reviewed and the candidate was interviewed. 1.3 Manuel Martinez was selected by BCRC-CAM as Project Coordinator as his qualifications were verified to be consistent with the TOR.	Transparent selection of the Project Coordinator	February 15, 2016	completed	

Activity	Description of work undertaken during reporting period	Deliverables	Delivery date	Status of Activity (completed or not completed	If activity not completed, please describe the reason why and indicate mitigation actions that were taken.
Activity 2 – Facilitate the sharing of Latin America and PACE experiences in the formulation of Guidelines for ESM of WEEE	2.1 Organize a regional workshop in Guatemala to exchange Latin America and PACE experiences in the formulation of Guidelines for ESM of WEEE with participation via Skype of experiences in Colombia and Mexico. 2.2 Prepare reports of regional workshop and publish it in BCRC-CAM Website.	2.1 Workshop organized with a successful exchange of Latin American and PACE experiences. 2.2 Report of the workshop approved by participants and published in BCRC-CAM Website.	February 23, 2016	completed	
Activity 3 – Review and Validation of draft Guidelines for ESM of WEEE for El Salvador	3.1 Preparation of revised draft Guidelines for ESM of WEEE incorporating information from workshop on exchange of experiences. 3.2 Consultation workshop to review Revised Draft of Guidelines for ESM of WEEE. 3.3 Preparation of workshop report including recommendation s for adjustments to Guidelines for ESM of WEEE. 3.4 (NOT ORIGINALLY INCLUDED IN THE PROJECT BUT IMPLEMENTED AND HIGHLY RELEVANT TO PACE WORK). Validation of PACE Guidelines for ESM of Used and End-of-Life Computing Equipment in a facility in Guatemala (E-waste de Guatemala) and in El Salvador (ZARTEX).	3.1 National Workshop organized in El Salvador 3.2 Revised Draft of Guidelines for ESM of WEEE 3.3 Final draft of Guidelines for ESM of WEEE presented to Environmental Commission of the Salvadoran Cabinet	October 19, 2016	completed	Please note that Salvadoran Guidelines for ESM of WEEE were considered excellent by both the Guatemalan and Salvadoran workshops, even acknowledged as being the best in Latin America. Therefore there was not need to prepare adjustments. These guidelines are considered a living document which will be updated regularly as needed. The Salvadoran Workshop was used to open a dialogue between public and private sector interested stakeholders to the point that its participants were identified by government officials as key members of the new to be announced public-private sector Salvadoran roundtable for WEEE. This was facilitated by the presentation of the Colombian experience on ESM of WEEE at the National Salvadoran Workshop, by Carlos Hernandez, the Colombian Director of the WEEE Project in Colombia, who

Activity	Description of work undertaken during reporting period	Deliverables	Delivery date	Status of Activity (completed or not completed	If activity not completed, please describe the reason why and indicate mitigation actions that were taken.
					for 5 years coordinated a public-private sector dialogue which was key in achieving significant advances on ESM of WEEE in Colombia and is now a model for Latin America. During the Salvadoran workshop a presentation was made on the validation of PACE Guidelines in a facility in Guatemala (E-waste de Guatemala) and in El Salvador (ZARTEX).

3. List of attached documents

Report of the Regional Workshop organized in Guatemala, fully translated into English, which includes a summary of each presentation made at the regional workshop and main comments made, workshop conclusions, the participants list and a link to all presentations made at the workshop.

Report of the National Workshop organized in El Salvador fully translated into English, which includes a summary of each presentation made at the national workshop and main comments made, workshop conclusions, the participants list and a link to all presentations made at the workshop.

F.   Moldova

Identification:

Partners Name:

- The Basel Convention Regional Centre for Training and Technology Transfer for Central Europe in Bratislava
- Environmental Pollution Prevention Office within the Ministry of Environment of the Republic of Moldova

Expected Accomplishment(s):

1. To collect the data necessary for estimation of waste electrical and electronic equipment (WEEE) arisen in pilot area with the aim of setting up the WEEE collection targets by the country in order to further promote implementation of the relevant obligations pertaining to the Basel Convention and to the EU Directives;

2. To organize a public information and education campaign, with particular focus on non-profit associations and education sector managers regarding the WEEE management issues and reduction of risks associated with unsound management of WEEE (including end-of-life computing equipment).

Output(s):

(a) Data for WEEE collection targets are collected.

(b) Relevant applicable legal obligations pertaining to the Basel Convention and the EU Directives are promoted.

(c) Protection of the population is improved.

(d) Improvement of waste generation's prevention.

(e) Increased awareness of educators & civil society organizations

(f) Educational materials and dissemination of activities results

(g) Capacity building processes are developed

(h) Trainings are organized.

(i) Narrative and expenditure interim and final reports submitted to UNEP/SBC

Title of the approved PRC project: "Reduction of risks associated with end-of-life computing equipment in Moldova through raising public awareness and strengthening national capacities"

SSFA starting date: 14 May 2015

Completion date: 30 March 2016 (based on no cost extension letter nr CZA 5812/2015, SEN-0526-2015 dated 22.12.2015)

Summary of Status:

The results of the project have fully contributed to the achievement of the SSFA's main objective, and namely to is to contribute to the achievement of environmentally sound management of WEEE-waste within Moldova. The project has been implemented as the joint initiative of the EPPO in partnership with the Basel Convention Regional Centre Slovakia. It has been evaluated by both partners the good cooperation level within the entire project implementation period.

With regards to achievement of the specific accomplishments, the project experts and implementation partners have obtained the following:

1. To collect the data necessary for estimation of waste electrical and electronic equipment (WEEE) arisen in pilot area with the aim of setting up the WEEE collection targets by the country in order to further promote implementation of the relevant obligations pertaining to the Basel Convention and to the EU Directives

WEEE and particularly end of life computing equipment in Moldova is one the fastest growing waste streams in Moldova. Previous experience of EPPO and BCRC on elaboration of the Draft WEEE regulation has allowed to estimate of the EEE introduced annually at the local market for the last 10 years, thus clearly this stream is increasing. Bearing in mind the EU –Moldova association agreement provisions, and the commitment to promote the WEEE regulation, that is harmonized with the EU Directive, it is a priority for

Moldova to improve the environmental management of WEEE and to initiate proper collection, treatment and recycling of electronics at the end of their life. The project aimed to conduct an analysis and provide recommendations on the feasibility and practicability of setting targets for one or more specific WEEE categories identified in draft WEEE regulation. In order to reach this target, firstly a context analysis is conducted, based on the results reached at the project pilot zone on the quantities of several major categories. Also, since the country lacks the WEEE treatment facilities, the WEEE is taken to other countries based on Basel Notification procedure, so the project implementation allowed again to check at which extend the national reporting for the Basel Convention can be improved for this particular categories of waste.

2.   To organize a public information and education campaign, with particular focus on non-profit associations and education sector managers regarding the WEEE management issues and reduction of risks associated with unsound management of WEEE (including end-of-life computing equipment).

All the steps that were conducted by EPPO in order to organize the campaign with regards to selected WEEE categories and particularly end of life computing equipment among the educational institutions within the project pilot area has been improved, based on the impact evaluation exercises. It is also important to mention, that the experience of project pilot zone was presented and promoted at project final event and can be further replicated among other project districts.

All project components have been completed, based on action plan. The initial duration of the project has been extended with 3 months, because of the need to prepare and organize the final project event and that took place on February 11st, 2016 in Chisinau, Republic of Moldova.

Major project outputs that were accomplished include:

- Information and data with regards to WEEE collection targets needed for promotion of the legal framework on WEEE at national level developed
- Selection of the project target zone – Cahul
- Questionnaire for the survey developed, piloted
- Survey conducted and report developed and presented to main stakeholders
- Educational materials and public awareness materials developed, printed and disseminated among professional and general public
- Training of Trainers for the representatives of the educational institutions, NGOs and public authorities organized.
- WEEE collection campaign concept developed and consulted with all the regional authorities
- WEEE collection campaign conducted, results of the collection made public
- Quantities of collected WEEE have been exported to Romania for recycling by MoldRec
- Project final event prepared and organized on February 11, 2016
- Progress and final narrative and expenditure reports presented to BCRC.

As such even of short duration the project initiative proved to be very significant for both national and local levels. Besides supporting the ministry of environment with collection of practical data, that is relevant to national context and shall further be used to setting the targets on WEEE collection, the project had an impact upon the selected pilot zone, by raising public awareness and reducing the adverse impact upon environment.

Educational materials were useful at content and adapted to needs and interactivity for the children and general population. The whole educational materials were elaborated jointly with BCRC expert and done in compliance with the PACE visibility rules. The electronic version of the flyers will be posted at partners' web page and provided for further consideration to PACE working group.

The project final event, conducted on February 11, 2016 was organized to present the results of the collection campaign conducted on 2-4 December 2015. In addition, the event allowed highlighting the main findings and conclusions of the collection campaign and sharing of the lessons learned

Activity delivery status

Activity	Description of work undertaken during reporting period	Deliverables	Delivery date	Status of Activity (completed or not completed

Activity	Description of work undertaken during reporting period	Deliverables	Delivery date	Status of Activity (completed or not completed
Project Management	BCRC and EPPO within the MoEnv have concluded MoU for overall project management.	MoU on project implementation	29 April 2015	Completed
Activity 1 – Organizing and conducting survey regarding the presence of end-of-life equipment among the educational institutions within the project pilot zone.	-Contracting of the qualified company to conduct survey	ToRs survey developed Contract signed and action plan developed	25 June 2015	Completed
	-Elaboration of the questionnaire	Questionnaire drafted by EPPO has been consulted with BCRC international expert, finalized and translated into Romanian language.	June 2015	Completed
	- Training of volunteers for filling of the questionnaire	CRAION Contact Cahul has organized training for filling in the questionnaire	25 June, 2015 10 Sept 2015	Completed
	- Analysis and dissemination of the results	The survey has been developed, consulted with SEA and presented at national final event.	30 October 2015	Completed
	- Elaboration of recommendations based on research results	Survey findings have been used for development of the collection campaign concept.	30 October 2015	Completed
	- Increasing of public knowledge through awareness-raising	Throughout entire project implementation, has conducted at national level (environmental and educational authorities) and at pilot zone level Cahul intensive information and knowledge sharing has been done by EPPO and partners, involving not only selected professionals, but also large population.	Competed	Completed
A2.1 Organizing ToT training for school managers within the project pilot zone regarding the WEEE management with the focus on reduction of	Elaboration of the thematic flyers (leaflets)	End of life computing equipment and WEEE related information packages has been developed and multiplied for ToT participants, general .	31 Oct 2015	Completed
	Elaboration of training set of materials	The set of 6 thematic presentations has been developed by EPPO and Viera Simcovic, BCRC	31 Oct 2015	Completed
	Selection of Participants for Training	CRAION Contact Cahul has selected the ToT participants on open invitation and competition	31 oct 2015	Completed

Activity	Description of work undertaken during reporting period	Deliverables	Delivery date	Status of Activity (completed or not completed
risks for children and population in relation with unsound WEEE management		bases. The list of institutions has been shared with EPPO and BCRC for consultation.		
	Conducting of the training	On November 5-6, 2015 the ToT has been conducted in Cahul district. The preparatory meetings (2X) have been organized by EPPO and CRAION Contact CAHUL on Nov 2 and Nov 4th, 2015.	5-6 Nov 2015	Completed
	Report on training is elaborated and widely disseminated	The ToT report and conclusions has been drafted and disseminated among participants and stakeholders. Media coverage has been as well secured.	30 Nov 2015	Completed
A2.2 Organizing a practical WEEE collection event within the project target zone and public information campaign.	-Selection of the pilot zone	As representative pilot zone – district Cahul has been selected for the campaign	Aug 2015	Completed
	-Cooperation with the waste collector company	EPPO has selected MoldREC company as WEEE authorizes company to be a partner for campaign	Sept 2015	Completed
	- Practical event arrangements	EPPO with MoldREC and CRAION conducted preparatory activities for the campaign. Campaign has been conducted during period 02-04 December 2015.	Nov-Dec 2015	Completed
	-Mass media coverage of event	EPPO has secured the mediatization of campaign through MoEnv/EPPO Web page, MoldREC and CRAION-Contact Cahul web page and various mass media links.	Dec 2015	Completed
Project final event		EPPO and partners have organized and conducted project final event on February 11, 2016	February 2016	Completed

G.   South Africa in collaboration with Lesotho and Namibia

<u>**Progress Report**</u>

1. **Identification:**

   Partners Name: AFRICA INSTITUTE
   Expected Accomplishment(s): Piloting the E waste collection system in 3 cities in 3 African countries
   Output(s): A well-established coordination system linking formal and informal sectors
   Title of the approved PRC project: Demonstration of ESM of E Waste in Three African countries
   SSFA starting date: May 2015
   Reporting period: December 2015 to December 2016

2. **Summary of Status:**

The E waste collection Pilot is being implemented in three areas, in three neighbouring countries. In Namibia, there is a shipping company that started the collection of E waste as a corporate social responsibility, while taking advantage of their shipping infrastructure to move the waste to recyclers in South Africa.

Unfortunately, their collection has subsided because the management of the company felt that the venture should be able to recover its own costs but instead it was costing the company more. As a result, there were plans to cut it all out of the company operations. It became a part time activity where receptacles that have been placed in schools and waste transfer stations were irregularly collected, while the dismantling personnel were re-assigned to other hauling activities.

In June 2016 it became apparent that the company management was determined to close down the operation. Ina meeting held during this month (June, 2016) it was resolved that the Department of Environment in Namibia would meet with the management of the company to request them to allow the pilot to run using their infrastructure. An agreement was reached, an account opened and an invoice requested from the company.

The electronic waste is still being dropped in the receptacles in schools and transfer stations, however the collection remains irregular, the waste is no longer dismantled and is simply piling in the storage area. There is a need to identify a new player in the space, but there were no companies interested as the Transworld cargo had been doing it.

In Lesotho, three containers were procured to be placed in strategic positions in town, where the public could drop off unwanted electronic and electrical equipment. The containers are in the process of being branded. Several radio programs have been done towards awareness raising. It is expected that as soon as the containers are placed, the campaigns will start again.

In South Africa, the municipality is not being helpful towards the project. As a result the pilot will be out sourced to a consultant that will document the process that is being undertaken by private sectors players that are collecting E waste.

1   Activity delivery Status

1

Activity	Description of work undertaken during reporting period	Deliverables	Delivery date	Status of Activity (complete/ on-going/ delayed)	Comments - brief description of implementing challenges, strategy/actions which have been adopted to address these challenges and planned actions to mitigate any identified risks
Activity 1 – setting up the coordination system	Introductory meeting held with City of Tshwane in Pretoria. Inception meeting held in Lesotho and coordination system established. Engagements with Namibian authorities.	Project coordination system	October 2015	Completed successfully in Lesotho and Namibia	There was a slow response rate from the countries, which delayed the setup and therefore the commencement of the activities in the countries. The Namibian company had made decision to close down the e waste operation, and this became a real challenge to resuscitate
Activity 2	Procurement of receptacles for Lesotho	3 containers	May 2016	3 Containers bought and transported to Maseru	The challenge remains that of accessing the placement sites. It was anticipated that the city council would easily assist. One mall has however accepted that the containers may be placed there.
Activity 3	Signature of MOU with Namibian company	Signed MOU and Invoice	August 2016	MOU signed with Government and private company	Despite the signature, the funds request were never sent because of problems in the country.
Activity 4	Branding of the containers in Lesotho	Branded containers	June to Dec 2016	Quotations received with artwork. One sided branding ordered	Good looking artwork developed and is being printed.
Activity 5	Radio Programmes	Radio slots	Jan to	Weekly radio	Awareness increasing

2

			June 2016	programs held for a month then stopped.	and public needs the drop off containers. Even though most inquiries were about the buyback system, which is popular in the metal scrap.

Annex C

Evaluation of PACE pilot projects

Evaluation of PACE pilot projects

Otto Simonett, Director of Zoï Environment Network

1.   Background

This external review of PACE pilot projects entailed the analysis of the available background materials, followed by telephone interviews with the regional organizations responsible for project implementation and some country focal points. The evaluation focused on broader project outcomes rather than on the details of how the projects were implemented or the budgets spent. The interviewees were asked following questions:

- What overall impacts did the PACE activities have "on the ground"?
- How have the PACE guidelines and activities influenced policymaking and the management of end-of-life computing equipment?
- What are the long-term sustainability elements or follow-up activities?
- Are there specific lessons learned?

The analysis comes in two sections: (1) Review of the methodological approach, providing a bird's eye view of the PACE globally, and (2) lessons learned, capturing some of the feedback received from the regions and the countries. While the headlines are valid for the global PACE project portfolio, the lessons learned cover some region- and country-specific issues related to legislation, government support, awareness, and the willingness of the private sector and the general public to participate. The review deliberately avoids highlighting specific countries and regions on the rationale that generic findings provide the highest value.

2.   Methodological approach

INNOVATION: The PACE partnership and the PACE pilot projects can be considered- in conjunction with other punctual initiatives - as pioneering in addressing the issues of e-waste worldwide, particularly in developing countries, due to the development and propagation of guidelines, legislation and policy globally (partnership), and implementing concrete projects towards implementation of the guidelines in countries previously not exposed to the issues of e-waste (pilot projects). The guidelines had a high impact in creating awareness and in contributing to legislation and technical solutions where these previously did not exist. All the persons interviewed noted how important it was to have concrete directions for their work in the countries and regions readily available. Also, they made use of the guidelines for raising awareness. This clearly shows the potential for innovation and new methodology to spread through international networks (concretely, the Basel Convention Regional Centres). The timing was crucial: when PACE started, e-waste was on the verge of becoming overwhelming.

LEVERAGE: The feedback from the regions and countries was very positive on how a lot can be achieved with modest funding. Most of the PACE pilot projects were able to leverage considerable support both in funding (synergies with other development assistance projects, governments, national green funds) and through partnerships,. Compared to the moderate size of the PACE projects this leverage was (and continues to be) quite substantial. This development also coincides with the e-waste issue catching the world's attention, in particular through the rapid growth of mobile telephone and internet use worldwide.

AWARENESS-RAISING: Both governments and the private sector (ranging from multinational telephone and IT companies to the local waste industry) made good progress on awareness-raising campaign and the PACE can certainly be credited for some of it. Designing campaigns that can lead eventually to behavioral changes in the general public is a work in progress.

PRIVATE SECTOR ENGAGEMENT: In most of the pilot projects, private sector participation was substantial, and opened highly interesting avenues and commitments for e-waste management. Here the multinational producers and their representatives in the countries (importers, national associations), as well as the local private sector engaged in waste collection and recycling, all play crucial roles. Extended Producer Responsibility (EPR) – a strategy for assigning more financial and physical responsibility to the private sector – has become part of the legislation of many countries, and, Corporate Social Responsibility standards have become commonplace for many industries. The direct impact of the PACE on the developments in the countries is difficult to quantify, but many interlocutors mentioned their work with the private sector as innovative and effective.

3.   Lessons Learned

LEGISLATION AND POLICY FRAMEWORKS AND STRATEGIES: With policy frameworks and legislation being the essential elements for addressing e-waste, partnerships like PACE can be expected to get the most traction in this area. But then, these legislative and policy processes take longer to unfold than the scope of a typical PACE pilot project. Thus, quantifying the direct impact of the PACE in this area is rather difficult. Still, during the period of the PACE partnership, enormous progress was made in all the regions with regard to policy frameworks, legislation, strategy and EPR. These catalytic efforts need to be continued in one way or another to achieve sustainability, and existing legislation needs to be analyzed for potential impacts on the generation and handling of e-waste (the importing of second-hand electronic goods, for example). This should, however, not be seen as a reason to prolong PACE pilot projects, since their main intention is to stimulate innovation and catalyze change.

ACCESSIBILITY OF THE GUIDELINES: Producing the guidelines in local languages is an essential first step, and the project produced versions in English, French, Spanish, Serbian and Romanian. Helping the target audiences – in the case of the PACE this covers a very wide range of stakeholders from government officials (local, national, regional), private enterprises as well as a more general public audience engaged in waste collection 'on the ground' - understand the guidelines is also essential, and the use of cartoons, animated movies or other media may be appropriate. Some of the pilot projects produced excellent spin-off products that have contributed considerably to the spread of the concepts and guidelines. Future partnerships may want to develop concise, visual "advocacy kits" for further dissemination at an early stage.

SPECIFIC ACTIONS: Concrete and tangible e-waste efforts, such as the installation of collection points, events at schools and training in technology, have greatly enhanced the visibility of the issue and triggered action. Such activities also help us gain insights into what actually does and does not work. On the other hand, the purpose of a global partnership should not be to establish collection points or disseminate waste bins, unless these activities are linked to a wider national or regional programme ensuring sustainability in one way or another.

EVIDENCE, DATA, INFORMATION: Dealing effectively with e-waste in a country requires relatively precise estimates of volumes, and information for decision-makers and the public needs to be based on simple, understandable facts and figures. The design of appropriate collection facilities, and investments in assembly and refurbishment depend on good information, as will plans for full metal recovery whether in-country, in-region or through appropriate export. Some of the PACE projects have contributed to this effort.

Beyond hard data on quantity, the PACE has also helped to gather behavioral evidence. In some parts of the world, people prefer to store obsolete equipment at home rather than bringing it to a collection point. This because they believe it still has some value or that the equipment may still work or that they should be compensated for having it collected. Many of the interview subjects stressed the importance of evidence and data visualization for decision-makers.

IMPLEMENTATION: The Basel Convention Regional Centres (BCRC) implemented the PACE pilot projects – with the exception of Jordan – through national focal points in the countries. This project structure is efficient in terms of identifying the regional needs and mobilizing expertise and project implementation. The BCRCs also play an important role for the activities sustainability. One drawback of this project structure maybe the longer project pathways that may be responsible for some of the project delays. In addition, the role and responsibilities of the regional centre's (BCRC) and their impact on country activities was not uniform across regions, some countries have indicated that they would prefer to work directly with the BRS secretariat in Geneva. Whatever drawbacks there are, e-waste is an issue to be dealt with regionally (and globally) and in this respect, the BCRCs are an invaluable asset for project delivery.

4.   Summary of Finding

The PACE partnership addressed e-waste issues on a global, broad and comprehensive range, with the main focuses on creating a platform for exchange and on developing global guidelines on e-waste.

In this context, the PACE pilot projects can be seen as a mixed basket of activities to – with quite limited funding – bring guidelines to action. The projects spawn an enormous range of activities – from regional awareness-raising and partnerships to support for the development of national legislation to the engagement and capacity-building of the private sector, and finally to local activities on awareness-raising, education and physical waste collection. While such a comprehensive and integrated approach can be a powerful vehicle to spread innovation, there is always a risk of spreading resources too thin, leaving a lot of work undone. In this context, leverage with various other initiatives and actors is key, and in this respect the PACE has done an excellent job. One factor for this success was good timing: with the consumer electronic boom, the PACE was surfing on the e-waste wave. Almost all the PACE-initiated activities have found continuation in one way or another, ranging from the development of regional strategies, sustainable partnerships with the private sector, development and adoption of national legislation including EPR, rapid growth in systematic e-waste collection, and in general increased awareness about the issue also in remote parts of the countries.

Annex

Interviewees and interview dates (in chronological order)

Dana Lapesova, BCRC-Slovakia, 2 December 2016

Miguel Araujo, BCRC-El Salvador, 19 December 2016

Predrag Jovanovic, National Team Leader, Serbia, 11 January 2017

Koebu Khalema, BCRC-South Africa, 13 January 2017

Michel Seck, BCRC-Senegal, 20 January 2017

Rana Saleh, Nedal Alouran, UNDP Jordan, 24 January 2017

Ahmed Khan, BCRC-Trinidad and Tobago, 25 January 2017

Tatiana Tugai, Environmental Pollution Prevention Office, MoE, Moldova, 27 January 2017

————————