

ABSTRACT

The rapid development of technology has led to the tight of business competition in telecommunications, forcing the Broadband Network Operator to be more efficient in compiling CAPEX and OPEX needs to overcome the scissor effect from income declining and increasing of operational costs every year. FWA is allowing mobile technology to intersect with the demands of fixed-line services and price points. FWA enables network operators to deliver ultra-high-speed Broadband with a rapid deployment time, supporting home and business applications where fiber is prohibitively expensive to lay and maintain. 5G FWA can provide a competitive alternative to cable and fiber across all markets.

In this study, three aspects will be discussed; technical, economic, and regulatory elements. On the technical part, calculations on capacity and coverage dimensioning determine telecommunication infrastructures' needs for 5G FWA implementation. The calculation and analysis are done using Net Present Value (NPV) and Internal Rate of Return (IRR) for feasibility deployment analysis in the economic aspect. For the regulation aspect, reviewing several regulations that apply in Indonesia to see the possibility of FWA implementation in Indonesia.

Based on the research, The traffic projection for Citra Raya Cikupa in 2026 will reach up to 351.35 Gbps. Calculation on coverage dimensioning shown the radius of 5G Mid-band reach 1.012 Km² compared to 5G mmW only 0.1 Km². Economic analysis also showed that 5G deployment using the 3.5 GHz Mid-band scenario is feasible with NPV Rp171.223.238.888 and IRR 60% compared to 28 GHz, which results in minus in NPV and IRR. In terms of regulations, this implementation is also possible in terms of spectrum, standardization and sharing resources driven by implementing the Law no 11 2020 about Work Creation.

Keywords - Fixed Wireless Access, CAPEX, OPEX, Capacity Dimensioning, Coverage Dimensioning, Net Present Value, Internal Rate of Return, Scissor Effect.