



Meru County adopts the Do-nou Technology in a bid to Transform Roads and Empower its Communities

County:	Meru		
Sector/s:	Road Infrastructure	Sub-sector/Theme:	Roads
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Target Audience:	Counties and partners		
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Introduction

Road infrastructure serves as the backbone of economic development, connecting communities to essential services and unlocking opportunities for trade, education, and healthcare. In Kenya, the strategic development and maintenance of road networks has become a critical priority at both National and County levels, with transformative impacts emerging in previously underserved regions.

The Kenyan road network falls under a dual management structure. The National Government, through agencies like the Kenya National Highways Authority (KeNHA) and the Kenya Rural Roads Authority (KeRRA), maintains major highways, international corridors, and strategic national routes that facilitate regional commerce and regional connectivity.

At the County level, devolved units assume responsibility for urban and rural access roads that serve as crucial links between communities and local economic centers. This decentralized approach has empowered Counties to address infrastructure needs with greater responsiveness to local priorities.



In Meru County, road infrastructure has faced significant challenges despite the region's agricultural potential and economic vibrancy. Many urban settlements and productive rural areas have remained underserved by quality road networks, limiting access to markets and essential services. Residents have contended with impassable roads during rainy seasons, excessive dust during dry periods, and extended travel times that affect productivity and quality of life.

The deteriorated condition of roads in urban areas like Majengo and Mjini has particularly hindered economic activities, with small businesses struggling to receive supplies and customers facing difficulties accessing commercial centers. Additionally, poor road conditions have compromised safety for pedestrians and motorists alike.

In addition to infrastructure challenges, the County faces significant unemployment issues, particularly among youth, women and People living With Disabilities. Limited economic opportunities have contributed to poverty and underutilized human resources, making innovative approaches that simultaneously address infrastructure and employment particularly valuable for the region.

Implementation of the practice (*Solution Path*):

In response to these challenges, the County Government of Meru embarked on a groundbreaking initiative funded by the Japan Social Development Fund (JSDF) and administered by the World Bank (WB). This Recipient-executed Small-scale Trust Fund project, implemented by Community Road Empowerment (CORE), introduces an innovative approach to addressing rural road infrastructure.

The Project development objective is twofold: to create employment opportunities and develop skills in labor-based road maintenance using the innovative **Do-nou technology**, and to improve basic access for the target population in the previously underserved urban communities of Majengo, Mjini, and Gitimbine in Meru Town.

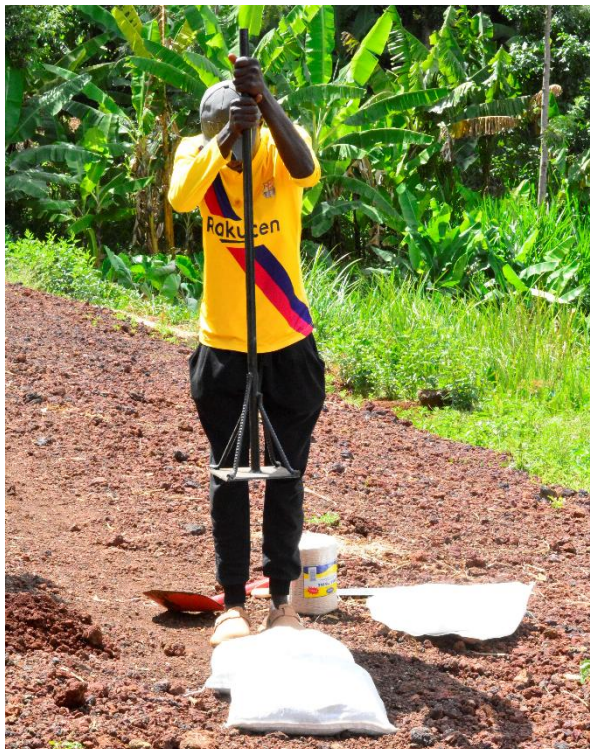
The County specifically focused on community-driven development to create lasting impact. The solution not only improves road infrastructure but also builds local capacity through skills transfer and enterprise development. By selecting the Do-nou technology, Meru County emphasized sustainable, locally-implemented solutions that transform both physical infrastructure and economic opportunities for residents, particularly youth and women.



A photo of 'Do-nou' arranged in grid patterns awaiting topping with appropriate surfacing material

The Do-nou Technology: How it works

This technique involves packing locally available materials into gunny bags to create a stable foundation for rural roads. These soil-filled bags follow specific preparation steps:



One of the youth's beneficiaries showcasing the preparation of a gunny bag

1. Preparation of Soil and Bags:

- Local soil with the appropriate composition is selected and prepared.
- Each gunny bag is filled with precisely measured quantities of soil.
- Bags are securely tied to prevent spillage during installation.

1. Arrangement and Compaction:

- These packed bags (called 'Do-nou' in Japanese, meaning 'soil bag') are carefully arranged in grid patterns.
- The arranged bags are firmly compacted to form a sturdy base layer.

2. Installation and Surfacing:

- Once properly installed, this foundation effectively distributes vehicle weight, prevents soil erosion, and maintains structural integrity even during adverse weather conditions.
- The Do-nou base is then topped with appropriate surfacing material, resulting in roads that remain accessible year-round while requiring

minimal specialized equipment for construction and maintenance.



A completed road section maintained using "Do-nou" technology

The method was chosen for several compelling reasons:

1. It utilizes locally available materials, reducing costs and environmental impact.
2. It creates employment opportunities for local community members
3. It is particularly effective on compact soil conditions prevalent in the region It creates more durable road surfaces compared to traditional methods at the same cost

The project employs a distinctive 40-day timeframe per road section, minimizing community disruption while maintaining quality. Workers receive compensation following World Bank guidelines, enhancing commitment and productivity. A gender-inclusive approach ensures women's meaningful participation throughout all project phases.

The initiative has rehabilitated 27 kilometers of road at a cost of KES 70 million (approximately KES 2.5-4 million per kilometer). Roads improved include Chief's Camp-Karu Rd 40, Gathima-Tosha Rd 16/17, and Mate-Kirige-Nchaure Rd 32. All construction follows Ministry of Roads and Transport specifications while incorporating innovative local methods.

The project's success relies on collaboration between the Government of Kenya, Ministry of Roads and Transport, Kenya Urban Roads Authority, Kenya Roads Board, and Meru County Government. These entities provide technical and advisory support through a formal Memorandum of Understanding.

Meru County's contributions include strategic road selection based on local priorities, clearing road corridors, providing technical guidance aligned with development plans, and facilitating community engagement for project acceptance and sustainability.



Beneficiary Selection Process

The selection of project beneficiaries was conducted through a transparent public participation process. Information posters were displayed in the target communities inviting participation, with priority given to people living in the surrounding areas where the project is being implemented.

The target communities were selected through a series of consultations with the Meru County Government, considering several factors aligned with JSDF criteria:

1. Potential to enhance the impact of the Eastern and Western Meru Bypass roads financed by World Bank on local beneficiaries by improving community access to the newly constructed roads.
2. Presence of low-income and marginalized/vulnerable groups (specifically, single-headed households and households with unemployed or underemployed adults and youth).
3. Communities whose livelihoods are affected by limited road access due to reliance on unclassified and poor-condition access roads, which are not supported by any World Bank-financed project or program.

The project targeted 50 groups, each composed of 25 people, prioritizing youth, women, and other vulnerable groups, with the aim of improving their livelihoods. In total, 1,250 people directly benefited from on-the-job training and employment opportunities using Do-nou technology.

The project was structured around three interconnected components designed to maximize impact and sustainability. Component 1 focused on capacity building through community mobilization, targeted training, and institutional support to Meru County to ensure sustainable adoption of labor-based road maintenance technology. Component 2 centered on enhancing livelihood opportunities through the formation of Small and Micro Enterprises (SMEs) and providing them with essential technical and financial support. Component 3 encompassed project management, rigorous monitoring and evaluation mechanisms, and strategic knowledge dissemination to document and share best practices with other stakeholders.

The project aims to improve 26 km of access roads connecting the 23 km Eastern and Western Bypasses. Officially launched on 27th April 2022, in Meru, the project is scheduled to conclude on 30th June 2025.

Results of the practice (*outputs and outcomes*)-

The project has achieved significant milestones across several dimensions:

Skills Development and Enterprise Formation

- 50 community groups have been formed and registered as Small and Micro-Enterprises (SMEs).
- 100 selected individuals (2 from each SME) have undergone intensive 6-week training by Kenya Institute of Highways and Building Technology (KIHBT) in Meru.
- As part of the Roads 2000 Program, the Ministry of Roads and Transport has supported these 100 people to undergo Labor-Based contractor and Do-nou technology training implemented by KIHBT.
- 33 SMEs have acquired Access to Government Procurement Opportunities (AGPO) certification.



- 22 SMEs have obtained National Construction Authority (NCA) certificates, enabling them to tender for contracts at County and National Government levels.

Infrastructure Development

- 19.38 kilometers of roads rehabilitated using Do-nou technology and standard graveling with murrum/gravel material.
- Additional 7.4 kilometers planned, bringing the total to 26.78 kilometers upon completion.
- Strategic culvert installation and drainage alignments implemented in collaboration with the County and Kenya Urban Road Authority.

Challenges Encountered

Despite its successes, the project has faced several notable challenges:

1. **Prioritization of Road Sections:** Each community feels it should be considered first, creating difficulties in establishing a fair and acceptable order of implementation.
2. **Beneficiary Selection Constraints:** The project's focus on youth employment sometimes excludes older community members who could contribute effectively. Additionally, the limited number of positions available has been insufficient to meet the high demand from **interested community members**.
3. **Topographical Challenges:** The varied terrain in Meru County has presented technical difficulties for road construction and increased costs in certain areas.
4. **Resource Limitations:** Specific requests from homeowners, such as concrete construction at drainage points near residential entrances, have created additional resource demands beyond the planned budget.

Lessons learnt:

1. Establishing clear Memoranda of Understanding with project partners and stakeholders is essential for effective collaboration and role clarity.
2. There needs to be a detailed scope of what public participation entails, including guidelines on the expected number of participants and what constitutes adequate community involvement.
3. The Do-nou technology's labor-intensive nature not only addresses infrastructure needs but also creates employment and builds skills within the community.
4. The involvement of National agencies, County Government, and international partners provided comprehensive technical, financial, and advisory support crucial for project implementation.
5. By aligning with established programs like Roads 2000 and leveraging existing institutions like KIHBT, the project enhanced sustainability and institutional support.
6. The formation of SMEs and their certification with AGPO and NCA ensures continued income opportunities beyond the project lifecycle.
7. The focus on underserved communities and marginalized groups has helped address inequities in infrastructure development and economic opportunity.
8. The year-by-year approach to training and road rehabilitation has enabled the project to refine methods and address challenges progressively.



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Recommendation:

1. Scale the successful Do-nou Technology implementation from Meru to other underserved regions throughout Kenya.
2. Create dedicated budget lines within road maintenance funds to ensure sustained support for community-based infrastructure approaches.
3. Incorporate Do-nou Technology into technical training institution curricula to build a larger pool of skilled practitioners nationwide.
4. Develop government procurement guidelines that give preference to local SMEs for maintenance of community access roads.
5. Establish a mentorship program where experienced contractors provide guidance to emerging SMEs on technical and business management capabilities.
6. Implement a regular monitoring framework to track road conditions, economic activities, and livelihood improvements for quantifying long-term benefits.



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Photos of; a) Chief's Camp -Karu Rd 40, b) Gathima-Tosha Rd 16/17 and c) Mate-Kirige-Nchaure Rd 32

Before



During



After





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Maps showing the roads construction



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ROAD NUMBER	ROAD NAME	ROAD LENGTH
11	Kimanya-Ngurumo Kainyinginyo Road	1.6km
12	Calvary-Ngurumo Road	0.4km
37	Full – Gospel Kabii Road	0.3km



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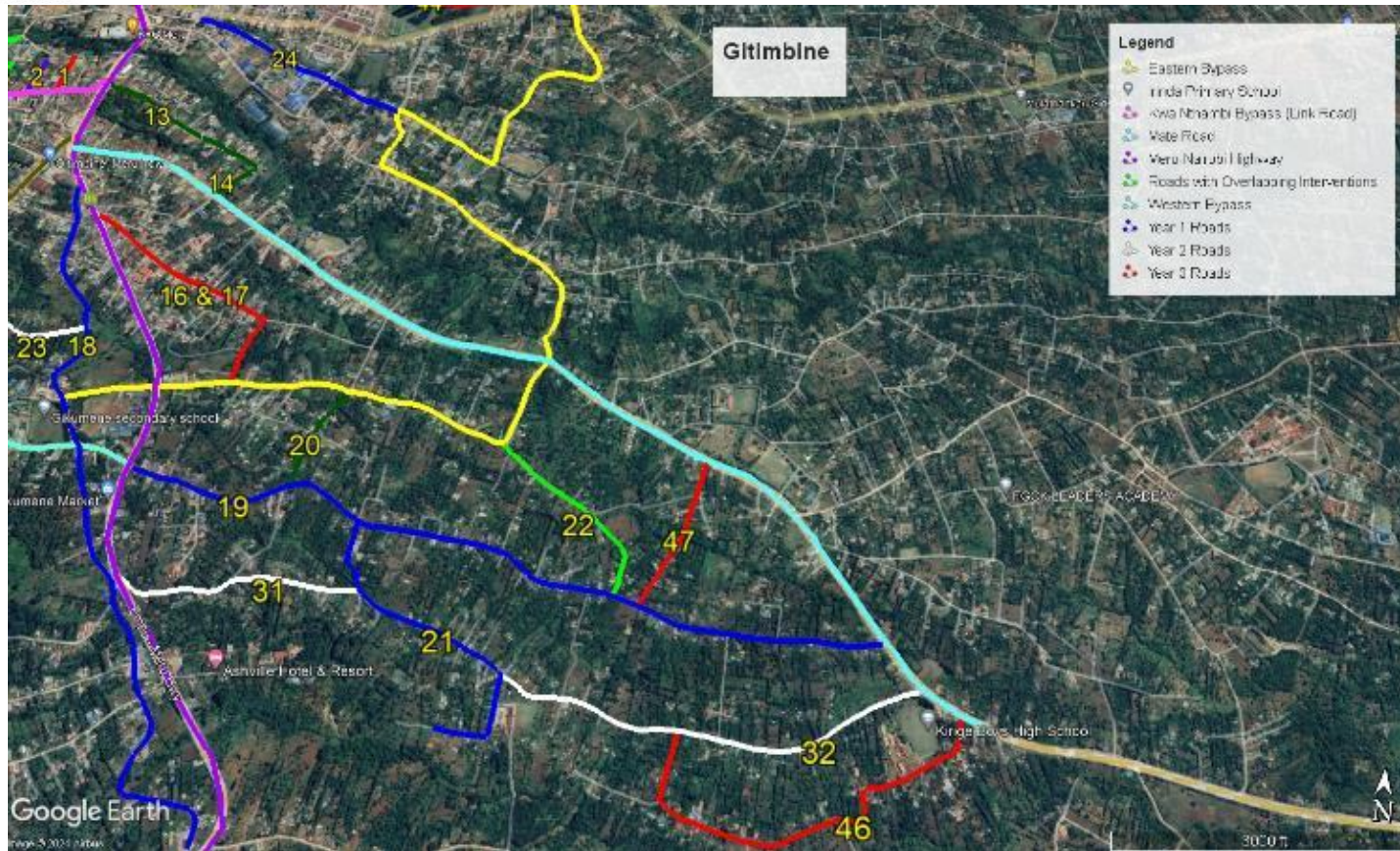
ROAD NUMBER	ROAD NAME	ROAD LENGTH
38	Bypass-M'karama Road	0.2km
39	Karingene-Bypass	0.3km
40	Chief's Camp -Karu Road	0.8km
41	Karingene Dispensary-Gachiege Road	1.2km



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ROAD NUMBER	ROAD NAME	LENGTH	ROAD NUMBER	ROAD NAME	LENGTH
13	Mwiraria-Mate Road	1.0km	20	Nkungi-Bypass Road	0.5km
14	Mwiraria-Mate-Kanyuru Road	0.4km	21	Nchaure-Maigene-Assistant Chief Road	1.2km
15	Bravo- Mate Road	0.35km	22	Eastern Bypass-Kathare-Nchaure	0.9km

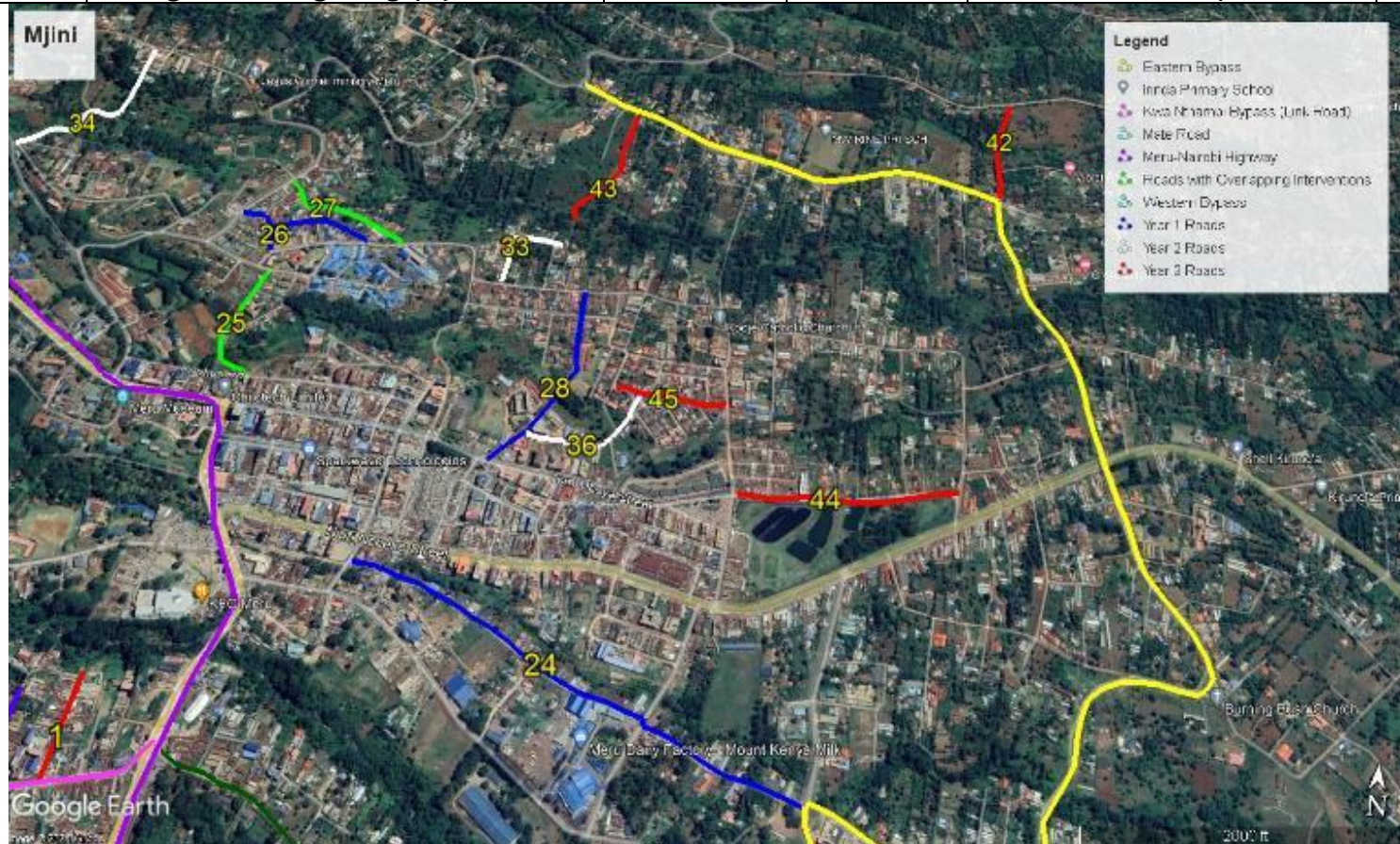


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16 & 17	Mate-Gathima-Tosha	1.3km	23	Gikumene-Kaguru Road	1.4km
18	Camflames-Gikumene-Kwa Daudi	2.9km	31	Tungi Road	0.9km
19	Gikumene-Kwa Mbogori-Nchaure-Muringo-Obugi Road	2.60km	32	Mate-Kirige-Nchaure Road	1.45km
46	Karingene-Muringo bugi pry school	1.2km	47	Kathare Kwa Phillip Road	1.0km



ROAD NUMBER	ROAD NAME	ROAD LENGTH	ROAD NUMBER	ROAD NAME	ROAD LENGTH
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24	Meru –Dairy Backstreet Kailanya Road	1.6km	34	Marua-Cathedral Road	0.65km
25	Hospital Road-CBK Road	0.4km	42	Mwirine-Chugu Road	0.2km
26	Ruaraka-Mjini- Floodlight	0.3km	43	Koje-Society Road II	0.45km
27	Mortuary –Mjini Social Hall Bypass Road	0.35km	44	Juakali – Mewass Road	0.4km
28	Koje-Full Gospel Road	0.40km	45	Koje-Shauri Road	0.25km
33	Koje-Society Road	0.28km			