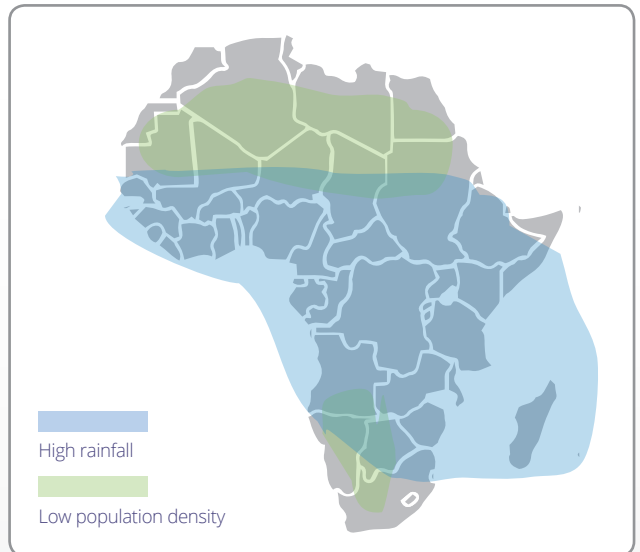


THE VALUE OF C-BAND IN AFRICA: CURRENT ADOPTION

C-band is of particular importance in Africa, which is one of the main markets of C-band VSAT services. This can be attributed to two main factors:

- ▶ **Limited terrestrial infrastructure** leads to high reliance on VSAT communications. C-band allows for coverage of large areas of the continent, making it valuable in **remote areas with low population density**
- ▶ Large proportion of the continent is characterized by **high rainfall**. C-band's higher resistance to rain fade makes it crucial for services requiring **high availability**



Sectors relying on C-band include, among others:

Mobile Backhaul



C-band offers reliable backhaul for mobile networks in remote areas and provides capacity for large regions

Oil and gas



C-band supports mission-critical operations in remote areas

Humanitarian Programmes



Over 50% of VSAT sites used by the humanitarian sector are estimated to be located in Sub-Saharan Africa

Broadcasting



C-band is used to deliver programmes via terrestrial networks to 140 million users in Africa

ATM networks



C-band is crucial where service level agreements set high reliability requirements

Air navigation and meteorology Services



C-band is used for networks which require wide coverage and high reliability

Tele-medicine



C-band supports the remote delivery of healthcare services, reaching otherwise underserved rural populations

E-government



C-band solutions facilitate efficient delivery of services to underserved and unserved areas across Africa

Maritime



Global coverage is crucial for vessels operating in remote regions or on long routes, moreover C-band is considered of increasing importance for large vessels

THE VALUE OF C-BAND IN AFRICA: BASIC FACTS ABOUT REALLOCATION

These points need to be considered when assessing the value of C-band:

- ▶ There are a wide range of service providers and a diverse user base
- ▶ Many services/activities generate primarily social value
- ▶ Climate and regional specificities are central to the value provided by C-band for specific applications
- ▶ Characteristics of C-band (worldwide coverage, rain fade, availability) reduce the number of viable substitutes

For a comprehensive assessment of C-band value, vital steps are to:

- ▶ Identify the market players, including both service providers and users
- ▶ Identify the products and services sold by the service providers and how they impact the activities of C-band users
- ▶ Assess the private value, including prices paid to service providers and value derived from C-band users' activities
- ▶ Assess the social value resulting from activities making use of C-band. This may include the social impact of humanitarian aid or healthcare services, as well as tax revenues
- ▶ Aggregate the value across sectors and geographies and arrive at a forecast of future value

Studies on C-Band reallocation offer a partial and inflated perspective

Studies such as the "Economic assessment of C-band reallocation in Africa" by Frontier Economics only offer a partial and inaccurate representation of the impact of reallocating C-Band for mobile use. The study compares the benefits of using C-band for mobile operators with the costs of reallocating spectrum to mobile use for satellite operators. The benefits are calculated using the price of 2.6 GHz as a benchmark for C-band value, which is then adjusted for country-specific differences. Finally, the net benefits are calculated for 4 case-study countries - Egypt, South Africa, DRC and Nigeria - with the results being extrapolated for Africa overall.

Examples of flawed assumptions include:

1

Ignores cost of reallocation

The impact on existing C-band users and the stakeholders they serve is ignored. C-band services they rely on cannot be cost-effectively migrated to other frequencies. Reallocation would have socio-economic impacts going well beyond those on operators.

2

Uses incomparable benchmarks

Economic benefits are overestimated by using auctions on 2.6 GHz - a band with different characteristics - as a benchmark for spectrum value rather 3.5 GHz auction values.

3

Incorrect approach to calculations

Country specific factors, obtained by using an inaccurate calculation approach, further inflate spectrum value for countries used as case studies (Egypt, South Africa, DRC and Nigeria).

4

Multiplier effect of errors

These two errors described above generate a multiplier effect that leads to further overestimating benefits.

5

Overlooks alternatives

Efficiency gains deriving from the usage of alternative methods to provide capacity (additional network deployment, off-loading mobile traffic onto fixed networks, etc.) are expressed qualitatively but are not quantified. Alternatives to C-band are not properly evaluated and there is no proposed comparison with alternative spectrum usage.

The methodology proposed by the Frontier Economics report presents an incomplete and inaccurate analysis by failing to consider the impacts on existing users and operators and by overestimating the benefits for mobile operators.