

# 26th ASEAN Valuers Association Congress

Embracing Globalisation in the Region - Valuation Education, Sustainability and Standards

4 - 6 November 2024, Concorde Hotel, Singapore

**Plenary Session 3 - Valuation Education, Training and Research**

**Topic 9: Asset Valuation on In Building Coverage**



## Andamari Oktia Aruti

Valuer at KJPP Rengganis, Hamid & Partners

Supported By:



Sponsored By:



LANDSFIELD  
PROPERTY CONSULTANTS



SRE GLOBAL  
The Property People @IFM

Organised By:



The background of the slide is an aerial view of a city at sunset. A prominent communication tower with multiple satellite dishes is visible on the right side. A semi-transparent network overlay with glowing nodes and connecting lines is superimposed over the cityscape. The sky is a mix of orange and yellow from the setting sun.

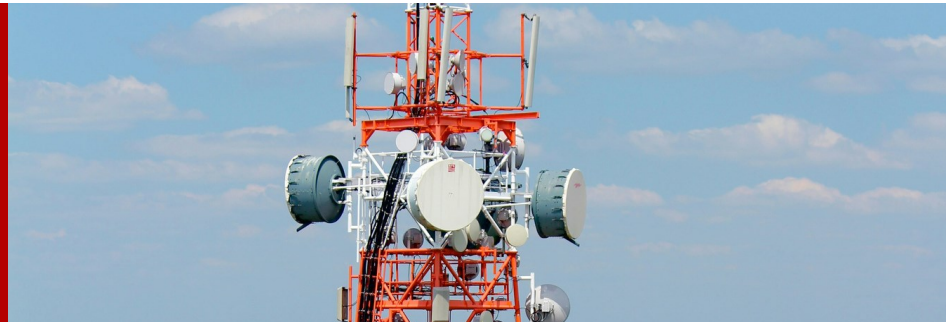
# ASSET VALUATION

# OF IN-BUILDING COVERAGE

**Andamari Oktia Aruti | Valuer at KJPP Rengganis, Hamid & Partners, Indonesia**  
**Prepared for AVA 26<sup>th</sup> ASEAN Valuers Association Congress**  
**Singapore 4-6 November 2024**

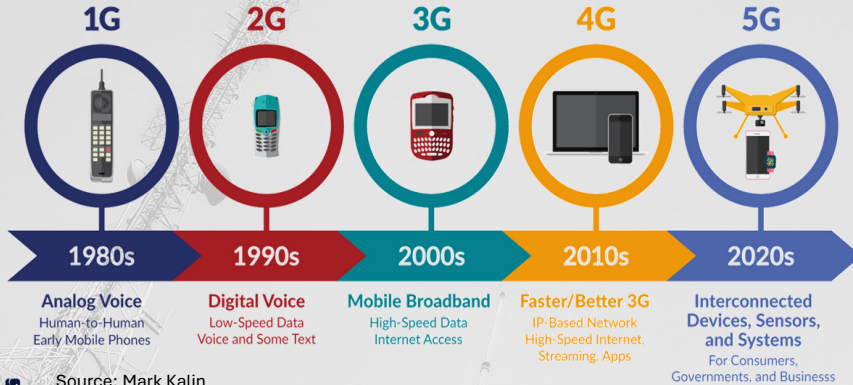
- 1 Introduction
- 2 In-Building Coverage
- 3 Scope of Study
- 4 Purpose & Objectives
- 5 Methodology
- 6 High and Best Use
- 7 Income Approach
- 8 Cost Approach
- 9 Conclusion & Recommendation
- 10 References

# CONTENT

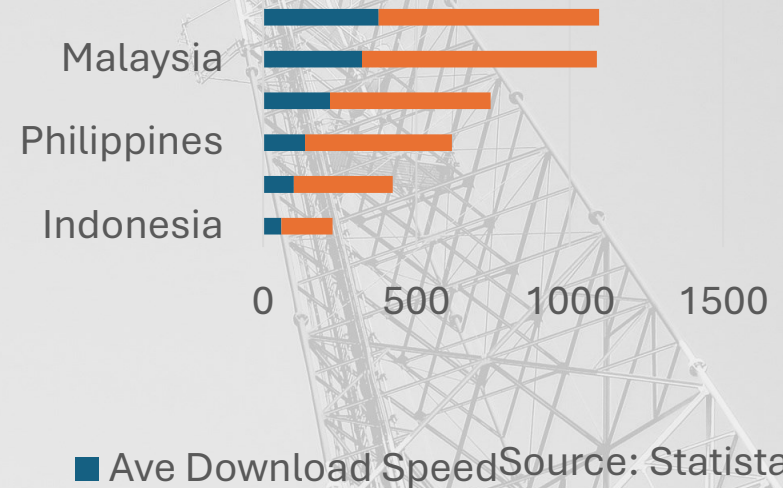


# Introduction

## Evolution of Cellular Networks



## ASEAN 5G Download Speed (in Mbps)



# Introduction

Advantages and Disadvantages of 5G technology

## Advantages

Higher speed : allowing faster file download and smoother streaming

Lower latency: reduces latency to as low as 1 millisecond

Increased capacity: support large number of devices

Enhanced connectivity: IoT support, improve efficiency and convenience

## Disadvantages

Device compatibility: not all devices support 5G

Expensive infrastructure cost : Need for more towers, 5G requires a denser network than 4G

Limited coverage: 5G operates on higher frequency bands that more easily obstructed by buildings, trees, and other obstacles

# In-Building Coverage

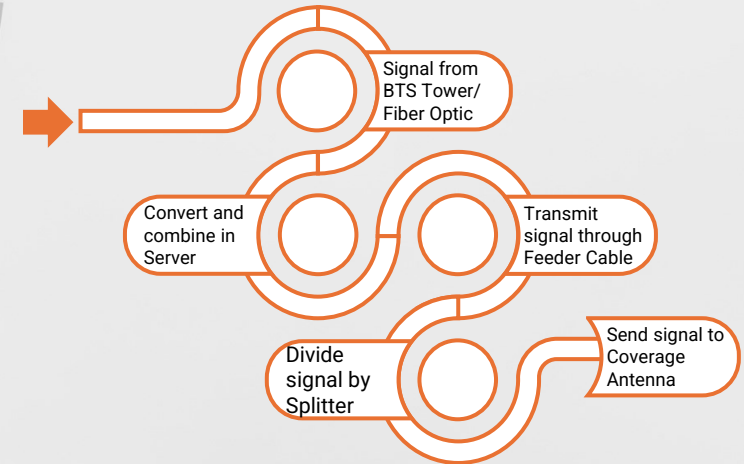


Source: IBTS

## What is IBC?

Antenna distribution system installed inside building to make sure the indoor signal availability. IBC usually consist signal booster that receive signal from BTS Tower and distribute the signal inside the building.

## Signal Transmission Process



# In-Building Coverage

## IBC Supporting Equipments



Coverage Antenna



Splitter



Connector



Jumper



Feeder/Coax Cable



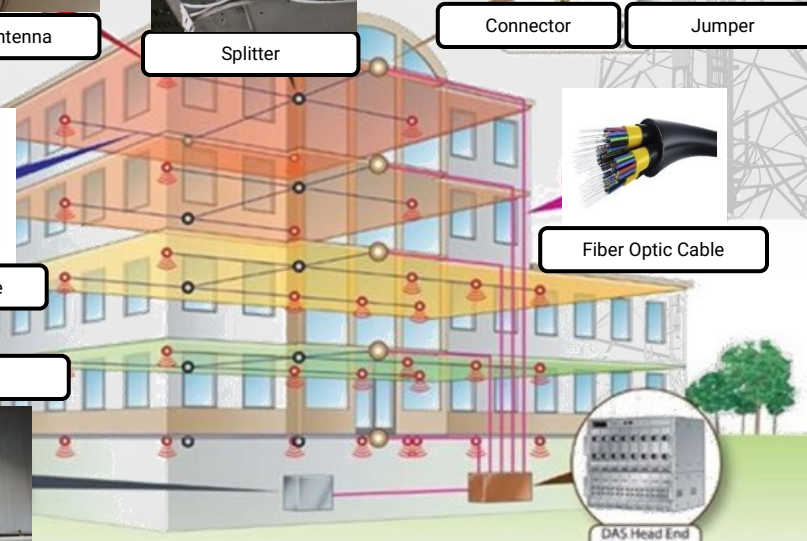
Fiber Optic Cable



Combiner



DAS Head End Equipment



**Antenna**

Often used in short-range wireless communication connections, which connect point to multi-point or one transmitter point to many receiver points

**Feeder Cable**

Cable used to transmit waves

**Combiner**

Tool used to combine two or more different frequencies

**Splitter**

To divide the RF signal into two, three or more, like a feeder cable

**Jumper**

Used to connect one component to another

**Connector**

Installed at the end of each feeder cable, can be connected to other components

# Scope of Study

The study was conducted in Indonesia, whereas many of telco operators is focusing on their core business of telecommunication such as mobile and data network and partnering with tech companies to build digital telecommunication ecosystem. They start to divest the non-core businesses such as BTS towers and IBC sites to tower co using sale and leaseback scheme

## Indonesia IBC Sale and Leaseback Transaction

Transaction	Type of Transaction	Date of Transaction	No of Site	Transaction per Site (mio IDR)	Rental Rate (mio IDR/ site/ year)
XL - DHOST	Sale	30 Apr 21	7	843	N/A
XL - DHOST	Sale	31 Mar 21	161	854	N/A
IOH - DHOST	Sale	15 Feb 23	633	758	N/A
IOH - DHOST	Lease-back	15 Feb 23	544	N/A	230

Source: Company Information Disclosure



# Purpose and Objectives

In a business context, an IBC system is often considered as an income producing property. IBC is seen as an attractive asset to be traded between telco operators and tower companies.

Considering the background above, the role of Valuer is needed in estimating the appropriate Market Value for IBC transaction.

# Methodology



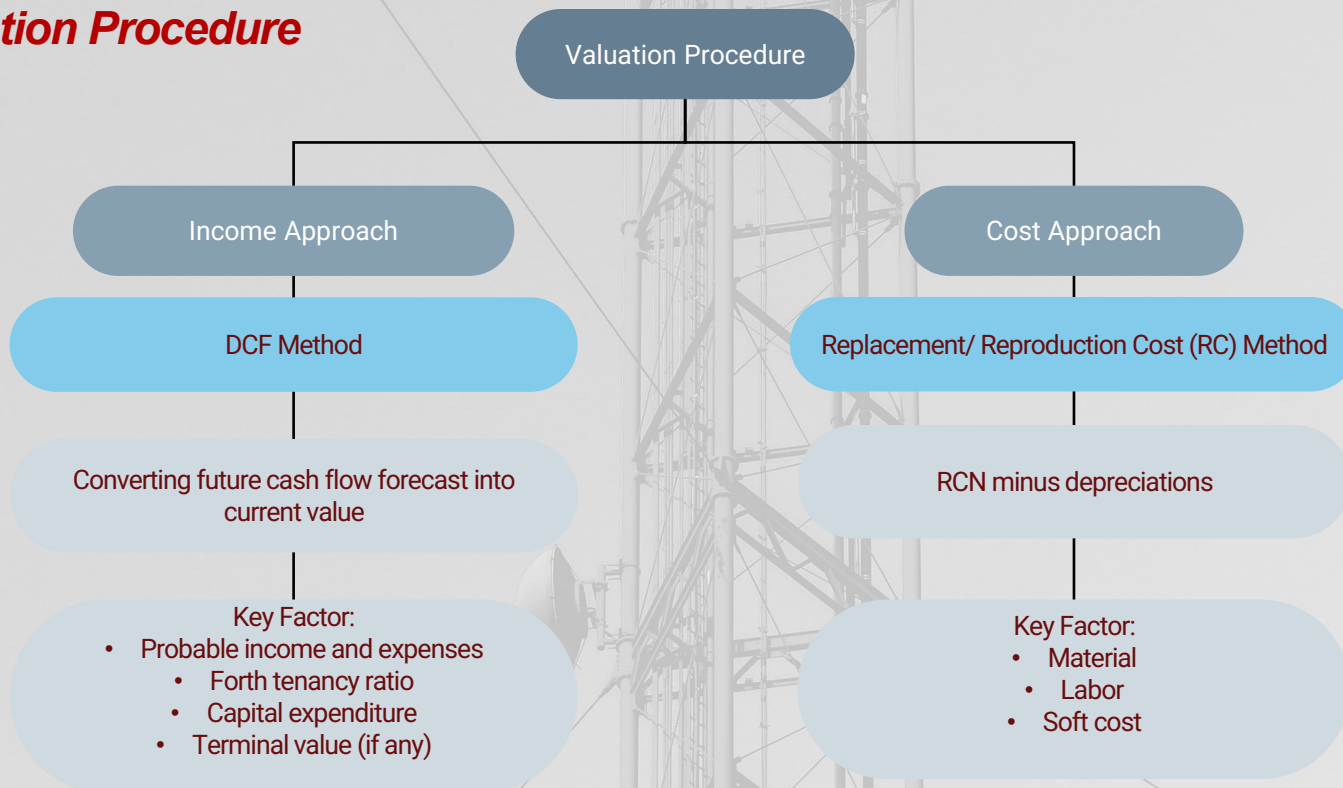
In this study, IBC system is assumed as Trade Related Property (TRP), which is seen as an individual property that can be transferred in operating condition including its existing contract. This property does not only include the IBC equipments but also the business components. TRP is often intrinsically associated with a specific type of business activities and it is often transferred as part of a going concern business.

“A trade related property is any type of real property designed for specific type of business where the property value reflects the trading potential” (IVS 232).

Research data is secondary data based on annual report, financial statement, and company information disclosure from several telco operator and tower company in Indonesia. It can be accessed through Indonesia Stock Exchange and the company website

# Methodology

## Valuation Procedure



# Result

## *Highest and Best Use Analysis – HBU As Improved*

### Physically possible

The placement of IBC infrastructure is in indoor area of public facilities, besides that, the placement of IBC equipment has met the proportional placement inside the building

### Legally permissible

The placement of IBC infrastructure is located in a leased building completed with building lease contract between building owner and IBC owner

### Financially Feasible

The IBC also has a long-term lease contract with telco operators that can generate revenue

# Valuation Analysis

## Income Approach

### Projection Period

Projected for 1 lease period of 10 years and can be extended for another period until the end of normal useful life. (30 years)

### Colocation Potential

Estimated to reach maximum at 1.7 within 5 year and assumed to be constant until the end of projection, with consideration based on TR of several tower co in Indonesia:

Tower CO	2019	2020	2021	2022	2023
STP	1.78	1.50	1.13	1.33	1.73
CENT		1.79	1.81	1.73	1.70

Various source edited by Author

### Rental Rate

- Rental rate for leased back is higher than market rate.
- The taller the building and the wider the signal that must be covered, will needs more number of antennas.
- The higher number of the antenna in one site, the rental price per unit will be cheaper
- The rental rate for 2nd period usually will be discounted

### Rental Rate

No of Antenna	Rental Rate (.000 IDR/antenna/month)
<40	360
41-100	280
101-200	200
201-300	180
301-400	160
401-500	150
>500	140

Various source edited by Author

### Expenses

Expenses	Amount
Building lease	35-40%
Repair & maintenance	
Site insurance	15-20%
Marketing cost	
General and administrative	
<b>Total Expenses</b>	<b>50-60%</b>
<b>Net Operating Income (NOI)</b>	<b>40-50%</b>

### Capital Expenditure

- Capex for equipment replacement

### Terminal Value

Capex colocation addition

# Valuation Analysis

## Cost Approach

### RCN Calculation

In calculating the Indicated Market Value of IBC equipment, the Replacement Cost New is obtained using the Detail Method.

### Detail Method

Replacement/Reproduction Cost New

#### 1. Direct cost

- Material
- Labor

#### 2. Indirect Cost

The number of antenna installed would depend on the number of floor, building

- Pre-implementation cost (site acquisition fee & permit, site survey, radio area, building facade (more complex building facade needs more antenna). network planning, detail design, mobilization)

- Value Added Tax (VAT)

### Economic Life

Based on the Normal Useful Lives (NUL) table from the American Society of Appraisers (ASA), the economic life of IBC equipment is 30 years (based on feeder cable component)

### Depreciation

Depreciation	Remarks
Physical	Estimating physical depreciation based on effective age compared to the normal useful life, as well as considering the observation condition
Functional	Do not consider due to the absence of technological changes related to the IBC
Economical/ External	Do not consider due to the absence of economic issues related to the IBC

### Entrepreneurial Profit (EP)

EP reflects the difference between the total development cost of the property and the price sold to the market. It represents the entrepreneur's compensation for the risk, time, and expertise associated with the IBC installation or the expected profit from a similar asset

# Conclusion

Based on analysis above, it is concluded that since IBC is assumed as TRP, this property will be valuable and transferable if it is covered with the lease contract. During the contract period, the rental rate can be considered according to the contract, however while the contract period ended, the rental rate must be considered based on market. The Cost Approach is only used as a check method since the investors are still considering the replacement cost to acquire this type of property, therefore in the Cost Approach consider the entrepreneurial profit as a compensation for the risk, time, and expertise from similar development

# Recommendation

- To have more caution in determining the revenue and expenses/costs that are considered in calculating Income and Cost Approach.
- Further study is needed to ensure whether the IBC transactions through sale and leaseback scheme will result in

# References

American Society of Appraisers – Estimated Normal Useful Lives

International Valuation Standards Effective 31 January 2022

Indonesia Valuation Standards 4th edition 2018

Indonesia Stock Exchange

Andriany, V. (2019). Penilaian Ganti Rugi untuk Kepentingan Umum (Studi Kasus Pembebasan Lahan untuk Tapak Tower PLN). *DINAMIS - Journal of Islamic Management and Business*, 2(2), 56-67.

Authority, R. U. (2020). Guidelines Requirement for Indoor Building Solution - Distributed Antennas System Installation. *Rura Inspiring Development*.

Siregar, D. D. (2004). Manajemen Aset Strategi Penataan Konsepe Pembangunan Berkelanjutan secara Nasional dalam Konteks Kepala Daerah sebagai CEO's pada Era Globalisasi dan Otonomi Daerah. Jakarta: PT. Gramedia Pustaka Utama.

Sujono, B. (2011). Penilaian Aset dalam Sektor Properti. *MODUL*, 37-40.

Yuliana, H., Charisma, A., & Sunubroto. (2018). Perencanaan dan Simulasi Indoor Building Coverage pada Jaringan Long Term Evolution (LTE) Menggunakan Radiowave Propagation Simulation (RPS). *Seminar Nasional Sains dan Teknologi*, 1-10.

Yuliana, H., Pratama, R. S., & Rahmatullah, G. M. (2022). Perencanaan Indoor Building Coverage (IBC) Jaringan 4G LTE di Gedung Fakultas Psikologi Unjani. *EPSILON: Journal of Electrical Engineering and Information Technology*, 20(1), 1-10.

<https://www.waveform.com/pages/das-distributed-antenna-systems>

<https://www.statista.com/statistics/1252791/apac-5g-download-speed-by-country/>



# Thank you!

Personal Information

Phone/WhatsApp : +62 81398843480

Email : [andamari.oktia@rhr.co.id](mailto:andamari.oktia@rhr.co.id)

