

# Evaluation of the Jakarta-Bandung Fast Train Policy using GSM-R Technology in the Era of the Industrial Revolution (2021–2023)

Rusdiyanta, Bambang Pujiyono

Faculty of Social and Political Science, Universitas Budi Luhur,  
Jakarta, Indonesia.



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## Abstract

This study aims to analyze the policy evaluation of the Jakarta-Bandung fast train using GSM-R technology. This study uses a descriptive-analytical method, with an assessment that aims to obtain empirical facts, capture social reality, and examine the behavior of public policy actors and research object groups, as well as analyze the evaluation of transportation policies using the CIPP evaluation model (Context, Input, Process, Product). In this study, data collection was carried out using library research techniques derived from literature, journals, e-books, scientific publications, research reports, books, the internet, KCIC's official website, and previous research relevant to the research topic. An evaluation was carried out on the construction of the Jakarta-Bandung fast train carried out in the 2021-2023 period by public policy actors. The results of the context evaluation of the Jakarta-Bandung fast train development program explained that the projected implementation of the development is incompatible with the scheme made in the initial regulations contained in Presidential Regulation RI Number 107 of 2015 and changes to the development scheme involving the role of the APBN. Several challenges were still found in the input evaluation, namely regarding Human Resources, budget funds, and procedures. The evaluation process for this projection has not fulfilled the plan by RI Presidential Regulation Number 93 of 2021. Product evaluation, for the Jakarta-Bandung high-speed train development program, has achieved many achievements as outcomes, but some challenges need to be overcome.

**Keywords:** Evaluation, Transportation Policy, Development, Fast Trains, CIPP Evaluation Model

## A. Introduction

The high population density in metropolitan cities triggers new problems, one of which is in the aspect of transportation to meet the needs of people moving from one area to another. It is necessary to develop accessible public transportation, especially for people in big cities. Transportation development aims to create a national transportation system by implementing a comprehensive transportation plan, cross-sectoral and regional, and last in the long term. In the regulations of the Law of the Republic of Indonesia Number 13 of 1992 it can be concluded that transportation has an important role in achieving

insight into the archipelago, national security, and national sovereignty. In the law, the train is part of national transportation which has an important role in facilitating the mobility of people and goods, as well as achieving national development stability, especially in Jakarta and Bandung.

The industrial revolution has brought new technological advancements in several aspects by giving rise to artificial intelligence, nanoengineering, interchangeable, biotechnology, and quantum computer technology. The industrial revolution also brought reforms that were able to erase the boundaries of the dynamics of economic activity in physical and digital terms. Characterized by distributed manufacturing, additive manufacturing, virtual and augmented reality, and the internet of things. The fast train development project between Indonesia and China uses GSM-R (Global System Mobile-Railway) technology by taking advantage of revolutionary developments. GSM-R technology is a signal system consisting of safety operations, train control data, and a 37,900 kilometer railway backup system with a high level of safety. And equipped with advanced speech call items (ASCI) as a provider of group voice calls and voice broadcast services, location-dependent addressing (LDA) to connect the driver with the controller via one button, and keeping in touch. GSM-R already has standardization approved by UIC (International Union of Railways). This technology is also used in high-speed rail projects in Europe, Saudi Arabia, China, and Morocco.

The government has carried out infrastructure development for the Jakarta-Bandung corridor as an effort to build transportation based on the Jakarta-Bandung Fast Train. This development is included in the National Strategic Project, namely the Indonesia-China Fast Train (KCCI). KCCI is a combination of China Railway and BUMN consisting of PT. Indonesian Railways, PT. Wijaya Karya, PT. Jasa Marga, and PT. Nusantara Plantations (KCIC, 2016). This rail corridor line starts from Jakarta-Bandung Halim (Jakarta) to Tegal Luar (Bandung) and is estimated to take around 36 minutes. And it will cross several areas between Jakarta and Bandung, such as East Jakarta, Bekasi City, Bekasi Regency, Karawang Regency, Purwakarta Regency, West Bandung Regency, Cimahi City, Bandung City, and Bandung Regency. With four stations consisting of Halim Station in Jakarta, and Karawang Station in Kab. Karawang, Walini Station in Kab. West Bandung, and Tegal Luar Station in Bandung City.

This development projection has impacts and benefits for both the state and citizens. The development of high-speed trains can be a more effective alternative to mass transportation, reduce congestion in two locations, prevent pollution of carbon emissions, open up new workers, economic development in the station area, improve the quality of transportation, facilitate the integration of transportation, increase population mobility, development of Transit Oriented Development (TOD), and reduce the number of transportation accidents. The impact felt from the construction of this high-speed train is stagnation and social disorder caused by an increase in funds for projected development by 20%. This was caused by immature planning, high land acquisition costs of US\$300 million, extreme clay shale geological conditions, the COVID-19 pandemic, the use of GSM-R technology of US\$50 million, an increase in construction costs from US\$600 million-US\$1.2 billion, an increase in interest costs (financing costs) from project loans, and an increase in pre-operating (head office) costs of US\$200 million. According to the State Capital Statement (PNM), it is estimated that Indonesia will incur around IDR 4.1 trillion in the Jakarta-Bandung fast train development project.

In overcoming this stagnation, the government must take steps and evaluate solving existing problems. The steps taken are planning a visit between the governments of Indonesia and China to see the rework

process by trying the Inspection Train (EMU - CIT), establishing an emplacement between Padalarang - Bandung Station by building a flyover and a People's Crossing Bridge (JPO), reminding stakeholders to improve transportation infrastructure, the transition from fossil energy to electricity, and refinance using APBN funds. Meanwhile, the policy evaluation carried out by the government was the amendment to RI Presidential Regulation Number 107 of 2015 to RI Presidential Regulation Number 93 of 2021 concerning the acceleration of the implementation of infrastructure and suggestions for fast trains between Jakarta-Bandung. It contains funding for the Jakarta-Bandung Fast Train that can be covered with APBN funds which are carried out with a State Capital Statement (PNM) for the consortium leader and guarantor for the obligations of the consortium leader to provide additional capital and cover the debt. Resulting in state budget intervention in the project which changed the business-to-business scheme into interference from the government which affected the government being trapped in large debts in the long term. And the government assigned Kereta Api Indonesia (KAI) to be the leader of the PT Pilar Sinergi BUMN Indonesia (PSBI) consortium which is a partner of Beijing Yawan HSR Co Ltd.

Based on the description above, the research question is How to evaluate the Jakarta-Bandung fast train transportation policy with GSM-R technology in the Industrial Revolution era (2021–2023)?

## **B. Literatur Study**

### **1. Public Policy**

The public policy comes from two words, namely policy and public. The policy comes from the Greek word polis which means "city-state". The term policy is also defined by programs, decisions, laws, provisions, proposals, and grand designs (Syafie 2006:104). The word policy implies (1) a series of concepts and principles that form the outline and basis of a plan in implementing a job, leadership, and attitudes regarding government or organization. (2) in the form of achievements, goals, and principles. The policy is a set of ideas or plans that are produced. Meanwhile, the public comes from the Latin "public" or "pubes" which means adults and is defined as belonging to or about a nation, state, or society. In KBBI the word public means general, belonging to the state or government, actions of the government or certain groups, and an effort made by the community to achieve common interests. According to Hagwood & Gunn (1988). Woll, as quoted by Tangkilisan (2003: 2), public policy is some government activities to solve problems in society, both directly and through various institutions that affect people's lives. It can be concluded that Public Policy is an action taken by official and non-official actors in achieving a certain goal, making decisions, and solving a problem that exists in society.

### **2. Public Policy Evaluation**

Evaluation is a continuous process of collecting and interpreting information by assessing a decision made and planned in a program. According to Whiley "Policy evaluation is an assessment of the effectiveness of the entire national program in meeting its objectives or an assessment of the relative effectiveness of two or more programs in meeting common goals." (Dye, 2013:63) . Policy evaluation is classified into two different tasks. The first is to determine the consequences that arise in public policy. The second task is to assess the success and failure of the policy based on the parameters of the previous policy. Policy evaluation is a stage for measuring problems that have been carried out in the results of policy implementation (outcomes) and impacts (impact) that are already underway, then can determine the stage to be decided in the future. Meanwhile, according to William Dun, Policy evaluation is the collection of information about policies that can be taken and identify past, present, and future policy

problems by looking at aspects of value focus, fact-value interdependence, time orientation, and value duality.

### 3. The Function of Public Policy Evaluation

Policy evaluation is carried out to provide information that is by policy programs and assess policies that have not been successful based on goals and objectives. Without policy evaluation, it will not reach the peak of success in making a program. According to William Dun, policy evaluation consists of:

- a. Providing credibility information in policy programs by looking at the extent to which steps have been taken in achieving certain targets and objectives in identifying problems.
- b. Make policy improvements by the values of public policy by the goals and objectives. Existing values are classified and criticized to achieve goals and objectives by looking at public policy actors with rationality based on several existing aspects of life.
- c. Carry out the stages of policy analysis in the formulation of problems and solving problems. Assess previous policies that should be corrected or updated with others.

### 4. Model of Public Policy Evaluation

In evaluating policies, models and techniques are needed to achieve certain goals. An evaluation model is needed to provide direction for evaluation planning in dealing with problems and provide a conceptual framework. This study uses the CIPP evaluation model (Context, Input, Process, Product). According to Stufflebeam, the CIPP Model is a comprehensive framework based on formative and summative evaluation of programs, projects, personnel, products, organizations, policies, and evaluation systems. This model provides directions for assessing context, inputs, and processes.

- a. **Context Evaluation:** This evaluation context helps plan decisions, determine the needs to be achieved by the program, formulate program objectives, and know the strengths and weaknesses of the evaluation.
- b. **Input Evaluation:** This evaluation helps regulate decisions, and determine existing sources, facilities, infrastructure, available budget, and necessary rules.
- c. **Process Evaluation:** Process evaluation helps implement decisions, to what extent the plan has been implemented, and providing existing input for stakeholders in program implementation.
- d. **Product Evaluation:** Product evaluation helps the next decision, to conduct long-term program assessments and the sustainability of a program that will be carried out.

This study looks at the evaluation of CIPP policies studied with transportation policies. Transportation policy is carried out to boost the country's economy, human civilization, regional integration, leading sector, facilitating mobility, and efficiency of travel time. Transportation development planning can be successfully measured by: (1) The creation of safe transportation services. (2) Availability of sufficient, adequate, orderly, and disciplined transportation facility capacity by procedures. (3) Implementation of responsible transportation services and affordable rates. (4) Transportation that achieves a high level of utility by looking at the passenger factor and load factors.

### 5. Methode Research

This study uses a qualitative approach and is descriptive in type. The focus of the research is on the evaluation of transportation policies, the construction of the Jakarta-Bandung fast train, and GSM-R technology for the 2021-2023 period. This research was conducted from December 2022 to January 2023 at the Jakarta-Bandung Fast Train development site with the scope of the East Jakarta area, Bekasi

City, Bekasi Regency, Karawang Regency, Purwakarta Regency, West Bandung Regency, Cimahi City, Bandung City, and Bandung Regency. This research analyzes the policy evaluation of the Jakarta-Bandung high-speed rail transportation that has been collected for study based on the CIPP policy evaluation model.

Data collection was carried out using library techniques or library research. Secondary data comes from literature, journals, e-books, scientific publications, research reports, books, scientific articles, the internet, the official KCIC website, and previous research that is relevant to the research topic. The analytical technique used in this study refers to Qualitative Data Analysis, including data reduction, data presentation, and Conclusion drawing and verification.

## **6. Result and Discussion**

### **1. Context Evaluation of the Jakarta-Bandung fast train transportation policy with GSM-R technology in the industrial revolution era (2021-2023)**

Context evaluation is a method used to determine the success and failure of an object such as a program, activity, or target that aims to make improvements to the goals to be achieved. Context evaluation of the implementation of the Jakarta-Bandung fast train development includes several components, namely: the historical background, the objectives of the Jakarta-Bandung high-speed train development, and the results of the resulting transportation policy evaluation. Existing data were obtained from previous literature and heritage studies relevant to the study. Based on the research conducted, the background for the development of the Jakarta-Bandung fast train was based on several factors. First, complementing rail transportation by creating new economic potential, especially in DKI Jakarta and West Java. Second, overcoming the intensity of traffic jams, reducing air pollution which results in carbon emissions, and changing patterns from shifting to mass transportation using renewable energy. Third, there are better reforms in the transportation aspect that emphasize the use of the MRT, LRT, BRT, and fast trains. Fourth, time efficiency by using a headway of around 36 - 44 minutes, making high-quality train transportation capable of covering 601 passengers and providing space for disability, and facilitating transportation integration by presenting adequate facilities by Transit Oriented Development (TOD). The construction of the Jakarta-Bandung high-speed train in 2020 has stagnated due to some reasons and has prompted several public policy actors to carry out a scheme to change the RI Presidential Regulation Number 107 of 2015 to RI Presidential Regulation Number 93 of 2021 concerning the acceleration of the implementation of fast train infrastructure and facilities between Jakarta-Bandung. At present, the construction has reached 80% and the rolling train has reached 85% with 8 trainsets and is targeted for completion in June 2023. Changes to the consortium assigned by PT Kereta Api Indonesia (Persero) which was previously led by PT Wijaya Karya (Persero) Tbk or WIKA. Changes in the implementation of fast train facilities and infrastructure, from the Jakarta – Karawang – Padalarang – Bandung – Walini route. And there is a change in funding that involves the state budget by paying attention to capacity and continuity, which was originally business-to-business but has become government intervention.

### **2. Input Evaluation in the Jakarta-Bandung high-speed rail transportation policy using GSM-R technology in the industrial revolution era (2021-2023)**

Input evaluation is determining a program that will be used to determine policy. This evaluation provides information about the scope of infrastructure and facilities to achieve goals by looking at indicators of Human Resources, budget funds, and regulatory procedures to be carried out. The projected construction of the Jakarta-Bandung fast train is part of Presidential Regulation no. 3 of 2016 concerning

the acceleration of national strategic projections. The construction of fast trains is designed using advanced and superior technology such as production areas, information centers, mixing stations, and the cast-in-situ method. This requires quite a lot of human resources in the projection to sustain operational and maintenance sustainability. To build on these projections, KCIC opened recruitment with a quota of 1,452 people who meet the qualifications. The existing human resources in building the projections transfer knowledge related to operational systems, capacity development, development implementation, and the TOD strategy, as well as the non-train business. During a visit to the Tegal Luar Bandung station, President Jokowi predicts that the high-speed train will be completed in July 2023. And this projected funding reaches Rp. 21.4 trillion with the submission of additional funds from the 2022 State Equity Investment worth Rp. 3.2 trillion. The training plan will be charged Rp. 350,000 for long distances and Rp. 150,000 for short distances. For the first year, the ticket is subject to a tariff of IDR 250,000. The procedure for the construction of fast-paced trains in Presidential Decree No. 93 of 2021 which contains the assignment of a BUMN consortium, KAI as project leaders, changes to the line scheme, formation of new committees, project funding, project implementation to become the direction of the Minister of Transportation.

### **3. Process Evaluation of the Jakarta-Bandung fast train transportation policy with GSM-R technology in the industrial revolution era (2021-2023)**

Process evaluation is an assessment of a program stage that is being carried out by looking at the progress and failures of a program design. This evaluation examines the construction process of the Jakarta-Bandung fast train. In building a project the stages are carried out. First, the feasibility test is the first step in making a project which is very important in determining plans. Second, the planning stage helps formulate a decision-making plan that is produced by the initial policy scheme. Third, the concept of the initial engineering stage is carried out for concept design by addressing the appropriate results. Fourth, development projects related to maintenance and operation processes include workers, construction workers, operators, and public policy actors. Development project management is categorized into three components:

- a. Civil engineering consists of architectural works, landscape, civil works, viaducts, and tunneling.
- b. Railway system, PSD, ATC, communication, fare collection, permanent way, power, and supply.
- c. Rolling stock

The projected construction of the railway is carried out in quite long stages starting from the planning stage, preparation for DCP 1-4 tenders, shop drawings, and implementation which consists of construction, manufacturing, prototyping and testing, operation, and maintenance stages.

### **4. Product Evaluation in the Jakarta-Bandung fast train transportation policy with GSM-R technology in the industrial revolution era (2021-2023)**

Outcome evaluation is to see how far a policy can achieve a program by using strategies, procedures, and methods to implement the policy. The evaluation of this study includes two components, namely, the success of the construction of the Jakarta-Bandung fast train and the consequences of implementing the construction of the Jakarta-Bandung high-speed train. As for the projected success of the current high-speed train construction, First, the construction of the largest KCIC tunnel with a diameter of 13.3 meters and a length of 1,885 meters was built by a consortium of contractors. Second, as a projected construction of the first fast train in Indonesia using GSM-R standard technology since 2015 with collaboration between Indonesia and China. Third, KCIC won the MURI award for the largest tunnel-

making drilling machine in Indonesia. Fourth, opening new job opportunities that give rise to the transfer of knowledge and skills that were not previously owned by Indonesian human resources. Fifth trains with technology that can save time within 350 km/hour with a distance of around 36-40 minutes. Sixth, increasing economic potential as a backbone in DKI Jakarta and West Java. Seventh, achieving a goal scheme that has been planned at the beginning which is beneficial in several aspects such as mobility, integrity, safety and comfort, environment or ecology, society, and geography. As a result of the construction of the Jakarta-Bandung fast train. The first is to increase the burden on the state as an aspect of funding by ABPN of IDR 21.4 trillion. Second, environmental damage due to tunnel construction on a large scale. As felt by 133 heads of families in the Tipar Complex, Bandung Regency, there are cracks in the ground in the complex that have the potential for landslides. Third, there is stagnation due to an increase in project raw materials by changing the initial design scheme. Fourth, the lack of careful planning projections in the arrangement of raw materials results in the accumulation of material on the shoulder of the road which can disrupt traffic users and disrupt the drainage function. Fifth, lack of attention to K3 (occupational safety and health, environmental safety, and public safety). It is necessary to carry out a thorough evaluation of workers by the Regulation of the Minister of Public Works and Public Housing Number 21/PRT/M/2019. Sixth, the environmental impact that is most felt by residents, such as projected dust which interferes with breathing and itching from back and forth transporting project materials, and water pollution due to cement waste from the construction of high-speed trains. Finally, other impacts can be detrimental to all stakeholders, starting from the community and government in several aspects.

## 7. Conclusion

In carrying out the policy evaluation process, the evaluator determines the value and benefits of the object to be evaluated as a reference for making a decision. In evaluating transportation policy, which had experienced stagnation in the construction of the Jakarta-Bandung fast train, the government updated the policy of RI Presidential Regulation Number 107 of 2015 to RI Presidential Regulation Number 93 of 2021. The program evaluation used is the CIPP (Context, Input, Process) evaluation model. , and Products). which was developed by Daniel Stufflebeam by looking at formative and summative functions. The formative function presents information to improve a program, while the summative function considers following up on success and plans in managing the program. Context evaluation of the Jakarta-Bandung high-speed rail development program revealed that the projected implementation of the development is incompatible with the scheme made in the initial regulations contained in Presidential Regulation RI Number 107 of 2015 and changes to the development scheme involving the role of the state budget. Strengths in the implementation of the construction of the Jakarta-Bandung fast train are contained in the policies and regulations that apply both in laws, government regulations, ministerial regulations, West Jakarta and DKI Jakarta governor regulations, decrees, and Bandung and Jakarta city regulations.

Evaluation of inputs to development projections, in general, is not by the standards of Presidential Regulation No. 3 of 2016. Several challenges were still found, namely regarding Human Resources, budget funds, and procedures. The evaluation process for this projection has not fulfilled the initial plan by RI Presidential Regulation Number 93 of 2021, therefore the government makes changes and reviews, and then when it has finalized the decision it can be re-done as material for implementing transportation policy evaluations. By paying attention to several stages such as feasibility test, planning, initial engineering stage concept, and maintenance and operation. In evaluating the product development

program, it was explained that the results of implementing the program had resulted in many achievements in the construction of the Jakarta-Bandung fast train as an outcome. In implementing the long-term outcome, the government has reviewed changes to the development scheme, but there are still many challenges and negative impacts that are being felt. Based on the conclusions above, the researcher provides suggestions in the form of recommendations to continue implementing the Jakarta-Bandung fast train development program because, based on the results of the evaluation several advantages become the strengths of the program that appear in the results of Context, Input, Process, and Product evaluation. For some of the challenges found in the evaluation of inputs and products, the government must pay attention to and cooperate with stakeholders to minimize gaps that occur in the field to keep the implementation running well.

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