

## RESTRUCTURING INDONESIAN RAILWAY – INTEGRATION OR SEPARATION

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### ABSTRACT

Law No. 23/2007 on Railways is opening the option for private sector or Local Government to be involved in railways. This study investigated experiences from other countries in railway restructuring especially their measures and model of restructuring. The countries investigated are Germany, Japan, Britain, and Sweden. After investigating restructuring experiences from other countries and looking on Indonesian railway condition, the study developed two approach of restructuring.

The first approach of restructuring was using vertical separation model. The approach has advantages of: eliminating potential discrimination from the current holding company, increase the transparency in railway fund management, and more competitive market. The disadvantages were the high transaction costs, a need for monitoring of the other's performance, the difficulty in creating complex performance schedules. The second approach was using the integration model. It has advantages of lower transaction cost, easy to manage path allocation, and efficient scheduled design. The disadvantages were the misuse railway fund allocation, also potential discrimination to the new entrants.

The study found that the separation model is still the best approach for restructuring Indonesian railway but if looking at the Indonesian railway current condition with its problem of backlog assets it would be better that the separation approach is used in the development of railway in other islands.

**Keywords:** Restructuration, separation, funds, operator.

### 1 INTRODUCTION

Flood that occurs periodically in dense populated area, particularly in urban area has caused damages and losses to physical structures, even loss of human lives. Flood in 1966 inundated almost 2/3 of Surakarta city including urban area. Inundation attained 1 m up to 2 m depth and caused 90 people died.

Indonesian railway has been a state-owned monopoly railway for two decades, since the implementation of Law No. 13/1992 on Railways, where one state-owned company called PT. KAI (Indonesian Railway Company) was set up to be responsible for both infrastructure and train operations. During that period opportunities for improvement still remain, as do many problems such as poor infrastructure poor conditions, poor rolling stock condition, the limited network (only in Java and Sumatra Island), train accidents, and poor service quality. In the hope of improving the railway, in 2007 the Government issued Law No. 23/2007 on Railways replacing Law No. 13/1992 on Railways, one of the important talking points is that the Government is opening the option for private sector or Local Government involvement in railways whether as infrastructure provider or train

operator. Law No.23/2007 obligates an establishment of new institutional structures for the railway sector to replace the current monopolistic structure in Indonesia, encouraging intra-modal competition for railway services. Evidence suggests that substantial cost savings can be achieved by creating competition and private participation in the supply of the railway infrastructure facilities and train services (UNESCAP, 2003).

Mahardi (2011) concluded that although Law No.23/2007 brought new vision regarding railway restructuring program there are several preconditions that need to be considered and properly formulated to ensure the success of restructuring program. Those important preconditions are legal framework, asset assessment, human resource evaluation, and good governance and its support. Furthermore it was mentioned that the restructuring option could be a combination between horizontal separation and vertical separation. Horizontal separation could be based on regional separation like Japan railway example or functional separation like what happen to German railway.

## 2 METHODS OF RAILWAY RESTRUCTURING

UNESCAP (2003) describe the three main dimensions that define the nature of the various restructuring scheme that have been done in recent years, which are:

- a) Vertical Structuring;
- b) Private Sector Participation;
- c) Degree of Competition.

In many railways, especially in the European countries, the restructuring process involved separating the responsibility for infrastructure and railway operation through different organization. This process is called "vertical separation". World Bank (2006) affirmed their position regarding this issue of vertical separation by saying that vertical separation is not desirable as an end in itself, but can be a valuable part of a wider package of structural reforms (for instance, to improve financial transparency) and it is important to make an assessment of its advantages and disadvantages considering the specific policy objectives and railway markets that exist in a particular country. For Indonesia case those objectives are depicted in the National Railway Master Plan (2010), which described the main objective of restructuring the railways is to reduce the Government expenses resulted from the railway operation and development.

## 3 EXPERIENCES FROM OTHER COUNTRIES

### 3.1.1 German Railway

The background for German railway reform was the market share loss and means to reduce the load on the federal budget. The points that need to be taken regarding German railway reform measures is that the infrastructure organization (DB Netz) is completely free to decide the level and structure of the charges (Link, 2003). This lack of regulation to the track provider (DB Netz) became a major problem which hampered competition in the rail market and growth of market share by non-DB companies for at least 10 years after the reforms, due to discrimination by DB AG on non-DB companies when running trains on DB Netz network (Link, 2009). Link (2009) further described that Germany has no sector-specific regulator with the same range of competences as the Office of Rail Regulation in the UK. However, in 2005, Germany amended its Railway Law especially one, which concerned rail regulation and gave Bundesnetzagentur (the German regulator for electricity, gas, telecommunications, postal services and railways) responsibility for supervising the rail market, especially non-discriminatory access to rail infrastructure. This experience shows that regulating

track authority is important for competition in the rail market and an organization with the responsibility for supervising the rail market, especially non-discriminatory access to rail infrastructure is equally important.

### 3.1.2 British Railway

In British railway reform, the Government proposed for the privatization of and introduction of competition into British Rail, the reigning railway holding company. The main points of British rail reform according to Van de Velde, et al. (1998) is to change the monolithic structure of railway into an incentivized set of private sector companies with contractual arrangements and negotiated prices, where it was believed that it would lead to gains in productive, locative and dynamic efficiency. The British railway privatization is different from other European countries, while other countries give the responsibility of infrastructure, allocation of time slots, and the management of train traffic to a public authority, British railway give that responsibility to a private monopoly firm called Railtrack. In the few years after the privatization, it was evident that a private monopoly, which works to achieve its own objectives under its own constraints, could not manage the national rail network to the public good (Mathieu, 2003). Mathieu (2003) said that the numerous accidents and poor management of rail network drove the British Government to put Railtrack under administrative supervision in year 2001. This new organization is called Network Rail, which is a nonprofit organization under the Government.

### 3.1.3 Japanese Railway

In the late 1970s, Japan's Government was experiencing a financial crisis, as the financial structure was inflexible and could not adapt to the necessity of reducing expenditures and the deficits was generated by the Japanese National Railways (JNR), the Foodstuff Control Special Account, and the National Health Insurance System (Mizutani and Nakamura, 2004). To address these problems, Japan's Government proposed the privatization of the three largest public corporations - JNR, Japan Monopoly Corporation (tobacco and salt), and Nippon Telegraph and Telephone Public Corporation (Fukui, 1992). In 1950s, competition from other modes were intensified which made JNR lost its competitive edge in its market, except for the metropolitan areas and the bullet train networks while JNR's investments in infrastructure only increased its debt load which had reached \$286 billion by the end of 1986 (Fukui, 1992). In the Japanese railway case, Mizutani and Nakamura (2004) said that the best choices for

restructuring might be vertical integration and geographical separation, because of the highly dense population along the major railway lines and the extremely strong commuter demand in metropolitan areas. The thing that needs to be noted from the Japan railway restructuring is that the Japan's Government took the approach of vertical integration and horizontal separation of its train operation division into six different passenger train companies and one freight company was based on their geographical factor of the railway network. One other thing that needs to be noted is that although JNR is vertically integrated, they use separate accounting so that the access could be granted fairly.

#### 3.1.4 Swedish Railway

The Swedish system began as a state railway, named Statens Järnvagar (SJ), and this was created to provide links between regional railways and thereby connect the different regions in Sweden along with various regional private railways. When the private railways became bankrupt, the state railway absorbed or purchased their assets which led to monopoly; by 1991, no private operator had rail track operations in Sweden (Carlson, 2004). Since the early 1960s until the mid of 1980s SJ continued to showed poor results and though Government kept increasing the support over the years, this proved to be insufficient to turn performance around, so Government loss its patience

and decided that a more radical transformation was needed (Nilsson, 2003). The transformation of the regulatory framework of the Swedish railway has developed in a step like manner that can be identified in three major regulatory reforms, the Transport Policy Acts of 1979, 1988 and 1998 (Van de Velde, et al., 1998). The 1988 Act eventually led to a complete transformation of the railway regulation and railway operations, as the control over the rail network was given to *Banverket* and they rapidly developed interest in improving the rail network (improvements and new lines) and increasing competition (Van de Velde, et al., 1998). They further states that the most important things this Act brought to Sweden railway were the introduction of competitive tenders, the separation of infrastructure from railway operations, the creation of a coordinated national timetable and a national ticketing system, the permission to let a private firm hold a long-term license for a railway line, and a separation of infrastructure charges from the actual costs of infrastructure provision.

To provide a better look at the restructuration approach between each country, the author make comparison based on: market structure, railway operation ownership, railway infrastructure ownership, and degree of separation, pricing regulation, and the background for reform. The comparison can be seen in Table 1 and Table 2.

Table 1. Comparison between German Railway and Japanese Railway

	Germany Railway		Japanese Railway	
	Before	After	Before	After
Market structure	Public company monopoly (Deutsche Bundesbahn and Deutsche Reichsbahn)	Open for other train operator by paying access charges to DB Netz.	Public Company Monopoly (JNR)	Divided into 6 passenger train and 1 freight train operator.
Railway operation and ownership	Deutsche Bahn AG (Holding Company)	Deutsche Bahn train operation unit and Non Deutsche Bahn operator	Japan National Railways (Holding Company)	JR East, JR West, JR Central, JR Kyushu, JR Shikoku, JR Hokkaido, JR Freight
Railway infrastructure ownership	Deutsche Bahn AG (Holding Company)	DB Netz	Japan National Railways (Holding Company)	Own by the passenger train operator and freight train operator pay access charge to passenger train operator.
Degree of separation	Integration	Horizontal separation (Based on function/infrastructure and operation)	Integration	Horizontal separation (Based on function/infrastructure and operation)
Pricing regulation	Controlled by the Government.	Based on access charges set by DB Netz.	Strict control by the Government.	Yardstick regulation
Background for reform	Loss of market share, better use of rail capacity, reducing Government subsidy, handle the huge amount of (excessive) personnel of Deutsche Reichsbahn.		Financial crisis, increasing debt, organizational structure and culture of JNR, loss of market share.	

Table 2. Comparison between Swedish Railway and British Railway

	Swedish Railway		British Railway	
	Before	After	Before	After
Market Structure	Public Company Monopoly (Statens Jarnvagar)	Open for other train operator by paying access charges to Banverket	Public Company Monopoly (British Rail)	25 franchise train operating company, freight train company and possible open access operators
Railway Operation Ownership	Statens Jarnvagar (Holding Company)	Statens Jarnvagar and other private operators	British Rail Business Center (Intercity, Regional Railways, Network South East)	25 franchise train operating company, freight train company
Railway Infrastructure Ownership	Statens Jarnvagar (Holding Company)	Banverket (Public Company)	British Rail (Public Company)	Railtrack (pre Hatfield accident), Network Rail (Post Hatfield accident)
Degree of Separation	Integration	Vertical separation	Integration	Vertical separation
Pricing Regulation	Controlled by the Government	Marginal social cost	Controlled by the Government	Set by franchisee
Background for Reform	Reducing Government subsidy, competition with other modes of transport (road), SJ lack of transparency		Political intervention, introduce competition for the market, reducing Government intervention	

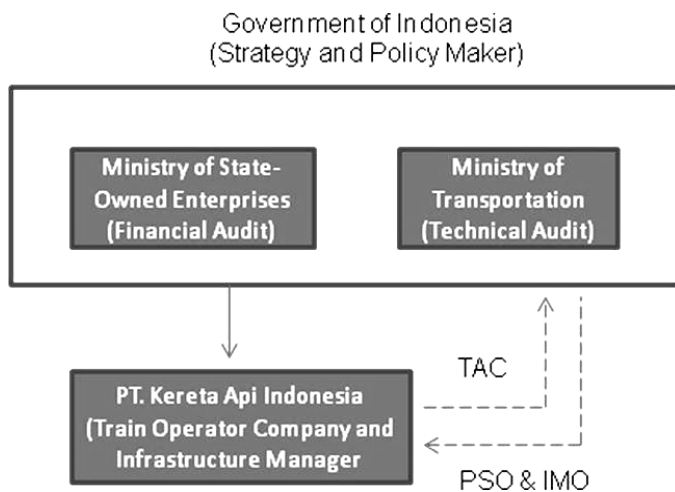


Figure 1. Current Indonesian railway structure. (Lubis and Nurullah, 2007)

Public Service Obligation (PSO) is compensation provided by the government, the basic price of which is defined by the difference between the production cost and noncommercial tariffs specified by the government (Lubis and Nurullah, 2007). In practice it is basically subsidy provided by Government to PT. KAI for the operation of economy class passenger trains. Infrastructure Maintenance and Operation (IMO) as the name suggest is a Government compensation for the cost of infrastructure maintenance and operation. The Track Access Charge is the expenses paid by the operator to the government for the use of railroad infrastructure. It is calculated based on IMO with infrastructure depreciation added together with an intermodal or inter-services balancing policy factors (Muthohar, 2010). Over the years, this funding mechanism is given in net form, one big package. In theory, the PSO scheme was a

subsidy given by the Government to the current operator for the operational cost of running economical class passenger trains, and IMO was given for the cost of maintaining and operating the railway infrastructure, while TAC was the charge imposed on the operator for using the railway infrastructure owned by the Government. Giving it in net form means that there are no real cash flows applied in each scheme, and the current company has accepted the fund in a bundle without any specific allocation in its accounting. This means that sometimes the funds needed for maintaining the infrastructure are used for other expenses like rolling stock maintenance, staff salary, or the other way around. The system of PSO, IMO and TAC should be different entities, not given in net form which is calculated in aggregate as  $PSO + IMO - TAC$  (Muthohar, 2010).

Not only that, there is also a problem of significant differences between the budget plan of the PSO contract and the actual cost. Muthohar (2010) points out that the problem is caused by differences between Government and the train operator (PT. KAI) in methods of calculating the operational cost for running economy class passenger trains. The Government calculated the net cost based on the difference between the total operational cost of each economy train and the total revenue of each economy train service, with the revenue calculated based on the standard tariff multiplied by the estimated load factor of the train. However, the train operator calculated the cost based on allocating the total operational costs of all train classes on a train-kilometer basis. This difference in fund calculation makes the railway does not have enough budgets to develop or maintain their

infrastructure and operation, causing backlog in both technology and assets.

#### 4 OPTIONS FOR INDONESIAN RAILWAYS

The Indonesian government, through the Ministry of Transportation, has set policies regarding the development of railway institutions. The National Railway Master Plan (2011) notes that the goal of restructuring the railway is to encourage multi operator railway management, so that the railway does not need to depend solely on Government funds which all this time have not been sufficient in maintaining and developing the railway. By implementing a multi operator model the Government hopes that the private sector could help in terms of railway investments and industry development; the model could also increase cost transparency in railway operation. There are many methods of railway restructuring which the Government needs to take into consideration when examining options to be taken for the Indonesian railway. The option chosen should achieve the objective set by the Law No.23/2007 where it implicitly states that institutional change for infrastructure manager and railway operation and also about introducing competition to the railway industry.

Profillidis (2006) argued that although competition can exist without separation but it could serve as a catalyst to introduce competition and facilitate the entrance of many rail operators. The vertical separation model is sometimes used to indicate a specific management model of railways, such as the model of European railway policy and many countries have used it in their reform processes, including Sweden and Britain. This model transfers the ownership of infrastructure to a separate organization from the operators, so that railway operators can be relieved of a huge amount of infrastructure capital costs and, in some cases, its maintenance costs as well (Kurosaki, 2008). Merkert, et al. (2008) in their paper discuss the effects of different institutional and contractual arrangements on the interactions between train operators and infrastructure manager in the three most liberalized rail systems in Europe: Sweden, Germany and Britain. In their opinion the clearest approach to avoid discrimination in access to rail infrastructure is through institutional separation of railway operation from rail infrastructure.

Other study argued that separation is not the best option for restructuring the railways. Bitzan (2003) finds that separation would result in increased resource costs; as railroads are natural monopolies in providing transport services, the multi operator model when applied to railways would result in increased resource costs (though his study admittedly restricted

to US freight railroads). Another study by Growitsch and Wetzel (2006) said that there was and still is concerns from many railways around the world that a separated structure of railway entity would result in much higher transaction costs than in an integrated model due to loss of economic scope. Looking at all those studies, there still seems to be an on-going argument about how the separation model could help reshape the railway to become more efficient, market-driven and (in the Indonesian case), to help reduce the Government burden of maintaining and developing the railway and hence to encourage transparency and accountability in railway funding.

Throughout the world, many attempts have been made to increase the role of the private sector in railway activities. Although the approach taken has varied from one country to another, the need to reshape the monopolistic railway into a market-sensitive transport entity is still a vital and universal objective (Moyer and Thompson, 1992).

#### 5 RESTRUCTURATION APPROACH

##### 5.1 Vertical Separation

Mizutani and Nakamura (2004) said that because the railway business constitutes naturally monopolistic elements (such as track maintenance), and potentially competitive elements (such as train operations and commercial functions), unbundling track maintenance from train operations is one way to sharpen the competitive edge of railways in the transport market, in theory at least. Separation of infrastructure and railway operation could minimize or even avoid potential discrimination by the current train operator if the infrastructure is still in the same holding company. The potential discrimination could be in the form of difficulties for the new train operators to enter the railway market. As Obermaier (2001) point out, vertical separation is an indispensable precondition for allowing third parties a non-discriminative entry to the railway market. Based on those arguments, to encourage private sector participation in Indonesian railway industry, it is necessary to separate the infrastructure from the railway operation. The proposed restructuration approach (see Figure 2) is as follows:

- a) Before separation, Government and incumbent operator need to finish the re-evaluation of railway assets.
- b) Separating the infrastructure from railway operation. The infrastructure organization will be nonprofit oriented and it is under Government authority. It will be responsible for the timetabling of all services across the network, allocating paths

- for train operators, collect track access charges from train operators and maintenance of the infrastructure. In the case that the train operator performance is interrupted due to problem caused by infrastructure, it will receive compensation from the infrastructure provider.
- c) There will be a new organization that acts as supervisory body for railways. This organization will be given the task of:
    - Supervise the implementation of regulation and standards applied,
    - Promoting competition and efficiency by overseeing if there is unfair business practices regarding infrastructure manager and train operators,
    - To monitor the execution of PSO,
    - To monitor and give recommendation on the fares policy,
    - Promoting the use of railways for freight transport.
  - d) Create a new regulation regarding rule of conduct between infrastructure manager and train operators and another regulation concerning PSO, IMO and TAC scheme. The new regulation should comprise of calculation method for PSO, IMO and TAC. It should also contain the rule regarding the relationship of infrastructure manager and train operators.
  - e) The new train operators will get their license from Directorate General of Railways. Licenses would specify safety, training, financial, and experience requirements. Licensing would require a

- f) A new incentive system will be implemented. There will be some type of performance penalty payment between operators, if one operator in its service causing the other operator service disrupted then the operator who causes it will pay penalty to the one whose service is disrupted. The amount of penalty will be determined from how long the disruption happens. By using this incentive system, it is hoped that train operators will be competing to operate efficiently and effectively, because otherwise the penalty will affect their income.

### 5.2 Modified Integration Model

As described in the previous section, the funding mechanism of PSO, IMO and TAC are given in net form and PT. KAI as the company who manage that fund have not separate their accounting, which causes the fund sometimes is used not on its intended purpose. This is the first issue that will be solved for this restructuring approach. Another issue of restructuring the railway without separating the infrastructure from operation is the barrier for entering the railway market for third parties, which in this case are private sector and Local Government. Carlson (2004) said that “an entry barrier is anything that requires expenditure by a new entrant into an industry, but imposes no equivalent cost upon an incumbent”.

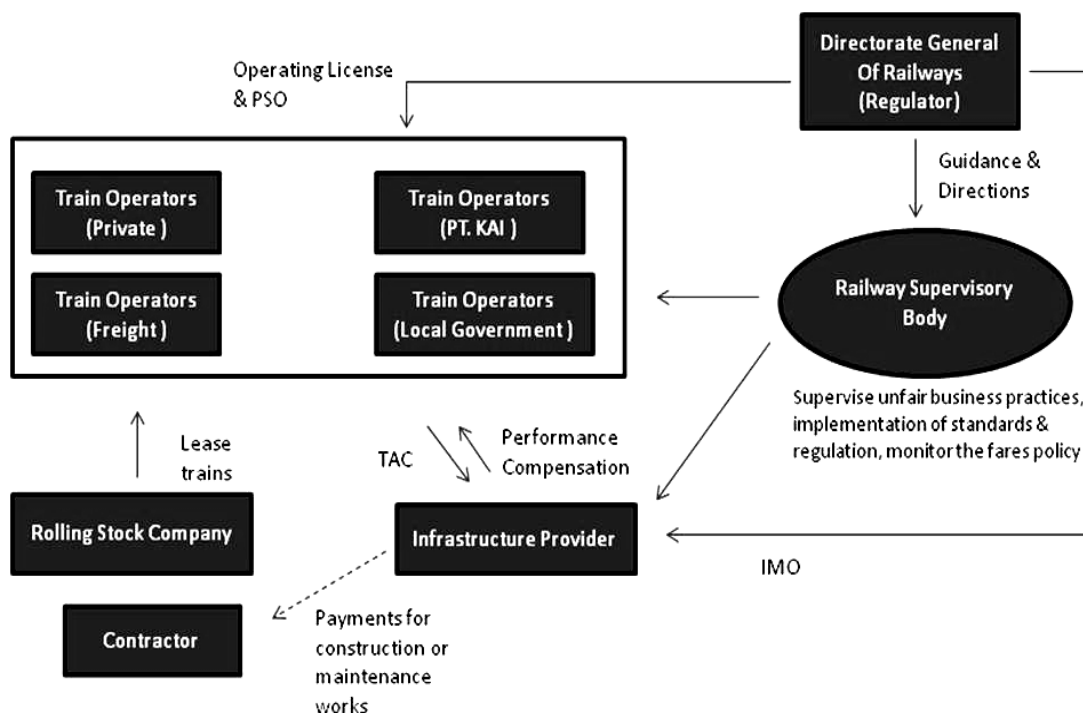


Figure 2. Vertical separation structure of Indonesian Railway.

The Government hopes that the restructuring could change the railway industry into a more market responsive railway and introduce competition through other operator beside the current one, also to increase transparency and accountability of railway. Taking both issues into consideration, a new integrated structure of Indonesian Railways (see Figure 3) is as follows:

- a) Improving the accounting system of the holding company by separating the accounting for infrastructure and railway operation.
- b) Changing the calculation method of the current infrastructure charges as preparation for the introduction of competition between current operator and potential new operator.
- c) Increase the role of Directorate General of Railway infrastructure work units (SATKER) by adding its responsibilities from managing the infrastructure to give access agreement, setting TAC, overseeing fair competition between operators and possible practice that could hinder new operator to enter the railway market.
- d) Establish new regulation regarding Open Access railway. The regulation will comprise of technical and managerial standard for open access, contract length for the access and rules about contract extension or breach of contract. In the case of open access operator could not fulfilled the level of service required, the current holding company will take over the operation.
- e) Open up several routes for open access, both freight and passenger trains. The author proposed

that the tender for the access will be conducted by Directorate General of Railways as regulator. The winner of the tender will be given privilege of setting its own fares.

### 6 CONCLUSIONS

The first approach which is the vertical separation model has advantages of eliminating potential discrimination from the current holding company, increase the transparency in railway fund management, and more competitive market. Because this model separates the management of infrastructure and operation, meaning that the chance for misuse of budget allocation is reduced, if other is not removed completely. Regarding the disadvantages of this model, it could be associated with problems like high transaction costs, a need for monitoring of the other's performance, the difficulty in creating complex performance schedules, and the stimulation of incentives for the track authority to invest in new facilities to increase efficiency and improve safety (Mizutani and Nakamura, 2004).

The integration model has advantages of lower transaction cost, easy to manage path allocation, and efficient scheduled design. In the proposed approach, to introduce competition into the Indonesian railway, new open access operators are allowed to enter the railway market through access agreement by the Government. The plan to change the method of infrastructure charging is also a positive point, since

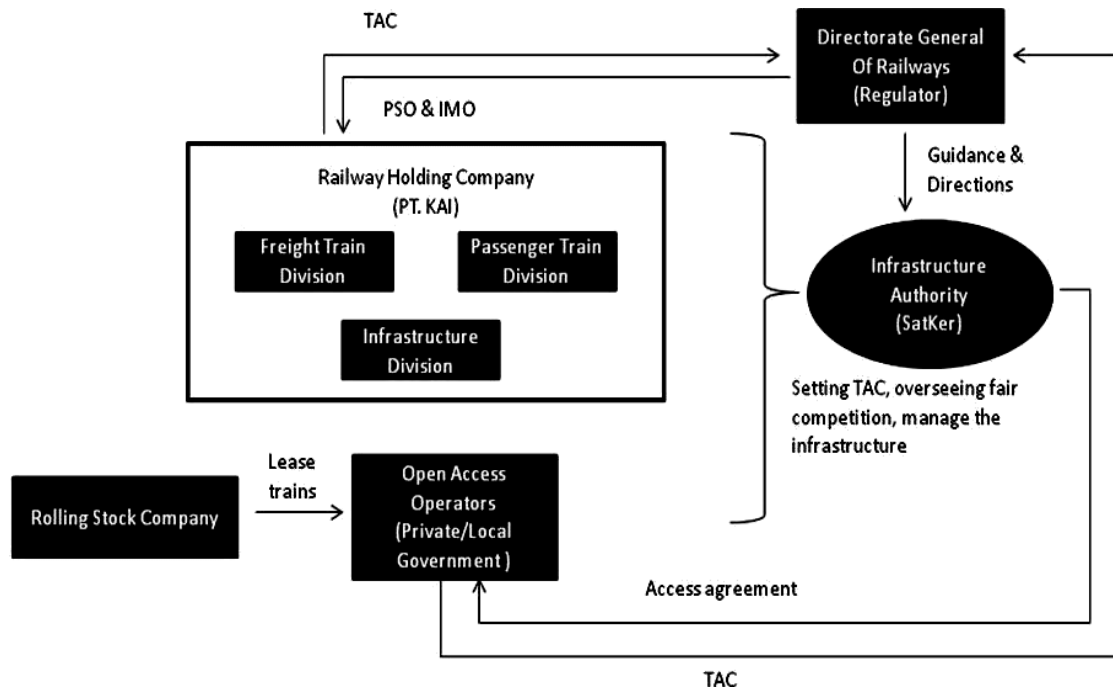


Figure 3. New integrated structure of Indonesian Railway.

the current infrastructure charge calculation ineffective for maintaining and developing the infrastructure network. Possible disadvantages of this approach probably there is still chance of misuse railway fund allocation, also potential discrimination to the new entrants, could be by using force or foul practices.

In the end it is up to the Government policy to choose which one is the best approach for Indonesian railway, from the author point of view the separation model is still the best approach for restructuring Indonesian railway for several reasons: firstly because it is implied by the Law that institutional changes is needed, it increase transparency in fund allocation and management of railway operation, improve management focus (since the infrastructure and operation are manage by different entity), and lastly it could encourage fair competition between current operator and new entrants. Considering the Indonesian railways current condition with its problem of backlog assets it would be better that the separation approach is use in the development of railway in other islands beside the current one. The other islands, aside from Java and Sumatra, could be the perfect place to implement the separation model since the railway assets like the rail, signaling, depot and station would be a new assets and the maintenance regime could be set up properly.

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