Matsuoka Zemi
Introduction of SATREPS Project

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What is SATREPS?

- SATREPS (Science and Technology Research Partnership for Sustainable Development) is a Japanese government program that promotes international joint research targeting global issues. Global challenges cannot be met by a single country or region acting on its own, so engagement by the international community is essential. To address these issues, SATREPS works through three- to five-year projects involving partnerships between researchers in Japan and researchers in developing countries. SATREPS projects are expected to lead to outcomes with potential for practical utilization, and to enhance research capacity in the developing country.
- The program is collaboration between two Japanese government agencies: the Japan Science and Technology Agency (JST) and the Japan International Cooperation Agency (JICA).

SATREPS Project in Sri Lanka

Ken Kawamoto, Saitama University: Principal Investigator in Japan

SATREPS = The Project for Development of Pollution Control and Environmental Restoration Technologies of Waste Landfill Sites Taking into Account Geographical Characteristics in Sri Lanka =

Environmental-Friendly Solid Waste Management

Develop site-specific pollution control and remediation techniques for waste disposal sites utilizing locally-available materials

Unregulated waste dumping is a crucial contributor to social and environmental problems in developing countries. The project aims are 1) to carry out monitoring of soil and groundwater pollution, and perform environmental risk assessment at waste dumping sites and surrounding areas, 2) to develop site-specific pollution control and remediation techniques for waste dumping sites utilizing locally available geo-/bio-materials, and to evaluate the developed techniques through small-scale pilot experiments, and 3) to propose a guideline for sustainable design and construction of waste dumping sites that is specifically linked and applicable to the waste management system in Sri Lanka.

Development of sustainable techniques to prevent contamination, with verification based on small-scale field experiment

Solid waste management at local municipalities and soil and groundwater monitoring at selected disposal sites are being investigated. Utilizing locally-available materials, low-cost and site-specific pollution control and remediation techniques for waste dumping sites are developed. A small-scale field experiment including these techniques will also be carried out. Integrating the results from these studies, applicable guidelines for the design and maintenance of solid waste disposal sites will be proposed to the Sri Lankan government.

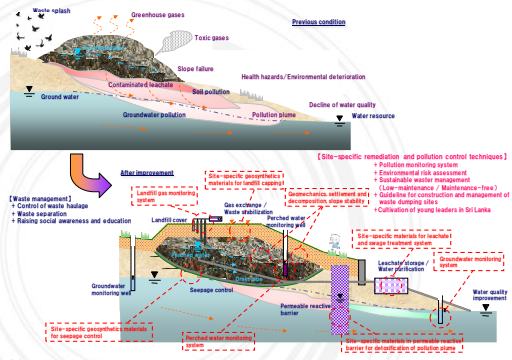
Field survey at open dump by SATREPS members

Laboratory measurement of landfill gases. The measured data provides us with information on buried waste characteristics

Counterpart Institutions	University of Peradeniya (UOP), University of Ruhuna (UOR), Institute of Fundamental Studies (IFS), National Solid Waste Management Support Center (NSWMSC), Central Environmental Authority (CEA)
Collaborators	Center for Environmental Science in Saitama (CESS), National Advanced Industrial Science and Technology (AIST), Waseda University
Research Period	5 Years Adoption fiscal year FY 2010

SATREPS: Site-Specific Pollution Control and Remediation Techniques

Project Period: Apr. 25th, 2011 ~ Mar. 31, 2016



Implementing Agencies

【Sri Lankan institutes】

- Univ of Peradeniya (UoP): Primary institute
- National Solid Waste Management Support Center (NSWMSC)
- Univ of Ruhuna (UoR)
- Institute of Fundamental Studies (IFS)
- Central Environmental Authority (CEA)

【Japanese Institutes】
International Institute for Resilient Society, Saitama University (SU)

- Center for Environmental Science in Saitama (CESS)
- National Advanced Industrial Science and Technology (AIST)
- Waseda University (WU)

SATREPS: Research Activities and Outputs

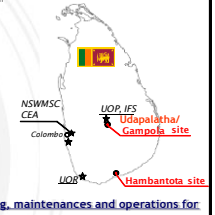
1. Formulate concept of guideline for planning, managements and maintenances for waste landfills
+ Review on solid waste management (SWM) and policies in Sri Lanka
+ Survey on organization, human resources, budget, technical capacities related on SWM at local authorities (Gampola site and Hambantota site)
+ Define items and contents of the guideline

Socio-economic analysis on SWM

2. Define methodology of appropriate site selection for new waste landfills
+ Technical, social, and economical conditions for appropriate new waste landfill site selection
+ Procedures for new waste landfill site selection

3. Monitor existing landfills and its surroundings
+ Monitoring plan, quality assurance and quality control (QA&QC)
+ Monitoring system and manuals, improvement of monitoring laboratories and staff capacity
+ Transport of pollution plumes and risk assessments

4. Develop pollution control and environmental restoration techniques for waste landfill sites
+ Site-specific pollution control and remediation techniques
① Leachate treatment ② Surface lining, Seepage control
③ Geomechanics, slope stability ④ Landfill capping
⑤ Permeable reactive barrier
+ Field scale study for examining developed techniques



5. Finalize the guideline for sustainable and applicable planning, maintenances and operations for waste landfills
+ Combined methods using outputs1 to 4 with low-cost, low maintenance and low environmental impacts
+ Potential maps for new waste landfills in the area of Gampola and Hambantota sites
+ A standard monitoring method for new landfill sites
+ Finalization of the guideline for sustainable and applicable landfill planning, operations and maintenances in Sri Lanka

Surveys of SATREPS Activity 1 (A1)

Survey	Survey Period	Survey Contents
Baseline Survey	Sep. 2011 ~ Dec. 2011	General Solid Waste Management Situation of Central and Southern Province
Local Budget Survey	Mar. 2012 ~ Aug. 2013	Detailed evaluation and breakdown of all the costs and revenues of a SWM project
Environmental Business Survey	Oct. 2012 ~ Jul. 2013	Business Activities on Environmental Monitoring, Consultancy, Recycling, Composting and Final Disposal Works on Solid Waste Management in Sri Lanka
Waste Amount & Composition Survey (WACS)	May 2012 ~ Feb. 2014	Quantitative Survey of total waste stream, generation, collection, composition, etc.
Public Awareness Survey	Dec. 2013 ~ June. 2014	Identify the citizen's general idea, action and policy acceptance with regard to solid waste management in their region




Support to make SWM Action Plan for 3 LAs
(Kandy MC, Gampola UC, Udapalatha PS) applying the SATREPS A1 surveys

Download Site of Research Outcome

Research Outcome

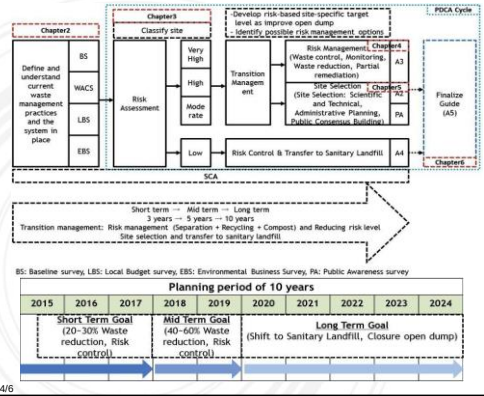
学術論文

出版状況	査読有無	詳細情報
掲載	査読あり	李洸昊, 松本礼史, 松岡俊二(2015)「途上国の都市における『ごみの流れ』の構造分析ースリランカ・キャンディ市を事例に」『国際開発研究』国際開発学会, 24巻, 1号, 2015年
掲載予定	査読あり	李洸昊(2015)「スリランカ・キャンディ市のごみ問題と廃棄物行政に対する住民意識の構造分析」『環境情報科学学術研究論文集29』環境情報科学学会

口頭発表

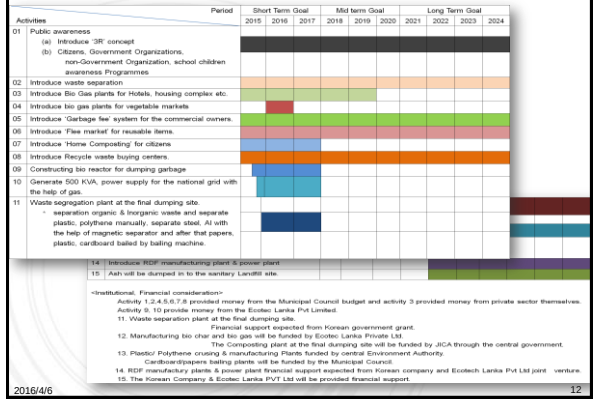
発表形式	審査有無	詳細情報
口頭発表	審査あり	松岡俊二(2014)「開発途上国の廃棄物問題と国際環境協力:制度はどのように変わるのか?」『国際開発学会第25回全国大会報告論文集』(2014年11月30日、千葉大学)
口頭発表	審査あり	李洸昊, 松本礼史, 松岡俊二(2014)「スリランカにおけるごみの流れの構造分析と廃棄物政策:WACS調査を踏まえて」『国際開発学会第25回全国大会報告論文集』(2014年11月30日、千葉大学)
口頭発表	審査あり	石渡まりな, 飯島聰(2014)「住民の廃棄物行政に対する信頼の規定要因は何かスリランカにおける住民意識アンケート調査から」『国際開発学会第25回全国大会報告論文集』(2014年11月30日、千葉大学)

Action Plan



Contents of Action Plan

Implementation Schedule (Kandy MC)



Implementation of "Action Plan (Kandy MC)"

Curbside Collection **Waste Separation**

Collect organic waste only three days/week
Weekend only inorganic waste

Recycling Centers **Awareness Programs**

Implementation of "Action Plan (Kandy MC)"

Home gardening program **TAKAKURA Compost**

Improvement of Final Disposal Site (Soil Cover)

"Guide for sustainable planning, management, and pollution control of waste landfills in Sri Lanka"

Follow Up

- **Finalize the Nation Guide**

  "Guide for sustainable planning, management, and pollution control of waste landfills in Sri Lanka"

- **Field Research (Udapalatha and Hambantota Site)**
- **Implementation of Action Plan**
- **Making and Implementation of Action Plan for other LA in Sri Lanka (Supported by NSWMSC)**

Project Participation of Matsuoka Zemi Student

- **Environmental Research Grant in Interdisciplinary Research of Nippon Life Foundation**

  Social acceptance of environmental innovation and formation of sustainable local city in Japan

  Research Assistant: Yuko Iwata (PhD Student)

- **Research Project on Social Regulation and Risk Governance of Atomic Industry**

  Research Project on Social Regulation and Risk Governance of Atomic Industry (MEXT)

  Research Assistant: Kohei Ohno (MA Student: Graduated on March, 2016)

→ Grant-in-Aid for Scientific Research and Exploratory Research (now)

- **SATREPS Project (JST and JICA)**

  The project for development of pollution control and environmental restoration technologies of waste landfill sites taking into account geographical characteristics in Sri Lanka

  Research Assistant: KwangHo Lee (PhD Student)

  Marina Ishiwata (MA Student: Graduated on March, 2015)

(Outside Project)

- **Joint Research Project of Shiga University and Economic and Social Research Institute, Cabinet Office, Government of Japan**

  Utilizing the richness of social capital for Regional Revitalization

  Research Assistant: Koka and Qinziyi (PhD Student)