Sustainable Infrastructure in Africa

Pathways to Green Growth in Africa

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WHAT IS SUSTAINABLE INFRASTRUCTURE?

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Infrastructure in UNOPS

UNOPS mandate* and comparative advantage

- Project Management, **Infrastructure** and Procurement

UNOPS Strategic Plan 2014 – 2017**

- New delivery practice **Sustainable Infrastructure**: *To contribute to the ability of countries to design, construct and maintain infrastructure, integrating and balancing social, environmental and economic considerations.*
- Strategic must win: **Leadership in Sustainable Infrastructure**

*United Nations General Assembly resolution A/RES/65/176 (20 Dec 2010)
** Executive Board decision 2012/16

Leader in Sustainable Infrastructure

UNOPS

FOCUS AREA

RISK REDUCTION & RECOVERY

- Vulnerability Assessments
- Watershed Management
- Shelter

TRANSPORT

- Roads
- Bridges
- Airstrips

PUBLIC BUILDINGS

- Prisons
- Hospitals
- UN-Buildings

COMMUNITY INFRASTRUCTURE

- Schools
- Housing
- Waste Management
- Water & Sanitation

SERVICE TYPES

CONSTRUCTION SERVICES (planning & design, construction, site supervision, contract management)

Disaster Resilient Engineering
Renewable Energies

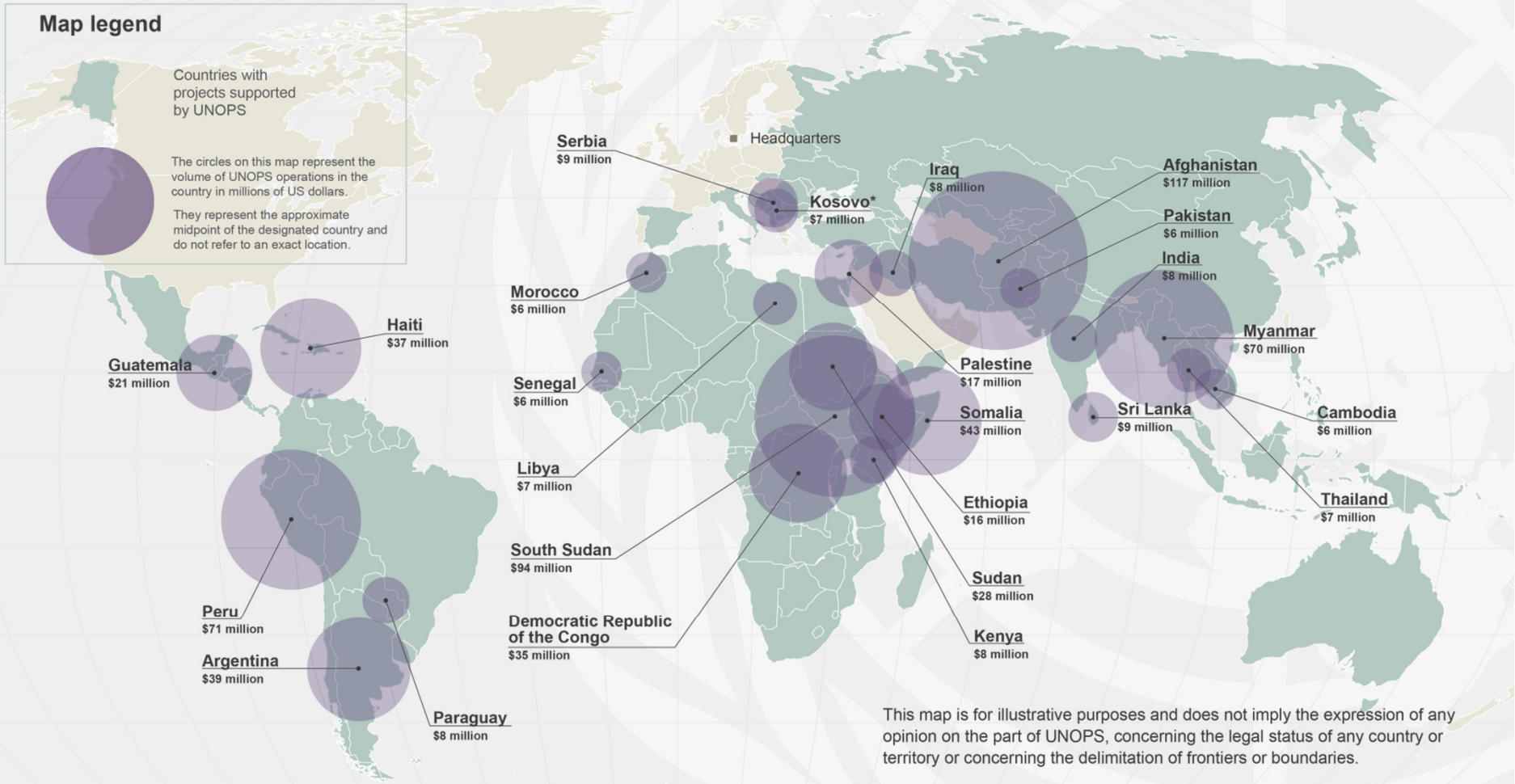
NON-CONSTRUCTION SERVICES (advisory services)

- Development of technical specifications
- Organizational strengthening
- Training & professional development

* The products/services mentioned under each Focus Area s are some examples. UNOPS works on a wider range of projects other than the above mentioned list.

Where we work

Infrastructure global portfolio (2012)

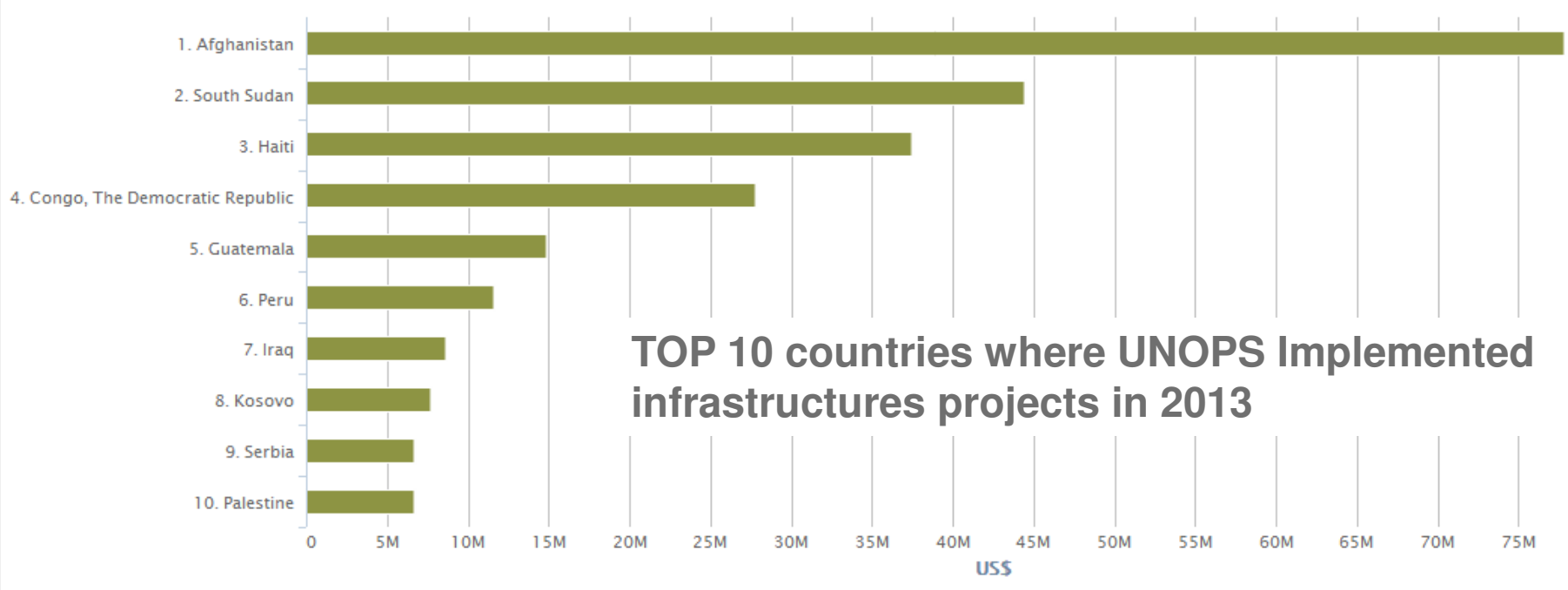


This map is for illustrative purposes and does not imply the expression of any opinion on the part of UNOPS, concerning the legal status of any country or territory or concerning the delimitation of frontiers or boundaries.

*Referred to throughout in the context of United Nations Security Council resolution 1244 (1999)

Top 10 countries of implementation

Transport $91 M
Public Buildings $65 M
Community Infrastructure $28 M
Risk Reduction & Recovery $9 M



TOP 10 countries where UNOPS Implemented infrastructures projects in 2013

Key results in infrastructure 2013

$1billion/year global portfolio, a third in Infrastructures

“ The new roads have really changed our lives. Now we can access schools, hospitals and markets easily “

Mohammadullah, Afghan farmer working on UNOPS roads

$338M expenditure in Infrastructure

3,560 km of roads were constructed or rehabilitated

39 schools, 40 administrative buildings

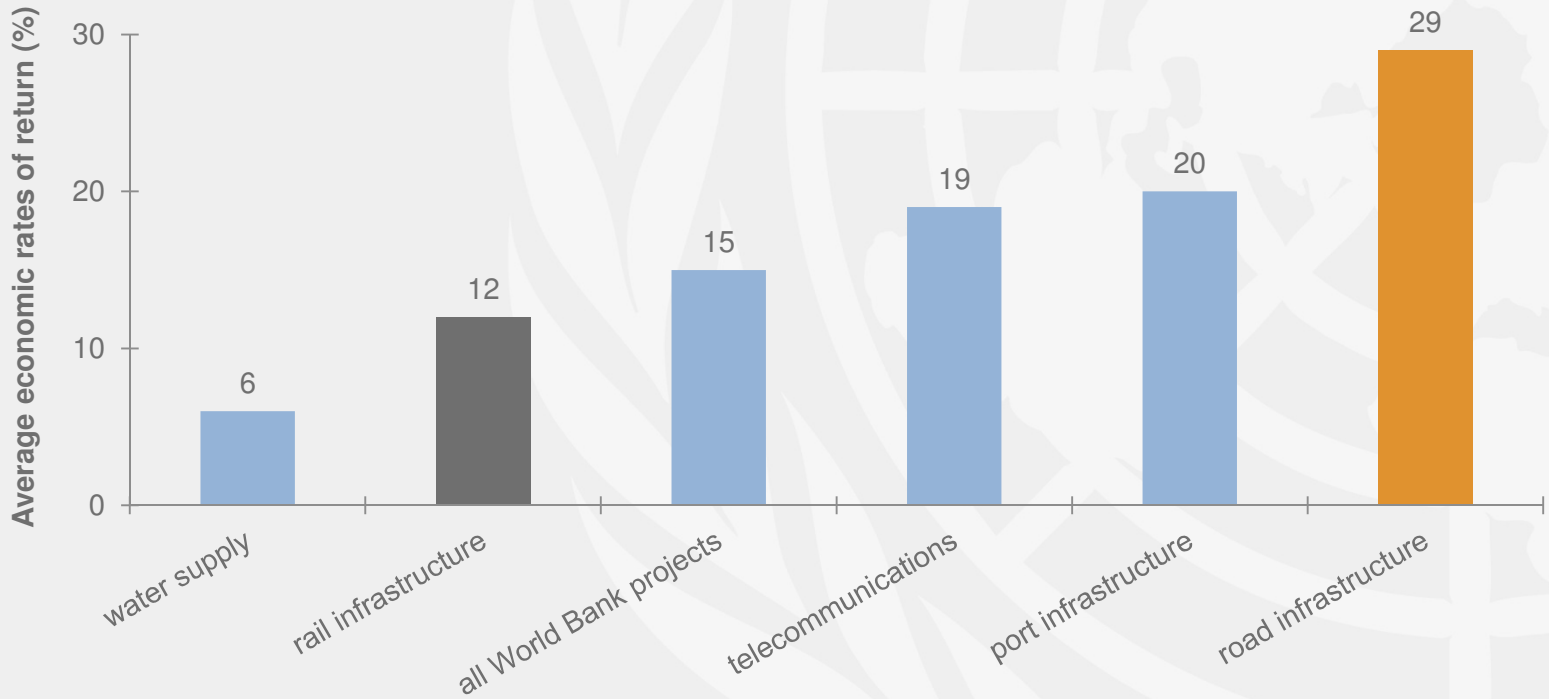
6 police stations, 7 courthouses, 7 prisons

81 bridges designed & constructed

14 hospitals, 14 health clinics & 7 medical facilities

‘Roads’ for Sustainable Development

Infrastructure Economic Return



Source: The World Bank, 2003

© International Road Transport Union (IRU) 2007

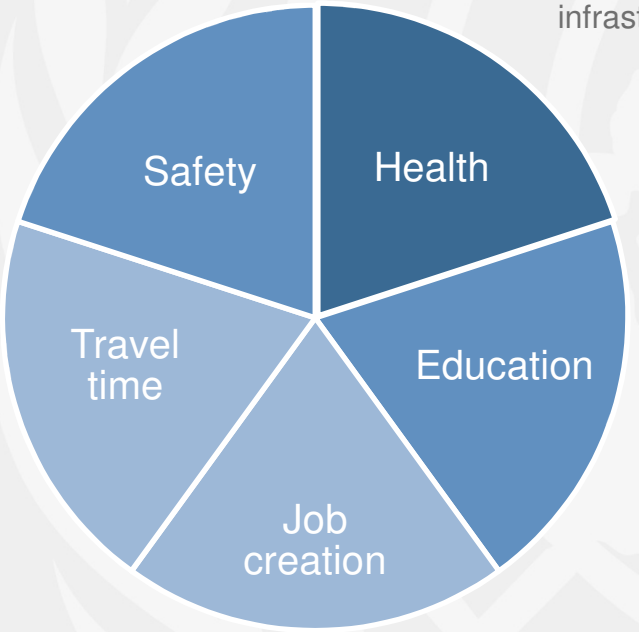
Gender & job creation

SAFETY

- Road safety in highways and trade corridors (without facilities for pedestrian mobility and protection) going through rural areas is a major issue, especially for women and children
- Road traffic injuries are leading cause of death among adolescent girls in high- and upper-middle-income countries

TRAVEL TIME

- Changing demographic and land-use patterns have made the distance to fields, water and firewood sources greater
- road access reduces travel time (especially for women who spend more time in transport activities in Africa)



HEALTH

- ~ 75% of maternal deaths could be prevented through timely access to essential health care → key role of transport & road infrastructure

EDUCATION

- Strong link between girl's school enrolment and road access
- School enrolment > in communities with paved roads and the percentage of children enrolled in schools declines the farther away the schools are
- World Bank case study from Morocco: girl's school attendance increased by over 40% after a new road was put in

JOB CREATION

- Increasing productivity of labour, access to markets for labour and goods, reduce the time of marketing produce & expand access to services

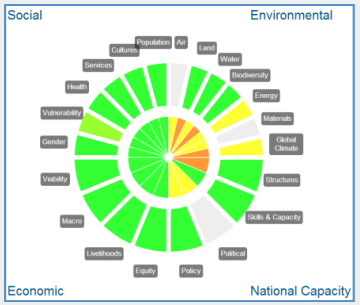
Source: World Bank, WHO

Measuring Infrastructure Sustainability

UNOPS

Before the construction

- Sustainability Markers
- UNOPS internal tool



During Design and Construction

- Good design for reduced environmental impact
- EMS – ISO14001
- Quality-ISO9001

Benchmarking the success

- CEEQUAL – the Civil Engineering Awards Scheme

CEEQUAL
IMPROVING SUSTAINABILITY

Excellence: standards

PMI Consultant Registry

PRINCE2® LICENSED AFFILIATE

Sustainable Project Management

CIPS Chartered Institute of Purchasing & Supply

FIDIC

Procurement & Contracts

Case Study: PARRSA in DRC

UNOPS

Challenge

The development objective of PARRSA is to **increase the agricultural productivity** and to **improve the marketing of plant and animal production by small farmers in targeted areas**. It covers the Province of Equateur in three districts of North Ubangi, South Ubangi and Mongala as well as the Pool Malebo in Kinshasa .The PARRSA includes three components: (I):Improvement of agricultural and animal production; (II):Improvement of infrastructures; (III) Building capacity of the Ministry of Agriculture, Fisheries and Livestock and the Ministry of Rural Development, Project Management and follow up and evaluation.

Detail

Project Name
Projet d'Appui à la Relance et à la Réhabilitation du Secteur Agricole (PARRSA)

Location
Various, DRC

Ref / Project ID
77040

Status
ongoing 50%

Source / Funding
WB $120m

Point of Contact
Moussa Diagana
MoussaD@unops.org

Solution and Deliverables

UNOPS has delegated contracting authority for the management and execution of component II **Improvement of infrastructure** by:

- Construction construction/rehabilitation of 2,500 km of agricultural roads,
- Rehabilitation and construction of 4 markets and 16 warehouses.
- Irrigation infrastructures covering surface area of 2,000 hectares

The objective of this component is to establish a link between the production areas by improving markets access in the project intervention areas. This component includes two sub-components:

i. road rehabilitation of agricultural services,

ii. improvement of infrastructure in Equateur.

Sustainability aspects

Selection of the roads, markets and warehouses:

- 3 districts on a participative basis involving the local communities and authorities.
- Rural roads link (1) agricultural areas for production to markets; (2) to fluvial ports; and (3) interconnected with national/provincial roads.

Selection criteria of markets

- Space for construction responding to the standards of setting-up of the rural markets;
- Sites in public domain vs. private concessions
- Importance of the market for the flow of production and for agricultural transactions;
- Management of the market by the beneficiaries.
- Women in the management of the market

Selection criteria of warehouses

- Warehouses in rehabilitation zones
- Communities to manage warehouses;

Envr/social impact of roads construction

Roads Maintenance in post project stage.

Use of Locally sourced Materials

Work with local firm for capacity building

Case Study: PARRSA in DRC

La route avant les travaux

La route après les travaux

Le pont de Nyalolo avant les travaux

Le pont Nyalolo après les travaux

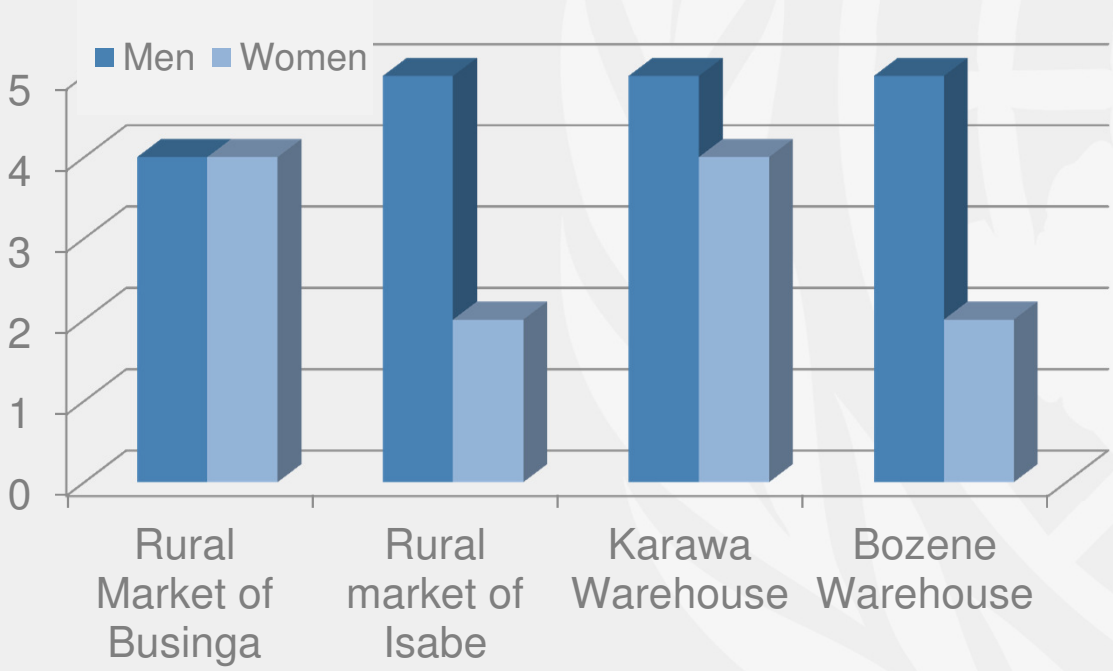
Case Study: PARRSA in DRC

During the construction

Case Study: PARRSA in DRC

Impact on gender

Elected members of management committee



Case Study: Warrap Roads in South Sudan

UNOPS

Challenge

SSRF Warrap State Stabilization Programme focuses **specifically on improving stability and security in priority areas affected by conflic**t. To this end, and to ensure the delivery of effective and well-targeted stabilization and recovery programmes in Warrap State, the South Sudan Recovery Fund (SSRF) through UNDP and implemented by the United Nations Office for Project Services (UNOPS)

Detail

Project Name
SSRF Warrap State Stabilization Programme

Location
South Sudan

Ref / Project ID
78572

Status
ongoing

Source / Funding
South Sudan Recovery Fund (SSRF)/$10m

Point of Contact
Jan Raats
JanAR@unops.org

Solution

The project consists of clearing and widens, horizontal centre line re-aliening, restoring construction of drainage structures, development of maintenance strategy and capacity building of Ministry of Physical Infrastructure of the Warrap State

Deliverables and Sustainability

Main deliverables

- Construction of Warrap – Mushaar Road 45 Km
- Construction of Warrap– Mushaar Road 40 Km
- Construction Of Four Police Posts
- Training Ministry Staff
- Assessment Of Makwac-apaboung Road
- Selection of the roads, markets and warehouses:

Sustainability

Despite the project value, UNOPS used its Short Form Contract (Green Book) for three main reasons:

- Limited complexity of the project
- UNOPS was to provide the designs
- Desire to attract local contractors (capacity building)

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Case Study: Warrap Roads in South Sudan

Before the construction → During the construction → After the construction

Case Study: Warrap Roads in South Sudan

UNOPS

Measuring the Impact

Inputs	Activities	Outputs	Intermediate outcomes	Impact
USD	Road construction	Road constructed	Travel time reduced	Security increased and level of ethnic conflict reduced
Time	Police posts construction and furnishing	4 police posts constructed and furnished	Presence of local Gov. increased	Job creation
Staff	MoPI staff training	10 operating MoPI staff trained	Traffic increased	Gender balance
		Job opportunities increased	Access to social services increased	
			Access to rule of law facility improved	

Assumptions

- weather, qualified contractor, skilled manpower
- South Sudan politically stabilized, Other agencies supports stabilization, DDR
- People have means to use the road, MoPI has budget and capacity to take over the maintenance

Case Study: Development of national road design manual

Challenge

An East African country, suffering from decades of conflict and poor economic growth, sought to build the necessary roads infrastructure to facilitate much needed economic growth and regional trade. To do so, the national authority, with the assistance of DFID and UNOPS**, needed to create a national standard for low volume roads design and construction to guide contractors and ensure efficient public expenditure on roads**.

Detail

Project Name
AFCAP South Sudan low volume roads design manual

Location
Juba, South Sudan

Ref / Project ID
65417 / 81781

Status
Completed
01/12 to 1/13

Source / Funding
DFID $320k

Point of Contact
Jan Raats
JanAR@unops.org

Solution

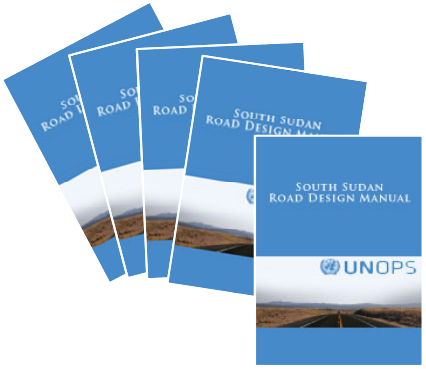
The engagement prepared design manuals for low volume roads appropriate for the local context of an East African country. UNOPS' experts took into account local conditions including traffic, climate, public sector and the available capacity for road construction and maintenance.

The manuals also considered local resources of materials, equipment, labour, contractors and crosscutting issues such as gender and environment. Importantly, the manual leveraged regional successes in Low Volume Road (LVR) Manuals.

Examples of deliverables

The primary project outputs are design manuals for low volume roads with the following components:

- Design Standards for low volume roads
- Complementary interventions
- Design standard for small structures
- Trail bridges manual
- Road Manual



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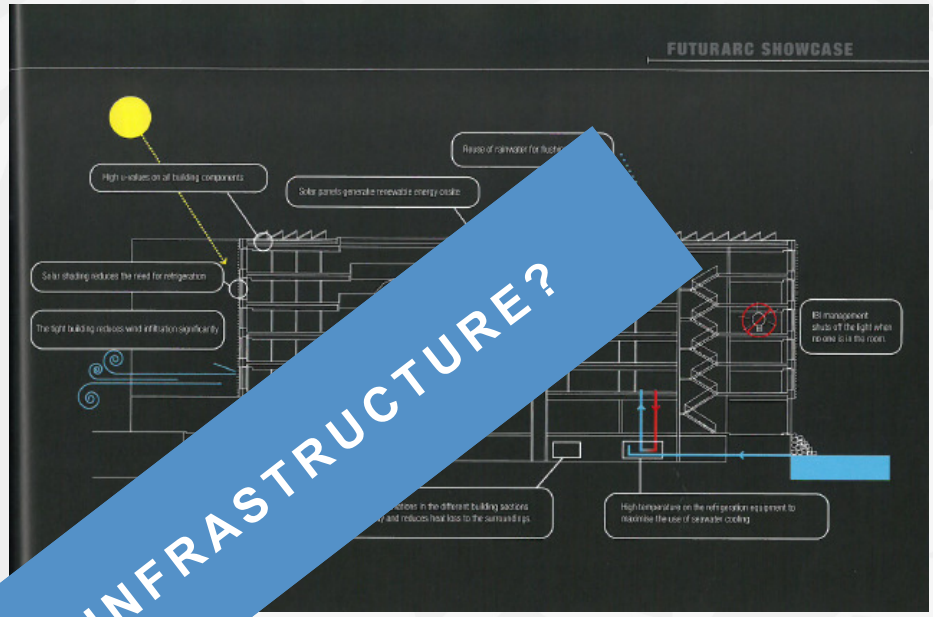
WHAT IS SUSTAINABLE INFRASTRUCTURE?

UN City Copenhagen



Is this a SUSTAINABLE INFRASTRUCTURE?

Sustainability

Air quality: entirely ventilated, only clean fresh air p… with balance humidity

Solar panels: 1,400 solar panels, production o… duces significantly the use of grid

Seawater cooling: cold seawater pumpe… system almost entirely eliminating the need of external power

Water efficiency: innovative aerator… w. Roof captures 3million l/year enough to flush toilettes

Solar shades: sophisticated sc… loses automatically to trap or reflect sun's heat

Reflective roofs: coated w… ant-based membrane reflecting sunlight reducing warming and AC usage

Green roofs: about 2… ered with vegetation preventing drains, storm water is harvested via sand traps

Waste: organic… uum system and recycled as compost for biogas production. Rest is recycled

Energy efficiency … st efficient building annual consumption < 50KwH/sqm (LEED Platinum)

Green energy: energy … ired to top up onsite PV production is purchased from the grid (35% from Wind Turbines)

UNEP-HABITAT UN Office Nairobi

Air quality

Landscaping

Natural air and lights

Water

Solar energy

UNOPS
ENVIRONMENTAL QUALITY
CONSIDERATIONS DESIGN
GENDER SENSITIVE
DESIGN
RENEWABLE
ENERGY
ENERGY
EFFICIENCY
MAINTENANCE AND
OPERATIONS
OCCUPATIONAL
HEALTH &
SAFETY
MORE SUSTAINABLE
INFRASTRUCTURE
usability
QUALITY CONSTRUCTION
WHAT IS SUSTAINABLE
INFRASTRUCTURE?
RISK REDUCTION
AND RESILIENCE
COMMUNITY
INVOLVEMENT
CHOICE OF
MATERIALS

Thank you!
Questions?