SATREPS PROJECT





Establishment of Environmentally Sound Management of

Construction and Demolition Waste and Its Wise Utilization for

Environmental Pollution Control and for New Recycled Construction Materials in Vietnam



The project is within the Science and Technology Research Partnership for Sustainable Development Program between Vietnam and Japan, with the collaboration of Ministry of Education and Training, Japan International Cooperation Agency (JICA), and Japan Science and Technology Agency (JST). National University of Civil Engineering (NUCE) and Saitama University have been collaborating closely with other important partners of the two countries on the 5-year project (2018-2023). In 2020, Covid-19 pandemic has caused cancelation of expert's business trips and training courses as well as considerable change in the project's plan. Despite that, the project has achieved some outstanding results in four main activities.

I. MAIN ACTIVITIES IN VIETNAM



[Activity 1: Development of guidelines for establishing an environmentally sound management system for construction and demolition waste (CDW)]

- Guideline Committee Meeting was held on January 07th, 2020 in order to make a draft of "Technical Guideline for On-site building demolition work for sorting materials".

- A research project (funded by Ministry of Construction-MOC, 6/2020-12/2021) on CDW management in Vietnam with the key output which is "Technical Guideline for On-site CDW Sorting" will be officially adopted and issued by the MOC.

[Activity 2: Development of technical instructions and standards for evaluation and quality control of recycled materials from CDW]

- Technical Standard Committee Meeting took place on January 07th, 2020 with the aim of drafting "Technical requirements - Testing methods for Recycled Materials from Construction & Demolition Waste for Base and Subbase of Urban Roads".

- "Waste Composition Survey at Construction and Demolition Waste Landfills in Vietnam" written by VN and JP members has been published in July 2020.





[Activity 4: Proposal of strategic business models for promoting CDW recycling and practically effective promotion measures for environmental sound CDW management and recycling]

- Baseline Survey on Construction and Demolition Waste Landfills in Hai Phong, Vietnam was conducted from August 2020 to December 2020.

- Investigation on the economic feasibility of CDW recycling and Pre-analysis of financial, economic evaluation on Construction and Demolition Waste Recycling in Hanoi has been performed since November 2020.

- Operation and Trial basis (pilot study) recycling CDW by the project crushing machine in Hanoi was launched in March 2020.

- Pre-consultation was held with Hanoi DOC and DONRE to establish CDW Recycling Promotion Committee in Hanoi.

[Activity 3: Development of new technologies for environmental pollution control and infrastructure construction by utilizing recycled materials in Vietnam]

Many experiments for wastewater treatment systems and permeable pavement systems with high water retention utilizing recycled materials from CDW have been carried out in Japan and Vietnam. The results were analyzed carefully and published in peer-reviewed international journal papers.



II. OUTREACH✤ News and media



- Satreps project was introduced in a program on Nhandan TV which is called "Environment and natural resources" in September 2020. This episode is about the treatment of construction waste and the interview with core members in NUCE. Moreover, the project's information was widely disseminated in other media such as Xay dung news, Hanoi TV, etc.

- Satreps homepage (http://cdw.satreps.nuce.edu.vn/) which was completed in December 2020 has been updated frequently.

* Technical cooperation and advisory

- MOU on technical cooperation with Danang city was signed in June 2020.

- Cooperation on CDW management and investigation in Quang Ninh province has been launched since November 2020.

- Vinh Phuc province also started cooperation with the project in construction waste management in 2020.

- There are some companies wanted to work with the project in the field of management and enhancement of construction waste treatment and recycling such as Ecosystem Co., Ltd; Oriental Consultants Co., Ltd Aureole Expert Integrators Co., Ltd –

Japan; Ha Long Joint Venture Company 135- Quang Ninh...



Other events:



- Project's vehicles safely arrived at NUCE in May 2020.

- 2nd and 3rd Joint Coordination Committee (JCC) meetings were held on 27 April and 16 December 2020 to confirm the project's achievement, progress and issues as well as make the short time and midterm plan for the project's activities.

- JST mid-term review report was submitted in October 2020.

- JST hearing on the progress of project was held in November (JP team) and December (VN team) in 2020.

***** Seminars and workshop:

- XXIII International Scientific Conference "Construction: The Formation of Living Environment" (from September 23 To September 26, 2020). Assoc. Prof. Nguyen Hoang Giang Vice Rector of NUCE, Project manager is one of the Keynote speakers with a paper titled "Development of management policies and advanced technologies of construction demolition waste: a lifecycle approach for sustainability"

- Special session on Waste in Construction Industry at the 10th International Conference on Structural Engineering and Construction Management Environment (ICSBE 2020) has been organized in Kandy, Sri Lanka on Dec 20, 2020 (in collaboration with University of Peradeniya / Sri Lanka)

* Academic publication:

- Hoang, N.H., T. Ishigaki, R. Kubota, T.T. Kien, N.H. Giang, M. Yamada, and K. Kawamoto. 2020.Waste generation, composition, and handling in building-related construction and demolition in Hanoi, Vietnam. Waste Management 117: 32–41. https://doi.org/10.1016/j.wasman.2020.08.006
- Bandara, A.B.P., G.M.P. Kumara, A. Matsuno, T. Saito, T.T.V. Nga, and K. Kawamoto. 2020. Examination of crushed laterite brick for removal of chromium and arsenic from wastewater. Int. J. GEOMATE 19(74): 22-30. DOI: https://doi.org/10.21660/2020.74.9176

- Iqbal, M.R., K. Kawamoto, T. Uchimura, N.T. Dung, T.K. Ton, N.V. Tuan, and N.H. Giang. 2020. Compaction characteristics and CBR of sludge blended with recycled clay bricks for road subgrade application. Int. J. GEOMATE 19(75): 133-143. DOI: https://doi.org/10.21660/2020.75.39591
- Nghiem, H.T., Q.M. Phan, K. Kawamoto, K.T. Ngo, H.G. Nguyen, T.D. Nguyen, Y. Isobe, and M. Kawasaki.
 2020. An investigation of the generation of construction and demolition waste in Vietnam. 2020. Detritus 12: 135-149. https://doi.org/10.31025/2611-4135/2020.14002
- Kawamoto, K. 2020. Environmentally-sound management of construction and demolition waste: Wise utilization aimed at environmental pollution control and development of recycled construction materials. Material Cycles and Waste Management Research 31(1): 44-50
- Giang, H.N., D.H. Pham, T.Q. Nguyen, H.T. Nghiem, and K. Kawamoto. 2020. Sustainable management and technologies for recycled construction demolition waste in Vietnam. IOP Conf. Ser.: Mater. Sci. Eng. 869 032040. doi:10.1088/1757-899X/869/3/032040 (XXIII International Scientific Conference on Advance in Civil Engineering: "CONSTRUCTION THE FORMATION OF LIVING ENVIRONMENT" (FORM-2020): Oral. 24 September 2020, Hanoi, Vietnam).
- Ngo, K.T., T.D. Nguyen, Q.M. Phan, V.T. Nguyen, and K. Kawamoto. 2020. Influence of AAC grains on some properties of permeable pavement utilizing of CDW and industrial by-product. IOP Conf. Ser.: Mater. Sci. Eng. 869 032046. doi:10.1088/1757-899X/869/3/032046.
- Nghiem, H.T.,V.C. Tran, P.D. Hoa, T.S. Kieu, and, N.H. Giang. 2020. Flow of waste and a method for prediction of demolition waste generation from buildings A case study in Hanoi, Vietnam. IOP Conf. Ser.: Mater. Sci. Eng. 869 042035. doi:10.1088/1757-899X/869/4/042035.
- Thai, H. N., A Kato, H.G. Nguyen, T.D. Nguyen, T. K. Tong, V.T. Nguyen, T. Uchimura, T. Maki, and K. Kawamoto. 2021. Effects of particle size and type of aggregate on mechanical properties and environmental safety of unbound road base and subbase materials: A literature review. Int. J. GEOMATE 20(78): 149-157. DOI: https://doi.org/10.21660/2021.78.GX281

* Keynote speech:

- Giang, N.H. 2020. Development of management policies and advanced technologies of construction demolition waste: a lifecycle approach for sustainability. XXIII International Scientific Conference on Advance in Civil Engineering - Construction the Formation of Living Environment FORM 2020. (Oral. 23 September, Hanoi, Vietnam).

* Award:

- November 2020. Second prize in the National Student Science Contest, Study on the development of pervious pavement block from construction and demolition waste (Ho Chi Minh, Vietnam)



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