
ITU-MIC Forum

Wireless Broadband Networks

MIC-BDT Activities/ Feasibility

Study on Low-Cost Wireless
Broadband Infrastructure Project

("FWBI-Project")

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FWBI-MIC/ITU Project

Objective: To encourage further extension of broadband coverage in developing countries, by identifying suitable technologies for broadband access and connectivity in developing countries

The expected outputs:

- Case studies, based on the study sites;
- Draft project document; for future pilot project;
- Draft input document, SG2: ITU-D.



FWBI-MIC/ITU Project

INPUTS

Ministry of Internal Affairs and Communications (MIC), Japan

- *In Cash Contribution: JPY 11'000'000;*
- *In-kind Contribution;*
 - *Assistance in Analysis and Study;*
 - *Securing a third party expert to carry out Preparation for Field Survey, Field Survey, and Analysis and Study above.*



FWBI-MIC/ITU Project

Main activities:

- Preparation for Field Survey
 - Preparing the questionnaires;
 - Identification of the target countries and their focal points
 - *(It is noted that MIC has shown the interest for Tunisia and Jordan)*

- Field Survey

- Analysis and Study



FWBI-MIC/ITU Project

Roles and Responsibilities

ITU

- The ITU act as the implementing agency and provide a staff for overall project supervision, monitoring, and coordination; and
- Recruit and supervise the experts;
- Correspond with the relevant parties;
- Provide advice and assistance to the project team, through the HQ and Regional Office, when it is required.

MIC, Japan

- Provided the assistance to the project team for Analysis and Study;
- Secured a third party expert contributed- in kind,
- Further funding, which may be required in case of the change in the Project.
- Made a voluntary contribution, as mentioned in the Input above

Beneficiary Countries

- The beneficiary countries, which designated as the target countries, provided the assistance to the project team for Field Study.



Project Implementation

1. Preparation
2. Countries Selections;
3. Field Survey
4. Analysis & Study



Analysis- Preparation

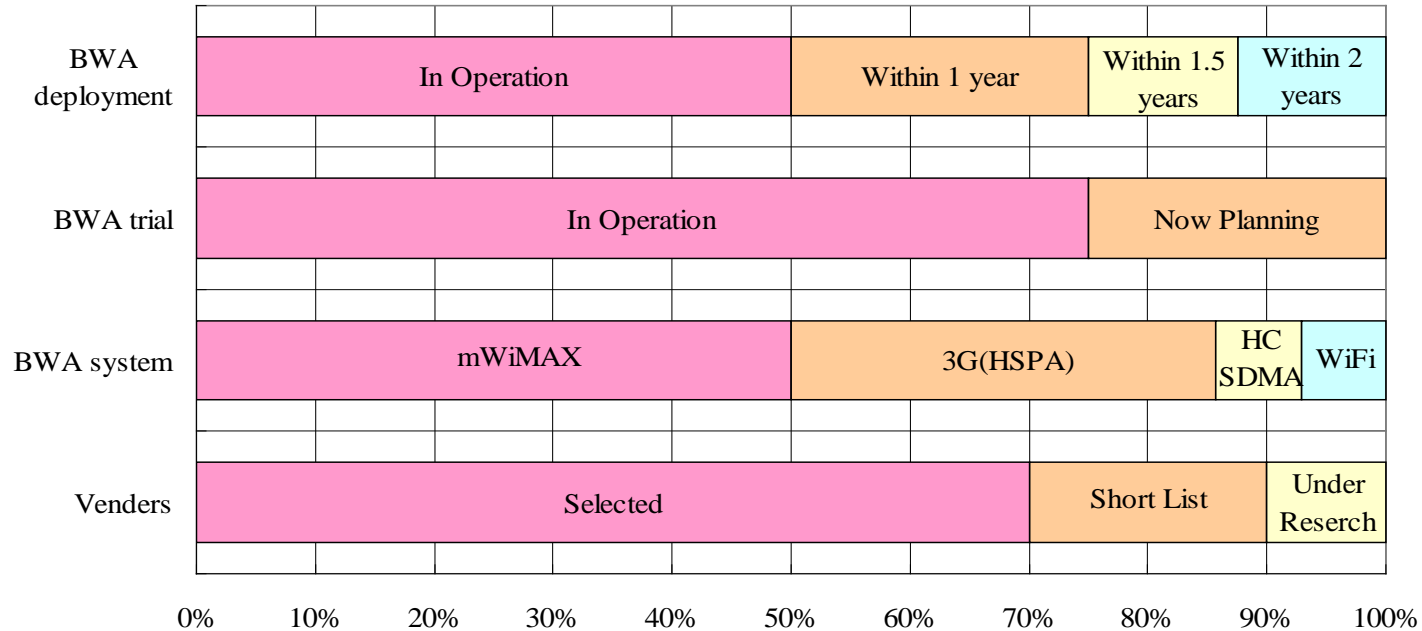
Preliminary survey

- Preliminary Survey on selected region, by Questionnaires
- The questionnaire circulated to the Arab countries;
- 8 countries responded: (Algeria, Iraq, Jordan, Libya, Morocco, Saudi Arabia, Syria, and Tunisia)
- Analysis of Answers to the above Questionnaires, selects sample countries and planned the field survey;

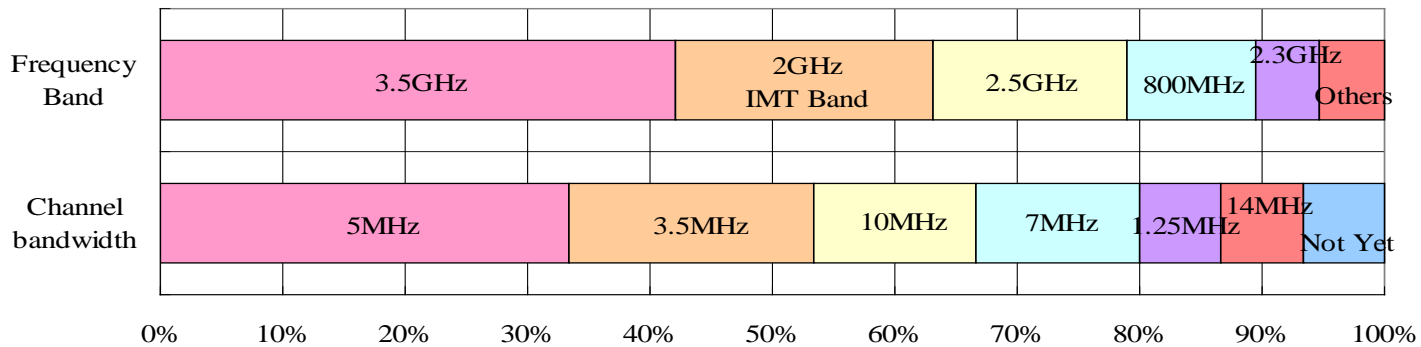


Result of questionnaire data

(1) Plan of BWA service

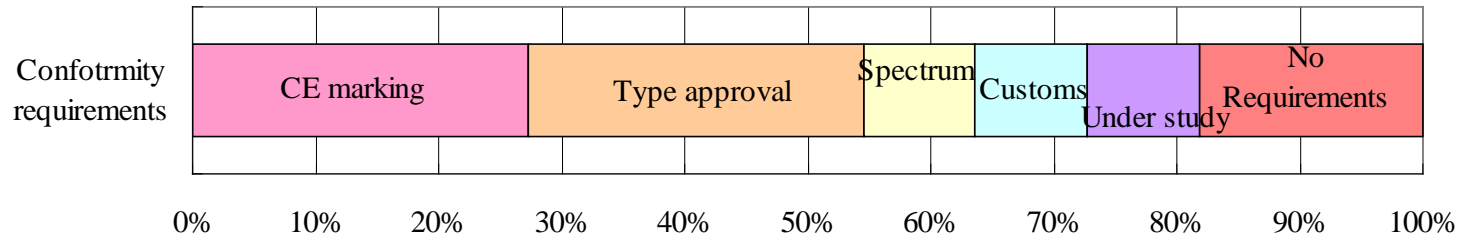


(2) Spectrum availability

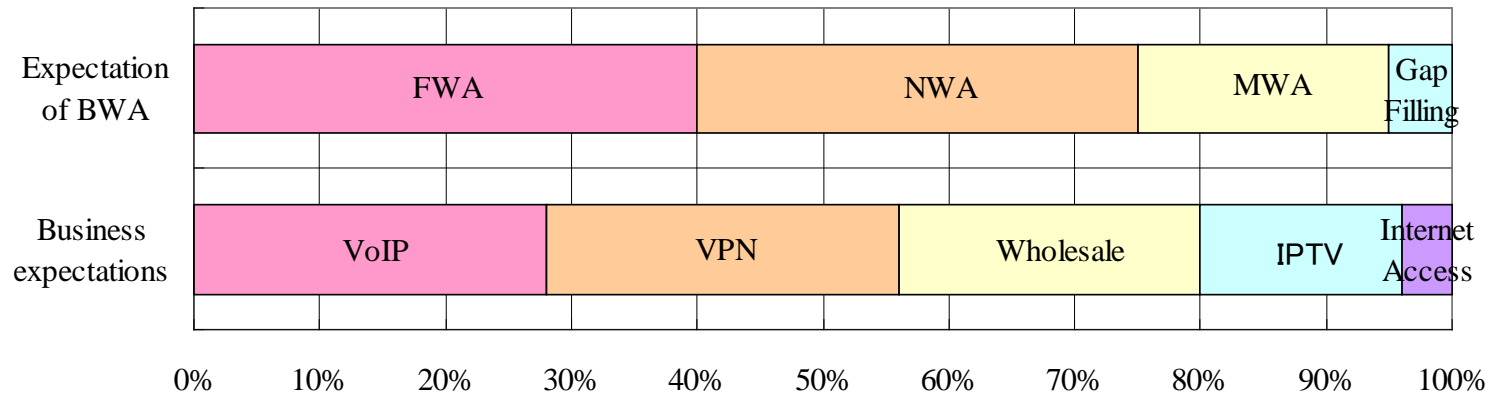


Result of questionnaire data

(3) Conformity requirements

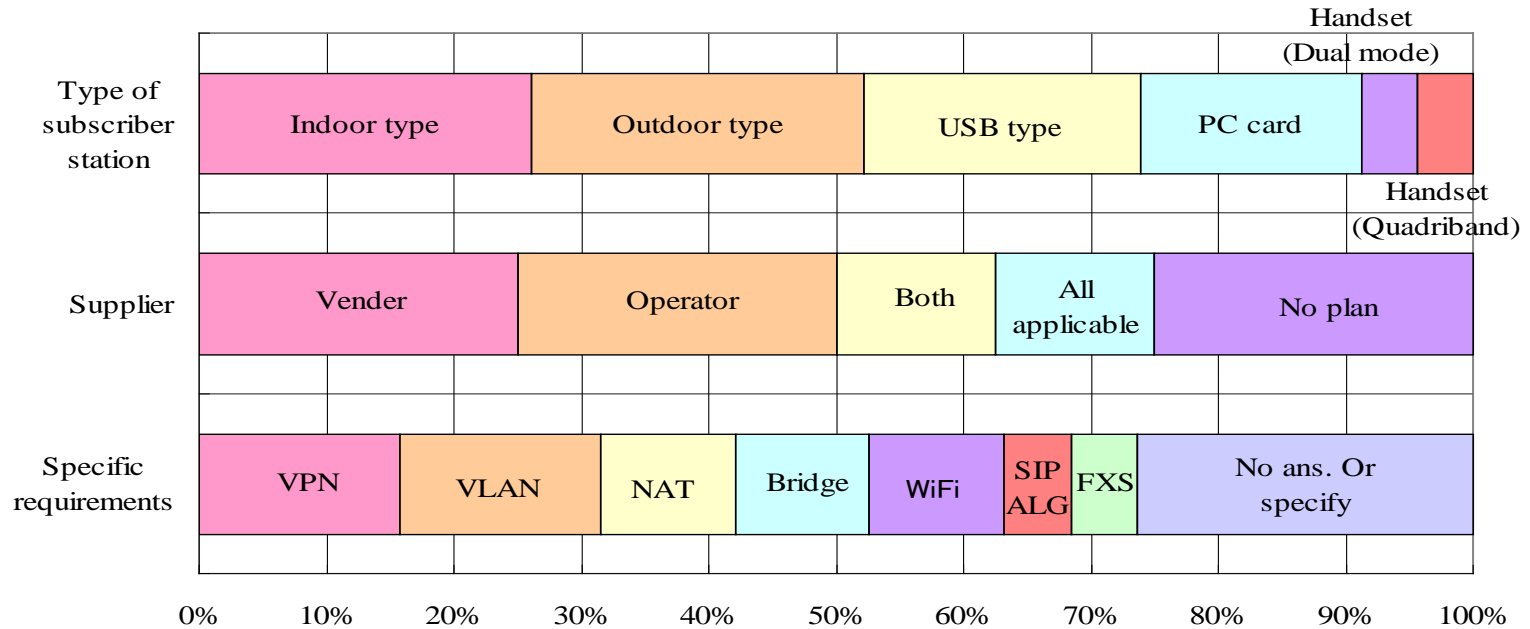


(4) BWA service expectations

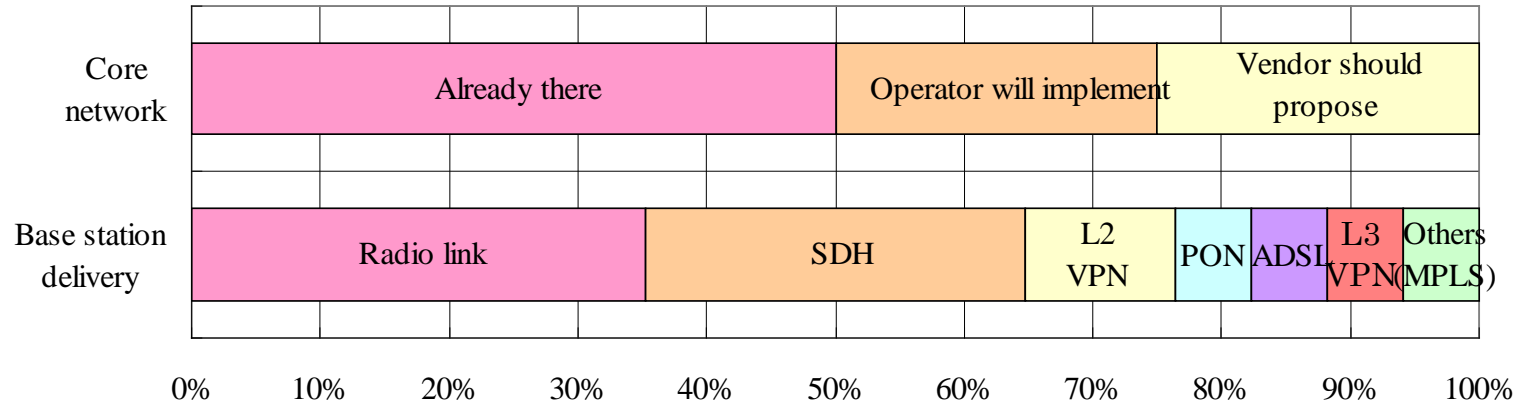


Result of questionnaire data

(5) Types of SS/MS

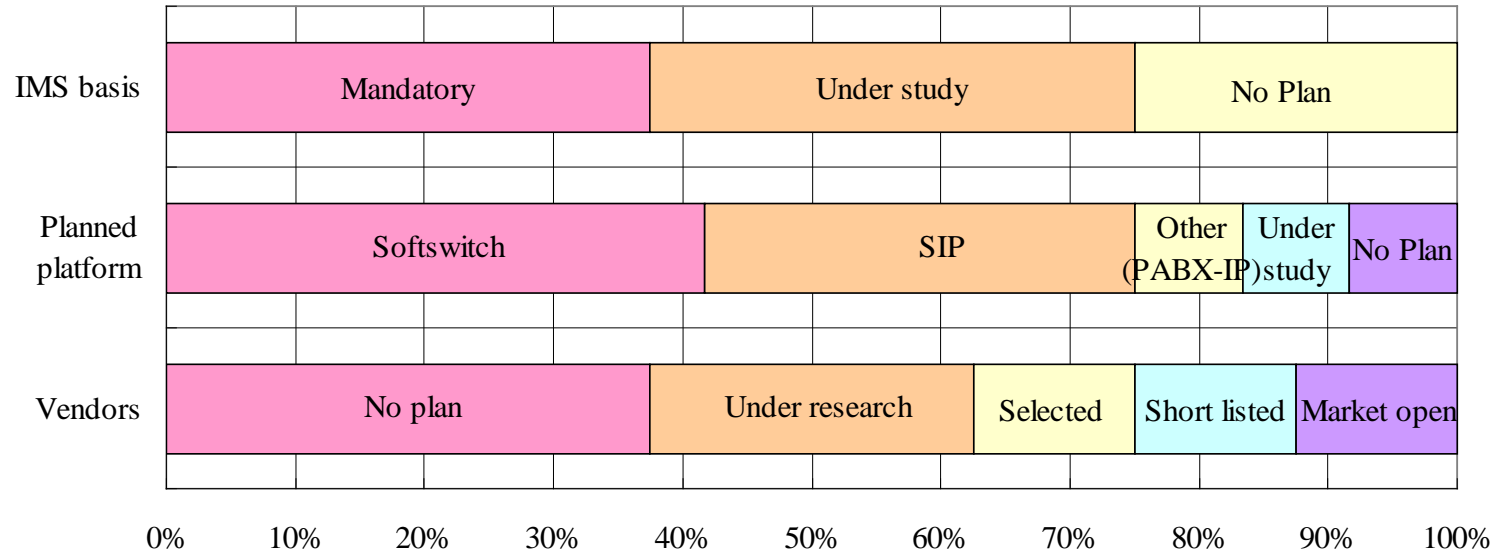


(6) Plan to implement the Core network

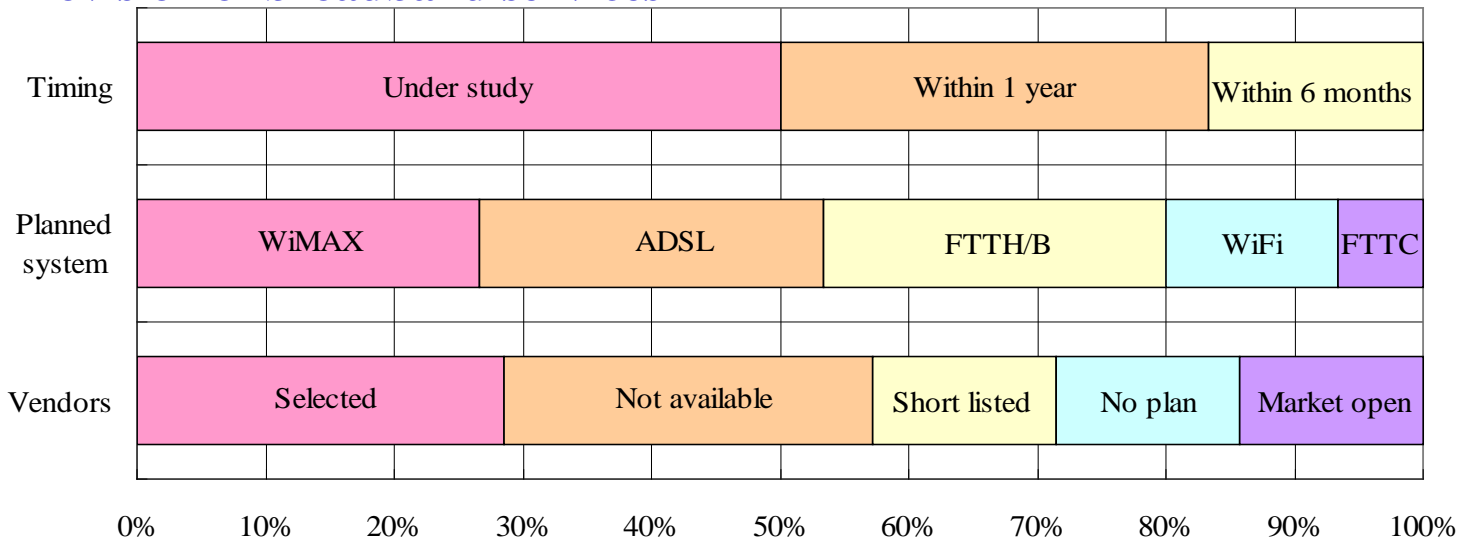


Result of questionnaire data

(8) Planned platform



(9) Provision of broadband services



Analysis The Field Survey

Field Survey

- Selection of the Study Sites in rural areas (2 sites per country)
- Survey of the surroundings
- geographic or topographic situation,
- climatic conditions,
- spectrum availability,
- available telecommunication networks,
- other infrastructures such as availability of power supply etc.

Analysis & Study

- Analysis of questionnaire data
- Trend investigation
- Access and approach systems investigation and selection
- Case study of BWA infrastructure at sample village,
- Formulation of the report comprising the useful information to be referred in selection of the systems to establish wireless broadband infrastructure.



Countries Background- Jordan

- **Geography**
 - Surface (km²) 89,342
 - Coast Length (km) 26
 - Max Altitude (m) 1,854
 - Lowest point (m) -416
 - Average temp (deg.C) 23.6
- **Demography**
 - Population (mil) 6.199 (July 2008)
 - Popl growth Rate (%) 2.3
 - Popl density (/km²) 64
 - Urban popl 83%
- **Age Structure**
 - 0-14 years 37.1%
 - 15-64 years 59.1%
 - Over 65years 3.8%
- **Education**
 - Adult Literacy Rate 91.1%
- **Macro Economics Index**
 - Nominal GDP at Market Price(MUS\$) 20,030 (2008)
 - Nominal GDP per capita (US\$) 3,421
 - Real GDP growth rage at Market price(%) 6.0% (2007)



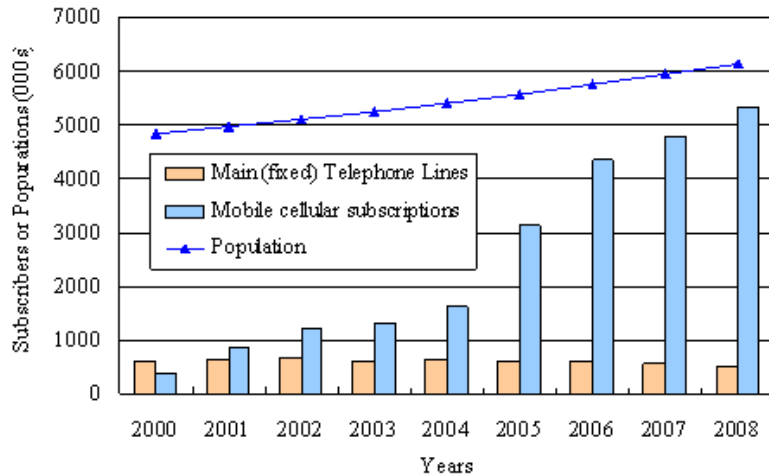
Around 80% of the country's surface area is covered by eastern desert.

The high plateau runs from south to north and divides the climate of western Jordan Valley from the eastern desert.

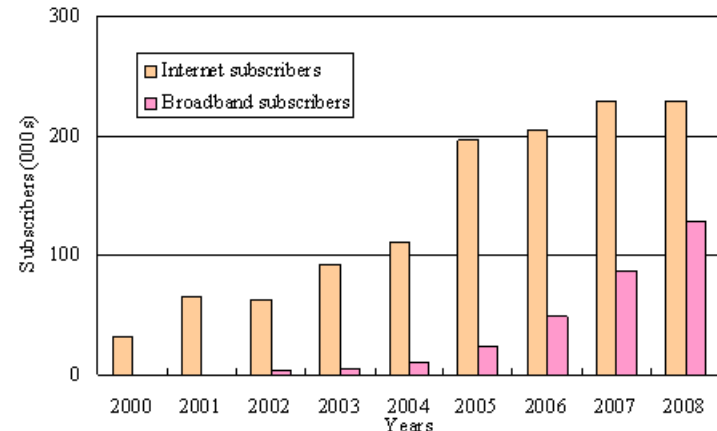
Most of population is allocated this north-western Jordan Valley and plateau area including the capital city of Amman.

ICT Statics of Jordan

Wireline and wireless growth



Internet subscriber growth



The wireline market

Liberalized in 2005. Until then, Jordan Telecom was the monopoly.

Subscribers are gradually reducing from 2003.

Fixed telephone lines per 100 inhabitants:

8.46 (CAGR -6.6%) in 2008

The wireless market

Jordan Mobile Telephone Service and MobileCom (GSM from 2000)

MNP was regulated and Umniah launched in 2005.

After then, mobile subscribers are rapidly increasing

Mobile subscriptions per 100: 86.6 (CAGR 32%) in 2008

Wireless is successfully penetrating owing to liberalization and competition in the mobile field.

ADSL service was launched in 2001

Fixed broadband subscribers are gradually growing
25% of fixed line accommodates ADSL in 2008.

half of internet subscribers utilize broadband equipment.

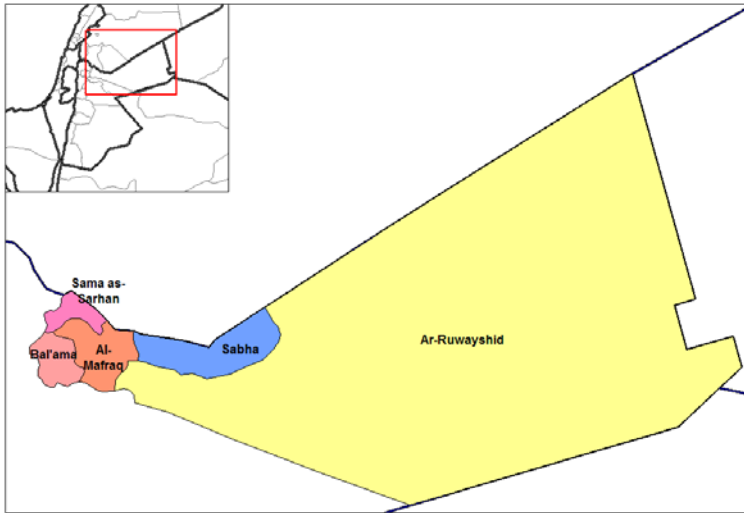
Jordan Telecom is the dominant and takes very big share in this DSL service even though competes with others.

Numbers of wireline is limited. So, broadband market penetration by DSL might be difficult unless operators deploy FTTX in the urban area and BWA in the suburban to rural area.



Sama As Sarhan

Al Mafraq Governorate



**Sama as Sarhan is located in Al Mafraq governorate
65 km north from Amman**

East end of plateaus and close to Syrian border.

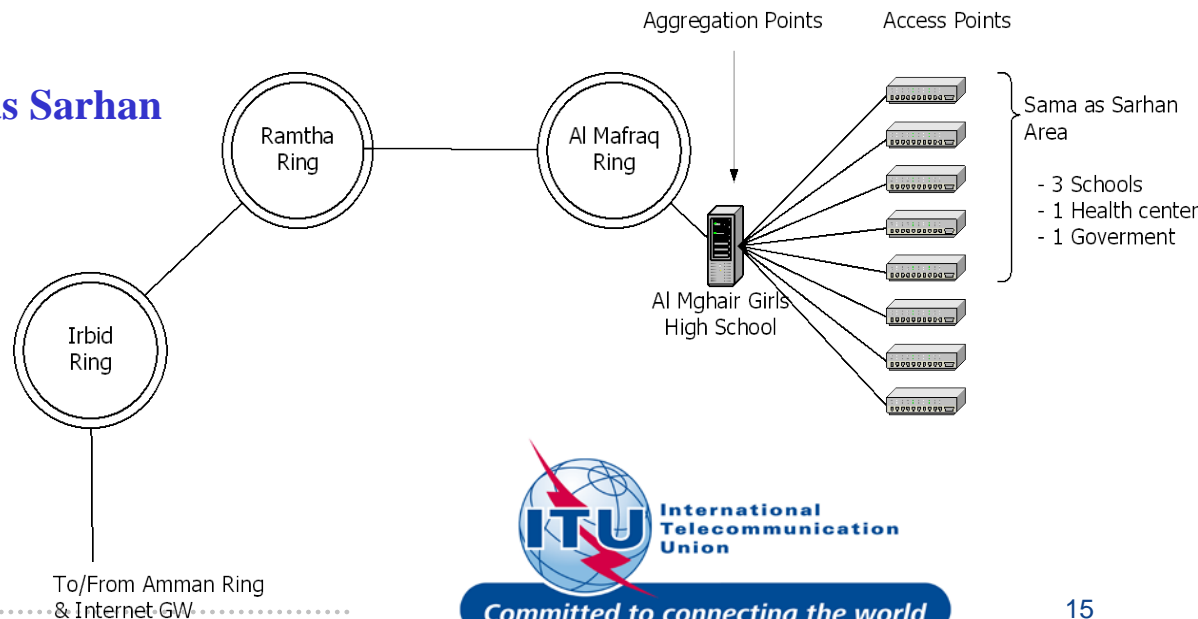
Population

Sama as Sarhan Municipal district : 17,462

Sama as Sarhan town : 4000.

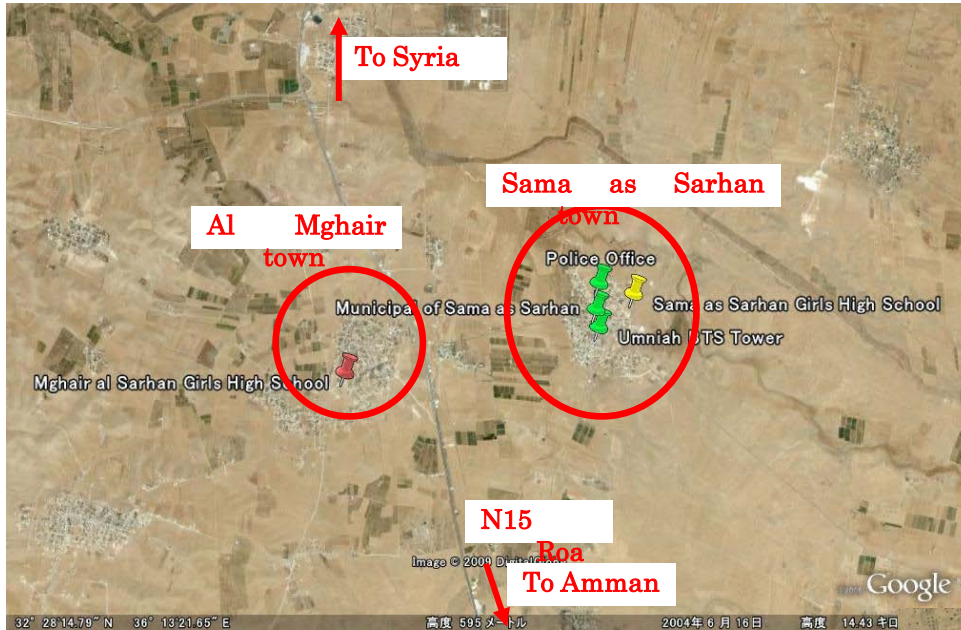
Housing in Sama as Sarhan town : 744 (May 2009)

Network Topology of NBN in Sama as Sarhan municipal district



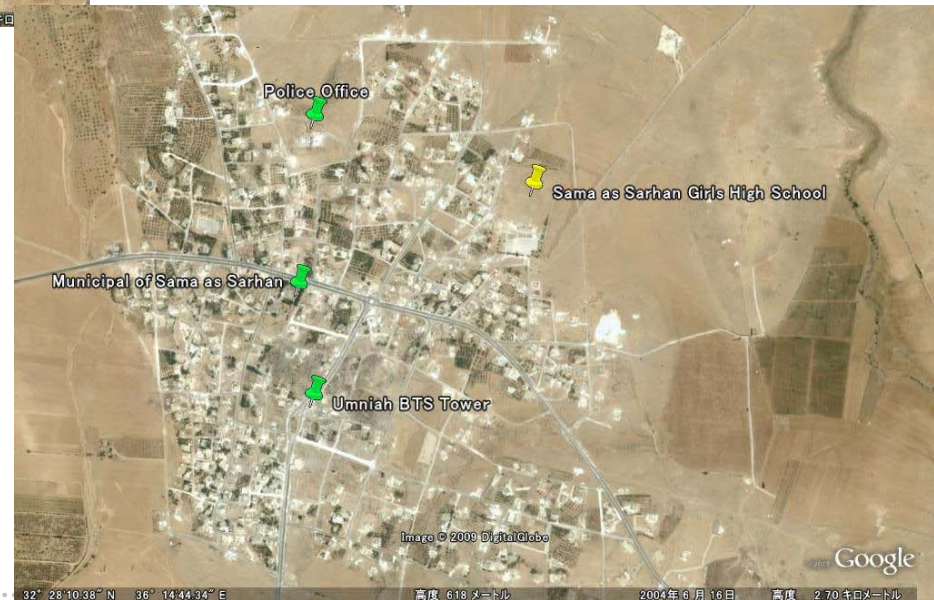
Committed to connecting the world

Sama As Sarhan



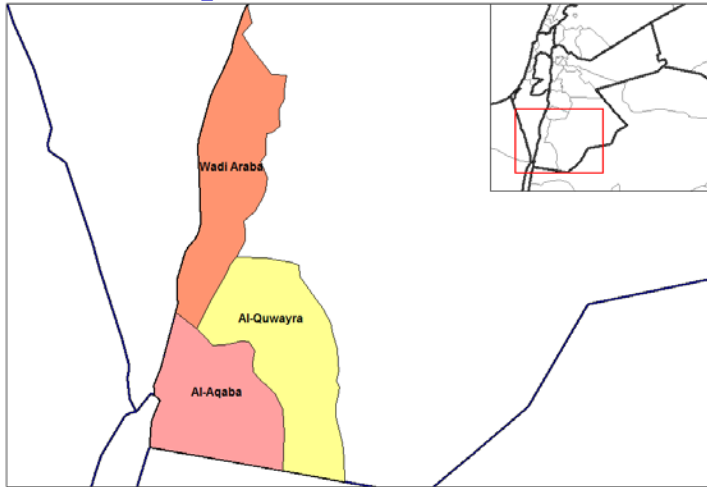
Location map of Sama as Sarhan municipal district

Sama as Sarhan town and facility locations



Al Quwayra

Aqaba Governorate



Al Quwayra is located in Aqaba governorate
45 km north from Aqaba.
North and west side is mountainous and gently
declined from north-west side to south-east side.

Population

Al Quwayra Municipal district : 13,000

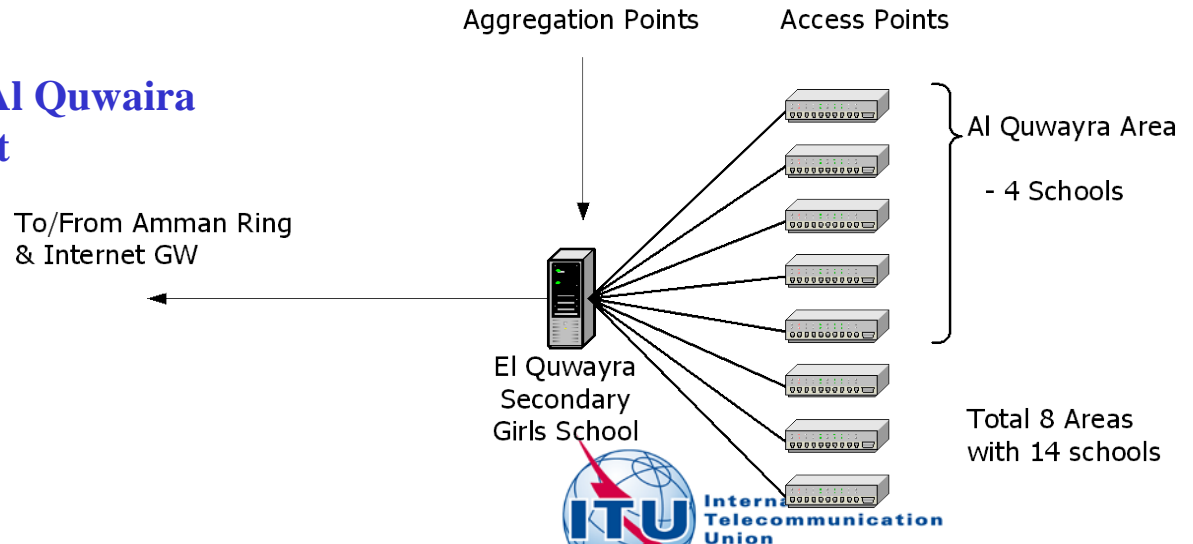
Al Quwayra town : 7,387

Housing

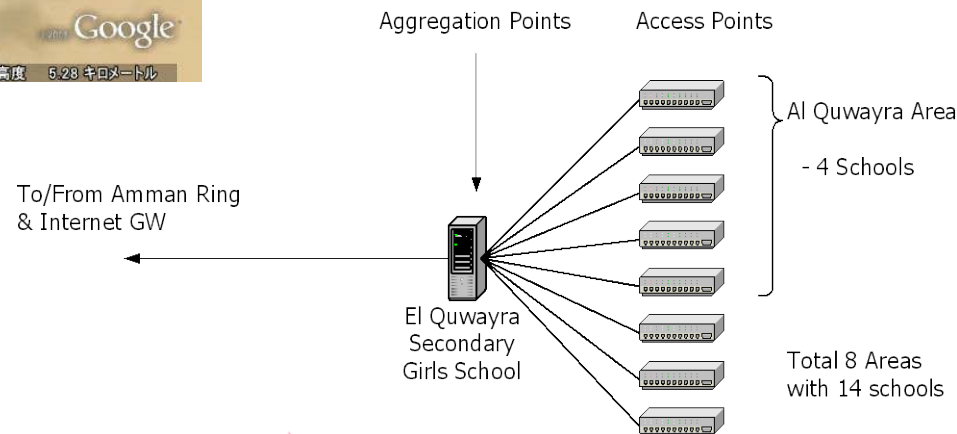
Al Quwayra Municipal district : 2,278

Al Quwayra town : 1,265 (May 2009)

Network Topology of NBN in Al Quwayra municipal district



Al Quwayra



Countries Background- Tunisia



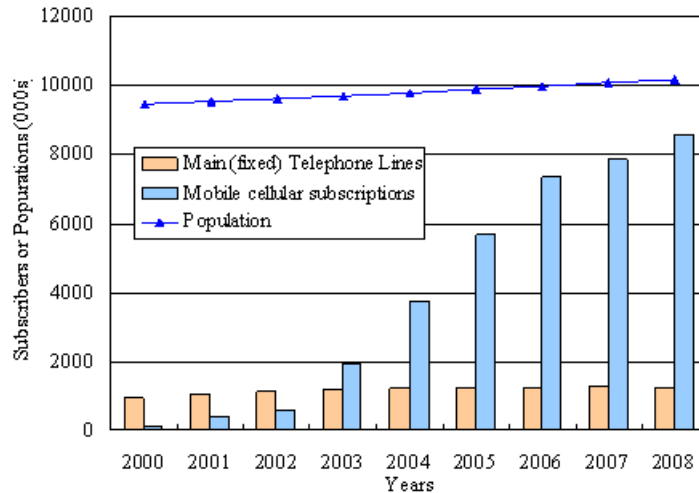
An extension of the Atlas Mountains runs north western part.
 Around 40% of the country's surface area is covered by Sahara desert.
 Most of population is allocated from north to east plain area.

- **Geography**
 - Surface (km²) 163,610
 - Coast Length (km) 1,148
 - Max Altitude (m) 1,544
 - Lowest point (m) -17
- **Demography**
 - Population (mil July 2008) 10,328
 - Popl growth Rate (%) 1.1%
 - Popl density (/km²) 63
 - Urban popl 64.4%
- **Age Structure**
 - 0-14 years 29.4%(2001)
 - 15-64 years 64.8%
 - Over 65years 5.8%
- **Education**
 - Adult Literacy Rate 74.2%(2003)
- **Macro Economics Index**
 - Nominal GDP at Market Price 40,348MUS\$
 - Nominal GDP per capital 3,907US\$
 - Real GDP growth rage at Market price(%) 6.3% (2007)
- 24 Governorates



ICT Statics of Tunisia

Wireline and wireless growth



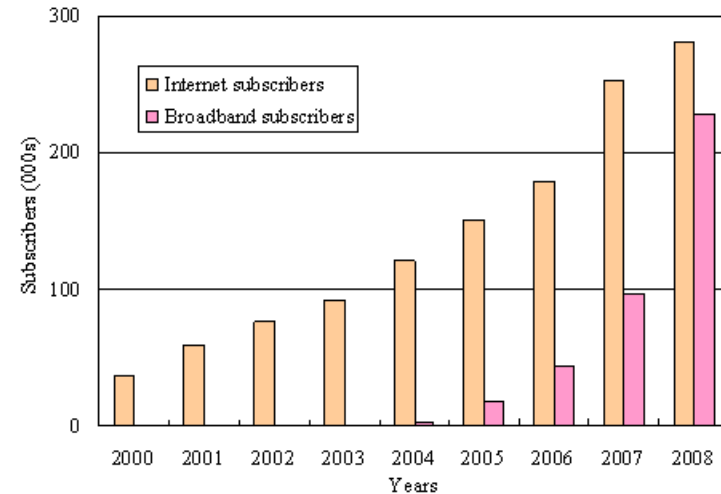
The wireline market

- The wireline re-liberalization was commenced in 2008. State-owned Tunisia Telecom (TT) is a monopoly.
- The wireline subscribers were also gradually increasing up to 2007. This may show that wireline was not enough popularized.
- Fixed telephone lines per 100 inhabitants:
 - 12.18 (CAGR 1.3%)

The wireless market

- The wireless monopoly Tunicell (parent company : TT) was continued until Orascom Telecom Tunisia (OTT) got the GSM license in May 2002. After this concession, mobile subscribers were significantly increased.
- The mobile subscriptions per 100 inhabitants
 - 82 (CAGR 34.9%) in 2008.

Internet subscriber growth



ADSL service was started in 2005

- The 93% of broadband internet access uses ADSL
- However, ADSL penetration ratio per 100 households is 3.36 in 2007.

Numbers of internet user : 2.8milions in 2008.

- Many dial up connections still remain and demand is increasing.

Currently the 700 entrprises connected to fixed WiMAX.

Due to lack of fixed lines and virtual monopoly issue, it might be difficult for the new fixed service operator to penetrate wired broadband market other than approaching from the mobile side.



Source : ITU *Committed to connecting the world*

Bizerte Governorate

Louata



Bizerte Governorate

- Area: 3,750 km²
- Population: 528,425
- Demographic growth rate: 0.82 %
- Urbanization rate: 60.9 %
- Working population: 181,033
- School enrolment rate (6 to 12 years): 95.8 %

Louata

- 60 km north from Tunis
- 13Km from Bizerte city
- Moderate hilly area surrounded by grain yards.
- Population : 6411
- Householders : 1151

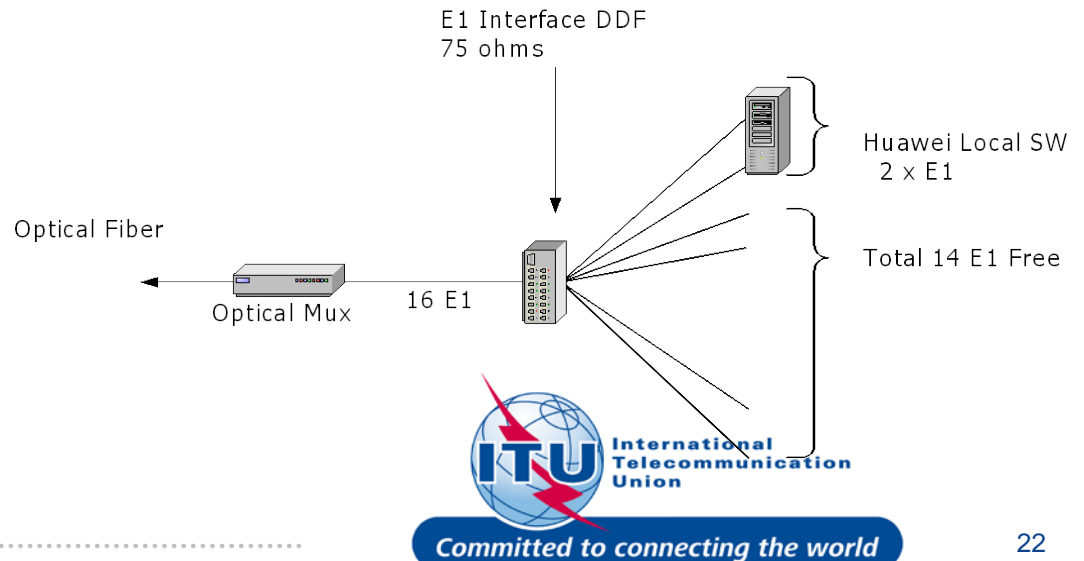


Louata LS

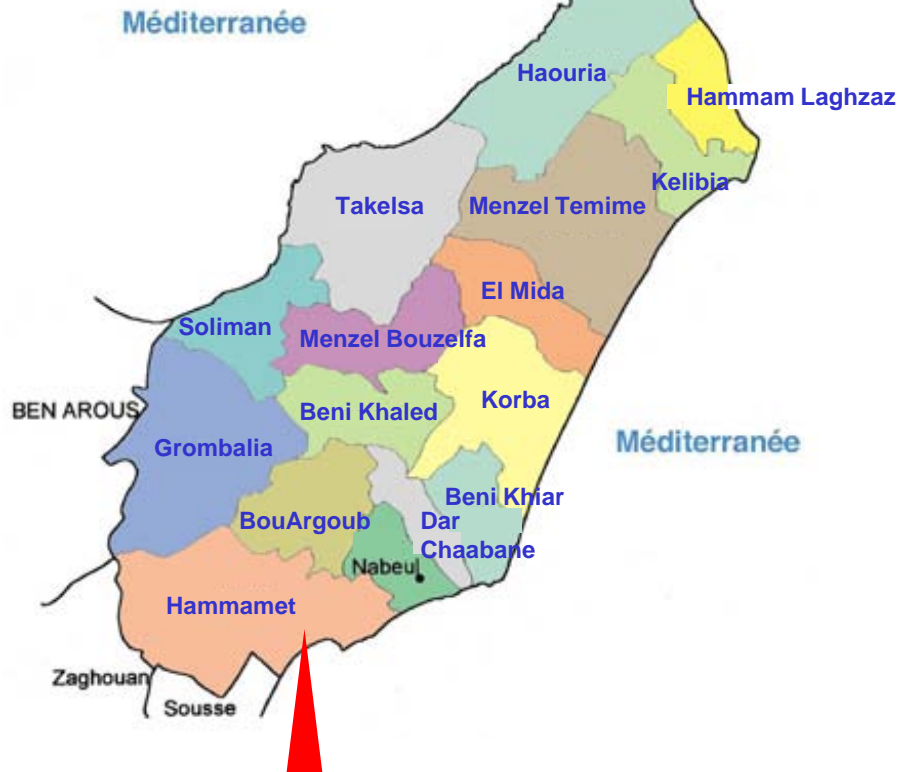


Louata LS and GSM WLL sites location

Louata LS configuration



Nabeul Governorate



Sidi Jdidi

•Nabeul Governorate

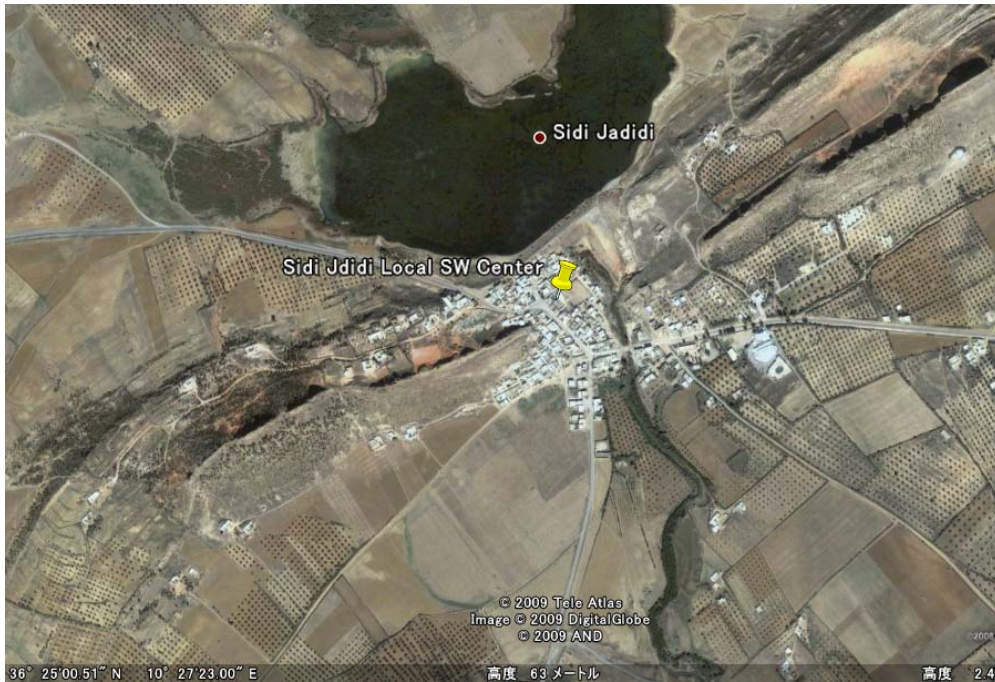
- Area: 2,822 km²
- Population: 728,537
- Demographic growth rate: 1.32 %
- Urbanization rate: 66.1 %
- Working population: 248,800
- School enrolment rate: 92.2%
- Government Administration divisions:
 - Delegations: 16
 - Municipalities: 24
 - Rural Councils: 21
 - Imamates: 99

•Sidi Jdidi

- 70km south east from Tunis
- 25km from Nabeul city
- hilly area, surrounded by small hill, plantation and pond.
- Population: 15,720 (in Sidi Jdidi Rural Council)
2,500 (in Sidi Jdidi village)
- Householder: 3,713 (in Sidi Jdidi Rural Council)
500 (in Sidi Jdidi village)

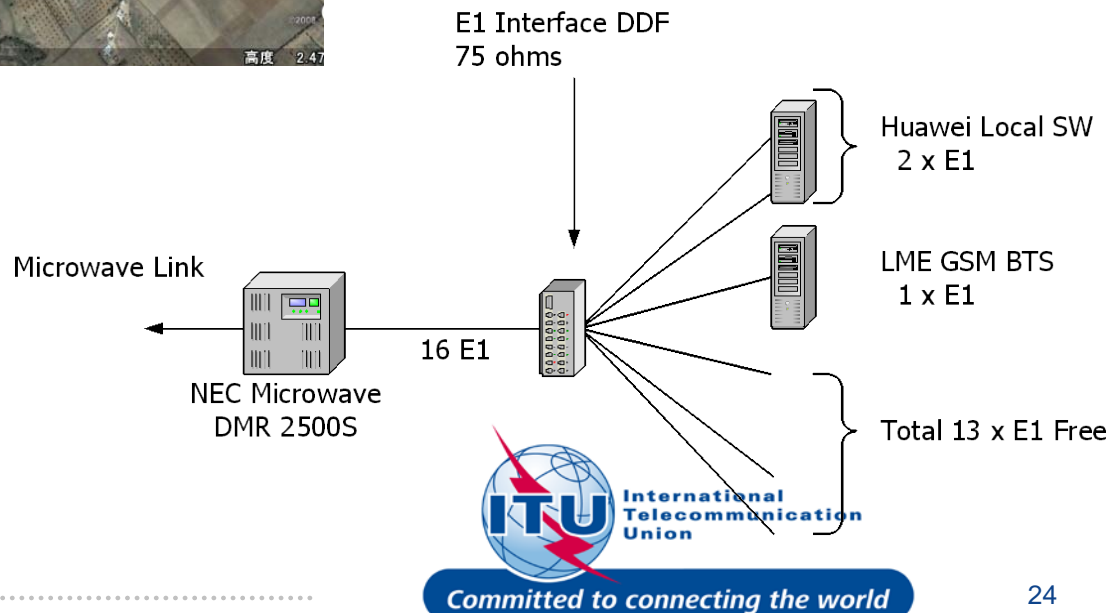


Sidi Jdidi LS



Sidi Jdidi LS location

Sidi Jdidi LS configuration



Preferable BWA system

- New entrant, fixed or 2G incumbent mobile operators
 - mWiMAX or eXtended Global Platform(XGP) is preferable
- Anticipated user density is high
 - eXtended Global Platform(XGP) is preferable
- Incumbent FDD 3G mobile operators
 - E-UTRAN(LTE) is preferable
- Other than above
 - mWiMAX is preferable



Thank You

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