



# The operational use of remote sensing for utilities projects is now a reality in Africa

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Use of Space Technology  
for Sustainable Development

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# Who we are

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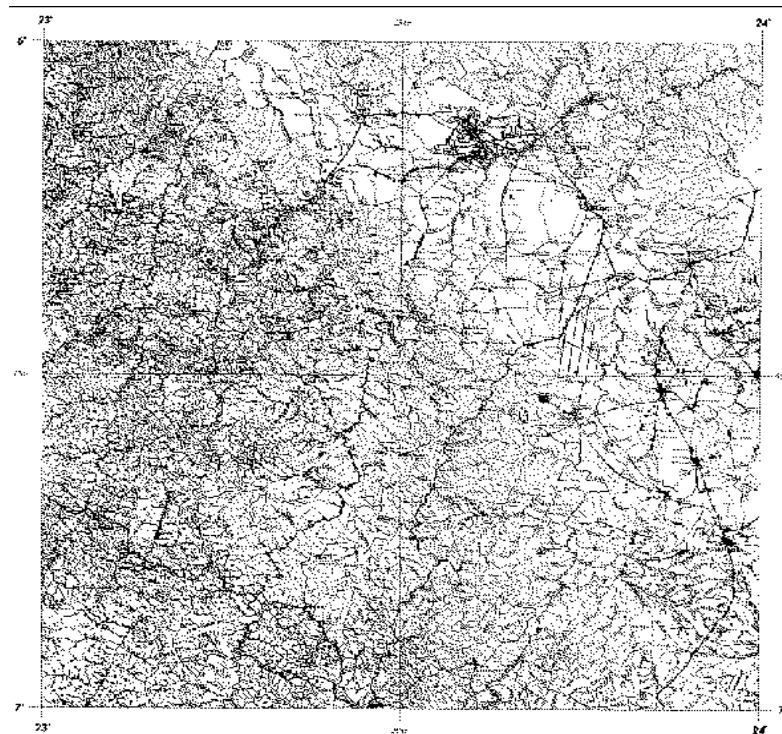
Keyobs  
is a **service company**  
specialized in geographic  
applications (mapping and  
topography).

# The organisation

- Keyobs was created in May 2001
- Keyobs is a spin-off company of the University and the Space Center of Liège (CSL)
- Main office housed in the WSL incubator within the Spatiopole of Liège
- 2 operating offices (Liège and Kinshasa)



# Most needed mapping update



Map 1:200.000 Bakwanga - 1954 © IGC



Carte digitale 1:200.000  
District de Tshilenge - 1997 © MKD



# Examples of operational use

- **Disaster reduction** (Flood, Erosion)
- **Energy** (Dams, Electrical interconnection)
- **Transportation** (Railway)
- **Urban development** (Urban mapping, Water/sanitation master plan)

# Disaster reduction - Flood

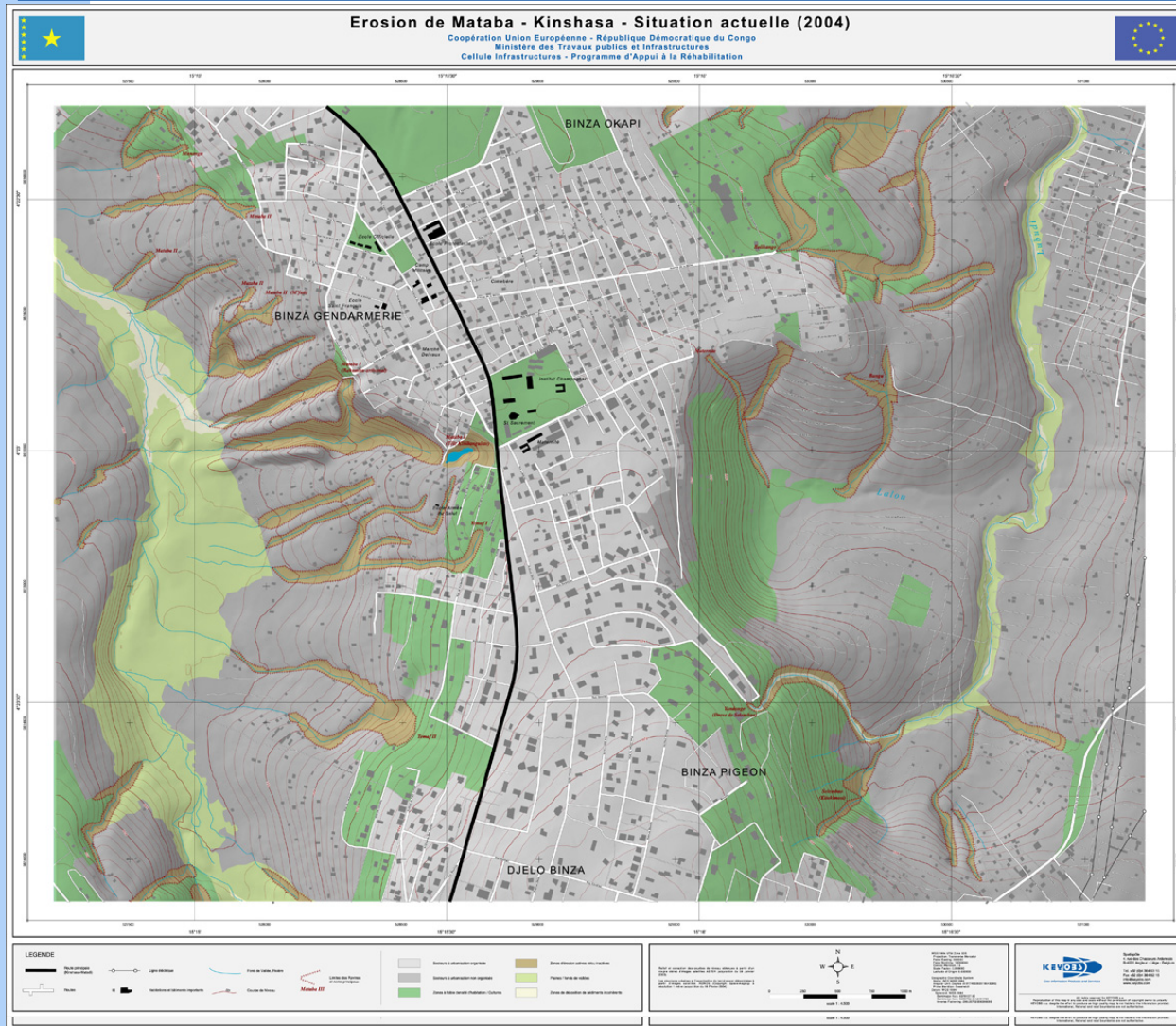


- **Subject** Integrated management of Oued Ambouli, Djibouti. Study of retention works for runoff water and water table recharge.
- **Mission** Digital elevation modelling, surface lithology mapping, morphology mapping, topographical profiles
- **Data used** SPOT5 DEM, SPOT5 HRG, ASTER, Google Earth
- **Delivery** digital format (Geographical Information System GIS on CD) and paper maps
- **Final customer** Local Ministries and EU - FED



# Erosion risk reduction

## Kinshasa, RD Congo



- **Subject** Erosion mapping for civil engineering works and promotion of EU activities
- **Mission** Erosion mapping from VHR images, topographical survey, historical mapping (1976-2004)
- **Data used** IKONOS, ASTER, Field topo
- **Delivery** digital format (Geographical Information System GIS on CD) and paper maps
- **Final customer** EU Programme d'Appui à la Réhabilitation (PAR)

# Erosion risk reduction

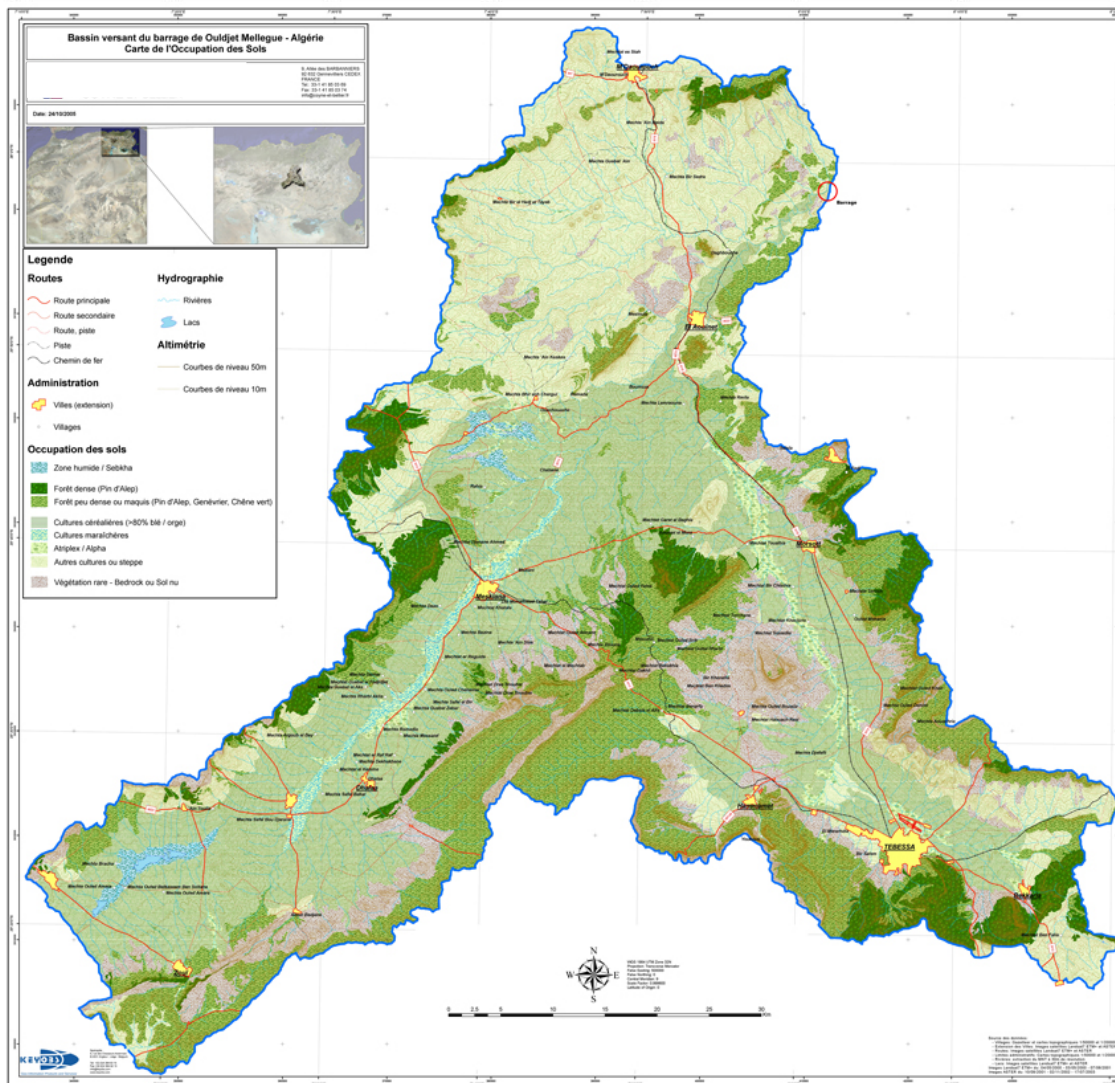
Mbuji Mayi, RD Congo



- **Subject** Erosion mapping for civil engineering works and integrated management
- **Mission** Mapping of erosion from VHR images, digital elevation modelling from satellite and topographic surveys
- **Data used** IKONOS, ASTER, Field topo
- **Delivery** digital format (Geographical Information System GIS on CD) and paper maps
- **Final customer** Ministry of planning and private engineering company



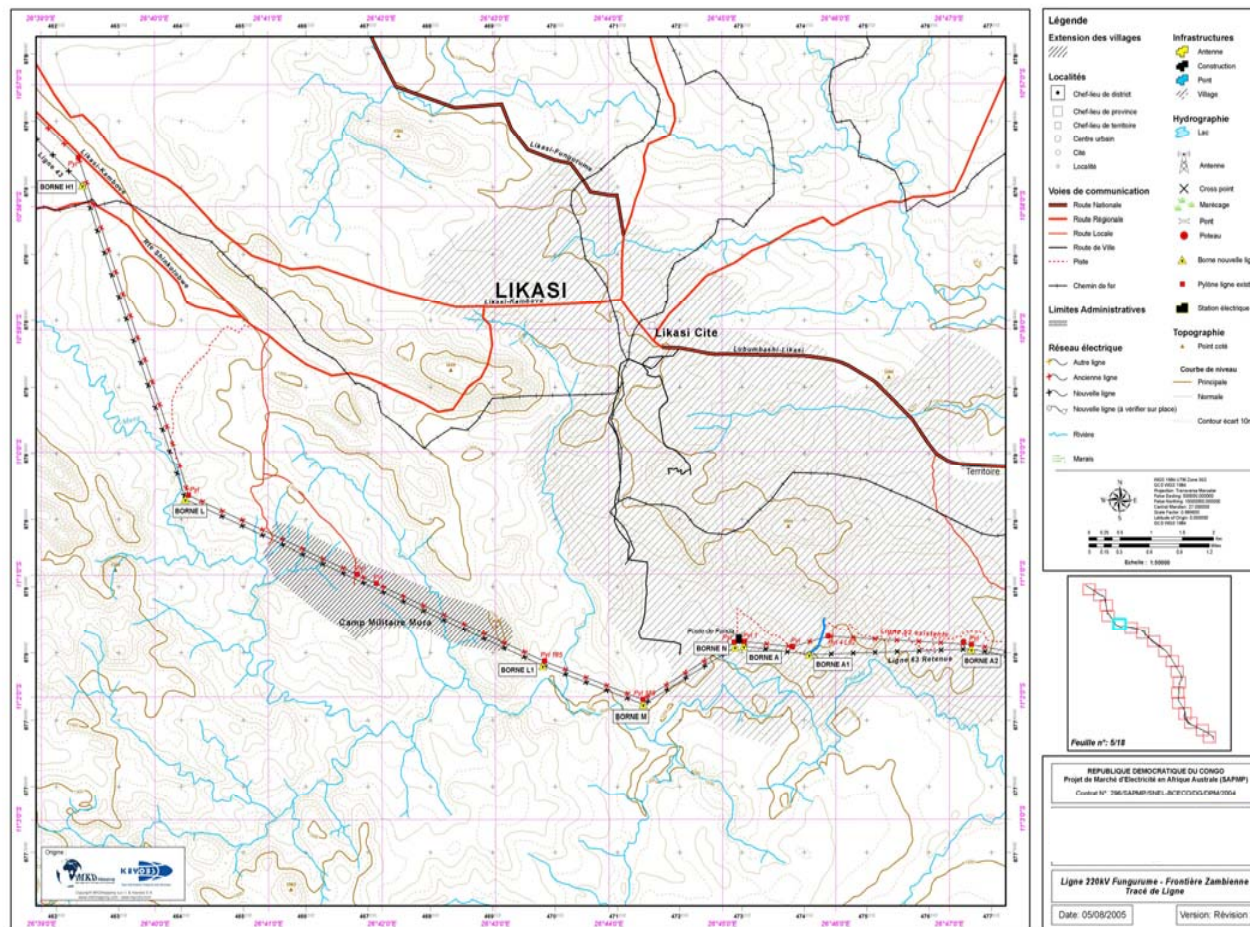
# Engineering Dam – Erosion



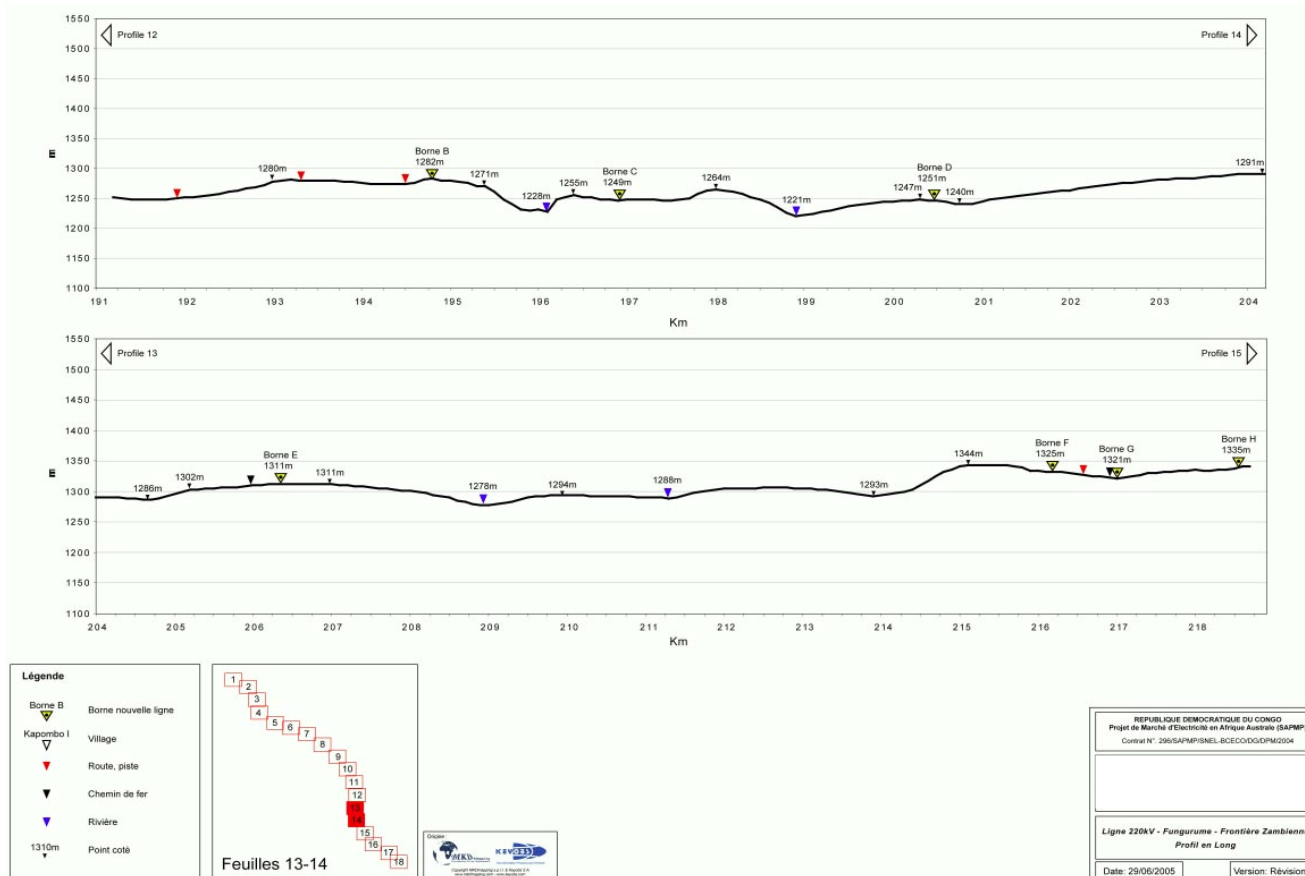
- **Subject** Description of physical environment – *Detailed Pre Project (APD)* of Ouldjet Mellegue Dam
- **Mission** Digital elevation modelling and derived products, surface lithology mapping, landuse mapping
- **Data used** Landsat, ASTER, SRTM
- **Delivery** digital format (Geographical Information System GIS on CD) and paper maps
- **Final customer** Agence Nationale des Barrages (Algeria)



# Electrical interconnection, DRC

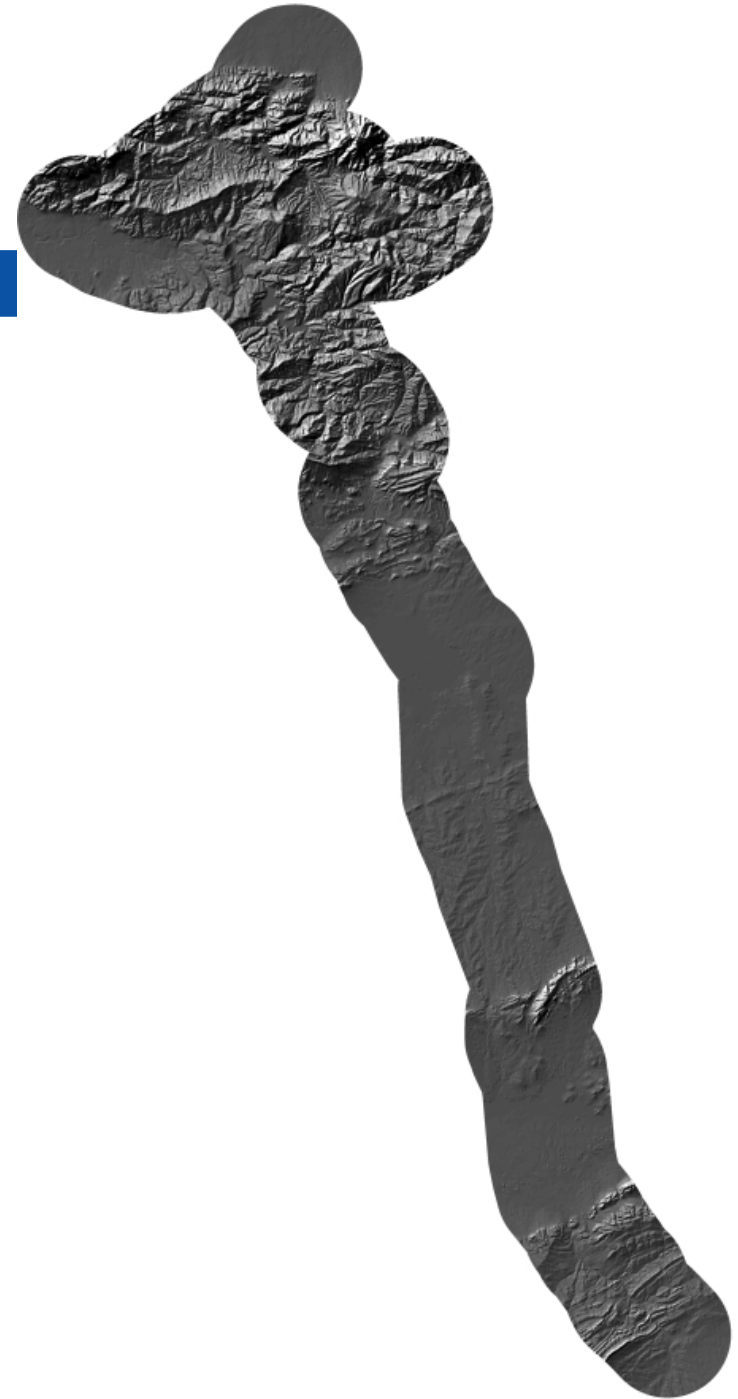


# Longitudinal profiles along 300km electrical lines



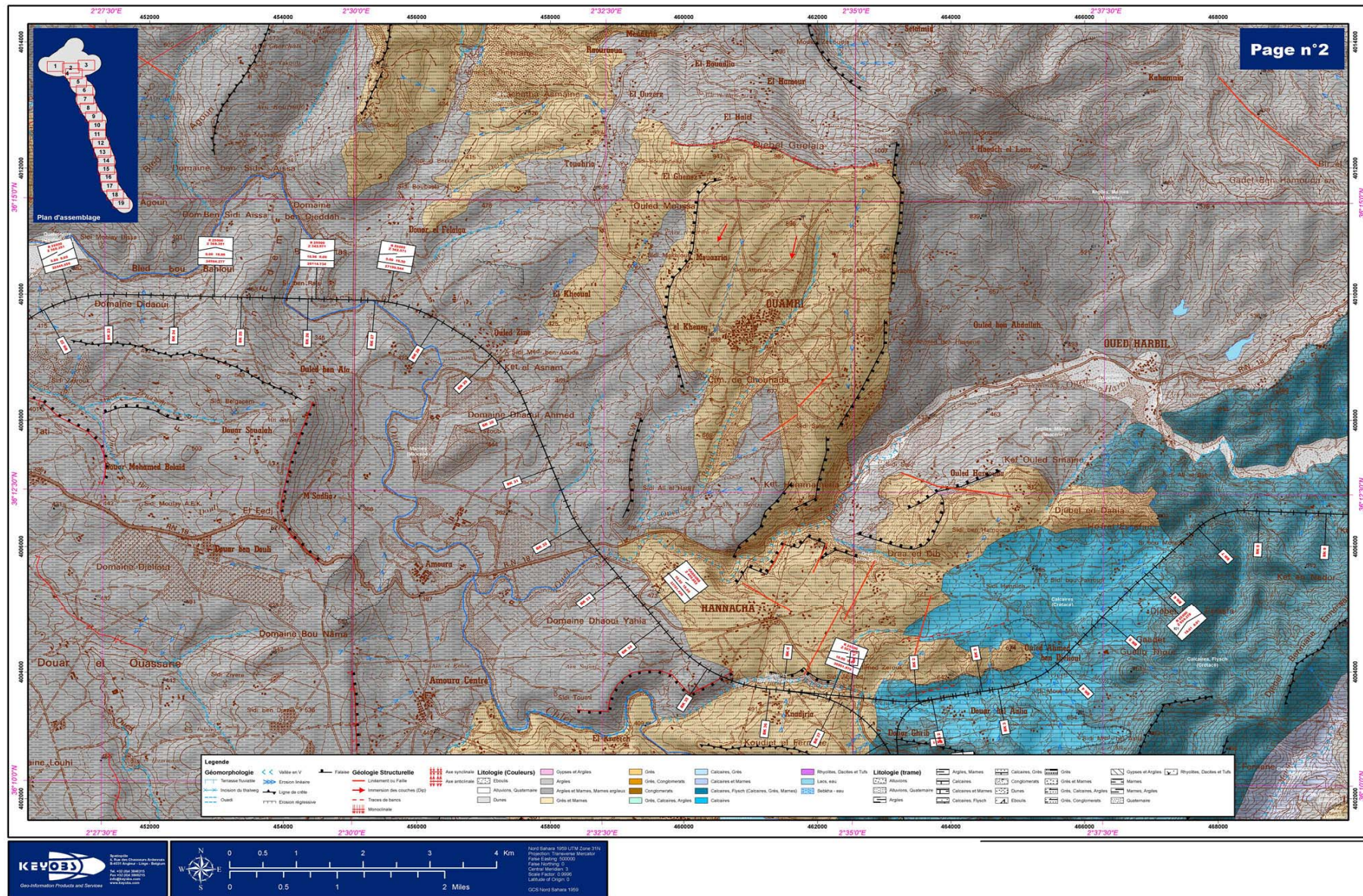
# High speed railway project, Algeria

- **Subject** Pre-project, detailed pre-project and implementation project of a fast train line in Algeria
- **Mission** Digital elevation modelling, surface lithology mapping, morphology mapping, field missions
- **Data used** SPOT5 DEM, ASTER, Landsat, SRTM, Field topo
- **Delivery** digital format (Geographical Information System GIS on CD) and paper maps
- **Final customer** National railway office





# High speed railway project, Algeria





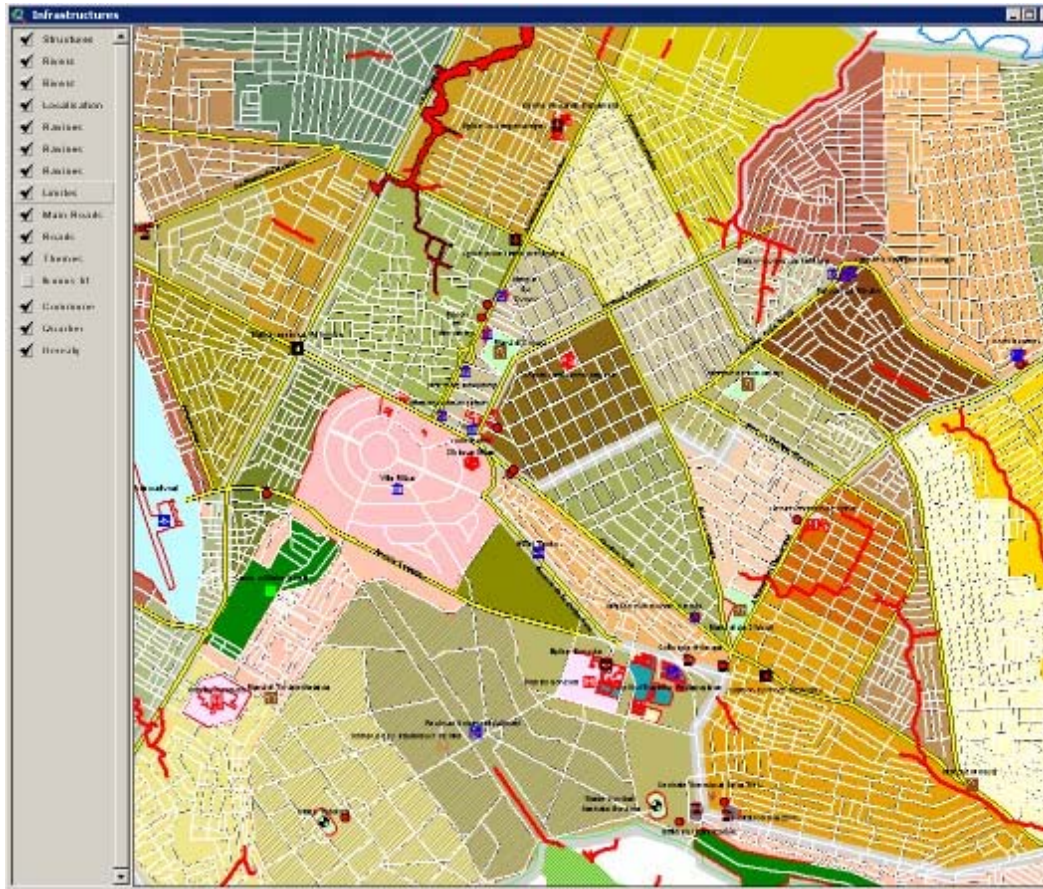
# Aerial mapping – Urban development



- **Customer** Ministry of Infrastructures Rwanda – Program of Urban Development
- **Donor** WorldBank
- **Mission** Aerial photography and mapping of 4 secondary cities (1:10k scale)
- **Delivery** digital (aerial photos and maps) and paper maps

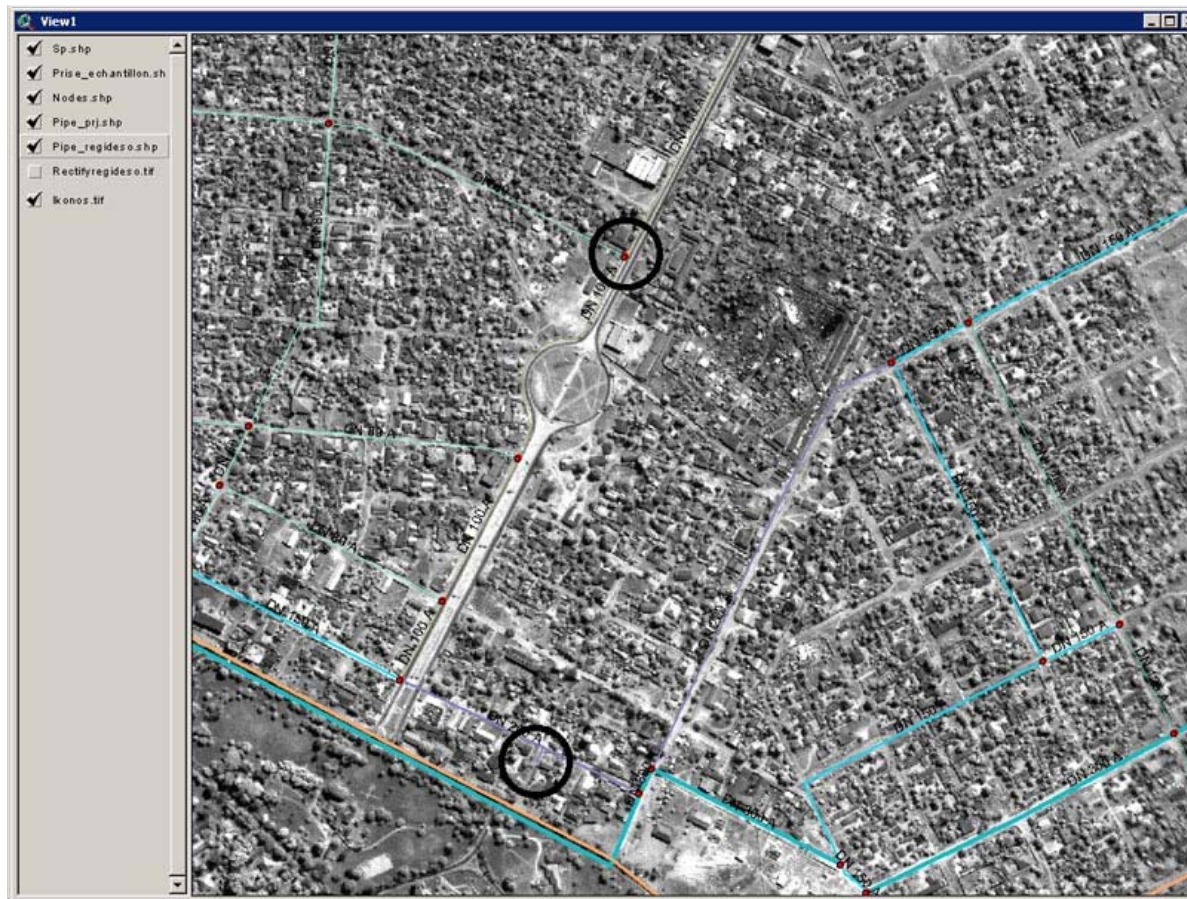


# Mapping urban water network



- **Subject** Upgrade of water distribution network
- **Mission** Urban mapping, digital elevation modelling, district classification vs. slopes of network
- **Data used** Ikonos, ASTER, Field topo
- **Delivery** digital format (Geographical Information System GIS on CD) and paper maps
- **Final customer** REGIDESO and engineering company

# Mapping urban water network



Mapping system to manage the water network  
in Mbuji Mayi (Kasayi)

# Conclusions

The operational use of RS/GIS is a reality

- Intensive use of free/cheap imagery
- Cover all relevant technical fields (field topography, aerial survey, LIDAR survey, remote sensing, GIS...) to address a limited number of applications
- Invest in local capacity
- Listen to the customers
- Add value to your customers' works
- Believe in you !



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