

OUTREACH ACTIVITIES UNDERTAKEN IN THE MNGD PROJECT IN 2019

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Introduction

This chapter describes the visualization and dissemination of the most recent research results obtained in the MNGD project. It presents a visualization of the results in the form of a project activity report describing three categories of results, keeping in mind the products to be delivered as a result of the research.

The first category is to share the visualized project's concept among project members, the second is dissemination of project concept to the general public, and the third is introduction and explanation of project activities to targeted local residents.

Project activities were conducted by researchers originating in different academic, cultural, and social contexts. The MNGD project was only begun in 2019, and the work discussed here was mainly performed by those engaged in research activities from the initiation of the project. In this project, which will continue over the next four years, activities will be conducted by taking into account the responses and opinions of those who have received the visualized research process and findings.

Concept Sharing among Project Members

This is a large-scale international joint study, conducted through four universities on the Japanese side and two universities and one administrative organization on the Ethiopian side. The core fields of study in this project are represented by researchers and specialists in engineering, agriculture, social and cultural anthropology, and area studies, among others. It is extremely important for researchers and experts from different countries, institutions, and fields of specialization share the core theme and image of the project to proceed with it

in future project. This section introduces how the abbreviation MNGD for the project was determined and how the project logo was created at the beginning of the project.

1. Project title

The abbreviation MNGD was proposed by Shigeta, a member of the project. He chose M-N-G-D due to its proximity to the sound of the word *menigedi*, which means road in Amharic. He then created an English phrase to describe the purpose of the project that could be abbreviated M-N-G-D.

Shigeta has been engaged in ethnobotanical research on the Ethiopian plant *ensete* for more than 30 years (see Chapter 3). He hoped that through its name, many Ethiopians who heard of the project would be able to remember it and its guiding orientation and be able to share it with others.

For many, the road is a part of daily life. For the people of Ethiopia, it is essential for achieving a better life. Shigeta, reflecting on this, composed the following text for the MNGD project website as an explanation of the idea of *menigedi* for Ethiopians:

*Menigedi ke sow gar,
Menigedi be sow,
Mengedi le limat*

Road with the People,
Road by the People,
Road for Development

This project is intended to create a network of people and things to create glocal (global + local) development tailored to local life to create and maintain a route with the above-mentioned meaning. The abbreviation M-N-G-D has this meaning.

For more than 20 years, Professor Kimura, the project leader, has been helping people living in 27 countries (as of March 2020), including Africa, Asia, Oceania, Central America, and South America, develop road-building skills. During this instruction, his beneficiaries have been working on support activities to “repair the road we use ourselves” (<http://corekenya.org/>), in the phrase of this project. Each time we explained what Professor Kimura had done to a friend in Ethiopia, they said, “I thought that roads were only made by the government. I

didn't even imagine that we would be able to make it ourselves." For more than 20 years, Professor Kimura has been working on the core idea of the MNGD project, namely, that the road is with and created by people, and it can lead to development.

Researchers in Japan and Ethiopia involved in the MNGD project developed abbreviations reflecting the experience of Professor Kimura, and they used a logo image introduced in the next section as a clue to guide work. We began to engage in research by associating our interest with this MNGD project.

2. The MNGD logo

Rooted in Professor Kimura's achievements, Ikeda developed several images related to the key elements of the MNGD project: roads, problematic soil (such as black cotton soil in this project), and the use of plants of native origin, and she created a design proposal for the project (Figure 1). Considering the idea that roads lead to development and to a shining tomorrow, she designed a logo that places the sunrise at the end of a yellow road. Various green gradients around the road indicate the cultivation of native plants (Figure 2).



Figure 1. Design Proposal & Rough Sketch



Figure 2. MNGD Logo

3. Major use cases

Once the logo was created, we began to use a number of means to communicate the project work to demonstrate its key concepts in public. For example, the project website was designed to convey a concrete image of the project site, including through photographs of the site that also retain the logo (Figure 3).

-Website of the project

<https://mngd.africa.kyoto-u.ac.jp/>

<https://www.facebook.com/mngdproject/>

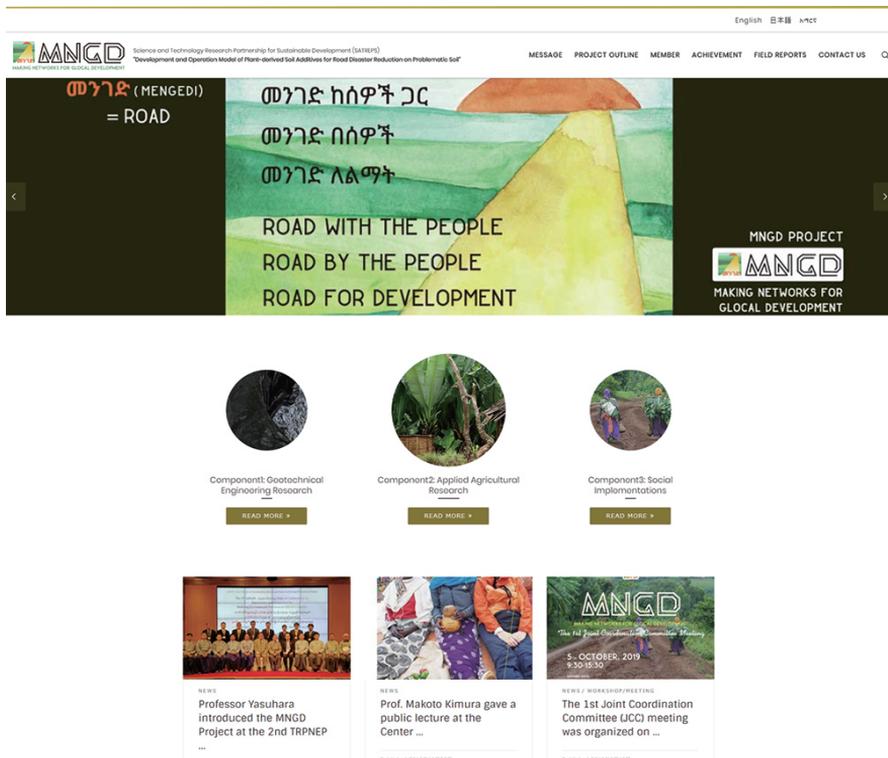


Figure 3. Website of the MNGD Project

In addition to the website, we prepared a sticker (Figure 4) and a document folder (Figure 5) to allow the collaborative researchers and graduate students on the Ethiopian side of the project to understand the image of the research project, and we attached these to ballpoint pens, mobile phones, personal computers, and other work items. In addition, a self-supporting banner (Figure 6) was prepared to assert the existence of the project even when the Japanese members were absent, and was set up at a counterpart university (Figure 7).



Figure 4. MNGD Goods 1, Sticker



Figure 5. MNGD Goods 2, Document Folder



Figure 6. MNGD Goods 3, Banner Stand



Figure 7. Prof. Kimura and Dr. Mesay Shake Hands in front of the MNGD Banner

Dissemination of Project Concepts and Images to a General Public

1. Pamphlet

Project pamphlets (Figure 8) were distributed at various events related to the project, such as the Kick Off Meeting at Addis Ababa on April 25, 2019, the Joint Coordination Committee meeting at Addis Ababa on October 5, 2019, and the Exhibition of TICAD 7 at Yokohama in July 2019.



Figure 8. Front (above) and Back (below) of the Brochure Printed at the Beginning of the Project

2. Poster

We also made an introductory poster for this project (in English and Japanese) (Figure 9). We had the opportunity to use this poster to present the outline and activities of the MNGD project to researchers working on joint research projects with Japan, mainly in Southeast Asia, at the ASEAN–JAPAN Meeting Point of Collaboration held in Myanmar. We give presentations at the ASEAN–JAPAN Meeting Point of Collaboration by Stakeholders and Researchers for Reducing Environmental Problems in ASEAN Countries in Naypyidaw, Myanmar.

At the time of preparation, three lecturers from Jinka University (introduced in chapter 4 as a collaborator), a counterpart institution, were visiting Japan on a short-term invitation. We received some comments on the clarity of the poster, in particular, the need to clearly present the project purpose and the overall goal. This poster will be revised as necessary, incorporating the responses of collaborators who are working for the counterpart organization.

Introduction and Explanation of Project Activities to Targeted Local People

1. Purpose of the manual and guidelines

The MNGD project focuses on three main issues and is intended to reflect the results of the research in manuals and guidelines for road construction. Generally, manuals and guidelines for the road describe engineering knowledge. In addition, we added knowledge from the humanities and social sciences to this manual and guidelines. We consider it necessary to pay attention not only to the technical steps of road building but also to organize local people who participate in operating and maintaining the road.

2. Manual of 2019 version

The basis for the 2019 version of the manual was the pamphlet prepared for the executive head of an NPO, MICHIBUSHINBITO, by Professor Kimura. As a first step, a simple flowchart (Figure 10) of road maintenance by community members was created, with reference to the pamphlet prepared by another road maintenance project in Kenya, CORE Kenya. Last December, we did a demonstration construction of a road in Jinka through villagers' participation. For this, we conducted an orientation meeting and outlined the plan to local residents with this flowchart.



SATREPS 

APRIL 2019-MARCH 2024

MAKING NETWORKS FOR GLOBAL DEVELOPMENT

A SUSTAINABLE APPROACH TO IMPROVING ACCESSIBILITY TO ALL-WEATHER ROADS IN RURAL ETHIOPIA

The Project for Development and Operation Model of Plant-derived Soil Additives for Road Disaster Reduction on Problematic Soil

Issued on December 2019

TARGET ISSUE: ROAD DISASTER

EXPANSIVE SOILS that cover more than 10% of the entire area of Ethiopia, have been the major constraints to building road network. Expansive soils pose a significant hazard to foundations for road infrastructure.

- >Change its volumes in response to the change in water contents
- >Heaving or lifting of road structure/Differential settlement
- >Loss of shear strength causes poor trafficability
- >Hampering people's access to social services

PROJECT PURPOSE is to develop a system of **MAINTAINING UNPAVED ROADS** using **LABOR-INTENSIVE TECHNOLOGY** and **LOCALLY AVAILABLE MATERIALS**. This system will be effective in reducing road disasters in areas of rural Ethiopia that have expansive soils.

PROJECT SITE
The project has been implemented in **ADDIS ABABA** and **JINKA, SOUTH OMO ZONE** in the Southern Nations, Nationalities and Peoples' Region (SNNPR).

METHOD **CELLULOSE-BASED ADDITIVES**



LOCALIZATION LOCAL RESOURCE APPROACH

① **LOCAL MATERIAL**
Cellulose-based (Plant-derived) Soil Additives on Problematic Soil is to be developed.

② **LABOR-INTENSIVE**
Operation model of road improvement using plant-derived soil additives by communities and relevant stakeholders is to be developed.

THE OVERALL GOAL of this project is to contribute to connecting all *kebeles* (small administrative units similar to wards) to **ALL-WEATHER ROADS** that provide affordable and maintainable all-weather access. It will also contribute towards meeting the needs of rural communities by applying innovative soil stabilizing technology that uses **LOCAL RESOURCES**.

To achieve this overall goal, the project will develop **PLANT-DERIVED SOIL ADDITIVES** and standardize **THE TECHNOLOGY FOR EFFECTIVE APPLICATION** to national and local road infrastructure development.

JAPAN ...Innovation is applied practically to socioeconomic development in developing countries

ETHIOPIA ...Contribute to the goal of the URRAP to connect all *kebele* with all-weather roads

SUB-SAHARAN AFRICA ...Developed Technologies will be applied in other sub-Sahara African countries

→ **CONTRIBUTIONS TO THE SDGs**



IMPLEMENTATION STRUCTURE | ADDIS ABABA SCIENCE AND TECHNOLOGY UNIVERSITY (AASTU), JINKA UNIVERSITY (JKU), ETHIOPIAN ROADS AUTHORITY (ERA), KYOTO UNIVERSITY (KU), EHIME UNIVERSITY (EU), UNIVERSITY OF MIYAZAKI (UOM), NAGOYA INSTITUTE OF TECHNOLOGY (NIT)

JAPAN

NIT

EU

KU

UOM

OUTPUT-1

GEOTECHNICAL ENGINEERING RESEARCH

Modification mechanism of problematic soil using cellulose-based soil additives has been clarified.

1.1 UNDERSTAND the mineral composition and physical and mechanical properties of the problematic soil (Black cotton soil).

1.2 VERIFY the effect of fine cellulose powder, obtained from used-paper, on improvement of properties of problematic soil. ESTABLISH its application method.

1.3 ESTABLISH the application method of newly developed soil additives made from local plants.

1.4 ELUCIDATE the improvement mechanism of the problematic soil by soil additives based on cellulose.

OUTPUT-2

APPLIED AGRICULTURAL RESEARCH

Production technology of cellulose-based soil additives using native plants has been developed.

2.1 FINE CELLULOSE POWDER "CELLDORON" — SEM image of treated clay with Celdoron. Fibrous cellulose could contribute the increase of shear strength of treated clay.

2.2 SELECTION of locally-available useful plant resources

- Site inspection of ensete farm
- Purchasing ensete and coffee husks at market
- Analyzing composition of ensete and coffee husks

2.3 DEVELOPING METHOD for processing plants into fine powder

- Site inspection of grinding machine of teff

2.4 PROGRESSION of Decomposition of FCP (Fine Cellulose Powder)

- Development of experimental fields in Jinka
- Burying Celdron samples in black cotton soil

OUTPUT-3

SOCIAL IMPLEMENTATIONS

Community-based road construction and maintenance models for problematic expansive soils have been developed.

3.1 TRIAL CONSTRUCTION To gather information on occurrences of road disasters and the current state of countermeasures undertaken in South Omo zone.

3.2 SOCIAL IMPLEMENTATION To develop maintenance method for roads on foundation of problematic soil processed with soil modifiers.

3.3 MANUAL & GUIDELINE Establish operation model of construction measures for problematic soil, and road maintenance and management system.

OUTPUT-4

4.1 SYNTHESIZED AND POLICY SUGGESTION

4.2 DISSEMINATION OF RESEARCH RESULTS

4.3 CAPACITY BUILDING

IN THE YEAR 2019 5 researchers from AASTU and 1 researcher from ERA → JKU (1 week)
3 lecturers from JKU → KU (2 months)

IN THE YEAR 2020 3 PhD. Students → KU, UOM, EU

ZONAL ADMINISTRATION OF SOUTH OMO ZONE

SOUTHERN NATIONS, NATIONALITIES, AND PEOPLES' REGION

ETHIOPIA

AASTU

JKU

ERA

Figure 9. Poster Outlining the Project

Before and after the demonstration site was constructed, an assistant who helped with the construction work provided items for the flowchart. One was an assessment of how much more of a burden falls on the residents beyond what was outlined to them in the description of the construction procedure (including economic aspects and the impact on the labor force). It also reminded us the necessity to show in advance what percentage of the construction cost must be provided by the project.

Future Plan for the MNGD Project

The project’s conceptual image that appears in the logo of the MNGD project and the idea and representation of specific work referred to in the abbreviation MNGD will be presented to people through our website, posters, pamphlets, and stickers. At the same time, to make available a deeper understanding of the project to local people, officials, and researchers who are specifically involved in it, we will continue to create and revise manuals and guidelines that incorporate interdisciplinary perspectives.

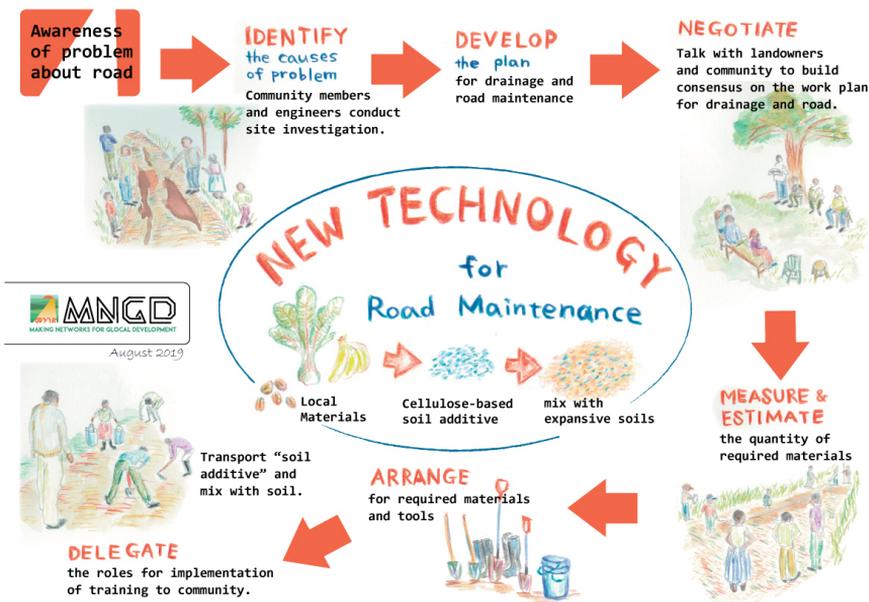


Figure 10. We Plan to Revise This Flowchart in the Future, Taking into Account the Opinions of Local Residents and Officials