How to Maintain the Rural Road by Ourselves

Civil Engineer
Geotechnical Engineering
Foundations, Tunneling, Retaining wall, New structures

Makoto KIMURA
Professor, Department of Civil and Earth Resources Engineering, Kyoto University, JAPAN
Chairperson of Board, Community Road Empowerment (NGO)
Tokyo Sky Tree  634 m high
Foundation
Earthquake force, Wind force
New technology  - Knuckle wall method -

Pile arrangement

Knuckle wall

Wall

Knuckle

Knuckle (bottom)
Crossing Sahara by bicycle (1984)

261-80-82
At the top of Mt. FUJI
What is a road for you?

Transport
Life
Network
Access

To carry farming products
Very important
To see the friends
Like water
Communication

No development without a road
Faïda

Above those are the answers from the group members. “What is a road for you?”
How do we repair rural roads without any machine?

What can I do for rural people as a Civil Engineer.

Challenges and Good Solutions

Vehicle per day < 50

September, 2007  Practical construction in East Uganda  May, 2008
Problems in rural area (Cause of the poverty)

Agricultural Community

River

Farm

Rural road (Unpaved)

Cash Crops

Well

Main Road (Paved)

Market

Can’t Transport Agricultural Product during Rainy Season

→

Crops are spoiled

→

Can’t get money
How to empower rural communities?
Which technology can solve the problem? (Four L)

Do-nou: GEOTEXTILE (Japanese term of soilbag)

Building firm SUBBASE

1. Locally available material
2. Labour based
3. Low cost
4. Low technology
“Do-nou” technology!!
Compaction
How to Generate the Strength of the "Do-nou"?

- **Bag**
- **External force**
- **Soil**
- **Soil is wrapped with bag**
- **External force applied to "do-nou"**
- **Tensile strength is generated.**
- **The soil inside the bag is reinforced.**
- **Mechanism is simple.**

Do-nou is the ultimate geotextile.

Careful work (compaction) is necessary.
The people can repair the road by themselves. (Kenya)
Repair the road we own by participation of community members. (Ghana)
Characteristics of “Do-nou”

**Material**

- **“Do-nou” bag**
  - Plastic (polypropylene)
- **Bags for sugar/maize**
- **Material put inside the bag**
  - Low cost material
- **Soil near the site**

**Construction**

- Labor based
- Simple
- No curing period
- Wooden mallet

**Compressive pressure**

- Bearing Capacity (250 kN)

Size: 40 cm x 40 cm, 10 cm, 20-25 kg
1952 Bridge construction in Japan
Voice of the people who experienced road maintenance using Do-nou

- Now I am confident I can maintain the road. Initially I was not very sure I could.
- I am very happy because the road has brought about good positive changes to our community.
- Initially I felt it was a difficult job needing a lot of energy but in the end I realized it was easy.
- In the beginning we did not have idea about maintaining roads but now we have learned.
- Big improvement of the road, I got knowledge.
- I have got technology, idea and murram road. I can do it by myself.
- I believed that the technology works on road maintenance.
IMPACT OF THE ROAD MAINTENANCE USING DO-NOU TECHNOLOGY

1. The buyers come to the village more frequently.
2. The price of the crops, vegetable and passion fruits, have raised.
3. The income of the farmers has increased.
4. The farmers were motivated and expanded their farm.
5. The farmers became able to reach the market more early in the morning, when the price was set more highly.
6. The extension officers visit the village more frequently, then the farmers get more skill and information of the markets from them.
7. The farmers started to new project for income generation, such as fish pond.
### Matrix for traffic, material, maintenance, and cost

<table>
<thead>
<tr>
<th>Design Amount of Traffic (Per day)</th>
<th>Material put in bag</th>
<th>Purchase material</th>
<th>Available material</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Do-nou, 2 layers</td>
<td>8.3 5.5 4.0 4.0 4.0</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>Do-nou, 2 layers</td>
<td>21.0 10.8 7.5 7.5</td>
<td></td>
</tr>
<tr>
<td>3.0</td>
<td>Do-nou, 3 layers</td>
<td>28.5 14.8 10.5</td>
<td></td>
</tr>
<tr>
<td>0.05</td>
<td>Asphalt t=0.05</td>
<td>51.0</td>
<td></td>
</tr>
<tr>
<td>0.15</td>
<td>Gravel t=0.15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cross section</th>
<th>Unit: m</th>
<th>Aspahlt</th>
<th>Crusher</th>
<th>Murram</th>
<th>Gravel</th>
<th>Sand</th>
<th>Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.0</td>
<td></td>
<td>18/m³</td>
<td>4.4/m³</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Low** Frequency of maintenance
- **High** Frequency of maintenance

**Target**
APPLICATIONS TO RURAL INFRASTRUCTURE

Retaining wall

Culvert

10 cm : Murram

Log B

Log A

“Do-nou” filled with Murram

70

50

150

20

80

50

Dam (water harvest)
With villager at 25 countries 145 km
**Future prospects**

- More trainings and policy dialogues for continuous Kenyan Government budget allocation for trainings at National training institute to youth.
  ⇒ In Kenya, 70,000 km of rural roads are still in poor condition, while 184 million youth are unemployed.
- Expansion of this inclusive business model to other African countries and developing countries.

<table>
<thead>
<tr>
<th>Region</th>
<th>Central America</th>
<th>South America</th>
<th>Africa</th>
<th>Asia</th>
<th>Pacific</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Countries</td>
<td>1</td>
<td>1</td>
<td>14</td>
<td>5</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>Length of the maintained road (m)</td>
<td>0</td>
<td>20</td>
<td>40,996</td>
<td>19,456</td>
<td>84,554</td>
<td>145,026</td>
</tr>
<tr>
<td>Number of trainees/participants</td>
<td>200</td>
<td>30</td>
<td>15,903</td>
<td>2,502</td>
<td>3,030</td>
<td>21,180</td>
</tr>
</tbody>
</table>
Road Problems to the Communities

Irrawady Division in Myanmar

1. Falling accidents in rainy season because of slippery and muddy road surface.
2. Bad road and bridge are impassable for vehicles.
3. No availability of suitable soil and stone for road maintenance because of Delta area.

Images of makeshift bridges and muddy roads are shown.
Khan Thar village, Pyapon, Irrawady

Project period: October 2013 – October 2014
Design: Tire Path Concrete Pavement (Thickness 10 cm)
Length • Unit Cost: 1,200 m • 13,000 Kyat/m (13 USD/m)
Number of participants in average: 50 person/days
Number of Working days: 64 days
Traffic: Bike, Motorbike, Toraji
Cross Section

Before

Do-nou filled with in-situ clay

After

Backfill

Concrete (Thickness 10 cm)

Stone or Gravel

Existing ground surface

60 cm  60 cm  60 cm
Impact of the project

Travel time

<table>
<thead>
<tr>
<th>Traffic means</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walk</td>
<td>45 min.</td>
<td>17 min.</td>
</tr>
<tr>
<td>Bicycle</td>
<td>Impassable</td>
<td>8 min.</td>
</tr>
<tr>
<td>Motorbike</td>
<td>Impassable</td>
<td>4 min.</td>
</tr>
</tbody>
</table>

The motivated and trained community has repaired the other road by themselves.

1. The road become passable even in rainy season.
2. The patients are transported to the hospital timely.
3. Students are no longer hampered going schools due to the road conditions.
4. Some villagers started bike taxi business.
5. The community themselves repaired the other road with the fund donated by the other NGO in February 2015.
Bridge in Khan Thar

Project period: October 2014 – October 2015
Type of bridge: Reinforced Concrete Bridge
Bridge Length: 20 m, 6 span, Maximum span length: 6 m
Cost: 19,000,000 Kyat (18,900 USD)
Number of participants in average: 40 person/days
Number of Working days: 150 days
Traffic: Bike, Motorbike, Toraji

This bridge was built with bamboos and very unstable. No motorbikes can pass.

Pedestrian bridge built with iron material
Sounding with local auger

Casting concrete for pile

Assembling steel bar

Form work for the beam
Min Hla Su village, Pyapon, Irrawaddy

Project period: October 2015 - October 2016
Design: Full Concrete Pavement with Do-nou
Length • Unit Cost: 1,200 m • 34,610 Kyat/m (27 USD/m)
Number of participants in average: 20 person/days
Number of Working days: 75 days
Traffic: Bike • Motorbike • Toraji
Concrete pavement thickness 10 cm

Wing/Head wall at the Inlet/Outlet of existing culvert built with Do-nou

Do-nou filled with in-situ soil

Concrete pavement

Existing culvert

Fill with in-situ soil

Do-nou filled with soil cement

Cross section in existing culvert

unit: cm

Concrete pavement Thickness 10 cm
Before

At the approach to the bridge

After
Yukawalay village, Hpa-an, Kayin

Project period: October 2013 - October 2014
Design: Gravel Soil Pavement with Do-nou
Length • Unit Cost: 120 m • 65,000 Kyat/m (66 USD/m)
Number of participants in average: 49 person/days
Number of Working days: 49 days
Traffic: 4 ton truck
Covered with in-situ soil containing local grass roots

Existing ground

Do-nou filled with soil cement

Fill

Compacted Good soil

Stone

Fill

Before

After
Impact

1. The number of roll over accident by boat, which was traffic means during flood, declined.
2. Patients are transported to hospital in timely manner.
3. Harvested crops can be transported to market, thus the post-harvest loss is reduced.
4. The villagers have obtained skills to repair road and they continue the maintenance and improvement of their road.
Sin Gu village, Hlaing Bwe, Kayin

Project period: October 2014 - October 2015
Design: Stone Pavement with Do-nou
Length • Unit Cost: 2,700 m • 12,000 Kyat/m (12 USD/m)
Number of participants in average: 20 person/days
Number of Working days: 150 days
Traffic: 4 ton truck
Cross Section

Highest water level

Do-nou laid under designed water level were filled with soilcement, other with in-situ soil

Fill with in-situ soil

Stone layer Thickness 10-15 cm

4.0 m

Before

Photo taken in rainy season

After

Photo taken in dry season
Le way, Nay Pyi Taw

Population: 88,000

Project period: October 2014 - October 2015
Beneficiary villages: Zekon, Thaloatpein, and other 64 villages
Design: Gravel surface • Reinforced Concrete Bridge
About Road, Length • Unit Cost: 1,000 m • 23,000 Kyat/m (23 USD/m)
Bridge Cost: 24,000,000 Kyat (2,400 USD)
Number of participants in average: 18 person/days
Number of Working days: 90 days
Traffic: 10 ton truck, Oxcart
Cross Section

Surface layer with 10 - 15 cm thickness of gravel

5.4 m for vehicles

2 m for oxcart

Do-nou filled with soil cement

Base course with granular soil

Before

After
The road lane was divided into two, one for oxcart and vehicles.

The wood bridge was replaced with reinforced concrete bridge.

10 ton truck can pass.
None Tone village, Pekon, Shan

Population: 5,000

Project period: October 2015 - October 2016
Design: Stone pavement with mortar
Length • Unit Cost: 240 m • 60,791 Kyat/m (46.5 USD/m)
Number of participants in average: 25 person/days
Number of Working days: 60 days
Traffic: 10 ton truck
**Cross Section**

- **Before**
  - Do-nou (soil cement)
  - Big stone or soil cement

- **After**
  - Stone and filling mortar

*Dimensions: 4 m*
The State of Construction and Impact

Laying pipe

After installation of culvert

Good drain system remove the cause of the mud on the carriageway of road.

1. The community become more cohesive through the experience of working together on the road.
2. The repaired section become passable even in rainy season.
3. It takes fewer minutes to go to market and hospital than before.
Min Kane village, Sinbaungwe, Magway

Population: 6,000

Project period: October 2015 - October 2016
Design: Stone pavement Thickness 25 cm
Length • Unit Cost: 2,500 m • 16,037 Kyat/m (12.3 USD/m)
Number of participants in average: 30 person/days
Number of Working days: 60 days
Traffic: 10 ton truck
Cross Section

Small stone: thickness 5 cm

Big stone: thickness 7.5 cm

Do-nou

3.6 m

Fill with soil cement

Covered with good soil

Good soil: thickness 15 cm

Before

After
Design

water level

Fill with good soil

Cross pipe

Do-nou filled with soil cement

The state of setting pipe

Complete
Chauk Tae, Chauk, Magway

Project period: October 2015 - October 2016
Cost: 28,017,100 Kyat (21,400 USD)
Number of participants in average: 15 person/days
Number of Working days: 40 days
Traffic: 10 ton truck
Box Culvert (size 0.75 m x 2.0 m, depth 4.0 m)

Population: 7,000
Vehicles couldn’t pass in rainy season.

Before

Wall: Masonry (Thickness 0.75 m)
Floor slab: Reinforced Concrete
Slab Thickness: 20 cm,
Iron bar φ 19 mm @150 mm

After

1. Motorbike can pass even in rainy season.
2. Students can go to school more days.
3. The method was presented at workshop.
A Potential for the Base of the Economic Pyramid (BOP) Business on Unpaved Road Maintenance by Community People

Resources ⇔ Business Model

Makoto Kimura
Kyoto University
Graduate School of Engineering
Sustainability (Kenya)

Training for “Do-nou” technology (CHARITY)

Association formed for rural road maintenance

Improvement of rural road

Sustainable maintenance

Business Potential

Recognition by the government

CHARITY TO JOB CREATION
Formation of Association and Registered Company

Six Farmer’s groups that acquired “Do-nou” technology (Horticulture, Peace building, etc)

They formed an association for improvement of rural road accessibility (October 2010)

Bottom-up: Empowerment both organisational structure and planning & management

Top-down: Recognition of “Do-nou” technology at the government level

Association registered as a company (September 2012)
Empowerment of organizational aspect
- Executive committee, Accounting, etc

Empowerment of practical aspect
- Cost estimation, construction planning
- Management of plans and materials
- Quality control
BOP Business Model – Kenya Version

Benefit brought wider range

Contribution for starting business

Japanese GV

International organizations

Ordering

Community Road Empowerment (CORE) Kenya

Funding

Technical transfer

Association (Registered as a company)

Kenyan GV

Private sector

Design & Construction

Improvement of rural road

Benefit to the community people
- Improvement of accessibility
- Shortening time for travel
- Decreasing of transport cost, etc

Improvement of livelihoods
BOP Business Model – Kenya Version

**Win-Win-Win-Win Relation**

- **Community**
  - Improvement of rural road
  - Benefit to the community people
    - Improvement of accessibility
    - Shortening time for travel
    - Decreasing of transport cost, etc.

- **Japanese GV**
- **International organizations**
- **Funding**
- **Canadian GV**
- **Ordering**
- **Kenyan GV**
- **Contractor**
- **Government**
- **Design & Construction**

**Benefit brought wider range**

**Contribution for starting business**

**Win**
Importance of Youth Employment

- No accessing to vocational trainings
- Poverty and unstable situations
- Unemployment for youths
- Increasing of idle youths
- Increasing of antisocial behaviour

Youth employment is a crucial point
Youth Employment for Sustainable Development

Joint Project with International Labour Organization (ILO)

Chairperson: Makoto KIMURA
Community Road Empowerment
Project Objective

To empower and create employment for youth groups by initiating Do-nou Technology for rural access road maintenance in the selected counties.
### Project Outcome Summary

[From the youths]

*We have skills.*

*Idle youths were reduced.*

*We learned moral with working together.*

*We got income.*

<table>
<thead>
<tr>
<th>Do-nou technology trainees</th>
<th>500 youths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constructors trainees → No. of groups who registered as companies</td>
<td>20 youths (1 rep. from each group) → 11 groups</td>
</tr>
<tr>
<td>Distance of maintained roads (During trainings)</td>
<td>3,730 m</td>
</tr>
</tbody>
</table>
Project outcome – Improved roads

Before the training

After the training

The road situations were improved in 5 counties, 7 sites. (3,730m)
Project outcome – Create Employment

Youth groups acquired some work after the project

- Supervision work from Kenya Rural Roads Authority
- Construction work costs several millions in Kenyan shillings
- Culvert installation and regular road maintenance work
- Part of work for 17 km paved road

Companies registered

11
(as of March 2014)
The future of Africa hinges upon motivated young people who overcome difficulties through their own power.

Japan’s Diplomacy towards Africa: “Strengthening Each Individual, One by One,”
Speech by Prime Minister Abe
2. Budget: USD 104,861
   USD 100,301, 95.6% (Grant)
   USD 4,560, 4.4% (Newala D. Counter fund)
3. Title: “Project for the Road Rehabilitation of Mkoma II Sokoni–Lihanga via Chimemena hill to Mkungu Road in Newala District, Mtwara Region”
4. Purpose: Livelihood of the People in Mkoma II village is improved with better access to hospital, market.
5. Area: Newala District, Mtwara Region, Tanzania
6. Executing Agency: Newala District
7. Implementing Agency (Supervision): CORE
<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oct., 14</td>
<td>Applied to Japanese Embassy (J.E.) by Newala D.</td>
</tr>
<tr>
<td>May, 15</td>
<td>Consultation to CORE by J.E.</td>
</tr>
<tr>
<td>Jun., 15</td>
<td>Visit to the site in Kenya by J.E.</td>
</tr>
<tr>
<td>Aug., 15</td>
<td>Field survey done by the CORE officers for design and BOQ for 2 weeks</td>
</tr>
<tr>
<td>Mar., 16</td>
<td>Contract as the project for 2015 fiscal year</td>
</tr>
<tr>
<td>Apr., 16</td>
<td>Mobilization by CORE officer for 1 week</td>
</tr>
<tr>
<td>May, 16</td>
<td>First supervision and coordination for 1 month, and 2 weeks, Local staff assigned</td>
</tr>
<tr>
<td>Sep., 16</td>
<td>Second supervision for 2 weeks</td>
</tr>
<tr>
<td>Oct., 16</td>
<td>Third supervision for 2 weeks</td>
</tr>
<tr>
<td>Feb., 17</td>
<td>Fourth supervision for 2 weeks, Completion</td>
</tr>
</tbody>
</table>

Expenditures in Brown from CORE, in Blue from Grant
B5 (National road), paved

Rehabilitated Section

Items of work:
✓ Concrete pavement
✓ Retaining wall
Longitudinal section view of the project road

Rehabilitated section
✓ Concrete pavement
✓ Retaining wall

Mkungu Road

B5 (National road)

Length: 5.8 km, Ave. G.: 2.8%

Mkoma II

Chimemena Hill

Water

Residents

Transport

L: 0.53 km, Ave. G.: 16%

L: 5.2 km, Ave. G.: 3.9%
Standard cross section

Traffic: Bike, Bicycle 4WD (Ambulance)

Retaining wall
With Do-nou Filled with Soilcement

Concrete foundation

Granular soil

Straight portion

Shoulder Width Concrete pavement
0.5 - 1.0 2.5 - 3.5 (t = 0.1)

Concrete (t = 0.1)
Base, Gravel (t = 0.15)

Do-nou (filled with granular soil)

Backfill Concrete ratio
(Gravel) Cement : Sand : Gravel = 1:3:6

Unit: m

Concrete ratio
Cement : Sand : Gravel = 1:3:6
### Summary of the works

**Period of construction:** Apr. 16 ~ Nov. (Dry)、Feb. 17  
**Executing agency:** Newala District  
**Supervision:** CORE, Intermittent supervision by Japanese 2 full time local staff (Coordination & Supervision)  
**Labour:** Mkoma II villagers  
**Completion work:** Concrete pavement $\text{t}=0.1, L=530, W=2.5$ (m)

<table>
<thead>
<tr>
<th>Item</th>
<th>Contents</th>
<th>Cost (USD)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment</td>
<td>Concrete mixer, Plate compactor</td>
<td>3,390</td>
<td>3</td>
</tr>
<tr>
<td>Labour</td>
<td>4,466 personday</td>
<td>16,720</td>
<td>16</td>
</tr>
<tr>
<td>Material</td>
<td>Cement, Quarry dust, Aggregate, Gravel, Granular soil, Water, Donou bags</td>
<td>30,313</td>
<td>29</td>
</tr>
<tr>
<td>Transportation</td>
<td>For Material, Water</td>
<td>12,542</td>
<td>12</td>
</tr>
<tr>
<td>Tool</td>
<td>Wheel barrow, Trowel, etc.</td>
<td>4,152</td>
<td>4</td>
</tr>
<tr>
<td>Supervision/Management</td>
<td>Fee for Japanese staff and local staff</td>
<td>37,744</td>
<td>36</td>
</tr>
<tr>
<td><strong>合計</strong></td>
<td></td>
<td>104,861</td>
<td>100</td>
</tr>
</tbody>
</table>


Construction
Supply of water for construction

Source (Water pan in Mkomall)

Transportation by bike

By vehicle

Stuck vehicle
Granular soil

Concrete
($t = 0.1$)

Base, Gravel
($t = 0.15$)

Straight portion
Inclusive business model developed through trainings to the youth on unpaved road maintenance using Do-nou technology

Dr. Eng. Makoto KIMURA
Professor, Graduate School of Engineering, Kyoto University
Chief Director, Community Road Empowerment (CORE, INGO)
1. To improve livelihood of rural people in Kenya by enabling them to access timely to the markets, hospitals and schools through improving conditions of rural access roads.

2. To contribute to the stability and development of the society through providing the youth with the employment opportunities and access to more and better jobs.
1. Limited access to markets, hospitals and schools due to poor road conditions

2. High rate of unemployment among the youth (80% of unemployment is youth)
Approach 1 to solve the problems

Training/demo of unpaved road maintenance using Do-nou tech. to the youth
A. Labor intensive, Local resource based, B. Demo at their residential area
=> The youth got the first experience contributing to the society.

1. Unpaved road before maintenance.
2. Demonstration of maintenance using Do-nou tech.
3. Workers on site, preparing materials.
Policy proposals to Local Authorities and Road Administrators/Line Ministry

A. Do-nou Demo, B. Budget allocations to the trainings for the youth
C. Manual & Guideline of Do-nou technology to be certified
Youth employment promotion model through trainings on Do-nou technology

- Business activities
  - Utilize the AGPO *
  - Skills for road maintenance
  - Qualified upon graduation
- Interested in road works
- Entrepreneurship
- No jobs, Dependent

*30% of government procurement is allocated to the youth etc.

* Access to Government Procurement Opportunities

- Youth employment promotion
- Receiving orders from Government
- Registered contractors
- Bid
- National training institute
  - (6 weeks, 150,000 ksh/person)
- Foundation of company
- Do-nou training/demo
- Policy proposal
  - 123 youth attended
  - (22 million ksh)
- Support saving the registration fee
- Company registration

Do-nou training/demo
Encourage the entrepreneurship

Implemented by NPO
Executed by Government
Conducted by the youth
36 Farmers groups (866 members) trained

121 Youth groups (2,424 members) trained

52 groups were trained at National training institute.

39 groups founded companies.

16 companies registered as qualified contractors.

20 contracts in total were received by the companies.

The contract amount in average is 1 million ksh.

Grant assistance by Min. of Foreign Affair in Japan

ILO

Toyota Foundation

Mitsui & Co. Environment Fund

Number of the trainees on Do-nou Demos

(Year)
Solution to poor road/unemployment problem with benefit for all three sides

Inclusive business model developed through trainings to the youth on road maintenance using Do-nou technology

Government

- Kenyan Government
  - Achievement of Vision 2030
  - Youth employment promotion
  - Better road networks

Base of Pyramid

- Community
  - Access to markets/hospitals/schools

Win-Win-Win

Benefit of all the three sides

Enterprise

- Local enterprise
- The youth with skills
  - Income
  - Business

Placing orders

Services (Road works)
Speech by H.E. Mr. Abe, Prime Minister of Japan
Japan’s Diplomacy towards Africa: Strengthening Each Individual, One by One
At A.U. HQ in Ethiopia, Jan. 2014

Experienced by the UNDP Goodwill ambassador, Ms. Misako Konno (Japanese actress)
Visit to Kenya at the occasion of TICAD VI, in Aug. 2016

【Bringing a bright future to youth】
「A Japanese NPO called CORE provides an excellent illustration of this.

Japanese aid workers and companies are working with consideration of African people’s feelings, such as trainings on road maintenance using Do-nou technology.
Bridge constructions
Field station 1 in Cameroon
Structure system
Make a good road for rural peoples!
Thank you for your attention!