

2014 FIDIC – GAMA ANNUAL CONFERENCE

LOCAL INVOLVEMENT IN MAJOR PROJECTS FOR SUSTAINABILITY

MAPUTO: 23 TO 26TH MARCH 2014



Group of African
Member Associations



International Federation
of Consulting Engineers



Association of Consultants
Mozambique

THE EWASO NG'IRO SOUTH RIVER MULTIPURPOSE DAMS DEVELOPMENT PROJECT IN KENYA:

*An example of effective cooperation between eight
different International and Local Consultancy Teams*

Eng. Charles Mwanda: Director, Regional Development / MEWNR (Kenya)

Eng. William Ogola: Project Coordinator / MEWNR (Kenya)

Eng. David Maganda: Director / AMA (Kenya)

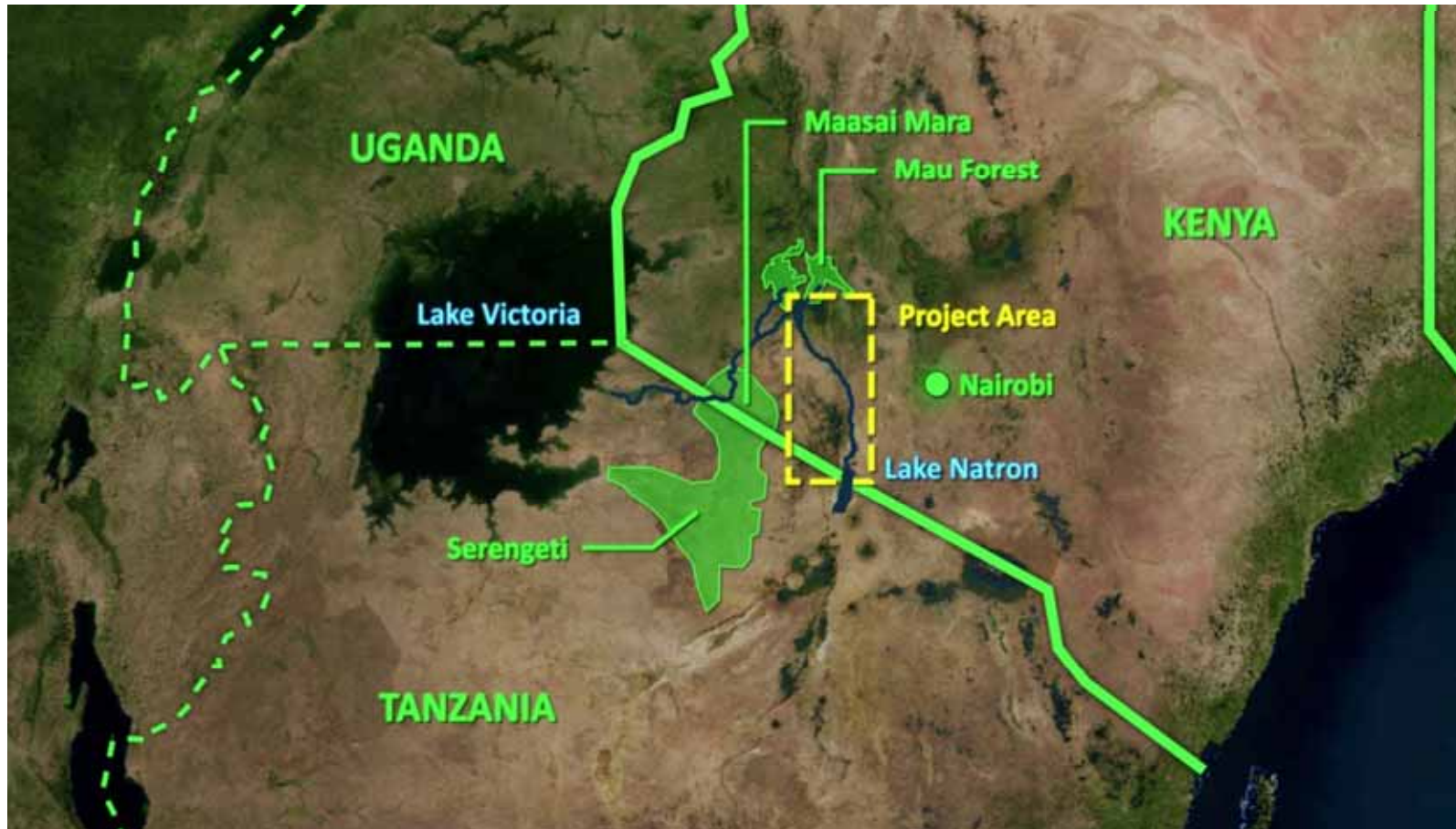
Eng. Pepe Pachón: Director Africa / TYP SA

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1. THE PROJECT



1. THE PROJECT

1.1. Project Studies



- **Scope:** Feasibility Study, Environmental Impact Assessment, Detailed Design and Tender Documents
- **Financement:** Government of Kenya
- **Client:** Ministry of Environment, Water and Natural Resources (MEWNR)
- **Consultant:** TYPESA (Spain) / AMA (Kenya)
- **Execution Period:** 08/05/2012 to 18/12/2013

1. THE PROJECT

1.2. Location Plan



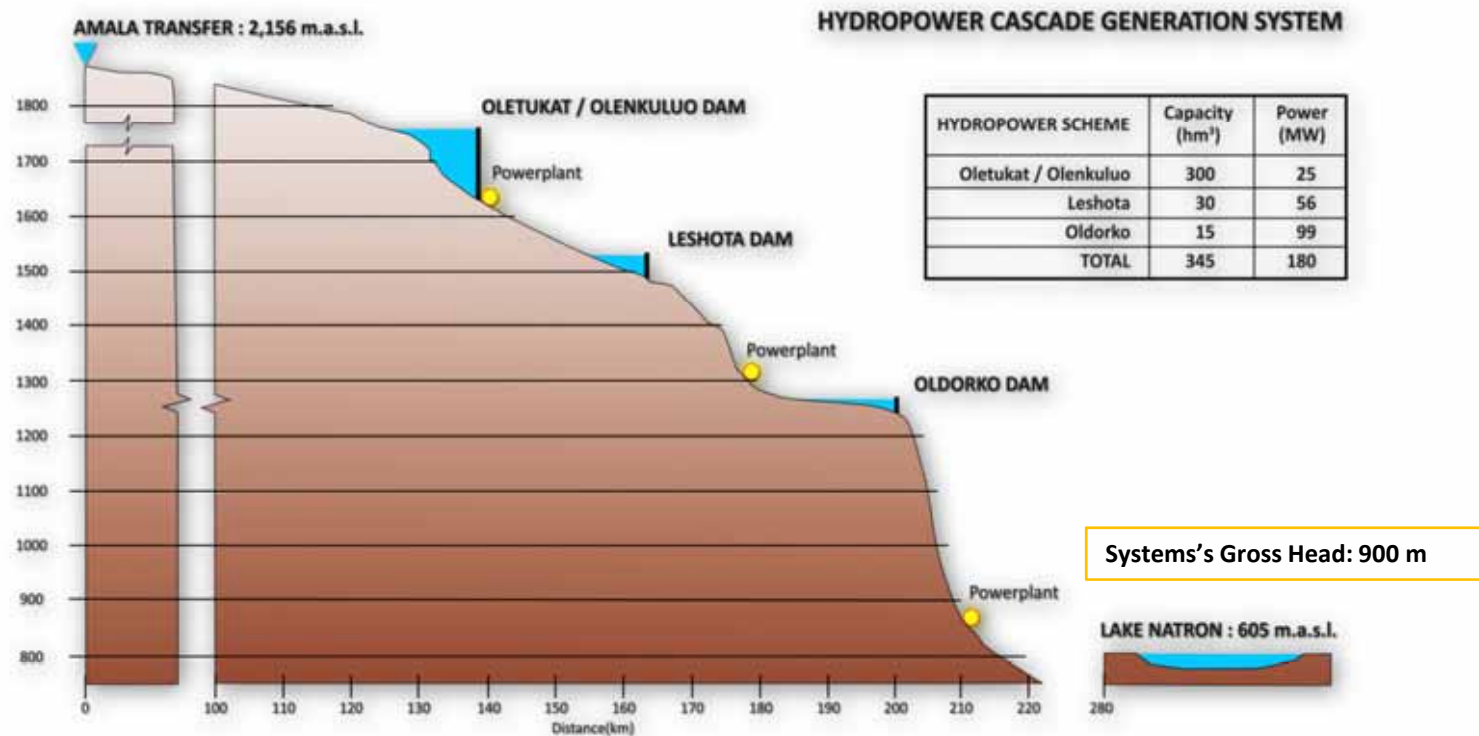
1. THE PROJECT

1.3. An Ecologically Friendly Solution

- **Environmental** factors and conditions have played a key role in the selection of the Preferred Alternatives.
- The main solutions have been adopted based on their **better environmental/social performance**, to the relative detriment of other technical and/or economical factors.
- The Project Design has strongly **minimized negative environmental impacts**: on the Mara River Regime, on the Nosagami Riverbed, on the Ewaso Ng'iro Regime downstream the Project (Natron Lake), etc.

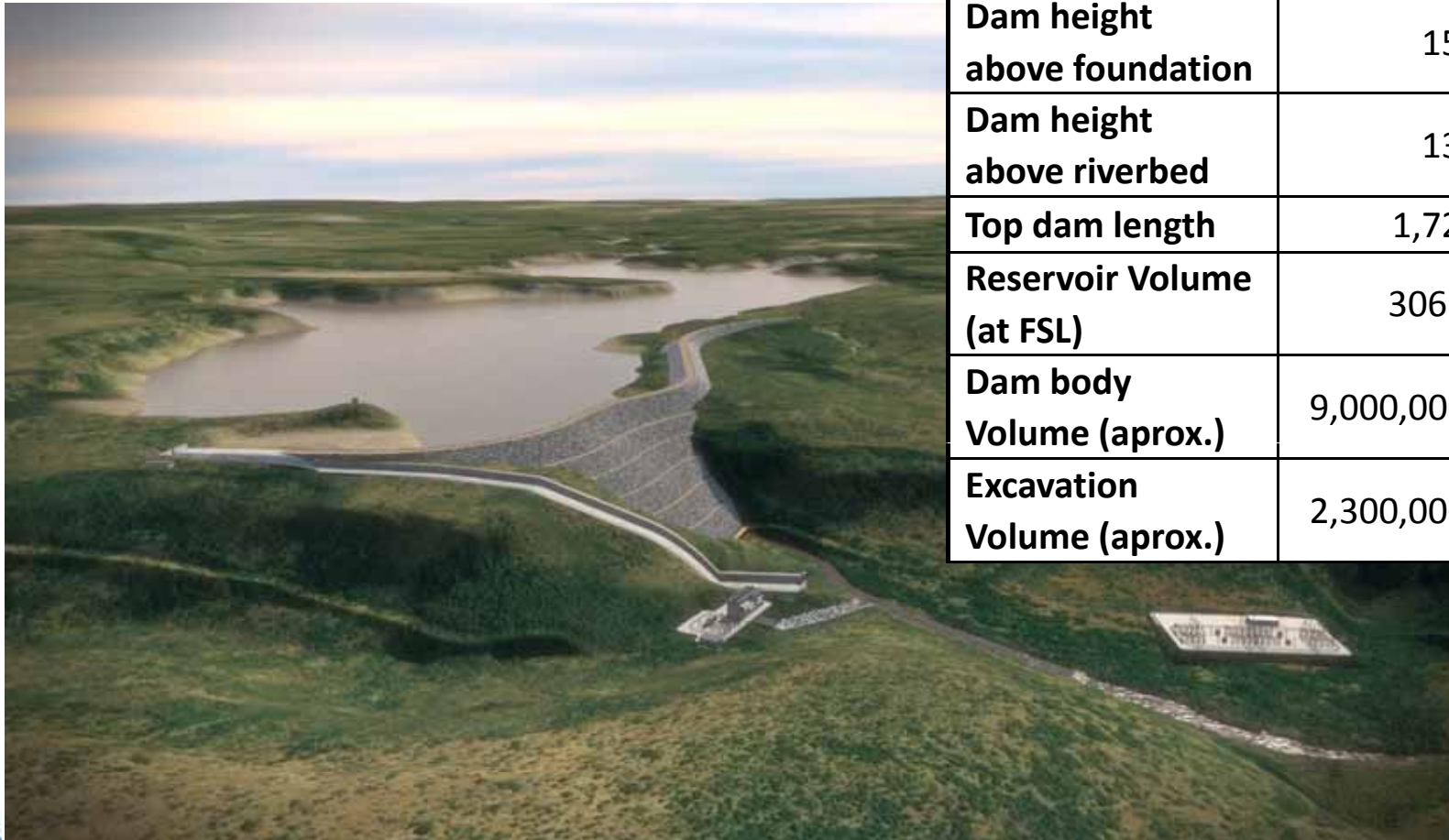
1. THE PROJECT

1.4. System Profile



1. THE PROJECT

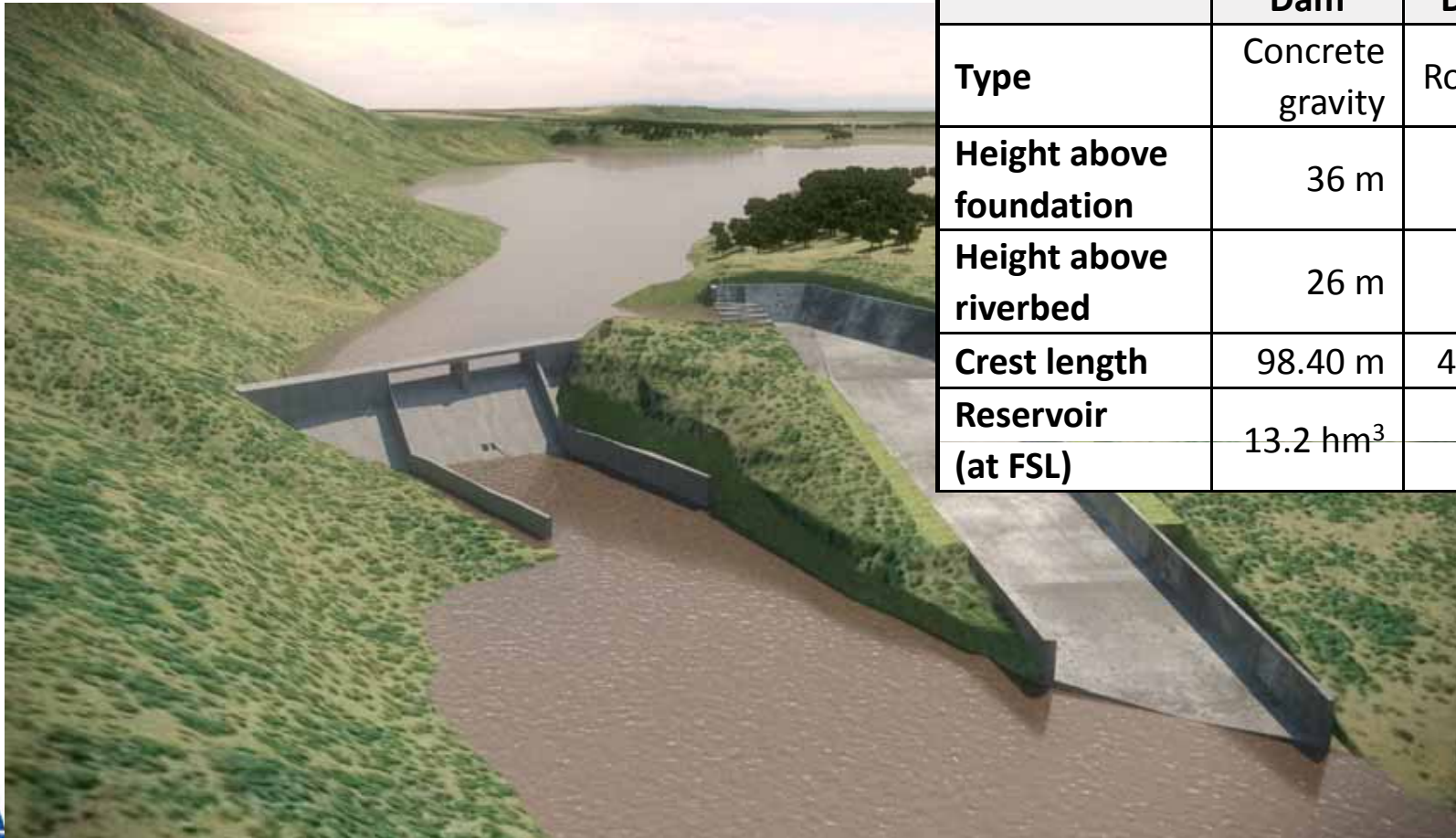
1.5. The Dams (1/3)



Type	Rockfill dam
Dam height above foundation	150 m
Dam height above riverbed	134 m
Top dam length	1,724 m
Reservoir Volume (at FSL)	306 hm ³
Dam body Volume (aprox.)	9,000,000 m ³
Excavation Volume (aprox.)	2,300,000 m ³

1. THE PROJECT

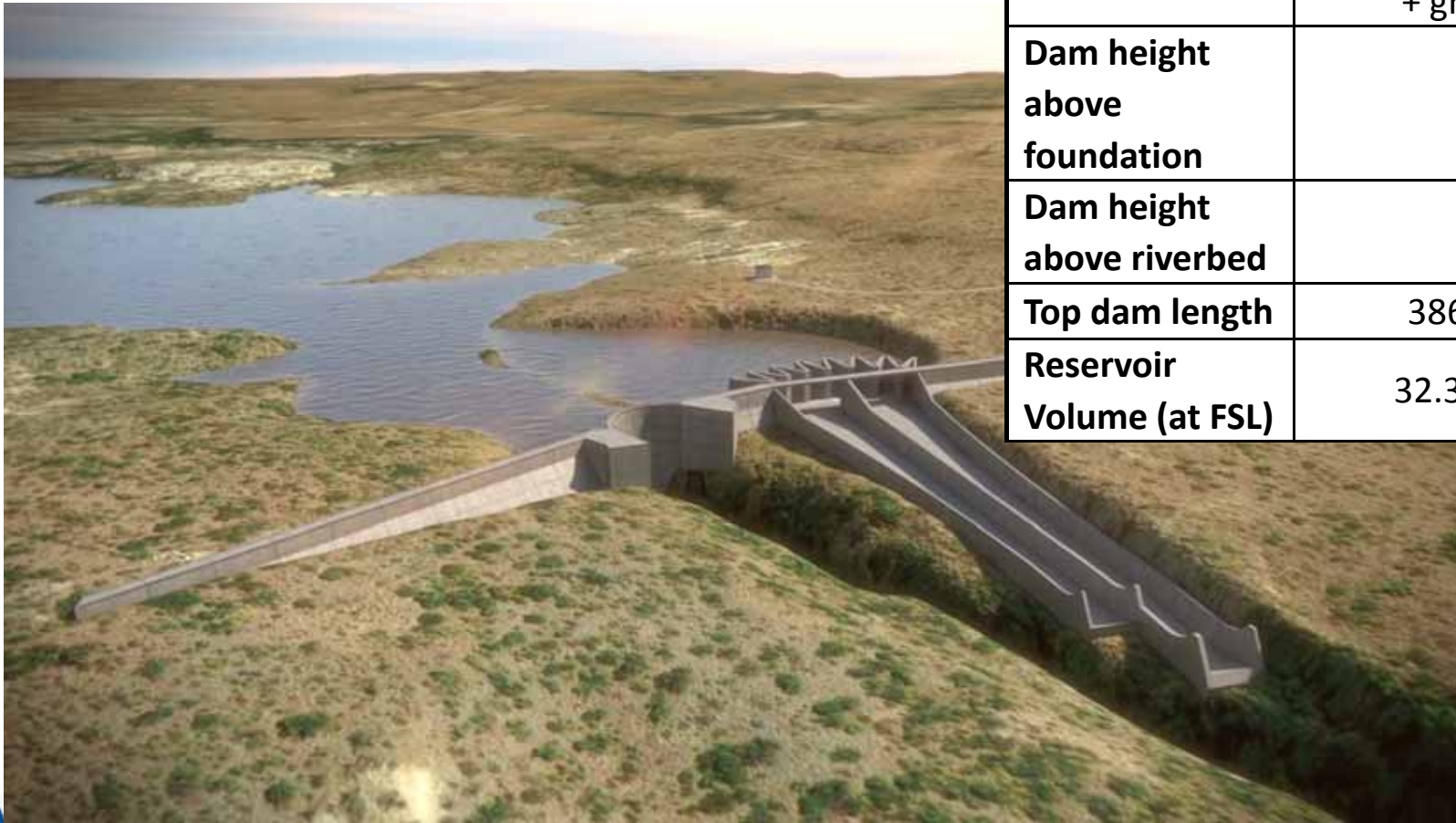
1.5. The Dams (2/3)



Characteristics	Main Dam	Saddle Dam
Type	Concrete gravity	Rockfill
Height above foundation	36 m	20 m
Height above riverbed	26 m	14 m
Crest length	98.40 m	419 m
Reservoir (at FSL)	13.2 hm ³	-

1. THE PROJECT

1.5. The Dams (3/3)



Dam Type	Concrete arch + gravity
Dam height above foundation	54 m
Dam height above riverbed	51 m
Top dam length	386.7 m
Reservoir Volume (at FSL)	32.3 hm ³

1. THE PROJECT

1.6. Main Project Benefits (1/2)

Hydropower Production	<p>Installed Power: 180 MW (15% of present Power demand in Kenya)</p> <p>Energy Production: 300 GWh (at draught years) to 1,050 GWh per year (at wet years)</p> <p><i>Saving the emission of 270 to 540 million kg/year of CO₂ to the atmosphere (if compared to a Thermal Power Station)</i></p>
Water Suply	<p>11,267 m³/day of healthy water supply for the populations of Ewaso Ng'iro, Mosiro, Oldorko and Magadi</p>
Irrigation	<p>Up to 110 million Kg/year of Horticultural Products or up to 77 million Kg/year of Pasture.</p> <p><i>Absorbing additional 15 to 35 million Kg/year of CO₂ from the atmosphere</i></p>
Tourism Development	<p>Based on the three Reservoirs and on the new Project's Road Network (175 km), which includes, inter allia, a new 115 km sealed road between Narok and Nguruman</p>

1. THE PROJECT

1.6. Main Project Benefits (2/2)

Fisheries	About 70 Tons/year fish production
Social Improvements	82 Primary Schools (17,000 children) will improve their availability of water by Roof Water Harvesting measures
	10,600 dispersed persons will improve the water availability for themselves and their livestock by means of 100 new rainfed water ponds
Generation of New Forest Areas	2,350 ha (5,800 acres) of Reforestation of the Mau Forest Complex
	306 Km of a 46m wide strip (1,410 ha or 3,500 acres) of Riparian Reforestations of the Ewaso Ng'iro South River and of the Amala-Mara Rivers.

2. MAIN ACTORS



2. MAIN ACTORS

2.1. The Client



The **Ministry of Environment, Water and Natural Resources** (former MoRDA) is **promoting**, through six Regional Development Authorities, the design and construction of complex multipurpose **Mega Projects, integrating hydropower production, irrigation, water supply, fisheries and tourism development:**

- TARDA: Tana and Athi Rivers D.A.
- KVDA: Kerio Valley D.A.
- LBDA: Lake Basin D.A.
- ENNDA: Ewaso Ng'iro North D.A.
- **ENSDA: Ewaso Ng'iro South D.A.**
- CDA: Coast D.A.



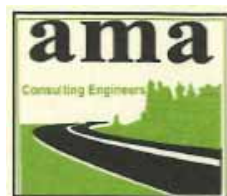
2. MAIN ACTORS

2.2. The Consultant (1/2)



TYPESA (Spain)

- Established in 1966
- 100% of its shares belong to its permanent staff
- Turnover (2013) : USD 256 million; 10% in Africa
- Permanent staff (31/12/2013): 1,947 people



ABDUL MULICK
ASSOCIATES LTD.

AMA (Kenya)

- Established in 1976
- A leading engineering consultancy firm in Kenya



2. MAIN ACTORS

2.2. The Consultant (2/2)

**TYPESA's
Permanent
Establishments
(42)**



IN SPAIN (10 + 3)

Branch Offices (10)

Andalucía (Sevilla , Malaga)
Aragón (La Rioja, Navarra, Zaragoza)
Arco Mediterráneo (Barcelona, Valencia, Murcia)
Euskadi (Bilbao)
Madrid

Subsidiaries (3)

MC2
 TECNOMA
 TEyS

OVERSEAS (20 + 9)

Branch Offices (20)

AFRICA (Kenya, Morocco, Tunisia)
ASIA (Turkey, India)
EUROPE (Bulgaria, Croatia, Montenegro)
MIDDLE EAST (Saudi Arabia, Dubai, Abhu Dhabi; Qatar)
LATIN AMERICA (Argentina, Bolivia, Colombia, Ecuador, Mexico, Panama, Paraguay, Peru)

Subsidiaries (9)

AFRICA (TYPKEN, Kenya)
EUROPE (AGRER, Belgium; TECNOFISIL, Portugal; BLIZZARD, Romania)
LATIN AMERICA (ENGECORPS, Brasil; TYPESA S.I., Chile; TEGEPSA, Peru)
USA (AZTEC; BHA)



2. MAIN ACTORS

2.3. Transference of Know-How

The transference of know-how has been intensive and **fruitful** in all directions: we all (TYPESA, AMA and the Representatives of the MEWNR / ENSDA) have learned much along the development of these Consultancy Services:

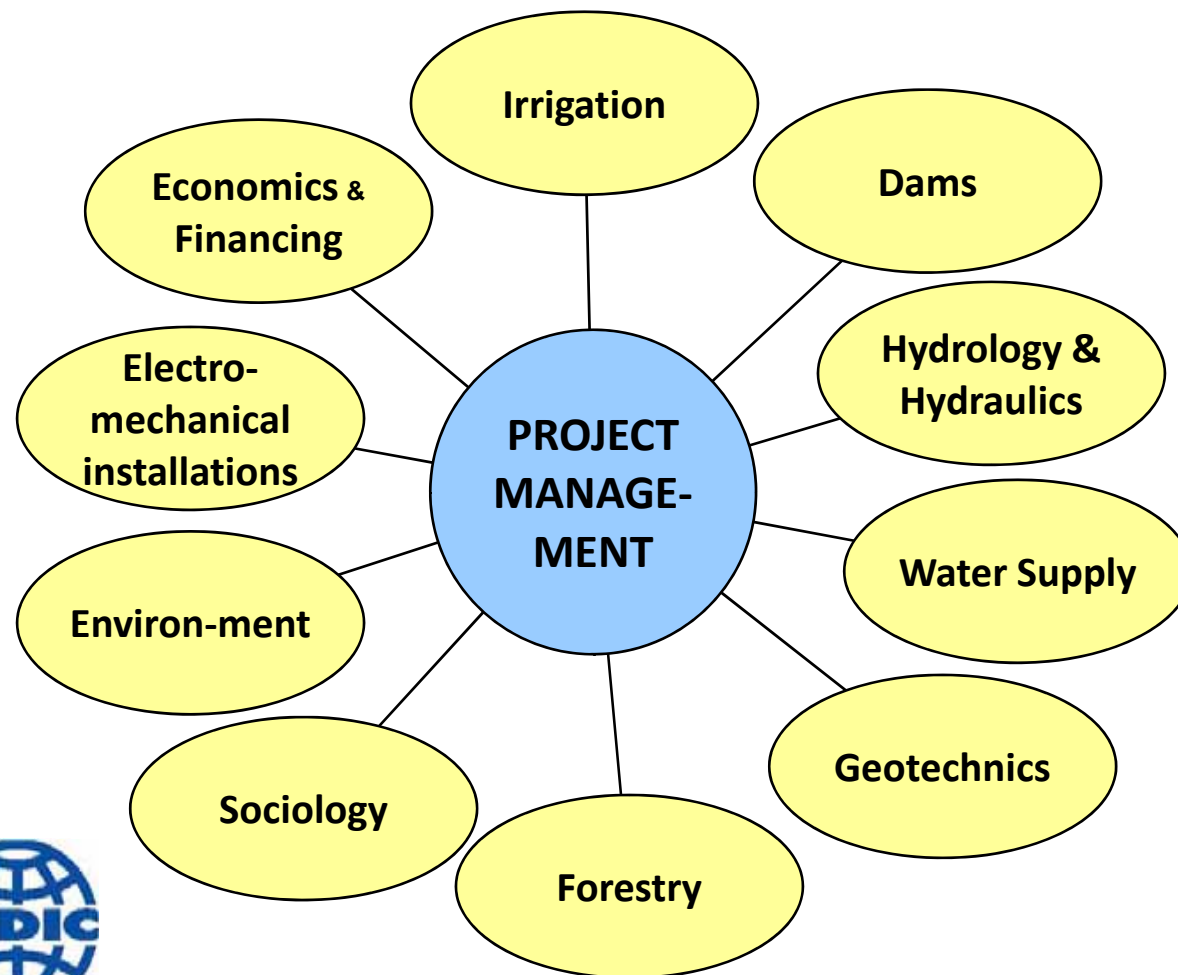


3. A MULTIDISCIPLINARY TEAM/ A MULTIGEOGRAPHICAL APPROACH



3. A MULTIDISCIPLINARY TEAM/ A MULTIGEOGRAPHICAL APPROACH

3.1. A Multidisciplinary Team



PROJECT EXECUTION

(Same procedures,
same quality assurance system)

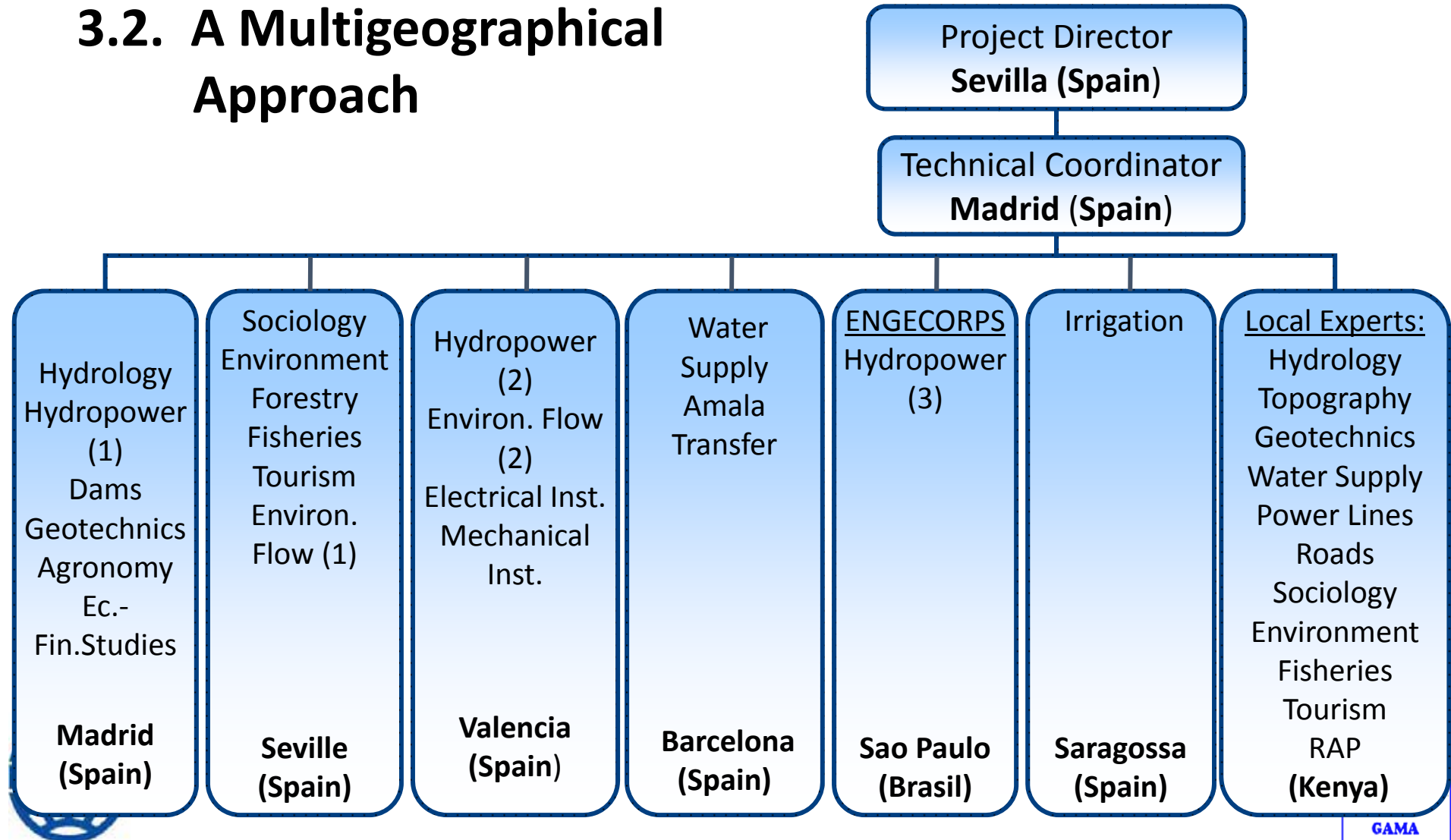
**INTERVENTION OF
THE TEAMS WHERE
THE HIGHEST
KNOWLEDGE AND
MOST SUITABLE
RESOURCES ARE
AVAILABLE**

PROJECT MANAGEMENT

CLOSE TO THE CLIENT

3. A MULTIDISCIPLINARY TEAM/ A MULTIGEOGRAPHICAL APPROACH

3.2. A Multigeographical Approach



4. CLIENT- CONSULTANT RELATIONSHIP

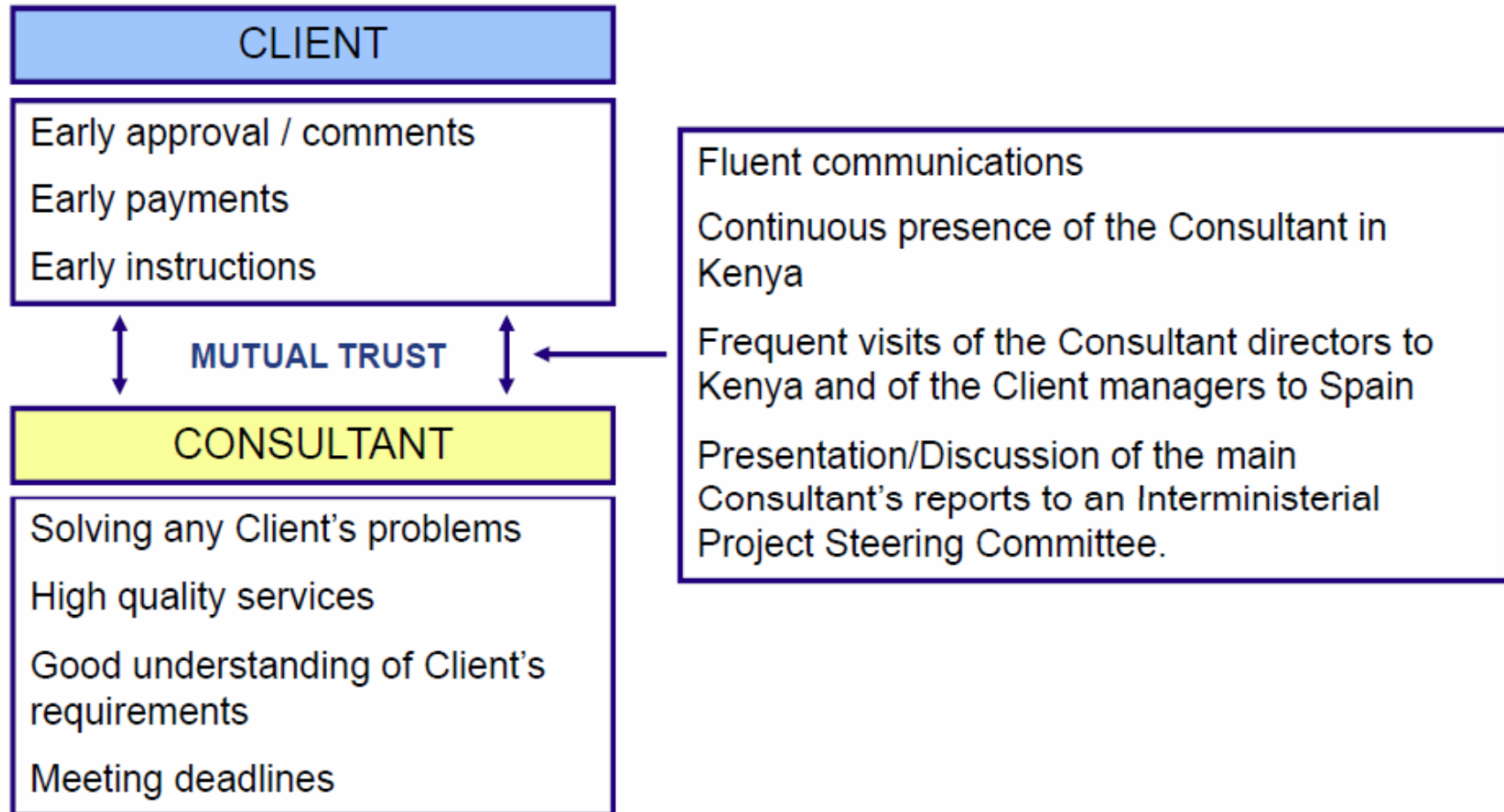


*Visit to TYPSA H.O. from
representatives of MoRDA and
ENSDA (February 2013)*



*Study Tour from ENSDA
representatives to Spain (May 2013)*

4. CLIENT- CONSULTANT RELATIONSHIP



5. WORKING FOR THE SOCIETY



5. WORKING FOR THE SOCIETY

Public Participation and Consultation meetings (attended by about 1,000 people):

- ✓ 2 District Level Meetings
- ✓ 10 Community Level Meetings
- ✓ 8 Consultation meetings for RAP
- ✓ 4 Informal Meetings on Environmental, Social and Wildlife matters
- ✓ 5 Informal Meetings on Agricultural and Irrigation Matters



6. VIDEO PRESENTATION



Thank you very much for your attention !



Your Advisor

