

Analysis of Domestic Content Standards for 5G BTS Infrastructure in Indonesia Using RIA Method

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ABSTRACT

Keywords: DCL, regulatory impact analysis, base transceiver station. This research aims to analyze and develop the standards for the Domestic Content Level (DCL) specifically for 5G Base Transceiver Station (BTS) infrastructure in Indonesia using the Regulatory Impact Analysis (RIA) method. The Regulatory Impact Analysis (RIA) method is employed as the primary approach in this research to evaluate various policy options and potential DCL standards for implementation. This approach allows for understanding the policy implications on various stakeholders, including regulators, vendors, and operators. A cost-benefit analysis assessment was conducted using in-depth interview methods, and the results indicate that the status quo alternative, which is 40% DCL standards for goods and services components, remains relevant for implementation in Indonesia. On the other hand, regulators are evaluating and reviewing this regulation to increase the DCL value and foster the BTS industry in Indonesia. The challenges currently faced by local producers also require stronger government supervision and support for future technological self-sufficiency in Indonesia.



Introduction

In the increasingly developing digital era, reliable and sophisticated telecommunication connectivity is a necessity in supporting economic growth, technological innovation, and public communication. One of the important elements in the telecommunications ecosystem is the fifth-generation (5G) mobile network that promises a level of speed and performance that has not been present in previous technologies. To implement 5G technology in Indonesia, problems arise related to the Domestic Content Level (TKDN) policy. Currently, there is no clear policy framework that regulates TKDN in the 5G BTS industry in Indonesia (Putri & Kadewardana, 2018).

Regulation of the Minister of Communication and Informatics Number 13 of 2021 states that telecommunication equipment and/or telecommunication base station devices based on Long Term Evolution technology standards must meet the minimum Domestic Component Level of 40% (Blondel, Guillaume, Lambiotte, & Lefebvre, 2008). In the

context of 5G where technology continues to develop rapidly, it is important for Indonesia to immediately formulate regulations and guidelines that are by local conditions and needs. In this case, various tools or models of analysis of laws and regulations, such as Regulatory Impact Analysis (RIA), Rule, Opportunity, Communication, Interest, Process, and Ideology (ROCCIPI) models, Regulatory Mapping (RegMap) models, Legislation Analysis Models (MAPP), and others, can be guidelines to ensure that the resulting regulations are not only good but also effective. Although each regulatory analysis model has certain advantages, it should be acknowledged that each also has weaknesses (Hoesein, 2012). The RIA method has been widely used and reviewed by several authors. In 2004, when Poland joined the European Union, the country had to adopt EU standards related to Regulatory Impact Analysis (RIA). Therefore, in 2004, the Ministry of Economy formulated new guidelines for the assessment of the impact of regulations (Renda, 2015).

This guideline was adopted by the Council of Ministers on 10 October 2006 and is still in force today. The 69-page document consists of the principles of the preparation of the RIA before the formulation of the legislative project. This guideline introduces a new element in RIAs, namely environmental impact aspects that expand the assessment of costs and benefits. This is done as a form of implementation of the principles of sustainable growth which is based on integration and equal efforts on three pillars: economic, social, and environmental (Brzęk, 2014) References (Kurniawan, Muslim, & Sakapurnama, 2018) in the results of his research show that several institutions that consistently implement RIA produce the following benefits: First, instruments that apply Regulatory Impact Analysis (RIA) provide detailed and systematically prepared policies. As a result, the resulting policies tend to be more accountable, transparent, consistent, and able to support the achievement of economic and social welfare. Second, the use of Regulatory Impact Analysis (RIA) by policymakers can contribute to formulating efficient and effective policies. The efficiency aspect is seen through the benefits obtained from the policy, considering that the main objective of the RIA is to ensure that the resulting regulations will provide an improvement in the welfare of the community with benefits that are proportional to the costs incurred.

The effectiveness aspect, which relies on the involvement of all stakeholders from the outset to the stage of problem formulation and the formulation of available options, can reduce the barriers that may arise from the outset. Third, instruments that apply Regulatory Impact Analysis (RIA) can systematically evaluate the positive and negative impacts of regulations that are being proposed or in force, involving an analysis of the costs and benefits of the various options available (Widiantoro & Kusumadewi, 2011). In other words, through the application of this method, it can be understood early whether intervention from policymakers is appropriate and necessary, or vice versa. This involvement is important because the policies formulated must provide maximum benefits by considering the positive and negative implications.

Reference (Aquila et al., 2019) conducted a study of regulatory agencies in Brazil to assess the complexity of the Regulatory Impact Analysis (RIA) conducted and identify

the quantitative methods used by these agencies. In developing countries such as Brazil, improvements in regulatory practices are becoming more relevant, and RIAs can contribute to this. The activities of regulatory institutions in conducting discussions and exchanging views on RIAs are very important for the advancement of regulatory quality, so it is necessary to develop materials and hold discussions to build the acceptance and use of RIAs. The implementation of RIA has become more relevant considering the goal of making regulation a technical process rather than a political one. Shah, K. U. (2018) in his research said that the RIA approach can provide evidence-based analysis to support policy decision-making in the developing country of the small island of Antigua & Barbuda. This approach can consider the potential technical performance of the option combined with cost-effectiveness resulting in justifications that aid the decision-making process.

This study provides hands-on experience in the implementation of RIA in the Caribbean. The results of the observation raise several important things, RIA is useful not only as an analysis tool but also as a coordination tool that can unite various diverse but relevant community trends. RIA is also a rational-based and transparent tool that is easily understood by policymakers and can be communicated to interested parties. Logic-based results and calculations make them easier to understand than complex statistical modeling or econometric approaches. RIA provides an analysis that allows decision-makers to justify deciding on action. The quality of regulation contributes to good governance in the public sector, which is increasingly recognized in the assessment of a country's competitiveness and long-term sustainability. This study proves that RIA's efforts are feasible and can provide critical results in the implementation of the SDGs for small island developing countries towards sustainable development.

Method

The process or stages of a regulatory impact analysis (RIA) briefly involves several stages. The level of deepening and complexity of this analysis will depend on how important the impact of the policy will be. The process and stages can be seen in Figure 1.

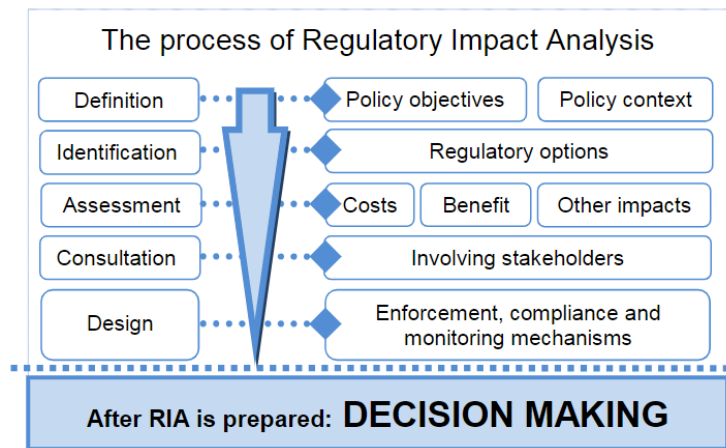


Figure 1
Process of RIA

Definition

After running for approximately 8 years, the Domestic Component Level (TKDN) regulation for Base Transceiver Stations (BTS) has not been able to encourage the development of the 5G BTS industry in Indonesia. One of the main reasons is the BTS TKDN policy which includes service elements, but this is not effective in encouraging the growth of the BTS industry in the country. Currently, the calculation applied to vendors still refers to the Regulation of the Minister of Industry Number 16 of 2011. This is due to the provisions in the Regulation of the Ministry of Communication and Information Technology (KOMINFO) which still includes base stations in the calculation of TKDN Services. Although vendors submit TKDN for devices, the current regulations still use the TKDN service rules[7].

Identification

After obtaining the formulation of the problem, the next stage is to develop regulatory options as an alternative to solving the problem. In this study, the author made an alternative regulatory option based on the regulation of the Minister of Communication and Information of the Republic of Indonesia Number 13 of 2021 which states that *the* Long Term Evolution technology standard must meet the minimum Domestic Component Level of 40%. From these rules, the author makes three options as follows:

1. Alternative 1: The 40% TKDN standard for goods components includes *software* and software baseband details. Conditions where the TKDN standard of 40% is only implemented for goods components.
2. Alternative 2: TKDN standard of 30% for goods components excluding *software*, and 10% for service components including *software*.
3. Alternative 3: 40% TKDN standard for combined components of goods and services (status quo)

Assessment

At this stage, an assessment of the impact of the proposed policy alternative options is carried out, one of which is by analyzing *costs* and *benefits*. References (Jacobs, 2006) show that there are several analysis methods that can be used according to the challenges or problems that occur.

Table 1
Pressures on RIA Methods

Pressures on RIA	Goals	Analytical Method
Neoclassical economics	Maximization of social welfare among multiple goods and bads (Pareto optimum)	Benefit-cost analysis using a common, monetary metric
Better public policy, integrating multiple objectives and interests	Weighing and balancing many positive and negative impacts	Soft benefit-cost analysis, integrated impact assessment including multiple policy objectives
New public management	Cost and performance disciplines	Cost-effectiveness analysis of various options
Competitiveness, microeconomic policies	Minimizing business costs	Business impact, SME tests, administrative burden tests
Social consensus, interest group pressures	High valuation of impacts on selected groups	Distributional analysis, partial analysis

Table 1 shows that monetary cost-benefit analysis which requires all cost components and benefits assessed in money is only one of the alternatives in analyzing the choice of policy options, if using a different approach, you can use other analysis methods or still use a more flexible cost-benefit analysis. For example, in the soft cost-benefit analysis method, the most important thing is that all costs and benefits felt by various stakeholders can be informed without any assessment in the form of money.

In the assessment stage of this study, two approach methods were used, namely Multi Criteria Analysis and Minus Implication. Multi Criteria Analysis (MCA) focuses on the preparation and determination of which decision is more appropriate to a condition faced by the organization. The same decision under different conditions will produce different results [13]. In this study, the author also uses the Plus Minus Implication method as a combined method in cost-benefit analysis. The PMI method classifies aspects of action/thought into three groups, namely the plus group in the form of positive aspects of the action/thought. The minus group is in the form of negative aspects of the

action/thought, and the interesting group is in the form of implications or possibilities that are still uncertain after the action (Alijoyo, Wijaya, & Jacob, 2021). The following stages of data collection and calculation of value weights for the Plus Minus Implication and Multi-Criteria Analysis methods carried out by the author are as follows:

1. Determine the scale for Plus Minus Implication with a range of 1 – 3. Where the largest value shows the greatest profit/loss impact of the specified indicator.
2. the Multi Criteria Analysis method, is determined by a scale of 1 – 5 where later the scale of 1 – 5 is converted into a value weight of 0 – 1 because the sum for all indicators from all stakeholders must be worth 1. The higher the value/weight, the more important and relevant the indicator is to the goals that have been set, and vice versa. It was found that the indicators from the validation results were 15, so the following is the value conversion determined:

Table 2
Conversion of Weighted Value of MCA Method

Nilai	Konversi Pembobotan
1	0.02
2	0.04
3	0.06
4	0.08
5	0.13

3. After the value is obtained and converted, then the value is multiplied by the result of the value contained in each alternative that has previously been obtained by the Plus Minus Implication method so that the total value is obtained to assess each alternative.

Consultation

To obtain data, the authors conducted in-depth interviews with stakeholders related to 3 resource persons which can be seen in the following table 3.

Table 3
List of In-Depth Interview Participants

No	Name	Job Position	Institution
1	Cendrawasih	PIC Domestic Industry Strengthening Program	Communication and Informatics
2	Juan Andreas	Procurement Analytics and Reporting	Telkomsel

3	Muhammad Avenzoor	Procurement Specialist	Huawei
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Design

The last stage is design. At this stage, the agency that conducts the *Regulatory Impact Analysis* (RIA) process determines the final design to find out an overview of how the selected regulatory options can be implemented in accordance with existing conditions. This stage will also formulate how the form of monitoring/supervision can be carried out.

Results and Discussion

At this stage, an assessment of the three proposed alternatives was carried out, the results of in-depth interviews with stakeholders, and the weighting of the Plus Minus Implication and Multi-Criteria Analysis methods can be seen in the following sub.

Regulator

Table 4
Results of Plus Minus Implication and Multi-Criteria Analysis from Regulators

No	Indikator Regulator	Bobot 0 s/d 1	Alternatif 1	Alternatif 2	Alternatif 3
1	Peningkatan Nilai Ekonomi	0,06	3	2	1
2	Kemampuan Produksi Lokal	0,13	3	2	1
3	Kesesuaian dengan Rencana Pembangunan Nasional	0,08	1	2	3
4	Biaya Perubahan Regulasi	0,02	1	1	1
5	Biaya Sosialisasi	0,04	1	1	1
TOTAL			0,71	0,6	0,49

In Table 4 above, it can be seen that from the regulator's side, it is produced that the highest score is obtained for alternative 1. Local production capabilities will result in a high level of importance if alternative 1 is applied when compared to other alternatives. The production cost indicator does not have a significant effect because currently, Kominfo is also evaluating the current TKDN policy for BTS devices in the hope of growing the local producer industry in Indonesia.

Operator

Table 5
Results of Plus Minus Implication and Multi-Criteria Analysis from Operators

No	Indikator Regulator	Bobot 0 s/d 1	Alternative 1	Alternative 2	Alternative 3
1	Initial Investment Cost	0,08	2	1	2
2	Operational Costs	0,13	3	3	3
3	Network Quality	0,04	1	1	1

4	Product Availability and Selection	0,06	2	2	2
5	Increased Local Industry Participation	0,02	1	2	2
TOTAL			0,73	0,67	0,75

In Table 5 above, it can be seen that from the operator's side, it is produced that the highest value is obtained for alternative 3. In the table above, it can be seen that the highest value is obtained by the Operating Costs indicator. According to the source, operational costs will always be high because the need for BTS maintenance operations is quite high. Network quality does not have a significant impact because network quality is influenced by investment costs for the purchase of equipment as well as operational costs for daily BTS maintenance needs.

Vendors

Table 6
Results of Plus Minus Implication and Multi-Criteria Analysis from Vendors

N	Indicator	Bobot 0	Alternativ	Alternativ	Alternativ
o	Regulator	s/d 1	e 1	e 2	e 3
1	Partnerships with local suppliers	0,04	2	1	3
2	Compliance with government regulations	0,08	2	1	3
3	Decline in dependence on imports	0,06	2	1	3
4	Innovation Development	0,02	1	3	2
5	Intervention with local suppliers	0,13	1	2	2
TOTAL			0,51	0,5	0,84

In Table 6 above, it can be seen that from the vendor side, it is produced that the highest value is obtained by alternative 3. This is because to maintain the stability of the current BTS industry which is controlled by PT Huawei at almost 65%, the implementation of alternative 3 or the status quo is better to implement. The government's intervention in local suppliers has an impact on the difficulty of developing local producers. On the other hand, the Kominfo scheme requires PT Huawei to hire Indonesian human resources but this scheme is not applied to other manufacturers, making it difficult for the BTS industry to grow in Indonesia due to the dominance of the BTS market share dominated by PT Huawei.

Implementation Strategy

Although the results of the in-depth analysis that has been conducted on stakeholders, vendors, operators, and regulators resulted in an alternative status quo (no regulatory changes), the strategy for the implementation of the BTS TKDN policy that is in line with the expectations of regulators, in this case, Kominfo, still needs to propose a framework and action plan that needs to be carried out. The following is a table of the

proposed regulatory framework based on the results of the in-depth interview as well as a comparison of current conditions and expected conditions to see an overview of how the new policy can be implemented.

Table 7
Regulatory Proposal Framework

Subject	Current Conditions	Expected conditions	Action Plan
Formulation of TKDN Policy	There is no minimum TKDN value rule for goods or service components	Determination of TKDN value rules for goods and services components	Changes in TKDN formulation
Local Manufacturing Industry	The import of BTS device components is still being carried out to obtain the required device standards.	BTS component devices are manufactured by Indonesian manufacturers	Incentive support from the government to local industries is needed equally for the development of BTS infrastructure.
Innovation and Technology	Do not have a patent/intellectual property of technology	The existence of an ecosystem that supports innovation and development of domestic technology	Providing fiscal and non-fiscal incentives for research and development of BTS technology.
Growth of Local Industries	There is no local manufacturer that can produce BTS devices according to the standards/quality desired by the operator.	The growth of the local manufacturing industry that can create devices with the required quality/standards	Monitoring and evaluation of foreign investors' compliance in carrying out technology transfer and human resource capability development, based on regulations that have

	been determined, one of which is the Ciptaker Law No. 11 of 2020
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From the table above, it can be seen that to implement the new regulatory policy, it is necessary to change the applicable laws, especially in formulating the formulation of the BTS TKDN that can grow the local industry. In addition, there is a need for government support in terms of R&D development incentives and supervision related to policies currently in place to improve local capabilities and foster technology knowledge transfer.

Conclusion

The Indonesian government's preference for PT Huawei as a dominant player in the Base Transceiver Station (BTS) market has various implications for other similar companies. On the one hand, this decision can be seen as an effort to develop telecommunications infrastructure by utilizing technology and resources owned by PT Huawei. However, PT Huawei's dominance also poses challenges for other telecommunications companies operating in Indonesia. Similar local and international companies may face difficulties in competing head-on, especially in terms of price and technology. Currently, the government through the Ministry of Communication and Informatics is conducting an evaluation and assessment related to the applicable BTS TKDN rules in Indonesia. Support from local producers is also needed so that if one day the formulation of this regulation has been determined, its implementation can run well. Kominfo also hopes that the telecommunications industry can grow from the side of local producers so that this has an impact on increasing the TKDN of BTS devices in Indonesia.

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