



Royal Government of Cambodia  
Department of Pollution Control  
Ministry of Environment

Project titled: Training Courses on the  
Environmentally Sound Management  
of Electrical and Electronic Wastes  
in Cambodia

**Final Report**  
Submitted to  
**The Secretariat of the Basel Convention**

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## LIST OF ACRONYMS

|                 |  |
|-----------------|--|
| <b>BCRC-SEA</b> | Basel Convention Regional Center for South-East Asia |
| <b>COP</b>      | Conference of Party                                  |
| <b>EEE</b>      | Electrical and Electronic Equipment                  |
| <b>EEW</b>      | Electrical and Electronic Wastes                     |
| <b>ESM</b>      | Environmentally Sound Management                     |
| <b>E-Wastes</b> | Electrical and Electronic Wastes                     |
| <b>SBC</b>      | Secretariat of the Basel Convention                  |
| <b>UEEE</b>     | Used Electrical and Electronic Equipment             |

## EXECUTIVE SUMMARY

The report summarizes the results of the project titled: Training Courses on Environmentally Sound Management of Electrical and Electronic Wastes “E-Wastes” implemented from February to July 2008 in Cambodia. The e-wastes project is funded by Japan’s Ministry of Environment through the Basel Convention Technical Cooperation Trust Fund for Assisting Developing Countries. The project is being implemented by a team led by Department of Pollution Control, Cambodia’s Ministry of Environment. All the project activities and Power Point presentations made at the training courses are provided on the CD-ROM accompanying this report.

The training courses on Environmentally Sound Management of Electrical and Electronic Wastes was successful in providing a forum for the twenty four project participating provinces and cities in Cambodia (Phnom Penh Municipality Kampong Chhnang Province, Pursat Province, Battambang Province, Banteay Mean Chey Province, Stung Treng Province, Rotanakiry Province, Mondolkiry Province, Kratie Province, Prey Veng Province, Svay Rieng Province, Kampong Cham Province, Kampong Thom Province, Siem Riep Province, Prea Vihear Province, Oudor Meanchey Province, Paylin City, Koh Kong Province, Keop City, Sihanoukville City, Kampot Province, Kandal Province, Takeo Province and Kampong Speu Province), to improve the knowledge and share experience regarding e-wastes and the broader issue of hazardous wastes management.

Over 300 people attended the training courses including workers, academia, custom, police and Governmental officials from ministries involved. There was open discussion and exchange information particularly related to the transboundary movement of second hand of electrical and electronic devices between countries, and the need of for further capacity building and training in e-wastes management.

# REPORT OF PROJECT ACTIVITIES

## I. Institutional Arrangement

The implementation of the project is focusing on the formulation of Training Materials and Structure of the Course, E-wastes Managerial Manual and Brochure based on Cambodian experiences and the guideline of the Basel Convention and the organization of the courses. To enable undertake this work, the Department of Pollution Control has cooperated with concerned institutions and Secretariat of the Basel Convention to set up the team for the implementation of the project. Names of the project staff, National and International trainers taken part in the project are the following:

1. Mr. Ken Choviran, Project coordinator from Ministry of Environment
2. Dr. Chrin Sokha, National Trainer from Cambodian Environmental Association
3. Mr. D.Wardhana H.S, International Trainer from the Basel Convention Regional Centre for Southeast Asia
4. Ms. Cynthia Indriani, International Trainer from the Basel Convention Regional Centre for Southeast Asia
5. Mr. Moy Vothana, Project assistant from Ministry of Environment
6. Mr. Chor Thol, Project assistant from Ministry of Environment
7. Mr. Soun Ponlok, Project assistant from Ministry of Environment

## II. Project Achievement

Since the implementation of the project from February to July 2008, the Project Team accomplished the following activities:

- i) Undertake the development of the Training Materials and Structure of the Course in both languages Khmer and English upon communicating with the respective municipal and local environmental authority for finding out their present and future requirement dealing with e-wastes management. It had been submitted to the Secretariat of the Basel Convention and Basel Convention Regional Centre for Southeast Asia (BCRC-SEA) for reviews and comments on March, 2008. The comments and suggestions from SBC and BCRC-SEA have been in cooperated in to the programme of the course.
- ii) Undertake the development of E-Waste Managerial Manual in both languages, Khmer and English languages. The first draft of the manual had been submitted to the National and International trainer of BCRC-SEA for reviews and comments on April, 2008.

The comments and feedbacks from them had been incorporated into the documents for the use as the training materials.

- iii) Undertake the development of the E-Wastes Brochure in Khmer language. The draft of the brochure had been reviewed by the team and publicizing more than 1,000 copies for the distributing during the courses (see Appendix D).
- iv) Successfully organized the First Training Course on the Environmentally Sound Management of E-Wastes from 21-22 April, 2008 at Cambodiana Hotel, Phnom Penh. There were 61 participants attended this course including participants from Phnom Penh municipality, Kampong Speu, Kandal and Tekeo provinces.
- v) Successfully organized the Second Training Course on the Environmentally Sound Management of E-Wastes from 24-25 April, 2008 at Golden Sand Hotel, Sihanoukville City. There were 58 participants attended this course including participants from Sihanoukville City, Keop City, Koh Kong and Kampot provinces.
- vi) Successfully organized the Third Training Course on the Environmentally Sound Management of E-Wastes from 26-27 May, 2008 at City Angkor Hotel, Siem Reap Province. There were 55 participants attended this course including participants from Siem Reap, Prea Vihear, Oudor Meanchey, Banteay Mean Chey and Kampong Thom provinces.
- vii) Successfully organized the Fourth Training Course on the Environmentally Sound Management of E-Wastes from 29-30 May, 2008 at TEO Hotel, Battambang Province. There were 58 participants attended this course including participants from Paylin City, Battambang, Kampong Chhnang and Pursat provinces.
- viii) Successfully organized the Fifth Training Course on the Environmentally Sound Management of E-Wastes from 9-10 June, 2008 at Phnom Pros Hotel, Kampong Cham Province. There were 59 participants attended this course including participants from Prey Veng and Svay Rieng provinces.
- ix) Successfully organized the Sixth Training Course on the Environmentally Sound Management of E-Wastes from 12-13 June, 2008 at Santhepheap Hotel, Kratie Province. There were 58 participants attended this course including participants from Ratanakiry, Mondolkiry, Kratie and Stung Treng provinces.
- x) Number of participants was selected as trainer on the ESM of E-Wastes. The list of trainers is attached as Appendix B

# REPORT OF THE TRAINING COURSES

## I- Introduction

1. Six training courses on Environmentally Sound Management of Electrical and Electronic Wastes were held in Cambodia during the e-wastes project implementation from February to July 2008. It was organized by the team lead by Department of Pollution Control, Ministry of Environment in collaboration with Municipal and Provincial Environmental Departments. The date and venue of courses are summarized as hereunder:
  - i) First training course was held in Phnom Penh Municipality from 21 to 22 April, 2008
  - ii) Second training course was held in Sihanoukville Municipality from 24 to 25 April, 2008
  - iii) Third training course was held in Siem Reap Province from 26 to 27 May, 2008
  - iv) Fourth training course was held in Battambang Province from 29 to 30 May, 2008
  - v) Fifth training course was held in Kampong Cham Province from 9 to 10 June, 2008
  - vi) Sixth training course was held in Kratie Province from 12 to 13 June, 2008
2. The objective of the course was to promote the capacity of awareness of the governmental officials and concerned people towards the Environmentally Sound Management of Electrical and Electronic Wastes in all cities and provinces in the country.
3. The training courses were attended by over 300 participants from twenty four provinces and cities in Cambodia, namely Phnom Penh Municipality, Kampong Chhnang Province, Pursat Province, Battambang Province, Banteay Mean Chey Province, Stung Treng Province, Rotanakiriy Province, Mondolkiriy Province, Kratie Province, Prey Veng Province, Svay Rieng Province, Kampong Cham Province, Kampong Thom Province, Siem Riep Province, Prea Vihear Province, Oudor Meanchey Province, Paylin City, Koh Kong Province, Keop City, Sihanoukville City, Kampot Province, Kandal Province, Takeo Province and Kampong Speu Province, who are involved or responsible for the e-wastes management.
4. The training course was also attended by expert from Cambodian Environmental Association and Basel Convention Regional Centre for Southeast Asia.
5. The list of participants is attached as Appendix C.

## **II. Opening of the Training Courses**

6. During the Opening Ceremony H.E. Khieu Muth, Secretary of State for the Environment delivered his opening speech. On behalf of the Royal Government of Cambodia, the Ministry of Environment and himself, express deep thanks to the Secretariat of Basel Convention for providing the support for the training course organizations and warmly welcome Mr. D.Wardhana H.S and Ms. Cynthia Indriani representing the Basel Convention Regional Center for South-East Asia and all representatives from line ministries, NGOs and the private sector attending the training course. His speech highlighted that the Training Course on the Environmentally Sound Management of E-Wastes in Cambodia that has been organized today is an event that confirms the Secretariat of the Basel Convention's support for our program for the environmentally sound management of e-wastes and during the course of this two day training course, the discussions and exchanges between the concerned institutions, both public and private sectors will be fruitful and contribute to the expected outcome of the course.
7. On behalf of the Secretariat of the Basel Convention, Mr. D.Wardhana H.S and Ms. Cynthia Indriani congratulate all staff of the Ministry of Environment of the Kingdom of Cambodia for successfully conducting this first national awareness training program throughout the cities and provinces. They are also glad that the BCRC-SEA has been invited and able to take part in the implementation of the program. They have highlighted that the technology of electronics has been rapidly developed since the last half century. The e-products have helped us perform various important activities and tasks as well as provided entertainment, however, e-wastes have two opposing advantages and disadvantages. The Basel Convention, one of the three conventions under UNEP, includes the e-wastes on its lists of hazardous waste. The Convention has also set the e-wastes as one of its priority waste streams during its 6<sup>th</sup> Conference of Party in Switzerland. BCRC-SEA has also prepared and published Technical Guidelines for E-Waste Inventory and 3 R (Reduce, Reuse, Recycle) of End-of-Life E-Products under the Basel Convention, which can be downloaded from its website.
8. Display the Video of the Exporting Harm “the High-Tech Trashing of Asia “: It was filmed by the Basel Action Network (BAN) related to the investigation to observe the recycling conditions of imported E-waste in Guiyu of China. The video highlighted that along with the new E-waste recycling business has come serious environmental and occupational impacts, some of which are accepted by the population and work force while other chronic toxic impacts are unnoticed as the public is unaware of the hidden threat. One impact that has not gone unnoticed has been the deterioration of the local drinking water supply. The E-waste industry in Guiyu has been going for six years; for the last 5 years, due to groundwater pollution, water has had to be trucked in from other town of Ninjing, 30 kilometers away.
9. Mr. Ken Choviran, Project Manager, presented the introduction of the training course objective and organization.

### III. Training Courses Presentation

10. Mr. Ken Choviran made a presentation on the Overview of the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Their disposal and the linkage between Basel Convention and e-wastes. He presented a brief background of the Basel Convention establishment including the goal of the convention which is to protect human health and the environment against the effects resulting from the generation, transboundary movement and management of hazardous wastes. He has also highlighted the COP Mandate which is related to the e-wastes as it is summarized hereunder:

- **COP6 (Dec, 2002)**
  - Adopted Strategic Plan for Implementation of the Basel Convention;
  - Identify priority waste streams (incl. e-waste)
  - Adopted MPPI
- **COP7 (Oct, 2004)**
  - Adopted Ministerial Statement on Partnership for Meeting the Global Waste Challenge
  - Adopted partnership approach (incl. on e-waste)
  - Adopted Work Programme (incl. on e-waste)
- **COP8 (Nov-Dec, 2006)**
  - World Forum on E-waste was held
  - Adopted Nairobi Declaration on ESM of E-Waste
  - Adopted decision VIII/2

11. Dr. Chrin Sokha, Team leader from Cambodian Environmental Association made a presentation on Articles in Basel Convention related to the General Obligations of parties, Cambodia's Participation in the implementation of Basel Convention and Relevant Cambodian Legislation to Basel Convention. He lighted that currently, the environmental laws and related sub-decrees already entered into force for the protection of human health and the environment, such as the Sub-Decree on Solid Waste Management; Sub-Decree on Water Pollution Control. However, these are not specific to e-wastes management, and they do not control the transboundary movement of e-wastes. The matter of responsibility for the health and safety of the workers who are exposed to UEEE has to be resolved. It is unclear where the responsibility lies and this is further compounded in the absence of occupational health monitoring and any specific laws or regulations on the safety of handling UEEE.

12. Mr. D.Wardhana H.S, Senior Technical Advisor and Ms. Cynthia Indriani, Executive Secretary from Basel Convention Regional Centre for Southeast Asia delivered a lecture on the Introduction of Electrical and Electronic Wastes that included the Definition, Criteria and Classification of E-Wastes, as well as E-Waste Issues on the increasing quantities and risks on human

health and environment. They also presented the sources of E-Waste, the Components and Materials contained in E-Waste, Common E-Waste Handling Practices, as well as the Environmental, Health and Safety (EHS) Risks.

13. Dr. Chrin Sokha summarized the Outcome of the Survey on the Current Situation of E-Wastes Management in Cambodia that included the Inventory Objective, Inventory Methodology, Flow of EEW, Desk Study and Field Survey Outcomes, Repairing/dismantling/recycling shop, Disposal of EEE residues, Lifetime uses of EEE/UEEE and Environmental and human health related issues. In his conclusion, he mentioned some important points which are summarized hereunder:
- i) Brand new electric and electronic equipment (EEE) and used electric and electronic equipment (UEEE) are imported into Cambodia for domestic consumption.
  - ii) Cambodia is not a country that produces EEE products and/or exports to other countries.
  - iii) Some imported UEEE have low quality or improperly function, which required either repairing or dismantling.
  - iv) Awareness and capacity dealing with UEEE and its residues management is commonly limited.
  - v) There is no information or official report addressing the EEW collection, transportation, recycling, as well as environmental and health related issues:
    - a. Repairing, dismantling and recycling activities
    - b. Collection, storage, transportation and disposal of EEW, which generated from households, business entities, and residues from repairing and dismantling process
  - vi) Some recyclable wastes were locally collected reflecting to domestic and international markets.
  - vii) There is not a specific institution that responsible for managing and recycling EEW.
  - viii) Specific law and/or regulation to properly manage, recycle and dispose EEW has not yet existed.
14. Mr. Ken Choviran delivered a lecture on the Harmful Substance in E-Wastes and Its Effects. He highlighted that e-wastes contain over 1000 different substances. Some of them are the precious substances and some are very hazardous substances which can create serious pollution upon disposal. Precious substances are the gold, silver and copper...etc. Hazardous substances are Lead, Cadmium, Mercury, Hexavalent, Chromium/

Chromium VI, Plastics including PVC, Barium, Beryllium, Brominated flame retardants (BFRs), Toners, Phosphor and additives. These hazardous substances can accumulate in the environment and has high acute and chronic effects on plants, animals and micro-organisms. Furthermore, it can causes cancer, damage to the central and peripheral nervous systems, blood systems, kidney and reproductive system in humans...etc.

15. Mr. D.Wardhana H.S and Ms. Cynthia Indriani delivered a lecture on the Environmentally Sound Management of E-Wastes that included the Introduction to ESM strategy, Overview on inventory, Guidelines for Inventory, Guidance for facility such as General requirement, Safety and Health Control Requirements, Safety and Health Control Requirements and Disposal System.
16. Mr. D.Wardhana H.S and Ms. Cynthia Indriani delivered a lecture Environmentally Sound Management of E-Wastes that included Sorting and Temporary Storage, Collection, Transportation and Handling Vehicle Requirement, Transportation Health and Safety, Transportation Checklist, Dismantling End-of-Life Appliances and Transboundary Movement
17. Mr. Soun Ponlok, Project assistance, provided a brief explanation of the Brochure of E-Wastes that included the main objective of its development which is to facilitate the readers to understand easily the e-wastes.

#### **IV. Training Courses Conclusions and Recommendations**

Based on the discussion in the plenary, participations agreed to a number of recommendations, subject to the need of continuity of the training courses organizations and the availability of financial resources including national follow-up activities to future work toward the Environmentally Sound Management of E-Wastes particularly capacity buildings and trainings in the country. Those are summarized below:

- i) The participants informed that the course was very useful and very interesting and expressed their gratitude to Cambodian Ministry of Environment for organizing these courses and to the Secretariat of the Basel Convention for providing support and to the resource persons for their great contribution.
- ii) The participations expressed that the Video of the Exporting Harm “ the High-Tech Trashing of Asia ” is very important training material in the courses and useful information related to the public awareness raising. Therefore, it needs necessarily to be translated into Khmer language and display on the National TV programme.

- iii) The participants expressed that this is the first training course in the country, so there is a need to have more such training courses in the future, particularly for the workers who involved directly with UEEE.
- iv) Duration of the training courses could be extended.
- v) Presentation materials from BCRC-SEA are suggested to be made available in Khmer language for the future training programme.
- vi) In order to ensure the continuity and to train more officials, a module approach was proposed.
- vii) It is suggested that the number of participants to be invited from each intuitions be more than two.

## **V. National Follow-Up Activities**

The participants in the training courses agreed on a number of recommended specific activities for the implementation of Environmentally Sound Management of E-Wastes especially capacity building and training in the country:

- i) The role of government in implementing the Environmentally Sound Management of E-Wastes cover a wide range of areas. As e-wastes affects human health, safety, transportation, education, trade and environment, a wide range of government agencies need to be involved. Those are included:
  - a) Industry
  - b) Health
  - c) Environment
  - d) Education
  - e) Finance
  - f) Local government
  - g) Rural Development
  - h) Transportation
  - i) Foreign Affair
  - j) Consumer
- ii) The participants recommended that the government to develop National Implementation Strategies of E-Wastes including the involvement of industry and non-profit civil society groups.

- iii) Industry plays vital role in promoting the ESM of E-Wastes through preparation of labels and development of Safety Data Sheets. Industry should also provide the training to stockholders and other affected parties. Finally, industry should participate in the development of legislation for e-wastes
- iv) The participants recommended that industry should conduct training and provide information and education on UEEE.
- v) Civil society also can play role in using public media to convey message about the e-wastes (e.g. for consumer) or by providing posters in the work place.
- vi) Civil society can also assist in training for workers and consumers. Finally, civil society can empower and build capacity among their stakeholders.

## Appendix A: Programme of the Training Course

| Time            | Contents   |
|-----------------|--|
| <b>Days one</b> |  |
| 8:00 - 8:30     | Registration   |
| 8:30 - 9:30     | <ul style="list-style-type: none"> <li>- Opening Ceremony</li> <li>- Opening address by BCRC-SEA</li> <li>- Opening address by Ministry of Environment, Cambodia</li> <li>- Video of the Exporting Harm: the High-Tech Trashing of Asia</li> <li>- Photos session</li> </ul>   |
| 9:30 - 10:00    | Coffee break   |
| 10:00 – 10:45   | Overview of the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Their disposal Presented by <b>Mr. Ken Choviran</b> , Ministry of Environment  |
| 10:45 - 11:30   | Role of Cambodia in the Basel Convention activities Presented by <b>Dr. Chrin Sokha</b> , Cambodian Environmental Association  |
| 11:30 - 12:00   | Discussion   |
| 12:00 - 13:30   | Lunch  |
| 13:30 - 14:30   | <p>Introduction of Electrical and Electronic Wastes</p> <p>(Definition, Sources, Types of E-Waste, E-Waste Components and Materials, Hazardous Material Components, Common Handling Practices, and Safety &amp; Health and Environmental Risks)</p> <p>Presented by <b>Mr. D.Wardhana H.S</b>, Senior Technical Advisor and <b>Ms.Cynthia Indriani</b>, Executive Secretary, Basel Convention Regional Centre for Southeast Asia</p> |
| 15:00 - 15:30   | Outcome of the Survey on the Current Situation of E-Wastes Management in Cambodia Presented by <b>Dr. Chrin Sokha</b> , Cambodian Environmental Association  |
| 15:30-16:30     | <p>Harmful Substance in E-Wastes and Its Effects</p> <p>Presented by <b>Mr. Ken Choviran</b>, Ministry of Environment</p>  |
| 16:30-17:00     | Discussion   |
| <b>Day two</b>  |  |
| 08:30 -09:30    | <p>Environmentally Sound Management of E-Wastes (Introduction to ESM Strategy, -Guidance for Inventory, Guidance for 3R facility Sorting and temporary storage and Collection)</p> <p>Presented by <b>Mr. D.Wardhana H.S</b>, Senior Technical Advisor and <b>Ms.Cynthia Indriani</b>, Executive Secretary, Basel Convention Regional Centre for Southeast Asia</p>  |
| 09:30-10:00     | Discussion   |
| 10:00 - 10:30   | Coffee Break   |
| 10:30 – 11:00   | <p>Environmentally Sound Management of E-Wastes</p> <ul style="list-style-type: none"> <li>-Transport and handling</li> <li>- Dismantling end of life appliances</li> <li>-Transboundary movement</li> </ul> <p>Presented by <b>Mr. D.Wardhana H.S</b>, Senior Technical Advisor and <b>Ms. Cynthia Indriani</b>, Executive Secretary, Basel Convention Regional Centre for Southeast Asia</p>                                       |
| 11:00 -11:30    | Discussions  |
| 11:30-12:00     | Dissemination of Brochure of E-Wastes Presented by <b>Mr. Soun Ponlok</b> , Vice Chief of Solid Waste and Hazardous Substances Management Office, Department of Pollution Control, Ministry of Environment   |
| 12:00 - 13:30   | Lunch  |

## Appendix B: List of Trainers

| N.  | Name              | Organization  |
|-----|-------------------|---|
| 1.  | Hong Phearak      | Environmental Department of Takeo Province            |
| 2.  | Chim La           | Environmental Department of Kandal Province           |
| 3.  | Nget Bong         | UEEE Repairing Shop of Phnom Penh                     |
| 4.  | Son Sam           | EEE Retail Shop of Kampong Speu Province              |
| 5.  | Pan Sochea        | Environmental Department of Koh Kong Province         |
| 6.  | Long Sreng        | Environmental Department of Kampot Province           |
| 7.  | Yol Chamnan       | Student of Build Bright University, Phnom Penh        |
| 8.  | Kam Kol           | Environmental Department of Sihanoukville             |
| 9.  | Ou hon            | UEEE Repairing Shop of of Sihanoukville               |
| 10. | Em San            | Environmental Department in Sihanoukville             |
| 11. | Ouk Chandyna      | Environmental Department of Kampot Province           |
| 12. | Chhunn Chheng     | Environmental Department of Preah Vihear Province     |
| 13. | Kong Sambath      | Environmental Department of Preah Vihear Province     |
| 14. | Phon Khleang      | Environmental Department of Banteay Meanchey Province |
| 15. | Ngeth Yuthoeun    | Environmental Department of Banteay Meanchey Province |
| 16. | Ly Sopheap        | Environmental Department of Oudor Meanchey Province   |
| 17. | Ngor Hour         | Environmental Department of Oudor Meanchey Province   |
| 18. | Thoeung Mao       | Environmental Department of Siem Reap Province        |
| 19. | So Disaveth       | Environmental Department of Pailin City               |
| 20. | Leng Simith       | Environmental Department of Battambang Province       |
| 21. | Long Chakrey      | University of NUM, Battambang Province                |
| 22. | Kim Chan Bophat   | Environmental Department of Kampong Chhang Province   |
| 23. | Keo Thim          | Environmental Department of Kampong Chhang Province   |
| 24. | Som Suy           | Environmental Department of Pailin City               |
| 25. | Phoern Chan Rong  | BBU Student, Battambang Province                      |
| 26. | Tim Ton Tilina    | Environmental Department of Battambang Province       |
| 27. | Dok Narom         | Environmental Department of Kampong Cham Province     |
| 28. | He San            | Environmental Department of Svay Rieng Province       |
| 29. | Koeut Saroeun     | Environmental Department of Svay Rieng Province       |
| 30. | Kham Phy          | Environmental Department of Prey Veng                 |
| 31. | Phel Seang        | Environmental Department of Prey Veng                 |
| 32. | Thoeun Chantha    | Environmental Department of Kampong Cham Province     |
| 33. | Lim Sitha         | Environmental Department of Kampong Cham Province     |
| 34. | Thoeun Srey Neang | Environmental Department of Kampong Cham Province     |
| 35. | Hak Seng          | Environmental Department of Kratie Province           |
| 36. | Khiev Samraing    | Environmental Department of Kratie Province           |
| 37. | Heng Kheng        | Environmental Department of Mondolkiry Province       |
| 38. | Han Khon          | Environmental Department of Mondolkiry Province       |
| 39. | Khem Huylim       | Environmental Department of Stung Treng Province      |
| 40. | Sieng Bokham      | Environmental Department of Ratanakiry Province       |
| 41. | Mak Bora          | Environmental Department of Kratie Province           |
| 42. | Ou Bunkhea        | Environmental Department of Kratie Province           |
| 43. | Ly Sekmeng        | Environmental Department of Stung Treng Province      |
| 44. | Samuth Lima       | Environmental Department of Kratie Province           |
| 45. | Chou Sopheak      | Environmental Department of Ratanakiry Province       |

## Appendix C : List of Participants

| N. | Name                | Organization                                      |
|----|---------------------|---|
| 1  | H.E. Khieu Muth     | Secretary of State, MoE                           |
| 2  | Mr. Sam Khandy      | Deputy Director General, MoE                      |
| 3  | DADAN WARDHANA H.S. | Senior Technical Advisor, BCRC-SEA                |
| 4  | Las Sokha           | Industrial Department of Phnom Penh               |
| 5  | Sorn Phanna         | Environmental Department of Takeo Province        |
| 6  | Pech Satha Serey    | Ministry of Labor                                 |
| 7  | Chim La             | Environmental Department of Kandal Province       |
| 8  | Sum Sarith          | Environmental Department of Kandal Province       |
| 9  | Thor Sopheap        | Environmental Department of Kandal Province       |
| 10 | Cho Thol            | Ministry of Environment                           |
| 11 | Hang Dara           | Ministry of Environment                           |
| 12 | Chhek Roth          | Ministry of Environment                           |
| 13 | Nget Bong           | UEEE Repairing Shop of Phnom Penh                 |
| 14 | Pich Chan           | Ministry of Commerce                              |
| 15 | Leng Sun            | UEEE Repairing Shop of Phnom Penh                 |
| 16 | Gneth Sovann        | Ministry of Health                                |
| 17 | Sunly Theara        | Ministry of Post and Telecommunication            |
| 18 | Net Bo              | UEEE Repairing Shop of Phnom Penh                 |
| 19 | Him Khema           | UEEE Repairing Shop of Phnom Penh                 |
| 20 | Ang MongKol         | Ministry of Information                           |
| 21 | Son Sam             | EEE Retail Shop of Kampong Speu Province          |
| 22 | Suon Punlork        | Ministry of Environment                           |
| 23 | Hour Sothorn        | Ministry of Women Affairs                         |
| 24 | Yi Sok              | EEE retail shop of Takeo Province                 |
| 25 | Eap Ponna           | Royal University of Phnom Penh                    |
| 26 | Phan Bunthoeun      | Ministry of Industry Mines and Energy             |
| 27 | Chang Sola          | EEE Retail Shop of Kampong Speu Province          |
| 28 | Ouk Sam             | UEEE Dismantling Shop of of Phnom Penh            |
| 29 | Yi Kannitha         | Ministry of Labors                                |
| 30 | Khu Kuning          | UEEE Repairing Shop of Takeo Province             |
| 31 | Choung Sothol       | Health Department of Kandal Province              |
| 32 | Sum Ang             | UEEE Repairing Shop of Takeo Province             |
| 33 | Chhit Chhun Ny      | Institute Technology of Cambodia                  |
| 34 | Chea Hak            | Environmental Department of Toul Kork District    |
| 35 | Moy Vathana         | Ministry of Environment                           |
| 36 | Hak Sinith          | EEE Retail Shop of Takeo Province                 |
| 37 | May Vannak          | Environmental Department of Phnom Penh            |
| 38 | Am Sithara          | UEEE Repairing Shop of Takeo Province             |
| 39 | It thon             | UEEE Repairing Shop of Kampong Speu Province      |
| 40 | Men Milynd          | Ministry of Health                                |
| 41 | Kaur Sokhoen        | Port in Phnom Penh                                |
| 42 | Kam Phalla          | EEE Retail Shop of Kampong Speu Province          |
| 43 | Pao Thanbunheng     | Ministry of Women Affairs                         |
| 44 | Me Sit              | EEE Retail Shop of Takeo Province                 |
| 45 | Bin Sopheakda       | Electricity Du Cambodge (EDC)                     |
| 46 | Say Sokheng         | Environmental Department of Kampong Speu Province |
| 47 | Duy Chan Dara       | Ministry of Public Work and Transportation        |

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| 48  | Hang Sok         | EEE Retail Shop of Takeo Province              |
| 49  | Kep phan         | EEE Retail Shop of Kampong Speu Province       |
| 50  | Chheng ra        | UEEE Repairing Shop of Kampong Speu Province   |
| 51  | Ling Ky          | Health Department of Phnom Penh                |
| 52  | Tuy Song         | UEEE Repairing Shop of Phnom Penh              |
| 53  | Heg Heapy        | UEEE Repairing Shop of Phnom Penh              |
| 54  | Ken Choviran     | Ministry of Environment                        |
| 55  | Morn Sareun      | Student of IU                                  |
| 56  | Sun Thoeun       | UEEE Collecting Site of Phnom Penh             |
| 57  | Noy Pathy        | UEEE Repairing Shop of Phnom Penh              |
| 58  | Koy Sonin        | Deputy director of Kampong Speu Province       |
| 59  | Mot Yara         | UEEE Repairing Shop of Phnom Penh              |
| 60  | Seang tha        | UEEE Collecting Site of Phnom Penh             |
| 61  | Pan Sochea       | Environmental Department of Koh Kong Province  |
| 62  | Kong Chanthon    | Environmental Department of Koh Kong Province  |
| 63  | Keo Bunna        | Vice chief officer in Sihanoukville            |
| 64  | An Trada         | UEEE Repairing Shop of of Sihanoukville        |
| 65  | Long Sreng       | Environmental Department of Kampot Province    |
| 66  | Chak Kong        | Industrial Department of Sihanoukville         |
| 67  | You Kim          | UEEE Repairing Shop of of Sihanoukville        |
| 68  | Yol Chamnan      | Student of Build Bright University             |
| 69  | nhang nhoeun     | Student of Sihanoukville                       |
| 70  | Cha Si           | UEEE Repairing Shop of Kampot Province         |
| 71  | Kog Pha          | UEEE Repairing Shop of Kampot Province         |
| 72  | Cha Sop          | EEE Retail Shop of Kampot Province             |
| 73  | Tep Sonora       | Environmental Department of Sihanoukville      |
| 74  | Ku kha           | UEEE Repairing Shop of of Sihanoukville        |
| 75  | Kam Kol          | Environmental Department of Sihanoukville      |
| 76  | Ou hon           | UEEE Repairing Shop of of Sihanoukville        |
| 77  | Tit Kol          | Phsar Leu Market Committee                     |
| 78  | Mao Soknirdey    | Industrial Department of Sihanoukville         |
| 79  | Peng Nara        | Department of Labor of Sihanoukville           |
| 80  | Soun Heng        | Municipality of Sihanoukville                  |
| 81  | Sam Ro           | EEE Retail Shop of Koh Kong Province           |
| 82  | Nhem Polyvan     | Police of Sihanoukville                        |
| 83  | Maly Rina        | Information Department of Sihanoukville        |
| 84  | Prak Vanny       | Environmental of Prey Nob District             |
| 85  | Me thea          | UEEE Repairing Shop of Koh Kong Province       |
| 86  | Ung Veth         | Labor Department of Sihanoukville              |
| 87  | Cho Thol         | Ministry of Environment                        |
| 88  | Lay Rithy        | Health Department of Sihanoukville             |
| 89  | Huot Sophorn     | Phone Saller of Sihanouk Ville                 |
| 90  | Chinreng Sombath | Custom Department of Sihanoukville             |
| 91  | Lo Leng          | UEEE Repairing Shop of Koh Kong Province       |
| 92  | Khem Kanol       | Education Department of Sihanoukville          |
| 93  | Sos Sophal       | MPTC of Sihanouk Ville                         |
| 94  | Tep Chea Rone    | Cam control of Sihanoukville                   |
| 95  | Ich Ros          | EEE Retail Shop of Sihanoukville               |
| 96  | Men Sokha        | Municipal Public Transport of Sihanoukville    |
| 97  | Yo Kem           | EEE Retail Shop of Keop City                   |
| 98  | Thuon Socheth    | Electricity Du Cambodge (EDC) of Sihanoukville |
| 99  | Yong Kim An      | Port of Sihanoukville                          |
| 100 | Chuon Tiver      | Custom of Sihanoukville                        |

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| 101 | Hem Nimol      | Environmental Department of Sihanoukville                       |
| 102 | Da Van         | UEEE Collecting Site of Kampot Province                         |
| 103 | Ouen Rath      | UEEE Repairing Shop of Kampot Province                          |
| 104 | Vinh Tha       | UEEE Collecting Site of of Sihanoukville                        |
| 105 | Ty Ny          | EEE Retail Shop of of Keop City                                 |
| 106 | Long Su        | UEEE Collecting Site of of Sihanoukville                        |
| 107 | Yi Ith         | UEEE Repairing Shop of Koh Kong Province                        |
| 108 | Dong Hong      | UEEE Collecting Site of Koh Kong Province                       |
| 109 | Net Voeun      | EEE Retail Shop of Keop City                                    |
| 110 | Em San         | Environmental Department in Sihanoukville                       |
| 111 | Chrea Sreng    | Environmental Department of Stung Hav District, SV              |
| 112 | Ouk Chandyna   | Environmental Department of Kampot Province                     |
| 113 | Chhunn Chheng  | Environmental Department of Preah Vihear Province               |
| 114 | Kong Sambath   | Environmental Department of Preah Vihear Province               |
| 115 | Sok Theara     | PM of Siem Reap Province  |
| 116 | Phon Khleang   | Environmental Department of Banteay Meanchey Province           |
| 117 | Ngeth Yuthoeun | Environmental Department of Banteay Meanchey Province           |
| 118 | Prum Chmon     | BBU student of Siem Reap Province                               |
| 119 | Nit Sivpay     | BBU student of Siem Reap Province                               |
| 120 | Toch Cheap     | EEE SHOP in Siem Reap Province                                  |
| 121 | Seng Thouk     | Cam-Control of Siem Reap Province                               |
| 122 | Top Thoeun     | Industrial Department of Siem Reap Province                     |
| 123 | Mek Kiry       | Industrial Department of Siem Reap Province                     |
| 124 | San Sameth     | Education, Youth and Sports Department of Siem Reap Province    |
| 125 | Keo Sophal     | Tourism Department of Siem Reap Province                        |
| 126 | Len Lom        | Police of Siem Reap Province                                    |
| 127 | Phem Vibol     | Environmental office of Bakong, Siem Reap Province              |
| 128 | Muth Samay     | Health Department of Siem Reap Province                         |
| 129 | Houp Thai      | Waste Management of Phsar Leur Market, Siem Reap Province       |
| 130 | Meas Morn      | Religious Affairs Department of Siem Reap Province              |
| 131 | Kun Kanel      | Environmental Department of Siem Reap Province                  |
| 132 | Heng Sirithy   | Custom Department of Siem Reap Province                         |
| 133 | Sov Sokchetana | Custom Department of Siem Reap Province                         |
| 134 | Peaing Vibol   | Public Work and Transportation Department of Siem Reap Province |
| 135 | Nol Khanra     | Post and Telecommunication Department of Siem Reap Province     |
| 136 | Koy Noeun      | Public Work and Transportation Department of Siem Reap Province |
| 137 | Uch bol        | UEEE repairing shop of Siem Reap Province                       |
| 138 | Tuch Saroum    | Environmental Department of Pouk District, Siem Reap Province   |
| 139 | Kroch Hout     | Environmental Department of Siem Reap Province                  |
| 140 | Sov Sokchetana | Assistant of MICC, Siem Reap Province                           |
| 141 | An Sarat       | UEEE collecting site in Siem Reap Province                      |
| 142 | Ma Sun         | UEEE repairing shop in Siem Reap Province                       |
| 143 | Mol Neng       | Health Department of Siem Reap Province                         |
| 144 | Tuive Banora   | Public Work and Transportation Department of Siem Reap Province |
| 145 | Ly Sopheap     | Environmental Department of Oudor Meanchey Province             |
| 146 | Ngor Hour      | Environmental Department of Oudor Meanchey Province             |
| 147 | Thoeung Mao    | Environmental Department of Siem Reap Province                  |

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| 148 | Pheng Cheangly    | Labor Department of Siem Reap Province                       |
| 149 | Mao Cham Rong     | Labor Department of Siem Reap Province                       |
| 150 | Tum Theanea       | EDC of Siem Reap Province                                    |
| 151 | Year Davy         | EDC of Siem Reap Province                                    |
| 152 | Prak Sarim        | Environmental Department of Siem Reap Province               |
| 153 | Pal Salat         | Information Department of Siem Reap Province                 |
| 154 | Ou Than           | UEEE repairing shop of Siem Reap Province                    |
| 155 | Choe Dek Sou Dara | Student of 7makara School of Siem Reap Province              |
| 156 | It Mon            | UEEE Repairing Shop in Banteay Meanchey Province             |
| 157 | Long Khem         | UEEE Collecting Site in Banteay Meanchey Province            |
| 158 | Set Larith        | UEEE Collecting Site in Oudor Meanchey Province              |
| 159 | Mean Veasna       | EEE SHOP in Oudor Meanchey Province                          |
| 160 | Min long          | EEE SHOP in Preah Vihear Province                            |
| 161 | Youn dOUNG        | UEEE repairing shop in Kampong Thom Provinces                |
| 162 | H.E. Srey Soben   | Deputy Governor  |
| 163 | Cynthia Indriani  | Executive Secretary, BCRC-SEA                                |
| 164 | Sim Ty            | Cam control-Department of Battambang Province                |
| 165 | Kong Than         | Cam control-Department of Battambang Province                |
| 166 | Buy Varong        | Labor Department of Battambang Province                      |
| 167 | Khem Sokha        | Reporter of Battambang Province                              |
| 168 | So Disaveth       | Environmental Department of Pailin City                      |
| 169 | Leng Simith       | Environmental Department of Battambang Province              |
| 170 | Hav Bic           | Environmental Office of Ratanak Mondol, Battambang Province  |
| 171 | Phe Sam Orn       | Custom Department of Battambang Province                     |
| 172 | Chan Youn         | Custom Department of Battambang Province                     |
| 173 | Keo Ratanak       | Religious Affairs of Battambang Province                     |
| 174 | Som Kim           | UEEE repairing shop of Battambang Province                   |
| 175 | Ros Visith        | MIME Department of Battambang Province                       |
| 176 | Ning Vuth         | UEEE repairing shop of Battambang Province                   |
| 177 | Koy Chanmealea    | Post and Telecommunication Department of Battambang Province |
| 178 | Parn Morokoth     | Environmental Department of Pursat Province                  |
| 179 | Yim Saoya         | Radio FM 92.75, Battambang Province                          |
| 180 | Khout Simon       | EEE SHOP of Battambang Province                              |
| 181 | Long Chakrey      | University of NUM, Battambang Province                       |
| 182 | Kim Chan Bophat   | Environmental Department of Kampong Chhang Province          |
| 183 | Keo Thim          | Environmental Department of Kampong Chhang Province          |
| 184 | Som Suy           | Environmental Department of Pailin City                      |
| 185 | Khuon Machim      | Environmental of Ekphnom District, Battambang Province       |
| 186 | Ek Chantrea       | Environmental of Sangker District, Battambang Province       |
| 187 | Doeun Sovann      | Tourism Department of Battambang Province                    |
| 188 | Sak Chan Treavuth | Monivong High School, Battambang Province                    |
| 189 | Di Savuth         | Environmental Department of Battambang Province              |
| 190 | Thoeuk Sathoeun   | Tourism Department of Battambang Province                    |
| 191 | Mean Chanthou     | Public Work and Transportation of Battambang Province        |
| 192 | Phoern Chan Rong  | BBU Student, Battambang Province                             |
| 193 | Hourn Houll       | Sanitation Group of Battambang Province                      |
| 194 | Sngoun Chandy     | Environmental Department of Pursat Province                  |
| 195 | Phy Sok           | Information Department of Battambang Province                |
| 196 | Chea Vongnarith   | Environmental Department of Battambang Province              |
| 197 | Ung Sat           | UEEE repairing shop of Battambang Province                   |
| 198 | Chang Kim Cheng   | High School Student of Monivong, Battambang Province         |

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| 199 | Up Neng            | UEEE Repairing Shop in Battambang Province                     |
| 200 | Meng Hout          | UEEE repairing shop of Battambang Province                     |
| 201 | Ly Kimchou         | Labor Department of Battambang Province                        |
| 202 | Mon Dara           | UEEE Repairing Shop in Pursat Province                         |
| 203 | Long Khem          | UEEE Collecting Site in Kampong Chhang Province                |
| 204 | Rith Keo           | UEEE Collecting Site in Pailin City                            |
| 205 | Mao Deth           | EEE SHOP in Kampong Chhang Province                            |
| 206 | Mant Youn          | EEE SHOP in Pailin City  |
| 207 | Dong Nat           | UEEE repairing shop in Pursat Province                         |
| 208 | Rak Sanang         | UEEE collecting site in Pursat Province                        |
| 209 | Tim Ton Tilina     | Environmental Department of Battambang Province                |
| 210 | Kem Sokuntheary    | Drainage Management of Battambang Province                     |
| 211 | Chamroeun Sereyrit | Public Work and Transportation of Battambang Province          |
| 212 | Chhe Seng          | Waste Management of Battambang Province                        |
| 213 | Khuth Mardy        | Post and Telecommunication of Battambang Province              |
| 214 | Sao Soeun          | Health Department of Battambang Province                       |
| 215 | Iy Meng Oy         | University Student of UME, Battambang Province                 |
| 216 | Heng Nareth        | Adviser, Ministry of Environment                               |
| 217 | Dok Narom          | Environmental Department of Kampong Cham Provinc               |
| 218 | He San             | Environmental Department of Svay Rieng Province                |
| 219 | Koeut Saroeun      | Environmental Department of Svay Rieng Province                |
| 220 | Am Thy             | UEEE Repairing Shop of Kampong Cham Province                   |
| 221 | Kham Phy           | Environmental Department of Prey Veng                          |
| 222 | Phel Seang         | Environmental Department of Prey Veng                          |
| 223 | Thoeun Chantha     | Environmental Department of Kampong Cham Province              |
| 224 | Ay Hay             | UEEE Repairing Shop of Kampong Cham Province                   |
| 225 | Vak Danth          | EEE Retail Shop of of Prey Veng                                |
| 226 | Tep Bunrath        | Police of Kampong Cham Province                                |
| 227 | Heng Mao           | Director of Primary School in Kampong Cham Province            |
| 228 | Prak Veasna        | Secondary School in Kampong Cham Province                      |
| 229 | Seng Hay           | UEEE Repairing Shop of Svay Rieng Province                     |
| 230 | Bun thun           | UEEE Repairing Shop of Svay Rieng Province                     |
| 231 | Choun Bunthoeun    | Custom Department of Kampong Cham Province                     |
| 232 | Pann Sokun         | Youth and Sport Department of Kampong Cham Province            |
| 233 | Lon Heang          | UEEE Repairing Shop of Svay Rieng Province                     |
| 234 | Hong Bunheang      | Police of Kampong Cham Province                                |
| 235 | Pon Sambor         | Post and Telecommunication Department of Kampong Cham Province |
| 236 | Heng Peng Sorn     | MIME Department of Kampong Cham Province                       |
| 237 | Lang Chan          | Custom of Kampong Cham Province                                |
| 238 | Krang Sak          | Post and Telecommunication Department of Kampong Cham Province |
| 239 | Heng Nay Earng     | Religious Affairs of Kampong Cham Province                     |
| 240 | Thong Mitch        | EEE Retail Shop of of Prey Veng                                |
| 241 | Keo Meng           | Labor Department of Kampong Cham Province                      |
| 242 | Av Phal            | UEEE Repairing Shop of Svay Rieng Province                     |
| 243 | Yin Bun Tith       | Kampong Cham Province  |
| 244 | Nget Ravath        | Public Work and Transport Department of Kampong Cham Province  |
| 245 | Sun Peng Seang     | EDC of Kampong Cham Province                                   |
| 246 | You Srun           | Tourism Department of Kampong Cham Province                    |
| 247 | Ran Sophea         | Kampong Cham Province  |
| 248 | Our Sam Un         | Public Work and Transport of Kampong Cham Province             |

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| 249 | Young KimSreang   | Public Work and Transport of Kampong Cham Province       |
| 250 | Ban Bunthoeun     | Environmental Department of Kampong Cham Province        |
| 251 | Sun Sary          | Police of Kampong Cham Province                          |
| 252 | Ly Kimse          | Health Department of Kampong Cham Province               |
| 253 | Im Tha            | EEE Retail Shop of Kampong Cham Province                 |
| 254 | Por Leang Kong    | Cam Control Department of Kampong Cham Province          |
| 255 | Ny Sivutha        | Cam Control Department of Kampong Cham Province          |
| 256 | Siung Kol         | Environmental Department of Kampong Cham Province        |
| 257 | Chim Pisith       | University of Tep Morha Ey Sey                           |
| 258 | Lim Sitha         | Environmental Department of Kampong Cham Province        |
| 259 | Thoeun Srey Neang | Environmental Department of Kampong Cham Province        |
| 260 | In Thay Hour      | MIME Department of Kampong Cham Province                 |
| 261 | Suy Dinnara       | Environmental Department of Kampong Cham Province        |
| 262 | Toun Rany         | EDC of Kampong Cham Province                             |
| 263 | Pich Phally       | Provincial Pedagogy of Kampong Cham Province             |
| 264 | Al Van            | EEE Retail Shop of of Prey Veng                          |
| 265 | Hea Rith          | EEE Retail Shop of Kampong Cham Province                 |
| 266 | Eak Mol           | EEE Retail Shop of Kampong Cham Province                 |
| 267 | Hong Kheam        | University of Kampong Cham Province                      |
| 268 | Yong Nin          | Waste Management of Kampong Cham Province                |
| 269 | Suy KimSan        | Health Department of Kampong Cham Province               |
| 270 | So Thea           | EEE Retail Shop of Kratie Province                       |
| 271 | Lean So           | Police of Kratie Province                                |
| 272 | Neang Vanna       | Custom Department of Kratie Province                     |
| 273 | Kong Chour        | Custom Department of Kratie Province                     |
| 274 | Im Kha            | EEE Retail Shop of Kratie Province                       |
| 275 | Deth Nhoun        | UEEE Repairing Shop of Mondolkiry Province               |
| 276 | Vint Thy          | UEEE Repairing Shop of Ratanakiri Province               |
| 277 | Ros Sophea        | Post and Telecommunication Department of Kratie Province |
| 278 | Hor Pros          | Kratie Krong High School                                 |
| 279 | Tan Sthavry       | Kratie Krong High School                                 |
| 280 | Yim Sinak         | Kratie Market (tax of the market)                        |
| 281 | Chorn Sam Oeurn   | Kratie Market (tax of the market)                        |
| 282 | Im Bunna          | University Student                                       |
| 283 | Sak Rath          | UEEE Repairing Shop of Kratie Province                   |
| 284 | Ath Vann          | UEEE Repairing Shop of Kratie Province                   |
| 285 | Leng Nay Yarith   | Tourism Department of Kratie Province                    |
| 286 | Hak Seng          | Environmental Department of Kratie Province              |
| 287 | Lay Kokheng       | Blacksmith (TV) in Kratie Province                       |
| 288 | Khiev Samraing    | Environmental Department of Kratie Province              |
| 289 | Kean Rany         | University Student                                       |
| 290 | Heng Kheng        | Environmental Department of Mondolkiry Province          |
| 291 | Han Khon          | Environmental Department of Mondolkiry Province          |
| 292 | Khem Huylim       | Environmental Department of Stung Treng Province         |
| 293 | Sieng Bokham      | Environmental Department of Ratanakiri Province          |
| 294 | He Sophana        | Women Affaires Department of Kratie Province             |
| 295 | Chea Luch         | Public Work and Transport Department of Kratie Province  |
| 296 | Loeung Sina       | Women Affaires Department of Kratie Province             |
| 297 | Neang Kung Hean   | Police of Kratie Province                                |
| 298 | Khun Sovann       | Cam control Department of Kratie Province                |
| 299 | Hoav Kim Srean    | Public Work and Transport Department of Kratie Province  |
| 300 | Tong Visai        | MIME Department of Kratie Province                       |

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| 301 | Tan Phinavy    | Education Youth and Sports Department of Kratie Province |
| 302 | Huy Ny         | UEEE Repairing Shop of Stung Treng Province              |
| 303 | Peou Rany      | Labor Department of Kratie Province                      |
| 304 | Ean Kim Hoeun  | Information Department of Kratie Province                |
| 305 | Dy Leang       | Environmental Department of Kratie Province              |
| 306 | Nou Chantara   | Religious Affairs Department of Kratie Province          |
| 307 | Doung Vuth     | UEEE Repairing Shop of Stung Treng Province              |
| 308 | Ry Mat         | EEE Retail Shop EEE Retail Shop of Kratie Province       |
| 309 | Sry Sok Leng   | University Student                                       |
| 310 | Kim Dyna       | Education Youth and Sports Department of Kratie Province |
| 311 | Kiv Monirith   | High School Teacher                                      |
| 312 | Mak Bora       | Environmental Department of Kratie Province              |
| 313 | Ou Bunkhea     | Environmental Department of Kratie Province              |
| 314 | May Chhan      | Public Work and Transport Department of Kratie Province  |
| 315 | Ly Sekmeng     | Environmental Department of Stung Treng Province         |
| 316 | Samuth Lima    | Environmental Department of Kratie Province              |
| 317 | Kham Chanphora | Provincial Officer                                       |
| 318 | Chou Sopheak   | Environmental Department of Ratanakiry Province          |
| 319 | Pak Sambat     | High School Teacher                                      |
| 320 | Si Vutha       | Information Department of Kratie Province                |
| 321 | Chuong Sengly  | Health Department of Kratie Province                     |
| 322 | Kim Phan       | Environmental Department of Kratie Province              |
| 323 | Hong Phearak   | Environmental Department of Takeo Province               |



**អារម្ភកថា**

ការរឹកចំរើនផ្នែកសង្គមមនុស្ស និងផ្នែកវិទ្យាសាស្ត្រចេះតែវិវឌ្ឍន៍ទៅមុខតែឈប់ឈរពីមួយថ្ងៃទៅមួយថ្ងៃហើយវិញរាល់សប្តាហ៍ វិទ្យាសាស្ត្រនិងកំពុងតែប្រកួតប្រជែងគ្នាដាច់ស្រាវជ្រាវ ។ មនុស្សជាតិបានចូលរួមធ្វើអោយពិភពលោកមាន ការផ្លាស់ប្តូរគ្នាខ្ពស់ គឺ មានន័យថា ធ្វើអោយគុណភាពចរិតស្ថានមានការប្រែប្រួល និងចម្រុះខ្ពស់គុណភាព។ ភាពខូចខាតចែបនេះប្រសិនបើពុំមាន ការត្រួតពិនិត្យលើគុណភាពចរិតស្ថានអោយបានត្រឹមត្រូវ ។ ដូចនេះហើយក្រោយពី ការប្រើប្រាស់ គឺត្រូវបង្កើតជាសំណល់គ្រប់ប្រភេទ ជាច្រើន ដែលក្នុងនោះមានសំណល់អេឡិចត្រូនិច និងបច្ចេកវិទ្យាអគ្គិសនី ។

សៀវភៅអប់រំនេះមានចំណងជើងថា យើងរួមគ្នាគ្រប់គ្រងសំណល់អេឡិចត្រូនិច និងបច្ចេកវិទ្យាអគ្គិសនីប្រកបដោយសុវត្ថិភាព ចរិតស្ថាន ដែលបានរៀបចំចងក្រងដោយមន្ត្រីជំនាញរបស់នាយកដ្ឋានត្រួតពិនិត្យការបំពុលចរិតស្ថាន នៃក្រសួងចរិតស្ថាន ស្ថិតក្រោម តំណែងជំនួយការពិសេសនាយកដ្ឋានអនុសញ្ញាប្រៃសណីយ៍សៀវភៅនេះបានលើកឡើងពីតួអង្គក្នុងគ្រួសារមួយ និងតួអង្គដទៃទៀត ។ នៅក្នុងតំណែងរៀងបានខ្លះបញ្ចាំងពីស្ថានភាពពិតពិតប្រាកដ និងជីវិតរស់នៅ និងតំណែង ចរិតស្ថានរបស់សំណល់អេឡិចត្រូនិច និង បច្ចេកវិទ្យាអគ្គិសនី ។ គោលបំណងចម្បងក្នុងការចងក្រងសៀវភៅនេះ គឺមានទិសដៅ ដើម្បីបញ្ជ្រាញការយល់ដឹងប្រកបដោយសុវត្ថិភាព ក្នុងសំណល់អេឡិចត្រូនិច និងបច្ចេកវិទ្យាអគ្គិសនីប្រកបដោយសុវត្ថិភាពចរិតស្ថាន ទៅដល់ស្រទាប់មហាជនទូទៅ ស្ថាប័នរាជការ អង្គការ ក្រៅរដ្ឋាភិបាល រដ្ឋាភិបាលអោយមានការយល់ដឹងប្រកប អំពីសញ្ញាណគ្រឹះទូទៅ និងមន័យ ប្រភព ប្រភេទ សមាសធាតុប្រឌុំ ផលប៉ះពាល់ និងវិធានការណ៍ការពារសម ស្របក្នុងព្រះរាជាណាចក្រកម្ពុជាដើម្បីអនុវត្ត និងឈោរមាត់ការការពារ ទប់ស្កាត់រាល់ការ បញ្ចេញសំណល់គ្រោះថ្នាក់ ទាំងនេះអោយមានប្រសិទ្ធភាពខ្ពស់។

បញ្ហាសំណល់អេឡិចត្រូនិច និងបច្ចេកវិទ្យាអគ្គិសនីគឺជាប្រធានបទមួយទៀតសំរាប់កម្ពុជាដែលប្រឆាំងនឹងសមត្ថភាព យល់ដឹង អំពីបច្ចេកវិទ្យាចរិតស្ថានថ្មីៗ អោយទាន់ចន្លោះនៃការវិវឌ្ឍន៍របស់ពិភពលោក។ ជៀសវាងព្រះរាជាណាចក្រកម្ពុជា អាចនឹងប្រែក្លាយ ជាតំណែងនៃអន្តរជាតិ។ ហើយយើងខ្ញុំសង្ឃឹមយ៉ាងមុតមាំថា ខ្លឹមសារក្នុងសៀវភៅដែលលោកអ្នកកំពុងអាននេះ គឺជាតន្ត្រីនៃការ យល់ដឹងពិតៗរបស់អស់លោក លោកស្រីសំរាប់ចូលរួមចំណែកក្នុងការវិវឌ្ឍន៍ដោយនិរន្តរភាព ក្រោមគោលនយោបាយកាត់ បន្ថយភាពក្រីក្រក្នុងបេសកកម្មបំរើជាតិរបស់រាជរដ្ឋាភិបាល ។

អស់លោក លោកស្រី ចិត្តអ្នកអានជាមីមេត្រី ក្រុមការងារនិពន្ធយើងខ្ញុំសូមថ្លែងអំណរគុណយ៉ាងប្រាថ្នាចំពោះការគាំទ្រ និងយកចិត្តទុកដាក់ក្នុងការអានរបស់អស់លោក អ្នក ហើយយើងខ្ញុំក៏មានសេចក្តីសោមនស្សិករាយជាពន្លឹក ក្នុងការរង់ចាំទទួលបានការ កែលម្អដោយមិនអាចខ្វះបានពីប្រិយមិត្តអ្នកអានទាំងអស់ពីគ្រប់ទិសទី ដើម្បីជួយអោយការបោះពុម្ពលើកក្រោយៗកាន់តែមានភាព សុក្រិតថែមទៀត ។ ជានិស្សាន យើងខ្ញុំសូមប្រសិទ្ធិពរជ័យដល់អស់លោក លោកស្រី ប្រិយមិត្តអ្នកអានទាំងអស់ជូនប្រទះ តែសេចក្តីសុខគ្រប់ប្រការកុំបីឃ្លាងឃ្លាតឡើយ ។

ធ្វើនៅ ភ្នំពេញ ថ្ងៃទី ០៨ ខែ មេសា ឆ្នាំ ២០០៨



សេចក្តីផ្តើម

និយមន័យ

ប្រភពបង្កើត

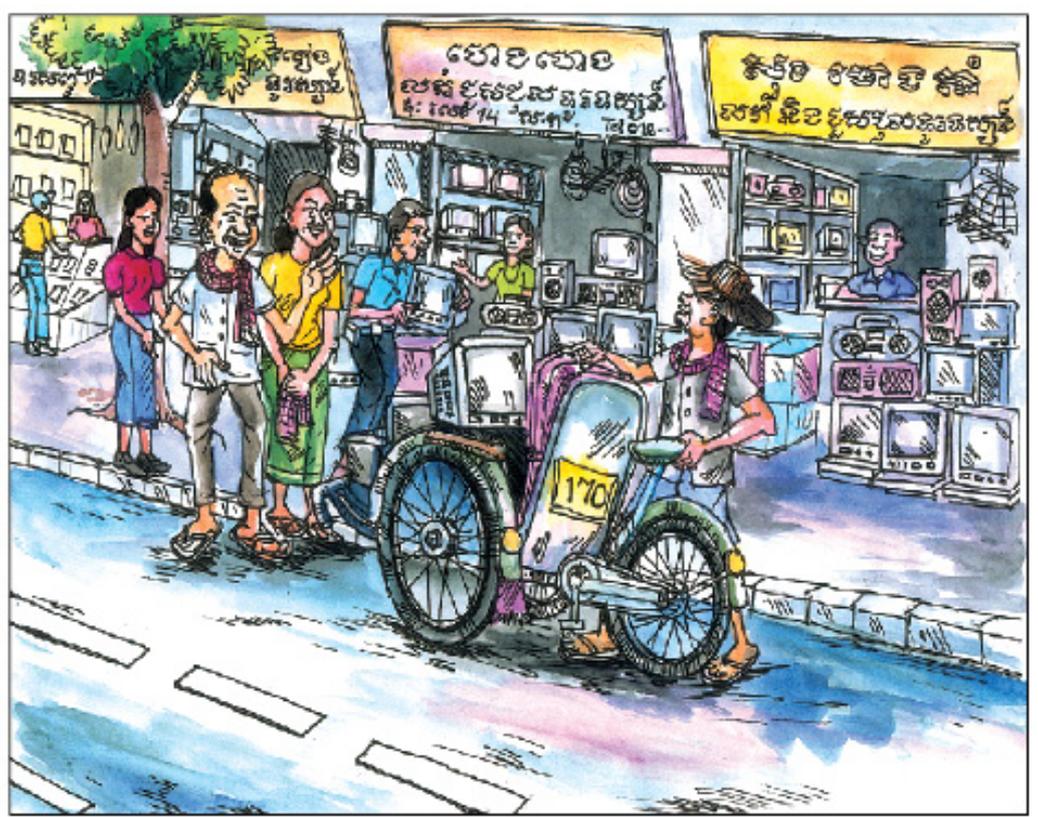
ប្រភេទ និងសមាសធាតុបន្សំ

ផលប៉ះពាល់

វិធានការណ៍ការពារ និងកាត់បន្ថយ

នាថ្ងៃសំរាកមួយ ពួកគេទៅផ្សារជាមួយក្រុមគ្រួសាររបស់គាត់ក្នុងគោលបំណងរកទិញរបស់របរខ្លះសំរាប់ប្រើប្រាស់ និងដើម្បីយកទូរទស្សន៍ និងម៉ាញែកជួសជុលផង។ សមាជិកក្នុងគ្រួសារគាត់មាន : ពួស មីងប្រេម សុខ និង ធីតា។ ពេលមកដល់ ផ្សារគ្រួសាររបស់ពួកគេ បានឃើញទូរទស្សន៍ ម៉ាញែក ទូរស័ព្ទចាស់ ថ្មីៗ និងជុំជុំជាច្រើនស្តុកស្តុះដាក់លក់នៅក្នុងហាងនៅតាមមុខផ្ទះ តាមដងផ្លូវ និងក្នុងផ្សារ។ លើសពីនេះទៅទៀតនៅមាន គ្រឿងអេឡិចត្រូនិច និងបរិក្ខារអគ្គិសនីថ្មីៗ និងជុំជុំផងដែរ។

ពេលនោះហើយដែលធ្វើអោយគាត់មានការស្នាក់ស្នើជាខ្លាំង គឺត្រូវជួសជុលផង ឬត្រូវទិញថ្មី ? របស់របរទាំងនោះទំនើបៗ ហើយល្អៗហួសពីការគិតស្មានរបស់គាត់ទៅទៀត។ បន្ទាប់ពីធ្វើដំណើរមួយសន្ទុះ ក្រុមគ្រួសាររបស់គាត់ក៏មក ដល់កន្លែង ជួសជុល និងលក់ ម៉ាញែកទូរទស្សន៍។ គាត់ជួនពេលនោះ សំលេងទូរស័ព្ទរបស់កូនគាត់ក៏ឆេះឡើង ។



-១-

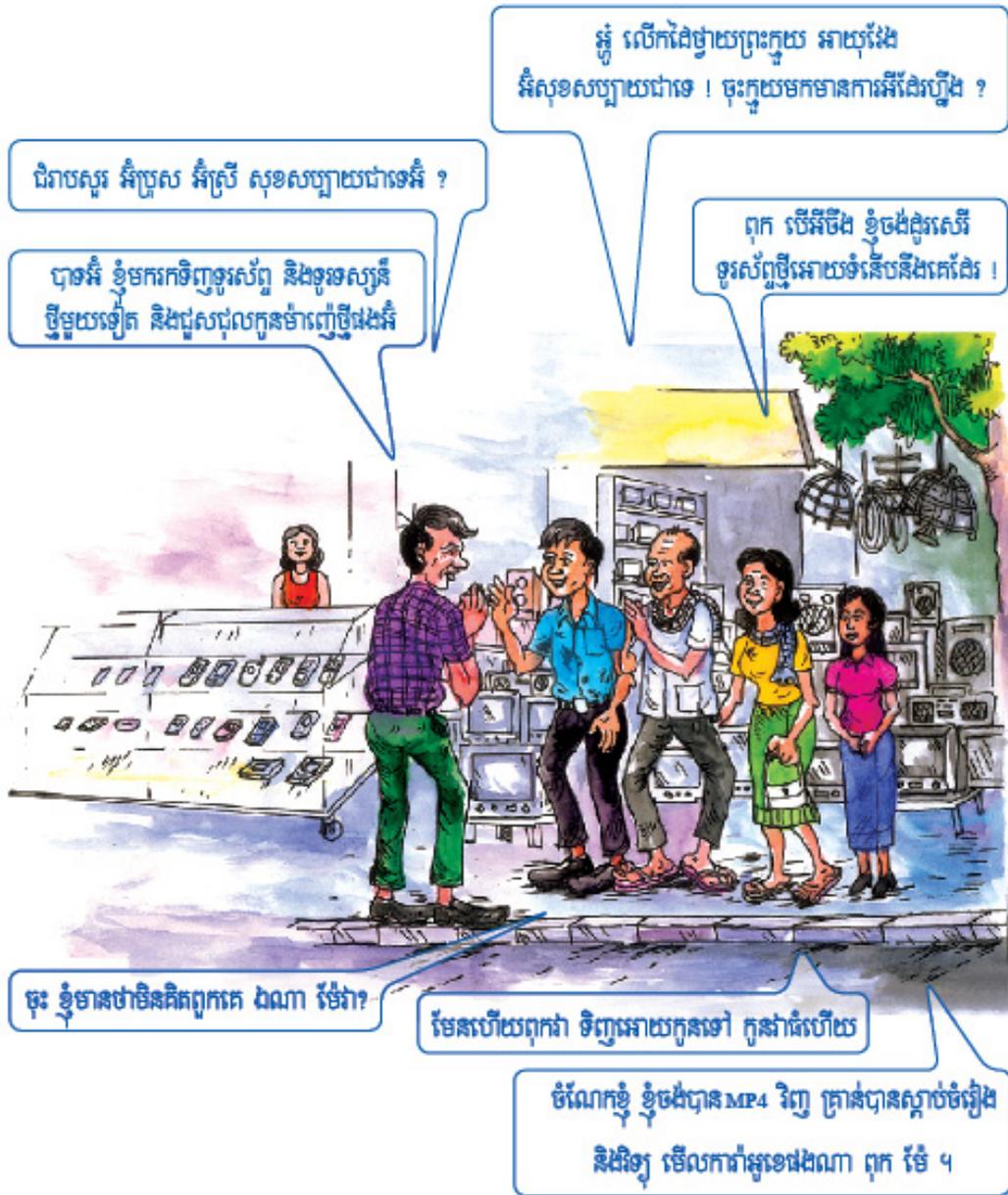
អ្នក គ្នាសុខសប្បាយជាទេសំណាញ់សុខ ខិត្យុវគ្គនៅផ្សារដើម្បីរកទិញទូរស័ព្ទថ្មីមួយនិងរកទិញទូរស័ព្ទមួយទៀតទុកដាក់ក្នុងបន្ទប់គ្នា និងរកមើលហាងលក់ទូរស័ព្ទផ្សេងៗទៀត។

ហេតុអ្វី! ទេម្រ: តើដឹងសុខសប្បាយជាទេ? ហើយដឹងនៅទីណាដែរ ខិត្យុវគ្គនេះ ?



ចំណែកភ្នាក់នៅផ្ទះផ្សេងៗ បើអីមិនយើងទាំងប្រាំបួនគ្នានៅទីនេះទាំងអស់គ្នាតែម្តងទៅណា ។  
បើអញ្ជើងរតនា ដឹងមកជួបគ្នាមក !

មួយសន្ទុះក្រោយមក ខេមរៈក៏មកដល់កន្លែងដែលសុខបានណាត់មែន ។



បានមែនហើយអី ! ហើយមានកំពូងទំ ឃ្លោមលេង  
កំសាន្តអីទៀតផង ។ ឃ្លៀ ឆិបាយអីចឹង សុខ  
ឯងបានទិញកំពូងទំហើយឬនៅ ? គ្នាគិតរកចង់ទិញ  
កំពូងទំមួយគ្រឿងហើយ គ្រាន់ស្រួលរៀនសូត្រណា  
ពីព្រោះគ្នាត្រូវ ប្រើកំពូងទំញឹកញាប់ណាស់ពីព្រោះគ្នា  
ជិតចូលឆ្នាំទី២ហើយ។

ពេលមកដល់ផ្សារអីចឹងទើបដឹងថាស្រុកយើងច្រើនល្បឿន  
ហើយទំនើបទៀត ។ មិនត្រឹមតែមានកន្លែងជួសជុលទិញទូរ  
ទស្សន៍ ម៉ាញ៉េទេ។ ថែមទាំងមានរបស់ ផ្សេងៗជាច្រើន  
មាន ម៉ាស៊ីនបោកក្រចក ទូរទឹកកកម៉ាស៊ីនត្រជាក់ កូនឡាន  
ក្មេងលេង និងគ្រឿងអគ្គិសនី ។  
អ្វីច្រើនមុខណាស់រាប់មិនអស់ទេ !



គ្នាក៏មានមួយដែរ ពុំគ្នាអោយកាលពីឆ្នាំទៅ  
តែ ដូចជាសេរីទាបបន្តិចខ្លះវាថែមទាំងខូចទៀត ។

តើអំពូលនេះថ្លៃប៉ុន្មាន?

អី អោយប្រដាប់ឆក់មូសខ្ញុំមួយមក !

មិយអំពូលចំណុះមួយមក

ប៉ាៗ កូនយកហ្នែកមួយនោះ !

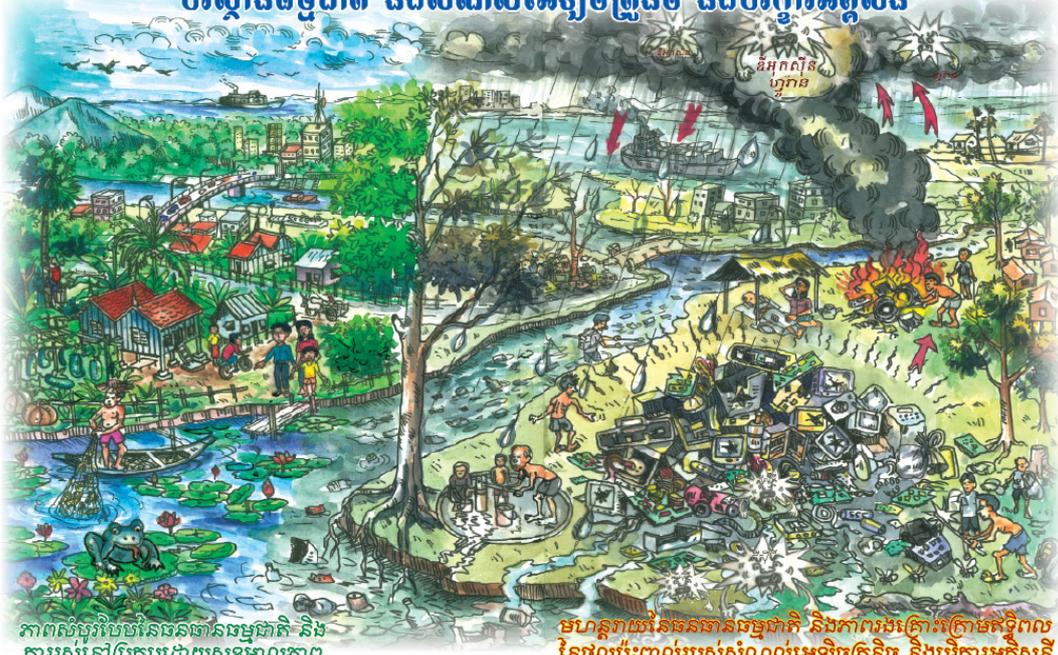
ប្តឹងហើយ ចាំប៉ុន្មានអោយកូន នៅអោយស្ងៀមកូន



ចាំស មានយកម៉ាកមួយណា

ពួកអ្នកទិញអីដែរ? អញ្ជើញចូលមើលលើសទៅ ទុរទស្សន៍ ឬម៉ាញ៉េ ថោកៗទេពូៗ ជួយកោរឆាយមួយទៅ !

**បរិស្ថានធម្មជាតិ និងសំណល់អេឡិចត្រូនិច និងបរិក្ខារអគ្គិសនី**



ភាពសំបូររបស់នៃធនធានធម្មជាតិ និងការរស់នៅប្រកបដោយសុខុមាលភាព

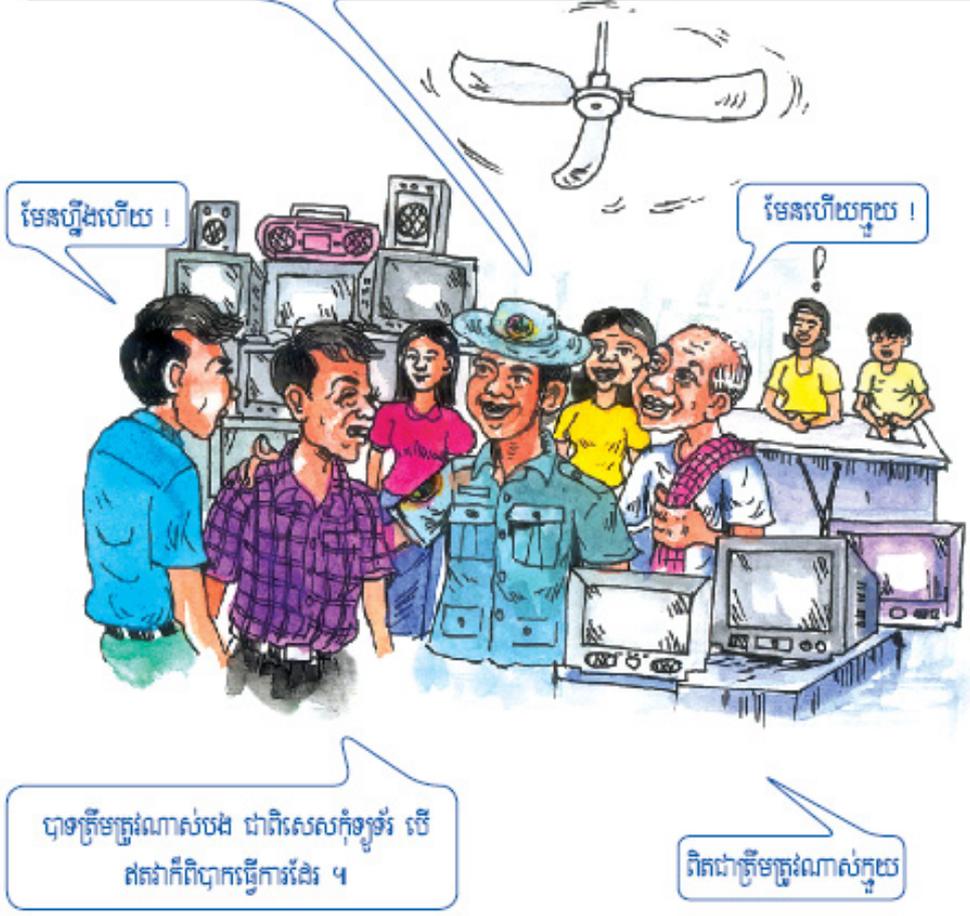
.៦.

មហន្តរាយនៃធនធានធម្មជាតិ និងការបង្កើនគ្រោះគ្រាមកទ្វិពលនៃផលប៉ះពាល់របស់សំណល់អេឡិចត្រូនិច និងបរិក្ខារអគ្គិសនី

.៧.

វិធាននោះស្រាប់តែមានបុរសម្នាក់មកដល់ ។ ដោយឮសូរ គ្រួសារ ពូសំ និងមិត្តភក្តិរបស់សុខជ័យជឿជាក់  
 គ្រឿងអេឡិចត្រូនិច និងបរិក្ខារអគ្គិសនី បែបនេះគាត់ក៏និយាយទៅ កាន់ពួកគេថា :

បាទពូ ខ្ញុំសូមកាត់ប្រសាសន៍របស់ពូ មីង និងអ្នកទាំងអស់គ្នាបង្អិច។ សព្វថ្ងៃប្រទេសយើង គឺមានការ  
 ជឿនលឿនណាស់ ជាពិសេសសំបូរដោយគ្រឿងអេឡិចត្រូនិច និងបរិក្ខារអគ្គិសនីមានដូចជា វិទ្យុ ទូរទស្សន៍  
 ម៉ាញ៉េ កុំព្យូទ័រ ទូរស័ព្ទ ប្លែកតេឡេ ទូរទឹកកក ម៉ាស៊ីនត្រជាក់ ជាដើម។ល។ របស់ទាំងអស់នោះ វាជួយសំរួល  
 ដល់ការរស់នៅរបស់មនុស្សយើងតាមបែបទំនើប ។ មែនទេពូ មីង និងប្អូនៗ ?



មែនហ្នឹងហើយ !

មែនហើយក្មួយ !

បាទត្រឹមត្រូវណាស់បង ជាពិសេសកុំព្យូទ័រ បើ  
 ឥតវាក៏ពិបាកធ្វើការដែរ ។

ពិតជាត្រឹមត្រូវណាស់ក្មួយ

**អ្នក្តីពិណ្ឌត :** និយាយអញ្ចឹងអប្បបរមាមិញ ខ្ញុំឮសូរច្រូតទាំងអស់និយាយពីចង់ទិញទូរស័ព្ទថ្មីទៀត និងចង់ ដូរទូរស័ព្ទសេរីថ្មី ចង់ទិញ  $MP_2$  និងកំពូតថែមទេ? ទាំងនោះហើយដែលគេហៅថាគ្រឿងអេឡិចត្រូនិច និងបរិក្ខារអគ្គិសនី។

**ប្តីប្រពន្ធ :** អត់ទោសលោកក្មួយ តើលោកក្មួយធ្វើការងារអីដែរ បានជាដឹងរឿងហ្នឹង ?

**អ្នក្តីពិណ្ឌត :** បាទ ខ្ញុំភ្លេចជំនាបម៉ឹងពូនិងអ្នកទាំងអស់គ្នា។ ខ្ញុំធ្វើការនៅក្រសួងបរិស្ថានហើយបច្ចុប្បន្នក្រសួងបរិស្ថាន ក្រោមការដឹកនាំរបស់រាជរដ្ឋាភិបាល គឺមានការយកចិត្តទុកដាក់យ៉ាងខ្លាំងលើកិច្ចការពារបរិស្ថាន ធនធានធម្មជាតិ និងសុខភាពសាធារណៈនៅក្នុងប្រទេសយើង ។ ហើយជាពិសេសម្យ៉ាងទៀតលើសំណល់អេឡិចត្រូនិច និងបរិក្ខារ អគ្គិសនីផងដែរណាពូ ។

**អ្នក្តីពិណ្ឌត :** ហ្ន៎ ក្មួយចុះអ្វីទៅដែលហៅថា សំណល់អេឡិចត្រូនិច និងបរិក្ខារអគ្គិសនី ? ម៉ឹងចង់ដឹងណាស់ !



សំណល់អេឡិចត្រូនិក និងបរិក្ខារអគ្គិសនី គឺជាឧបករណ៍ គ្រឿង ធាតុនៃគ្រឿង អេឡិចត្រូនិកនិងបរិក្ខារអគ្គិសនីទាំង ឡាយណាដែលយើងលែងប្រើប្រាស់ ហើយត្រូវបានគេបោះបង់ចោល មានបំណងចង់បោះបង់ចោលឬត្រូវអោយមានការបោះបង់ចោល ។ ម្យ៉ាងទៀត នៅពេលដែលមានការកែច្នៃវត្ថុទាំងនោះ ឡើងវិញដោយមិនគោរពតាមគោលការណ៍នៃការគ្រប់គ្រងសំណល់អេឡិចត្រូនិកនិងបរិក្ខារអគ្គិសនីប្រកបដោយសុវត្ថិភាព បរិស្ថាននោះនឹងបង្កអោយមានផលប៉ះពាល់ខ្លាំងណាស់ដល់សុខភាពមនុស្ស និងបរិស្ថាន។

ចុះទាំងអស់ហ្នឹងវាមានប្រភពចេញមកពីណាដែរចង ?



បាទចង ចុះហើយមានវាជាអ្វីខ្លះ បានជាគ្រោះថ្នាក់ ពុលដល់ សុខភាពមនុស្ស សត្វ និងបរិស្ថានចែបនេះ?

ខ្ញុំក៏ចង់ដឹងដែរចង ព្រោះខ្ញុំនៅជាមួយគ្រឿងអស់ហ្នឹង រាល់ថ្ងៃ។ ដូចជា ដុំ ផ្សា តំឡើង...។



ហើយនៅក្នុងចំណុចខាងលើ សម្ភារៈដែលអាចបង្កើតជាសំណល់អេឡិចត្រូនិច និងបរិក្ខារអគ្គិសនី ដែលអ្នកទាំងឡាយ បានស្តុកស្តុមមាន :

១. ម៉ាស៊ីនបោកកក់ ម៉ាស៊ីនសំដួត ទូទឹកកក ម៉ាស៊ីនត្រជាក់ ចង្រ្កានអគ្គិសនី។
២. ម៉ាស៊ីនបិតម្ជុលី, ម៉ាស៊ីនដុតកាហ្វេ គ្រឿងអគ្គិសនីសំរាប់អាងតំប៉ុង ភាឡិកា គ្រឿងសំរោះសំអាងខ្លួនមួយចំនួន ឆ្នាំងអ៊ីត។
៣. កំពូទ័រ ម៉ាស៊ីនគិតលេខ ទូរស័ព្ទ ម៉ាស៊ីនទូរស័ព្ទ ម៉ាស៊ីនថតចំលង។
៤. វិទ្យុ ទូរទស្សន៍ វីដេអូកាមេរ៉ា ម៉ាស៊ីនថតចំលង អ៊ីធឺ ឧបករណ៍ដូនដ្រឺ។
៥. អំពូលអគ្គិសនីមួយចំនួន។
៦. ម៉ាស៊ីនស្វាន ម៉ាស៊ីនអារ ម៉ាស៊ីនដេរ ម៉ាស៊ីនកាត់ស្មៅ ។
៧. គ្រឿងថ្នាំថ្លង់ដែលដោយថាមពលអគ្គិសនី វីដេអូហ្គេម ម៉ាស៊ីន ឬទូរលក់ទំនិញដោយប្រើលុយជាកាក់។
៨. វ៉ាដ្រូតេតាពី (ឧបករណ៍/ម៉ាស៊ីនស្ទង់វាស់បេះដូង) កាដូឡូស៊ី (ឧបករណ៍/ម៉ាស៊ីនលាងសំអាតឈាម) ដ្យាប៊ីស (ឧបករណ៍វិភាគ ឧបករណ៍ធ្វើតេស្តស្រ្តីមានផ្ទៃពោះ ម៉ាស៊ីន/ឧបករណ៍ពិនិត្យស្រូត និងសំរោះពិសោធន៍។
៩. ឧបករណ៍ត្រួតពិនិត្យផ្សេង ឧបករណ៍ត្រួតពិនិត្យ/គ្រប់គ្រងកំដៅ (ឧបករណ៍គ្រប់គ្រង/ត្រួតពិនិត្យស៊ីតណ្តាត ម៉ែម៉ូស្តាត ជញ្ជីងប្រើទំនង់ និងជញ្ជីងវាស់ស្ទង់នៅក្នុងមន្ទីរពិសោធន៍។
១០. ទូរម៉ាស៊ីនលក់សេវាដែលមានបំពាក់ឧបករណ៍សំរាប់កំដៅកំប៉ុង ឬធ្វើអោយត្រជាក់ដោយស្វ័យប្រវត្តិម៉ាស៊ីន អេមីនីម (ATM) ។

បើនិយាយជាមួយទៅវាមានប្រភពមកពី :

ក. មជ្ឈមណ្ឌលពាណិជ្ជកម្មតូច ធំគ្រប់ប្រភេទ

ខ. ស្ថាប័នរដ្ឋ ឯកជន និងលំនៅដ្ឋាន

គ. រោងចក្រផលិតឧបករណ៍ទាំងនោះ ដែលផលិតជាគ្រឿងអេឡិចត្រូនិច និងបរិក្ខារអគ្គិសនី

ហើយម្យ៉ាងទៀតគឺ ពូ មីង និងប្អូនទាំងអស់គ្នាបានដឹងទេ ? នៅក្នុងនោះវាមានធាតុមានតំលៃនិងមានតំលៃខ្ពស់ជាច្រើន ប៉ុន្តែសុទ្ធតែប៉ះពាល់សុខភាពមនុស្ស សត្វ រុក្ខជាតិ ដូចគ្នាទាំងអស់ហ្នឹង !



ចុះវាមានសារធាតុអ្វីខ្លះនៅក្នុងសំណល់អេឡិចត្រូនិច និងបរិក្ខារអគ្គិសនី ។ ហើយវាប៉ះពាល់ ដូចម្តេចដែរទៅចង?

អញ្ជឹងសូមចាំស្តាប់ណា !

ប្រសិនបើយើងគ្រប់គ្រងវាមិនបានល្អនោះវានឹងតែបង្កការខូចខាតកាន់តែធ្ងន់ធ្ងរ។ ធាតុទាំងនោះរួមមាន : សំណ កាដូម បារត ក្រញ៉ូម ប្លាស្ទិក គីរ៉ូស៊ី (PVC) បារ៉ូម បារីស្យូម ទឹកថ្នាំពណ៌ និងTonerសខ្មៅ ហ្វូសហ្វួន និងសមាសធាតុបន្ថែម (សមាសធាតុ គីមីអសីរ៉ាដ) ដែលមាននៅក្នុងកញ្ចក់ទូរទស្សន៍ចាស់ៗភាគច្រើនជម្រកកញ្ចក់ប៉ោង អាសេនិក តង់តាលុម ជ្រាប្រភេទលោហៈធាតុដែលមានតំលៃខ្ពស់ ស្ថាន ដែក អាណូមីញ៉ូម ប្រាក់ ប្លាទីន មាស ស៊ីលីកុង លីធ្មូម អាមេរិកស្យូម ហ្សេកម៉ាញ៉ូម និងសារធាតុវិទ្យុសកម្ម .....។ល។

ហើយចំពោះផលចំណេញ ខ្ញុំគ្រាន់តែលើកយកលោហៈធាតុមួយចំនួនប៉ុណ្ណោះ ដែលមាននៅក្នុងនេះ ។  
ហើយពិភពលោកកំពុងតែយកចិត្តទុកដាក់ ។ ដោយកន្លងមកនេះក្រសួងវិស្វកម្មក៏បាន និងកំពុងចាត់វិធានការណ៍ដែរ  
ក្នុងរឿង ហ្នឹង ។



ដូចខ្ញុំបានជម្រាបខាងលើអញ្ចឹងនៅក្នុងសំណល់អេឡិចត្រូនិច និងបរិក្ខារអគ្គិសនីមានផ្ទុកសារធាតុគីមីគ្រោះថ្នាក់  
ជាច្រើនដូចបានរាយនាមខាងលើ ដែលនៅក្នុងនោះក៏មានលោហៈធាតុមួយចំនួនមានតំលៃនិងលោហៈធាតុខ្លះ  
មានតម្លៃលំដាប់ អតិថេយ្យនាំចេញទៅក្រៅប្រទេស។ ប៉ុន្តែយើងត្រូវតែគោរព តាមគោលការណ៍គ្រប់គ្រង  
សំណល់អេឡិចត្រូនិច និងបរិក្ខារអគ្គិសនីប្រកបដោយសុវត្ថិភាពវិស្វកម្មនិងច្បាប់ពាក់ ព័ន្ធនឹងឡាយដែលមាន  
នៅក្នុងប្រទេសយើង ។ ៣

## សំណ

ផលចំណេញពីសំណ គឺមានលក្ខណៈធ្ងន់ធ្ងរដែលការពុលដោយសំណនេះមានការព្រួយបារម្ភខ្លាំងនៅលើពិភពលោក។ សំណត្រូវបានគេហាមឃាត់មិនអោយមាន ដោយដាក់កំរិតស្តង់ដារនៅក្នុងប្រទេស៧៥កំរិតខ្ពស់ៗឆ្នាំ១៩៧០ មកម្ល៉េះ ។ សំណវាធ្វើអោយខូចខាតទៅដល់ ប្រព័ន្ធស្រែកស្រែក ប្រព័ន្ធលោហ មុខដាត់ដេនសោម ប្រព័ន្ធបន្តពូជសត្វ របស់មនុស្ស និងចំណែកដល់ប្រព័ន្ធអង្គីត្រីត ប្រព័ន្ធក្រពើព្រាផលិតអ័រម៉ូន.....។ ហើយម្យ៉ាងទៀតសំណបានធ្វើអោយ ចំណែកទៅលើខួរក្បាលរបស់កុមារ ។ គឺធ្វើអោយភាពឆ្លាតវៃរបស់គេមានការថយចុះវាលំដាប់។ លើសពីនេះសំណបាន ចំណែកយ៉ាងខ្លាំងទៅដល់បរិស្ថាន ដោយប្រមូលផ្តុំនៅក្នុងបរិស្ថាន ហើយចំណែកដល់ រុក្ខជាតិ សត្វ និងពពួកមី ក្រសើរៗ ដែលដើរតួនាទីយ៉ាងសំខាន់នៅក្នុងតំណែងធម្មជាតិ។

## បាវត

បាវតធ្វើអោយខូចខាតដល់សិរ្សផ្សេងៗដូចជា ខួរក្បាល តំដេនសោម និងតំដេនសោមនៅក្នុងពោះស្រ្តី ដែលខ្លាច ដល់ការបង្កកំណើតរបស់ទារកក្នុងផ្ទៃម្តាយ ។ បាវតគឺពុលដល់មនុស្ស និងបរិស្ថានតាមរយៈខ្សែចង្វាក់អាហារនៅក្នុង តំណែងវិទ្យុនៃធម្មជាតិ ឧទាហរណ៍៖ ជំងឺមីណាម៉ាតាក់ ។

និយាយជាមុនទៅគឺថា នៅក្នុងសំណល់អេឡិចត្រូនិច និងបរិក្ខារអគ្គិសនី មានលោហៈធាតុ សមាសធាតុ សារធាតុ ជាច្រើនដែលសុទ្ធជា សារធាតុពុលគ្រោះថ្នាក់ខ្លាំងដល់សុខភាពមនុស្ស សត្វ និងបរិស្ថាន។ គឺដូចជាខូចខាតដល់ប្រព័ន្ធ ខួរក្បាលប្រព័ន្ធតំដេនសោម ប្រព័ន្ធលោហអាកាស ប្រព័ន្ធផ្លូវដង្ហើម ។ លើសពីនេះមានសារធាតុ ភីស៊ីប៊ី (PCBs) នៅ ពេលដែលមានការធ្វើអោយបំបាត់សមាសធាតុចំពុលខ្សែលំដាប់ច្រើន ប្រភេទដោយបង្កអោយមានជំងឺផ្សេងៗ ដូចជា : រលាកស្បែក ជំងឺប្រព័ន្ធផ្លូវដង្ហើម និងអ្វីដែលមានការព្រួយបារម្ភខ្លាំង គឺនៅពេលនោះឆេះវាមានប្រតិកម្ម បំបែកដោយបានបំបាត់ចេញនូវសមាសធាតុ ឌីអុកស៊ីន និងហ្វូរ៉ាន ដែលអាចប្រឈមមុខក្នុងការកើតជំងឺមហារីក ដឹកាចសាហាវ បំផុត ។

ចុះពួកយើងអាចជួយអ្វីបានខ្លះទៅក្នុងឋានៈជាពលរដ្ឋល ?  
និងថាតើរដ្ឋាភិបាល ក៏ដូចជាក្រសួងធីស្ថានចូលរួមចំណែក  
យ៉ាងដូចម្តេចដែរ ???

ហ្ន៎ ! នេះពិតជាសម័យកំពុង  
ដំបូកបដោយគ្រោះថ្នាក់មែន ហ្ន៎ !!!!

មានអី ល្អណាស់ប្អូនបើអីចឹង! ខ្ញុំមានការរស់រវើកខ្លះ  
ខ្ញុំគិតរំលោភ ពូ មីង ប្អូនៗ និងអ្នកទាំងអស់គ្នាសិនហើយ។  
ចាំថ្ងៃក្រោយជួបគ្នាទៀតណា !



បង ខ្ញុំមានការចាប់អារម្មណ៍ដល់ការរៀបចំរបស់បង  
អំពីសំណល់អេឡិចត្រូនិក និងបរិក្ខារអគ្គិសនី ខ្លាំងណាស់  
ពេលក្រោយពួកខ្ញុំគិតសុំឯកសារពីបងដើម្បីនិក្ខេបទក្នុងការ  
សិក្សារបស់ពួកយើងខ្ញុំហើយណាបង ។

**វិធានការណ៍ការពារ និងកាត់បន្ថយ**

**I. ការចូលរួមពីសំណាក់បុគ្គលិកម្នាក់ៗ**

យើងប្រហែលជាកត់ថា ការចូលរួមក្នុងការកាត់បន្ថយសំណល់អេឡិចត្រូនិក និងបរិក្ខារអគ្គិសនី ពីសំណាក់យើង ម្នាក់ៗមិនសូវដើរតួនាទីសំខាន់ប៉ុន្មានទេ។ ប៉ុន្តែនោះគឺជាការយល់ច្រឡំទេតាមពិត យើងម្នាក់ៗសុទ្ធតែជាផ្នែកមួយយ៉ាង សំខាន់ក្នុងការចូលរួមចំណែកជួយកាត់បន្ថយ និងទប់ស្កាត់សំណល់អេឡិចត្រូនិក និងបរិក្ខារអគ្គិសនីដ៏ដូចជាចូលរួមចំណែក ក្នុងការកាត់ បន្ថយការចំពុលបរិស្ថាននៅក្នុងប្រទេសយើង និងនៅក្នុងតំបន់បានយ៉ាងមានប្រសិទ្ធភាពផងដែរ។

យើងអាចធ្វើដូចតទៅនេះណាពូ ប្អូនៗទាំងអស់ :

- យល់ដឹងអំពីការញែកសំណល់នៅតាមផ្ទះ ។
- រៀនរៀងការប្រកាសយកគំនិត ឬទស្សនៈសម្រាប់និយមហូសហេតុ ។
- ត្រូវចេះសន្សំសំចៃក្នុងការប្រើប្រាស់គ្រឿងអេឡិចត្រូនិក និងបរិក្ខារអគ្គិសនីដើម្បីកាត់បន្ថយអាយុកាល ខូចខាត គឺការប្រើប្រាស់បានយូរ ។
- រៀនរៀងទិញរបស់បន្ថែមថ្មីផ្តល់ផ្តាសង្ខារខ្លះខ្លាចខុសគោលចំណងក្នុងការប្រើប្រាស់ ។
- រៀនរៀងធ្វើអោយសំណល់នេះ ។
- ប្រើប្រាស់សំភារៈទាំងនោះនៅពេលណាដែលចាំបាច់ប៉ុណ្ណោះ ដូចជា : ទូរទស្សន៍ វិទ្យុ ម៉ាញ៉េ ទូទឹកកក ម៉ាស៊ីនត្រជាក់ អំពូលអគ្គិសនីជាដើម ។ ល។
- ជួសជុល និងថែរក្សាជាប្រចាំអោយបានល្អ។

**II. ការចូលរួមពីសំណាក់សហគមន៍ និងរដ្ឋាភិបាល**

- ប្រមើលពីការអភិវឌ្ឍន៍នៃពេលវេលាអនាគត គឺការអភិវឌ្ឍន៍ប្រកបដោយនិរន្តរភាពបរិស្ថាន ។
- ការគាំទ្រយ៉ាងខ្លាំងក្លាពីសំណាក់ថ្នាក់ដឹកនាំគ្រប់ជាន់ថ្នាក់ និងការចូលរួមចំណែកគ្រប់ស្រទាប់មហាជន ។
- ផ្តល់ការផ្សព្វផ្សាយអប់រំដល់គ្រប់ស្រទាប់មហាជនទូទៅតាមរយៈប្រព័ន្ធផ្សព្វផ្សាយអោយយល់អំពី សំណល់អេឡិចត្រូនិក និងបរិក្ខារអគ្គិសនី និងផលប៉ះពាល់របស់វា ។
- បង្កើនសមត្ថភាពភាពយល់ដឹងបន្ថែមដល់មន្ត្រីជំនាញ និងស្ថាប័នពាក់ព័ន្ធអំពីសំណល់អេឡិចត្រូនិក និងបរិក្ខារអគ្គិសនី ។
- រៀបចំបញ្ញត្តិច្បាប់ និងបទដ្ឋានបច្ចេកទេសក្នុងការគ្រប់គ្រងសំណល់អេឡិចត្រូនិក និងបរិក្ខារអគ្គិសនី ។
- ជំរុញការចូលរួមពីមហាជនទូទៅដោយមានការលើកទឹកចិត្ត ។
- ជំរុញការគ្រប់គ្រងសំណល់អេឡិចត្រូនិក និង បរិក្ខារអគ្គិសនីប្រកបដោយសុវត្ថិភាពបរិស្ថាន ។
- ជំរុញគោលការណ៍ ៣ R ( ការប្រើប្រាស់ឡើងវិញ ការកែច្នៃឡើងវិញ ការកាត់បន្ថយ )។
- កិច្ចសហប្រតិបត្តិការរវាងស្ថាប័នរដ្ឋ ផ្នែកឯកជន អង្គការក្រៅរដ្ឋាភិបាល ស្ថាប័នអប់រំ ក៏ដូចជាកិច្ច សហប្រតិបត្តិការអន្តរជាតិក្នុងតំបន់ និងសកលលោក ។



នាយកដ្ឋានត្រួតពិនិត្យការចំពុលបរិស្ថាន ក្រសួងបរិស្ថាន  
 ទូរស័ព្ទ: ០១២ ៨៥៦ ៨១៨ / ០២៣ ៩៨៧ ៨៨០  
 ទូរសារ: ០២៣ ៣៦៤ ៨៤៩  
 អាសយដ្ឋាន: លេខ ៤៨ រុក្ខិវិថីព្រះនរោត្តមសីហនុ សង្កាត់ទន្លេបាសាក់ ខណ្ឌចំការមន រាជធានីភ្នំពេញ