CHAPTER 4 Study on Operational Issues

4.1 Framework on analysis for operational issues

In this chapter the present status and issues of operational framework for road preservation in Indonesia are identified, and the implementation of road preservation management is discussed.

At first, the study team identified the authority for road preservation based on the legal framework. Organizations of the authority, duties of the organizations, and guidelines and standards for road preservation were investigated.

Secondary, the present status in Indonesia was compared to the operational framework for road preservation in Japan

Finally, the team discussed the implication for operation in order to achieve effective and efficient road preservation from viewpoints of authority, organization, and others.

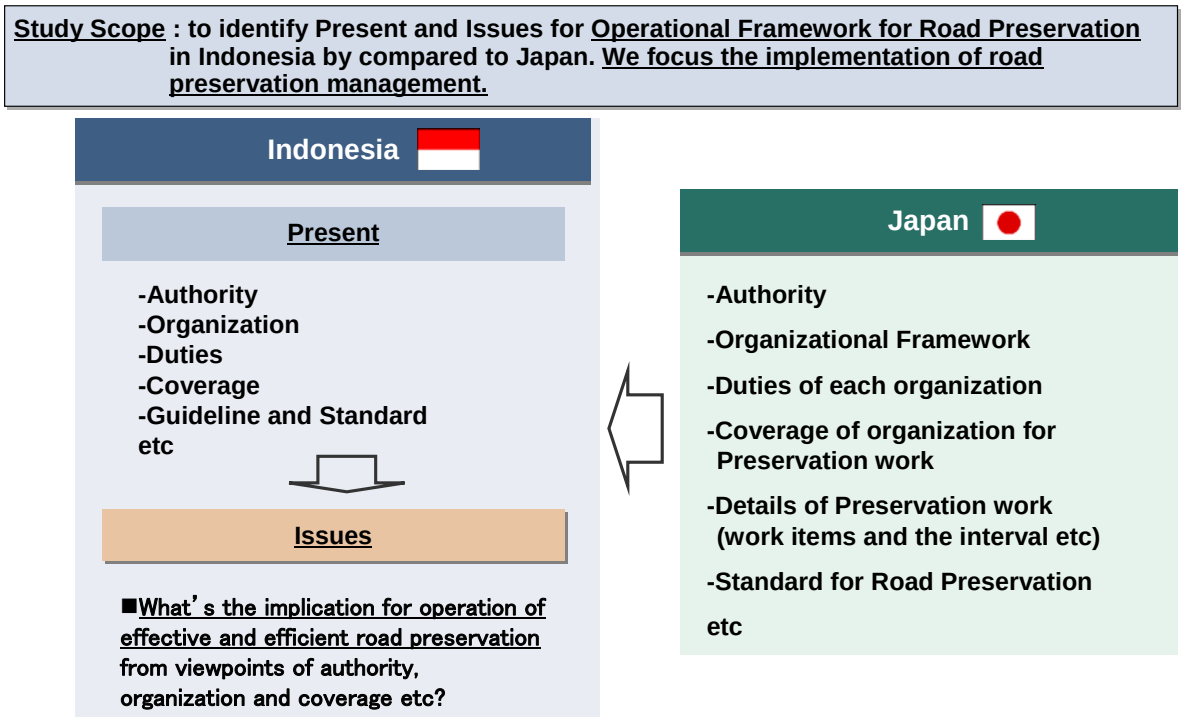

Chart 4.1 Framework on analysis for operational issues

4.2 Operational framework for national road in Indonesia

4.2.1 Operational framework

CIRCULAR LETTER Number: 06/SE/Db/2009 stipulates the details of main tasks and responsibilities of BALAI, SNVT and PPK regarding of road preservation. The operational framework for national road preservation in Indonesia is already formed basically in the hierarchy manner. It consists of the Road Bureau, the Regional Development Bureau, the National Highway Office and their Site Branch Office.

PPKs which are ranked at the bottom level of the hierarchy in this framework request preservation work including drawing, budget plan (RAB). According to this circular, the implementation of the management for preservation and assets began in TA (year budget) 2009 and this circular came into effect in TA 2010. It is supposed that road preservation for national roads will be implemented more reliably in the future based on this circular.

4.2.2 Roles and responsibilities of organizations for road preservation

A BALAI is responsible for general affairs and budgeting of road preservation management for the section of national roads. A SNVT is responsible for planning and control of road preservation work. A PPK is responsible for road preservation work.

4.2.3 Roads covered by each organization

The total length of national roads is approximately 35,000km. The total length of provincial roads is approximately 49,000km and the total length of Kabupaten roads is approximately 360,000km.

The number of SNVTs for road preservation is 84, and the number of PPKs for road preservation is 302. Average length of national road that a PPK is responsible for is approximately 119km/PPK.

Table 4.1 Coverage of BALAI

Balai	No	Province	SNVT Level (Incl. SKPD, Satker etc.)	PPK Level (Incl. PK, BPK, etc)	Length of Naional Road(km)			Length of Naional Road/PPK(km/PPK)
					Naional	Provincial	Kabupaten	
1	1	NAD	4	19	1,730	1,702	17,115	91
	2	North Sumatra	4	21	2,098	2,752	28,425	100
	3	Riau	2	11	1,134	1,872	19,328	76
	4	Riau Island	2	4				
2	5	West Sumatra	2	11	1,221	1,154	16,081	111
	6	Lampung	2	7	1,091	2,368	13,932	156
	7	Bengkulu	2	11	733	1,563	5,278	67
3	8	South Sumatra	3	12	1,394	1,748	13,534	116
	9	Jambi	2	9	812	1,025	8,990	90
	10	Bangka Belitung	2	2	520	551	3,446	260
4	11	Banten	2	5	474	889	3,846	95
	12	D.K.I. Jakarta	1	5	-	1,329	-	-
	13	West Java	3	14	1,231	2,199	19,988	88
5	14	Central Java	3	16	1,423	2,540	23,301	89
	15	D.I. Yogyakarta	2	3	182	690	3,977	61
	16	East Java	3	16	2,140	2,001	32,326	134
6	17	South Sulawesi	3	12	1,514	1,260	25,882	126
	18	West Sulawesi	1	4	537	441	1,923	134
	19	Southeast Sulawesi	3	7	1,314	1,187	6,013	188
	20	Central Sulawesi	3	4	1,849	2,037	11,705	462
	21	Gorontalo	2	5	626	408	3,883	125
	22	North Sulawesi	3	12	1,305	940	5,889	109
7	23	West Kalimantan	2	5	1,476	1,656	10,955	295
	24	Central Kalimantan	2	11	1,820	1,708	10,476	165
	25	South Kalimantan	2	9	861	812	9,317	96
	26	East Kalimantan	2	14	1,616	1,554	7,720	115
8	27	Bali	3	7	517	883	5,842	74
	28	West NusaTenggara	2	5	592	1,842	5,499	118
	29	East Nusa Tenggara	3	15	1,393	1,737	15,335	93
9	30	Maluku	2	14	929	1,612	4,297	66
	31	North Maluku	2	4	451	1,867	2,461	113
10	32	Papua	7	2	1,825	1,873	11,865	913
	33	West Papua	3	6	476	2,253	5,630	79
Total			84	302	35,283	48,967	358,713	119

resource) official website of Ministry of Public Works (www.pu.go.id),IRMS Data

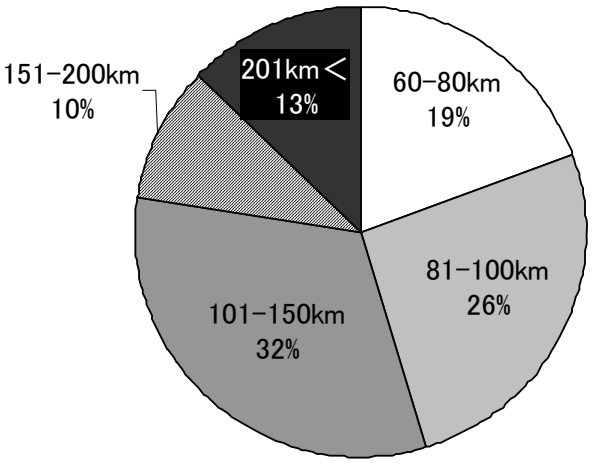

Chart 4.2 Average length of national road per PPK for preservation work

Average length of national road / PPK = 119km / PPK (= total length of National Road / total number of PPK)

4.3 Operational framework for road preservation in Japan

4.3.1 Types of road and their management in Japan

(1) Types of roads

In Japan, there are 4 types of roads according to the designated authority defined in Road Act. The 4 types are expressway, national highway, prefecture road, and municipal road. The administrative organization of each road is listed in the Table 4.2.

In addition to the above four types of roads, there are agricultural roads, forestry, roads in port areas, and wholly private roads. These roads are outside the jurisdiction of Road Act

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Table 4.2 Type of roads classified by the road act in Japan

Type of Roads[1]		Designator	Administrative Organization		Expense[3]
			New Construction and Renewal work	Preservation, Repair, Restoration from disaster etc	
National Expressway		Minister	MLIT[2]	MLIT	Expressway Company[4] (MLIT, Prefecture, Designated City)
National Highway	Designated Section	Minister	MLIT	MLIT	MLIT, Prefecture, (Designated City)
	Undesignated Section	Minister	MLIT	Prefecture (or Designated City)	MLIT, Prefecture, (Designated City
Prefectural Road		Prefectural Governor	Prefecture (or Designated City)	Prefecture (or Designated City)	Prefecture (or Designated City)
Municipal Road		Municipal Governor	Municipality	Municipality	Municipality

1) Agricultural Roads, Forestry Roads, Roads in Port area, Roads owned by Private sector etc are existing in Japan besides roads based on Road Act..

2) MLIT is abbreviated Ministry of Land, Infrastructure, Transport and Tourism.

3) MLIT will provide a subsidy for undesignated section of national highway, prefectural road and municipal road if necessary.

4) National Expressway that the Expressway companies are responsible for construction and management is compensated for the work by the toll revenue.

Source: MLIT website

(2) Management of road

The management of roads includes new constructions, maintenance, repair, and disaster recovery. It also includes some deliveries of permits such as traffic restriction and removal or abandon of occupied property on the road. The details of the managements and their managers are defined in Road Act.

1) Expressway

MLIT is primary responsible for construction and preservation work, but the most sections of expressways has been transferred to expressway companies and the work are under the management of the companies.

2) National highway

New constructions and reconstructions of roads are conducted by MLIT. Prefectures can

conduct these work only when there are special reasons or in the case of a small scale project.

Maintenance, repair, disaster recovery and other management in designated sections of national highways are administered by MLIT, while the un-designated sections of national highways are administered by prefectures. A designated section is defined as an interval where traffic is heavy and its construction or reconstruction has been almost nearly finished. It is defined by the decree government ordinance.

However, other management in designated sections of national highways can be conducted by a prefecture or designated city, if it is stated in the government ordinance. Moreover, if national highways outside the designated section need an advanced construction for disaster recovery, or if the area lies between boundaries of prefectures, MLIT can administer on behalf of the prefecture.

The above is the general principal of national highway maintenance that is defined in the Road Act. But there is another law named "Road Repairs Act" which states that for the time being, if necessary, MLIT can repair the national highways that is outside the designated section. This law was established in 1948 and has been implemented over 50 years.

3) Prefecture road

Prefecture roads are administered by a prefecture. However, the roads within the district of a designated city shall be administered by the ordinance-designated city. Other roads that are within the city district can be administered by the city if agreed between the prefecture and the city.

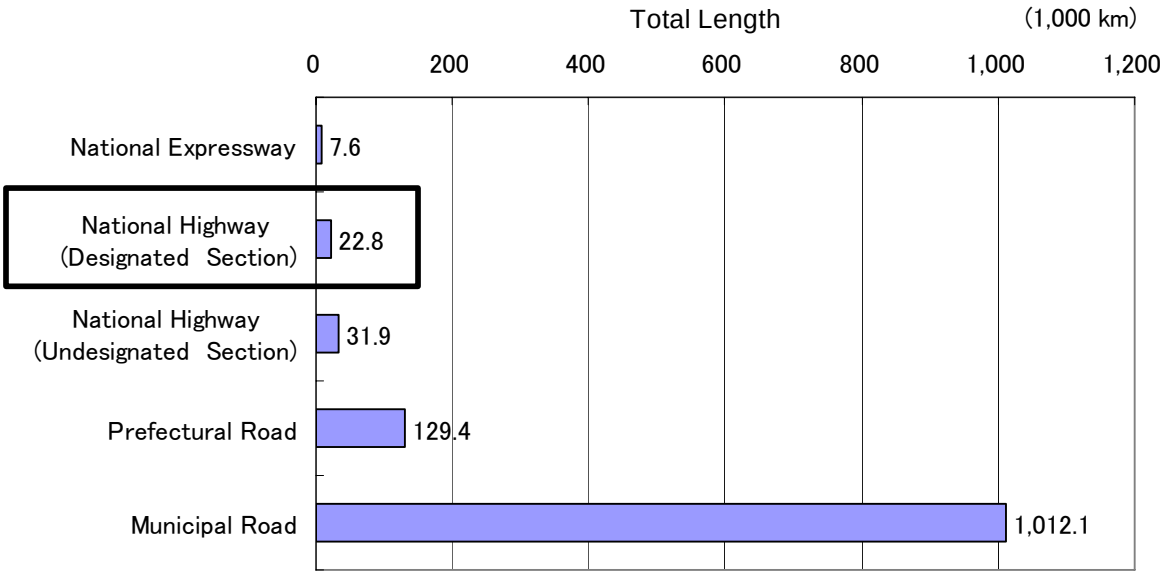
4) Municipal road

Municipal roads are administered by a municipal. The administrative works and activities conducted by the municipal government are same as those of the prefecture government.

(3) Length of roads in Japan by type

Chart 4.3 shows the length of roads classified by Road Act in Japan.

The length of designated national road is just approximately 23 thousand km and it’s shorter than the undesignated section, but it consists of the major road network in Japan.



Note: The length of National Expressway is shown as March 2009. The others are shown as 1st April 2008.

Source: MLIT website, Road Statistics of Japan

Chart 4.3 Length of roads classified by road act in Japan

4.3.2 Road management system

(1) Organization of the central government

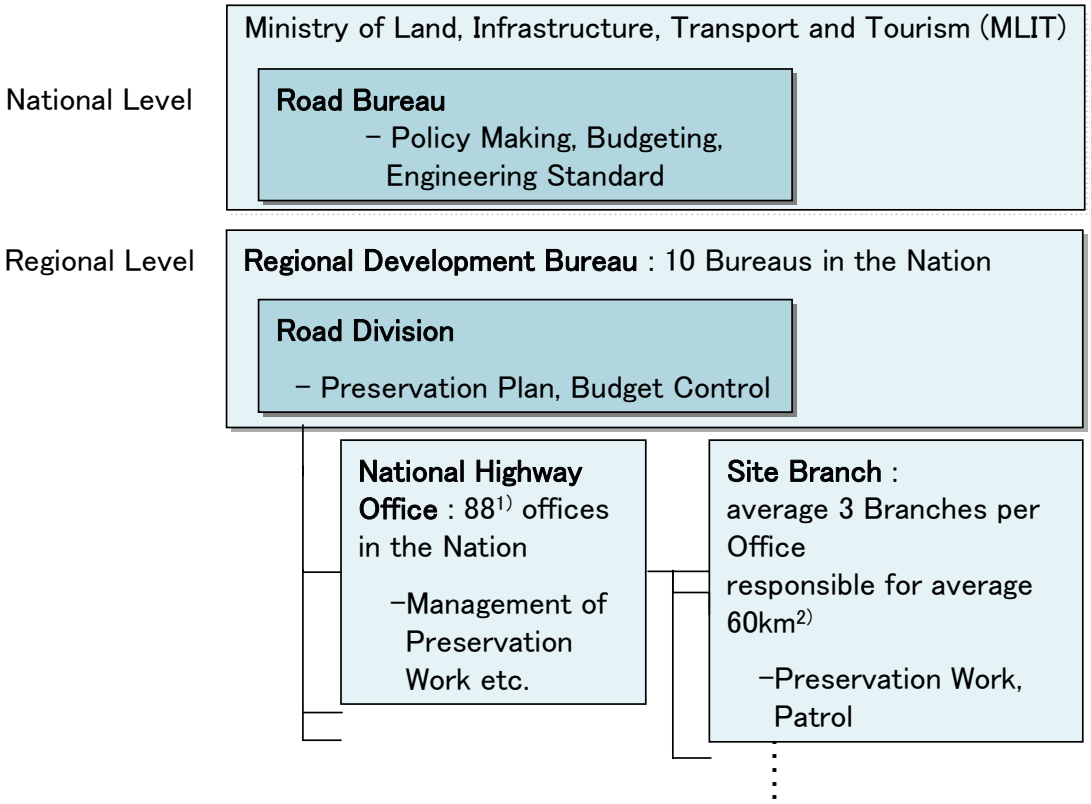
1) Overall structure

Road Bureau under MLIT is in charge of road administrations.

The main services are:

- Planning national highway network
- (Re)construction of national highways and management of the designated section.
- Support to road administration implemented by prefectures and municipals.
- Accounting for road improvement special account
- Directing expressway companies

Ten Regional Development Bureaus throughout the nation are settled as regional organizations of MLIT. They have jurisdiction over infrastructures of roads, rivers and airports, seaports. Moreover, they are in charge of affairs for planning regional development and directing constructions. One Regional Development Bureau has 5 to 8 divisions. Road division holds national highway offices whose tasks include road preservation works. These organizations and its roles are all listed in government ordinances. The actual road repairing is implemented by a site branch of a national highway office.



Notice This Chart describes the organizational structure for preservation of designated national highways, whose preservation work is under the responsibility of the Minister. The preservation works of undesignated national roads are under the responsibility of the Provincial Governors.
108 National Highway Offices exist, however only 88 offices are responsible for preservation works in addition to other works like construction etc while the other 20 offices are responsible for only the planning, survey, design, cost estimation, construction and supervision without preservation.
It is the average except Hokkaido and Okinawa region because they are special cases.

Chart 4.4 Organizations for preservation of designated national roads in Japan

Note: The circles above chart mean the location of Regional Development Bureaus.

Source: MLIT website

Chart 4.5 The jurisdiction area of each regional development bureau

2) Road Bureau

The Road Bureau has 7 divisions as listed in Chart4.6.

Maintenance and management policy belongs to National Highway and Risk Management Division. The duty includes formulating basic policies of preservation of national highways. In addition, Environment and Safety Division is in charge of maintenance and management policy of prefectural and municipal's roads.

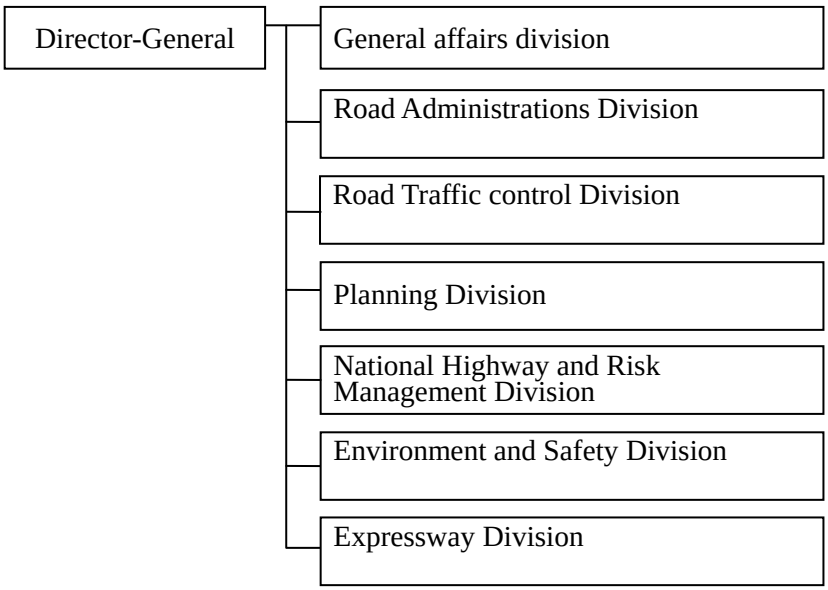


Chart 4.6 Organization chart of the road bureau

3) Regional Development Bureau

Road Division of a Regional Development Bureau works for management on designated sections of national highways, support to the prefectures, and other clerical work.

Chart4.7 shows the organization of Kanto Regional Development Bureau, which has jurisdiction over Kanto region that includes metropolitan areas.

Kanto Regional Development Bureau has 8 divisions including Road Division. Road Division has 8 sections. Road planning 1st section is responsible for making the action plans and budgeting for preservation. Road management section is responsible for preservation management in designated national road. Local roads section is responsible for advice and supervision of local road preservation.

National Highway Offices are also settled under Road Division.

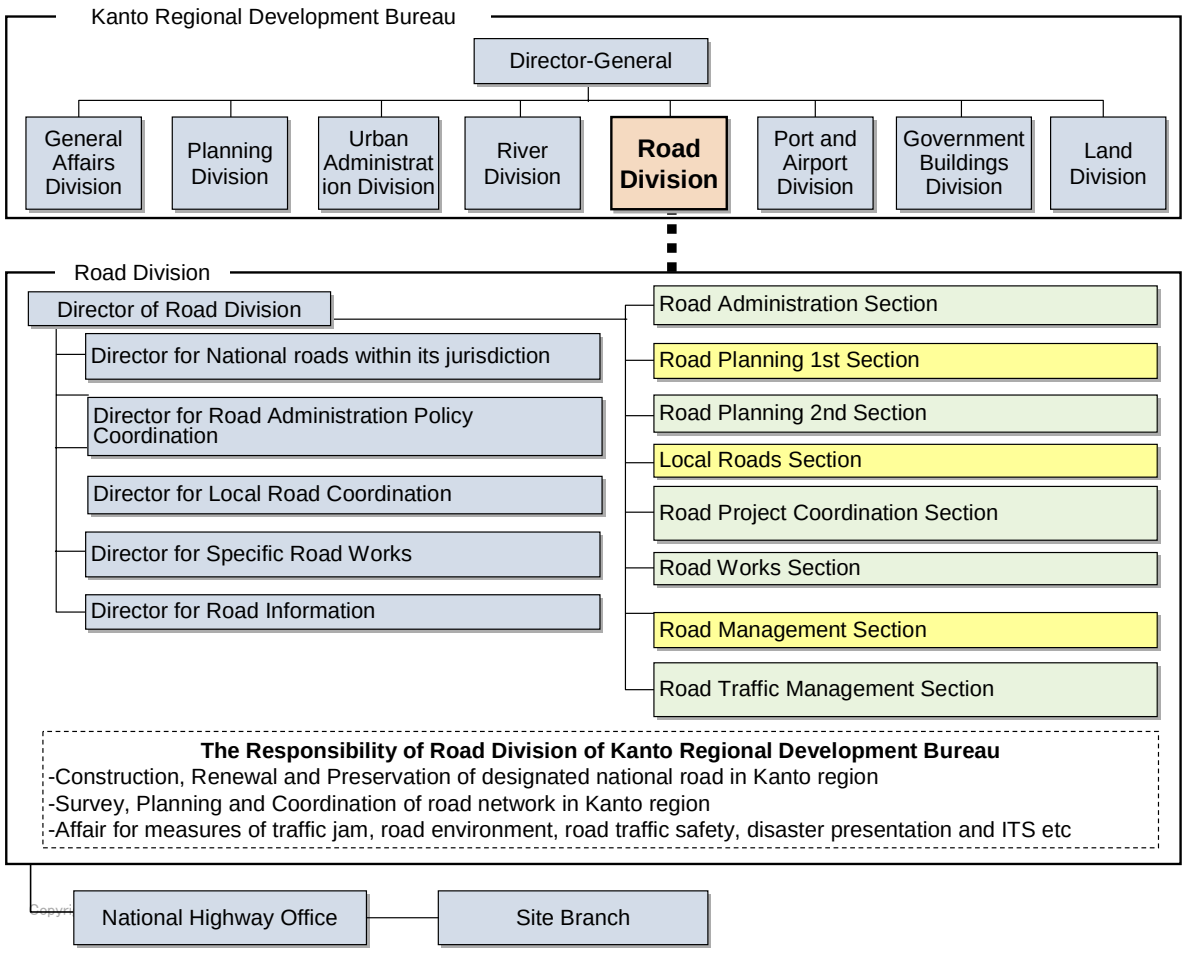


Chart 4.7 Kanto regional development bureau

4) National Highway Office

National Highway Offices are established to manage designated sections of national highways. Kanto Regional Development Bureau, for example, holds 12 National Highway Offices which are responsible of 2,366.9km of designated sections of national highways.

Tokyo National Highway Offices is responsible for 153.2km of the 2,366.9km. This office implements various adjustments on constructions. A National Highway Office sometimes has branch offices if its administration section is long. Tokyo National Highway Office has four branch offices.

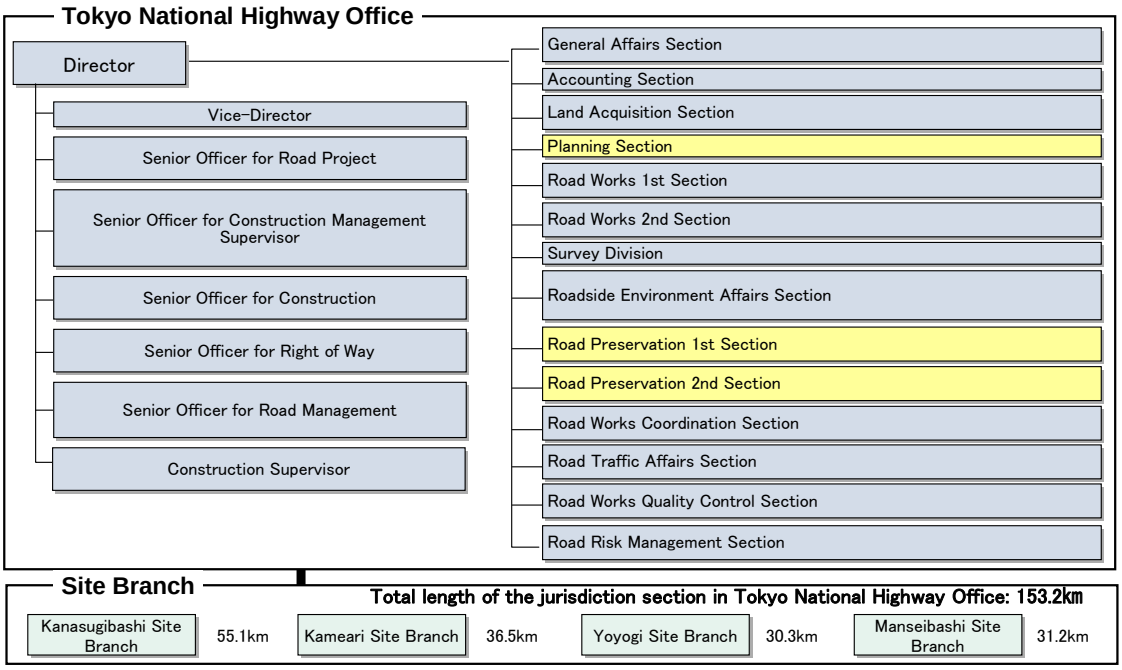


Chart 4.8 Tokyo National Highway Office

Source) Tokyo National Highway Office website

Chart 4.9 The Jurisdiction section of each site branch

National Highway Offices are responsible for implementing fields operations. Roles of sections of Tokyo National Highway Office are listed in Chart4.11

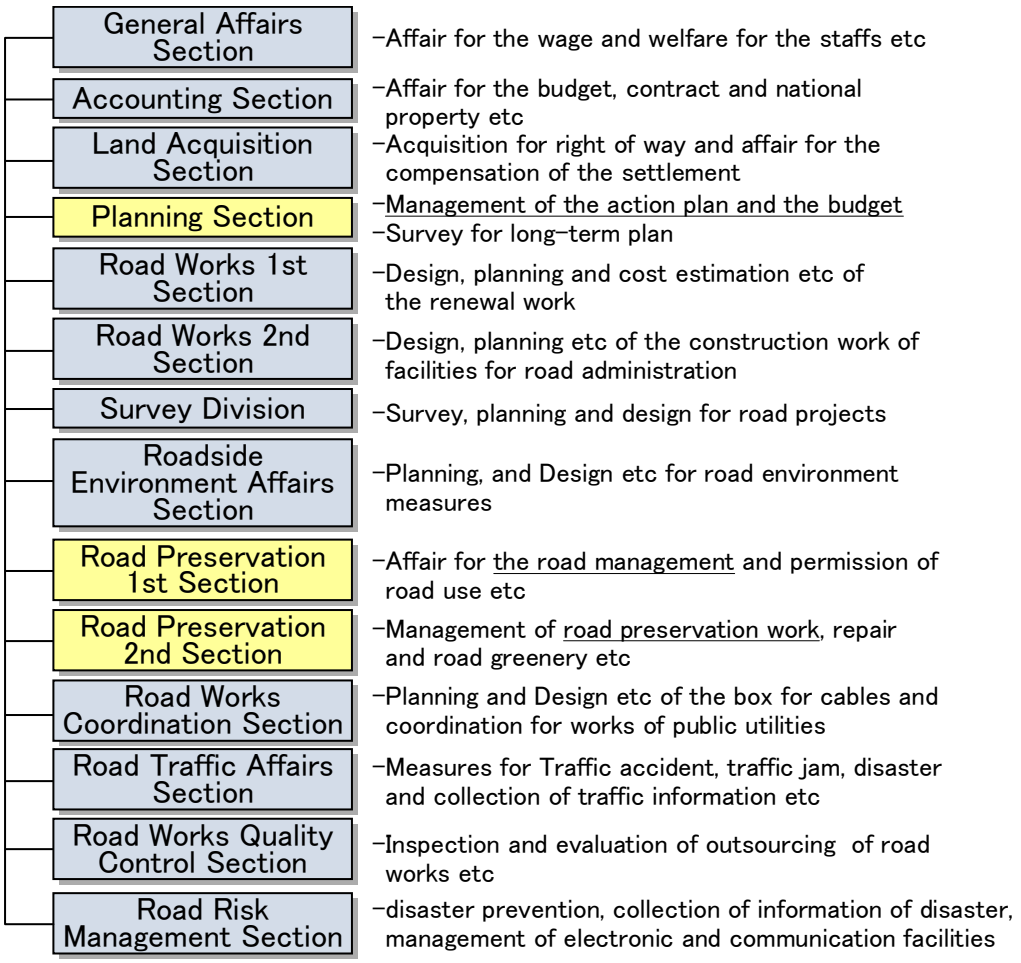
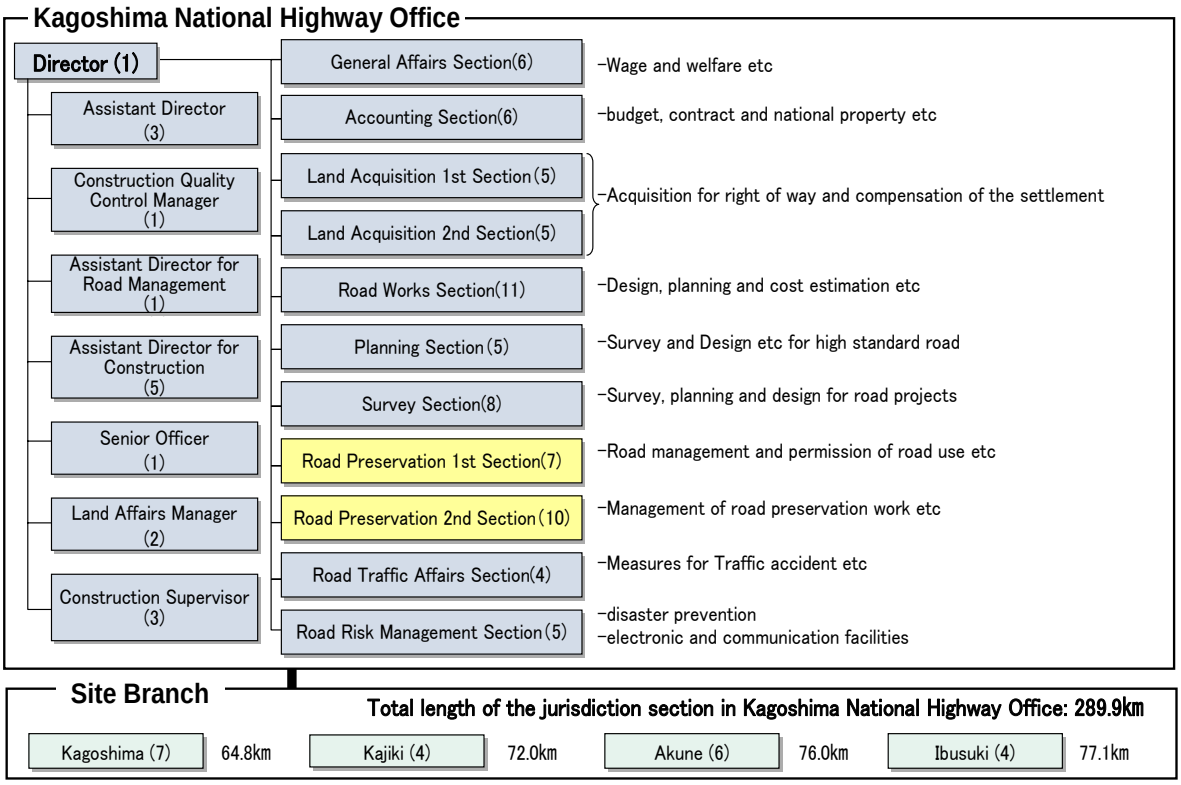


Chart 4.10 Roles of Tokyo National Highway Office

Chart 4.11 shows the case of Kagoshima National Highway Office which is located in western Japan. Road Preservation 2nd Section has 10 staffs. Kagoshima National Highway Office has four site branch offices and each branch office has approximately 5 staffs.



※ The number of staffs in each section are shown in parentheses

Chart 4.11 An example of the organizational structure of national highway office (Kagoshima National Highway Office)

Source: Kagoshima National Highway Office website

Chart 4.12 The jurisdiction section of each site branch

Table 4.3 shows the number of vehicles for road preservation work deployed in Kagoshima National Highway Office.

Table 4.3 The number of vehicles for road preservation work deployed in Kagoshima National Highway Office

	Number
Vehicle for road cleaning work	13
Vehicle for communications in case of disaster	4
Patrol car	9
Other equipments for repair work in case of disaster	4
Total	30

Source: Kagoshima National Highway Office website

Vehicle for road cleaning work

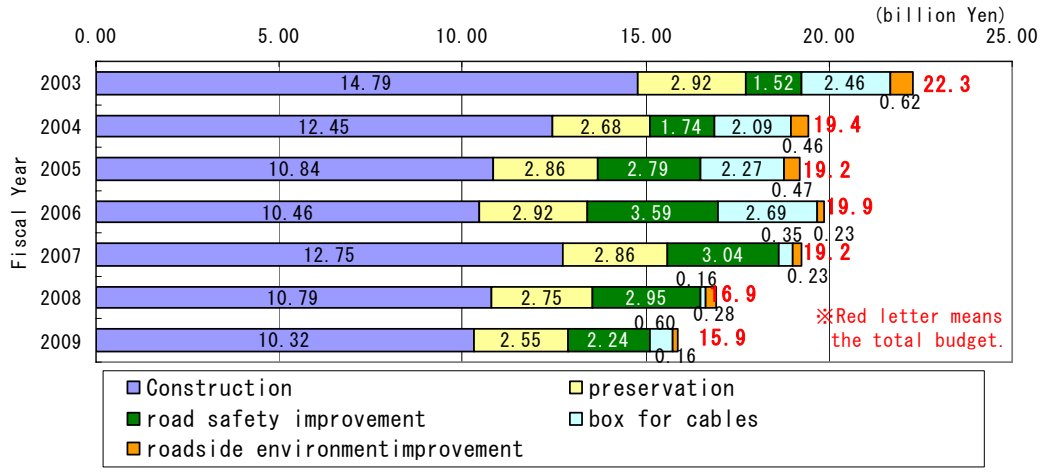
Vehicle for communications in case of disaster

Patrol car

Source: Kagoshima National Highway Office website

Chart 4.13 Examples of vehicles for road preservation work deployed in Kagoshima National Highway Office

The average budget for preservation work in Kagoshima National Highway Office is approximately 2billion yen for 289.9 km national road managed by the office. Chart 4.14 shows the budget for the work.

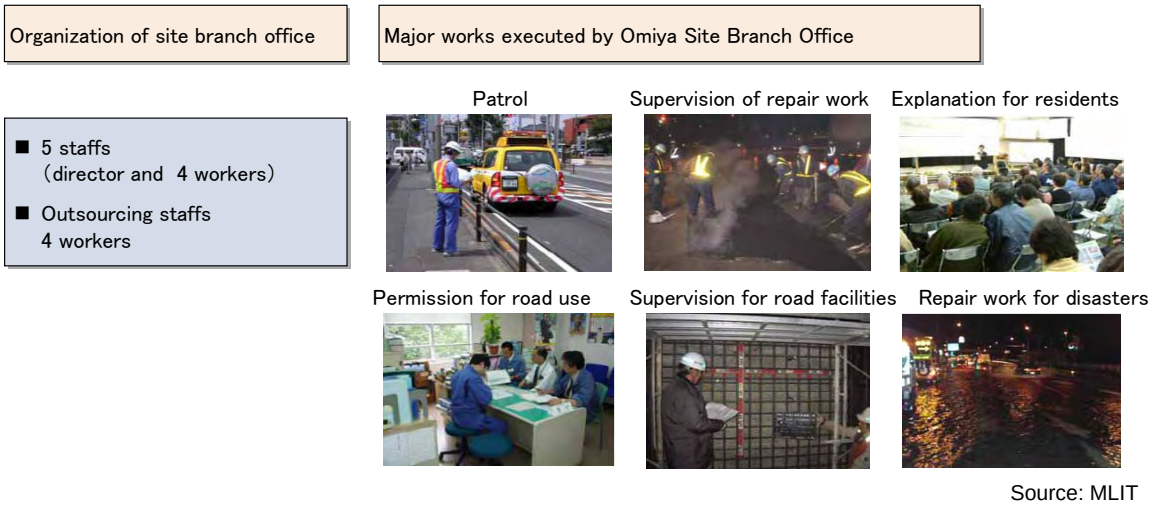


Source: Kagoshima National Highway Office website

Chart 4.14 The budget for work in Kagoshima National Highway Office

5) Overview of preservation work by a site branch office (An example in Omiya site branch office under Omiya National Highway Office)

Chart 4.15 shows the overview of preservation work by a site branch office in the case of Omiya site branch office near Tokyo. Omiya site branch office has 5 proper staffs and outsourcing 4 workers.



Source: MLIT

Chart 4.15 Overview of preservation work by site branch office
(An example in Omiya site branch Office under Omiya National Highway Office)

Table 4.4 Administration and outsourcing for road maintenance operations

	Administration	Outsourcing
Patrol	・Making patrol plan and steps to take at emergencies ・Making adjustments and contacts with agencies concerned (Police, Fire station, local government) ・Making adjustments and contacts with local residents	・Patrolling ・(Normal, nighttime, emergency time patrolling)
Maintenance	・Making maintenance plan and steps to take at emergencies ・Making adjustments and contacts with agencies concerned (Police, Fire station, local government) ・Making adjustments and contacts with local residents	・Street cleaning ・Weeding ・Minor repair of streets ・Minor repair of attachment of streets ・Correspondence to emergencies and natural disasters.
Inspection	・Making inspection plan. ・Evaluation on inspection plan ・Deciding which countermeasures to take	・Investigation before making inspection ・On the spot inspections (bridge, tunnel, pavement, attachment of streets) ・Gathering inspection data

		・ Analyzing inspection data ・ Planning countermeasures
Repair	・ Making repairing plan ・ Conference amongst agencies concerned and notification to local residents. ・ Supervising and inspecting	・ Designing investigations ・ Supporting making an estimate of construction. ・ Repair of pavements ・ Repair of structures ・ Taking countermeasures on fires and earthquake disasters.
Snow removal work	・ Deciding snow removal work and steps to take at emergencies ・ Making adjustments and contacts with agencies concerned (Police, Fire station, local government)	・ Collecting information, patrol and preparation for snow removal work. ・ Spraying antifreeze ・ Snow removal work (roadway and sidewalk) ・ Treating cornices
Management office work	・ Procedures for approvals (application for occupation and for special vehicles to pass) ・ Procedures for drawing boundaries ・ Procedures for deciding director disposal	・ Accepting various applications ・ Support on examining various applications ・ Site checking and support ・ Support revision to take on management
Consulting bureau	・ Administrative counseling and judge making of measure to take towards complaints ・ Offering information of regulatory and construction information	・ Acceptance of administrative counseling and complaints ・ Sorting administrative counseling and complaints ・ Supporting the offering of information of regulatory and construction information

6) Length on administration of National Highway Offices

Length on designated sections of national highway totals is 21,170km throughout the nation, and 88 offices are in charge of this length. This means that each office administers 240km of national highways.

Table 4.5 National Highway Offices across the nation and a length of road expansions in each area

Region	National Highway office		Length (km) (as the end of March 2006)
Hokkaido	1	Sapporo	1,078.4
	2	Otaru	471.5
	3	Obihiro	708.5
	4	Kushiro	839.0
	5	Abashiri	844.0
	6	Muroran	690.1
	7	Hakodate	689.2
	8	Asahikawa	645.7
	9	Rumoi	272.5
	10	Wakkanai	246.0
Tohoku	11	Aomori	279.6
	12	Iwate	236.4
	13	Sanriku	269.0
	14	Sendai	455.3
	15	Akita	192.3
	16	Yuzawa	95.2
	17	Noshiro	104.6
	18	Yamagata	365.1
	19	Sakata	150.6
	20	Fukushima	92.2
	21	Koriyama	203.1
	22	Iwaki	192.4
Kanto	23	Tokyo	161.3
	24	Sobu	105.8
	25	Yokohama	242.2
	26	Omiya	255.9
	27	Kitashuto	30.6
	28	Chiba	308.1
	29	Shuto	2.1
	30	Utsunomiya	229.5
Kanto	31	Nagano	275.0
	32	Hitachi	312.0
	33	Takasaki	196.3
	34	Kofu	245.1
Hokuriku	35	Niigata	293.0
	36	Nagaoka	210.1
	37	Takada	125.1
	38	Toyama	193.0
	39	Kanazawa	201.7
Chubu	40	Shizuoka	241.2
	41	Hamamatsu	118.4
	42	Nagoya	411.1
	43	Mie	175.4
	44	Hokusei	41.6
	45	Kisei	151.8
	46	Gifu	228.5
	47	Tajimi	85.2
	48	Takayama	148.7
	49	Iida	137.2
Kinki	50	Shiga	251.9
	51	Fukuchiyama	127.2
	52	Kyoto	148.9
	53	Osaka	201.6
	54	Hyogo	221.4
	55	Himeji	133.3
	56	Toyooka	70.8
	57	Nara	141.2
	58	Wakayama	119.0
	59	Kinan	157.4
	60	Fukui	181.1
Chugoku	61	Tottori	147.9
	62	Kurayoshi	86.9
	63	Matsue	197.5
	64	Hamada	134.8
	65	Okayama	251.3
	66	Fukuyama	65.3
	67	Miyoshi	61.6
	68	Hiroshima	204.3
	69	Yamaguchi	459.6
Shikoku	70	Tokushima	264.4
	71	Kagawa	174.1
	72	Matsuyama	276.1
	73	Ozu	128.6
	74	Nakamura	99.1
	75	Tosa	291.6
Kyushu	76	Kitakyushu	171.9
	77	Fukuoka	267.4
	78	Kumamoto	283.7
	79	Kagoshima	287.8
	80	Osumi	96.1
	81	Oita	172.1
	82	Saeki	112.6
	83	Nobeoka	64.4
	84	Miyazaki	202.8
	85	Saga	202.0
	86	Nagasaki	159.7
Okinawa	87	Hokubu	147.0
	88	Nambu	159.2
Total			21,170.2
Average			240.6

7) Legal framework to authorize the duties in each organization

Chart 4.16 shows the legal framework to authorize road preservation and the duties of each organization in Japan.

Road Act is a basic law to authorize road administration, and to identify types of roads, road administrators for each type and to authorize the duties of road administrators definitely. The related government decree and circular issued by Road Bureau of MLIT provide the technical standard for road construction and preservation.

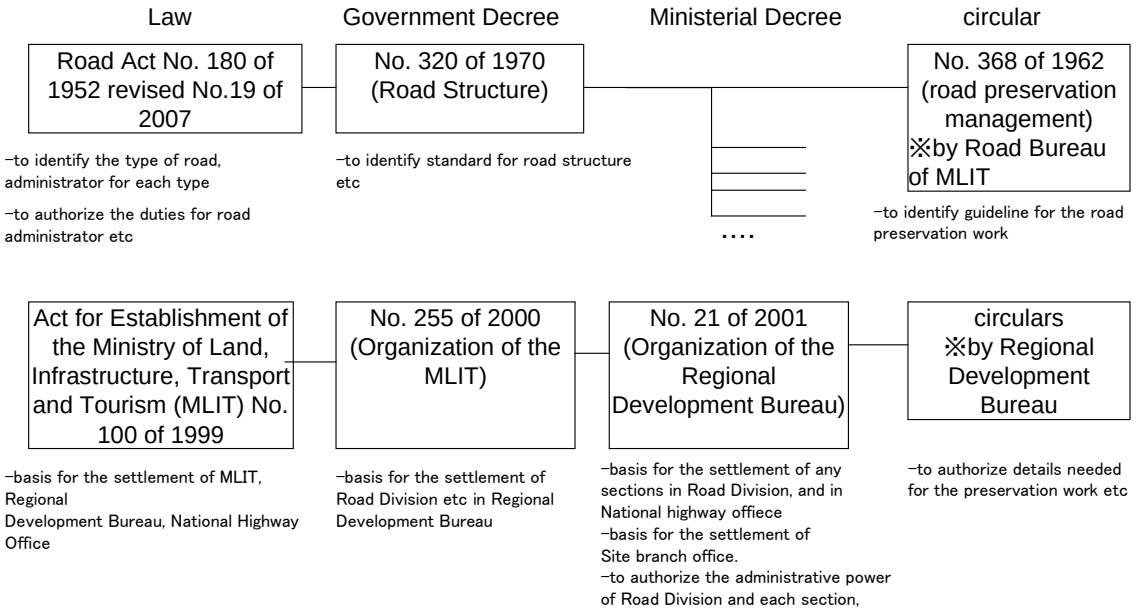


Chart 4.16 The legal framework to be authorized the duties in each organization

4.3.3 Organizational structures of local road administration

(1) Prefectural roads

Public Works Division is responsible for road administration of prefectures. In addition to road administration, this division is usually responsible for river administration and coastal administration. There are branch offices established in administration areas of prefectures. However in some cases, City Division has road projects when they are parts of city panning projects.

According to Act on Special Measures concerning Road Construction and Improvement, many toll road businesses belong to Business Administration Department, not to Public Works Division.

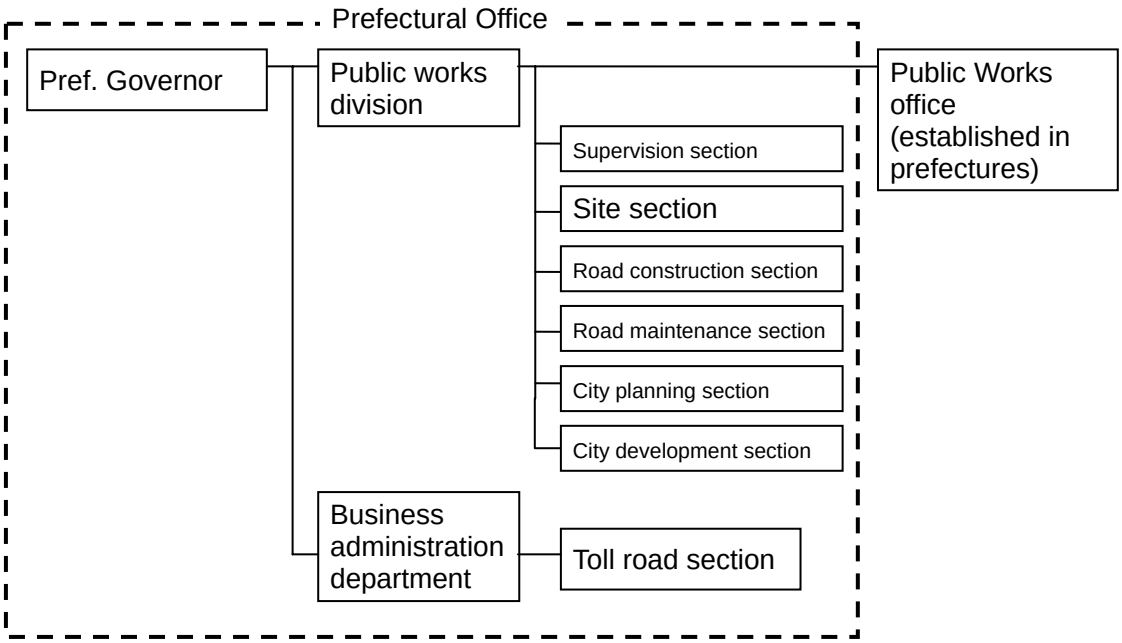


Chart 4.17 A typical structure of road administration in a prefecture

Duties of each section are listed in Table 4.6. Public Works offices usually execute actual road maintenance and management work.

Table 4.6 Duties of each section of Public Works Division

Section		Duties
Public Works Division	Supervision section	・ Personnel matters, budget and accounting works
	Site section	・ Land expropriation
	Road construction section	・ Planning, investigation, new establishment and improvements of road projects、 ・ Road construction
	Road maintenance section	・ Road maintenance ・ Disaster responses
	City planning section	・ Planning and coordinating of urban roads ・ Planning and drafting of investigation and construction project of urban freeways
	City development section	・ Maintenance of urban roads and redevelopment of city area
Business Administration Department	Toll road section	・ Planning, coordination, construction, management of toll road projects

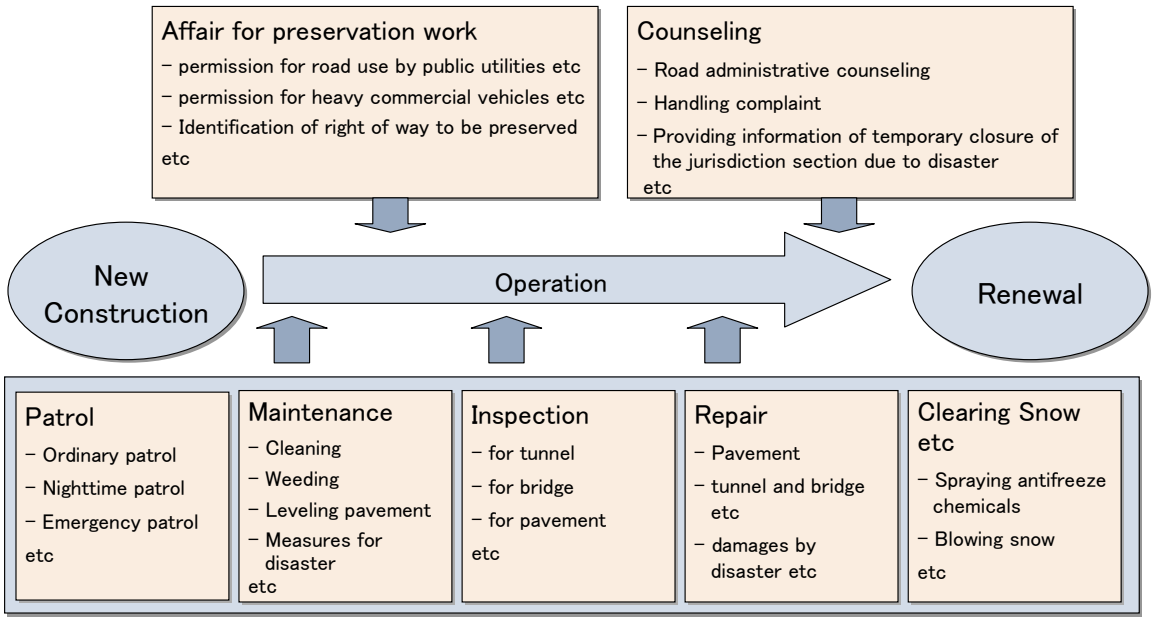
(2) Municipal roads

Organizations and duties are similar to those of prefectures.

(3) Overview of preservation work of designated national highway

Preservation work has many tasks such as counseling, patrol, maintenance, inspection, repair and clearing snow.

Patrol is executed to detect any obstacles on the road. Maintenance is executed to keep the road function routinely. Inspection and Repair is executed to detect the damage and to recover the function periodically. In a winter season, clearing snow in the right of way is carried out to keep road transport smooth if necessary.

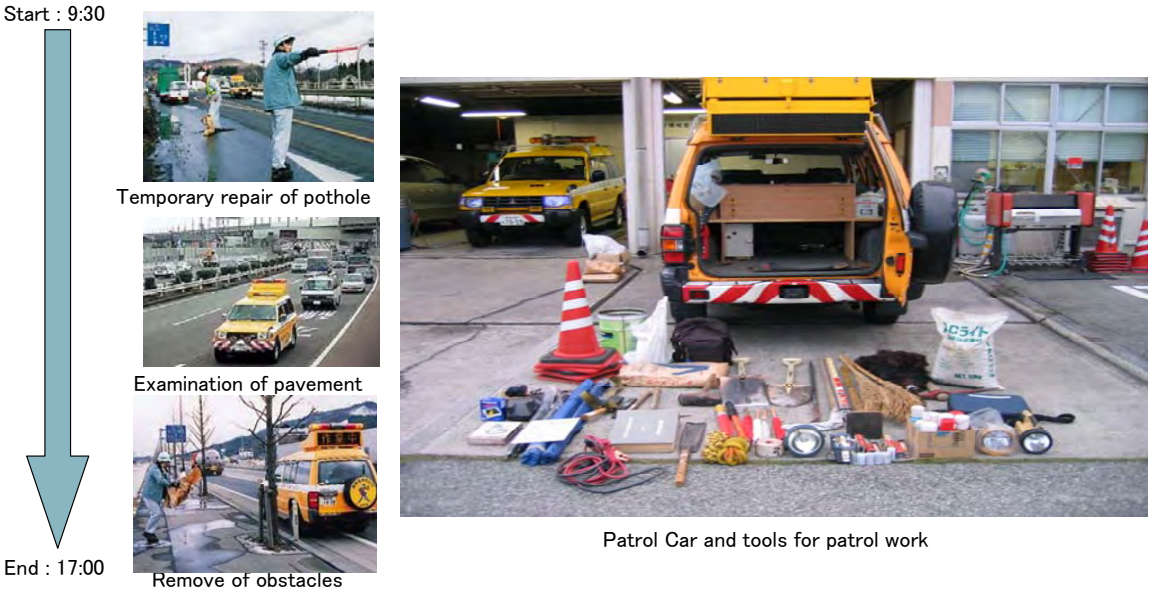


Source: MLIT

Chart 4.18 Overview of preservation work of designated national highways

(4) Overview of Patrol work

Patrol is carried out everyday basically. If necessary, a temporary repair work is carried out in Patrol. The obstacles on the roads are detected and removed by ordinary patrol work in order to keep good condition for road safety. A patrol car equipping tools for patrol work is deployed in a site branch office.



Source: MLIT

Chart 4.19 Overview of patrol work

Fallen trees

Fallen parts of automobile

Damaged guardrail

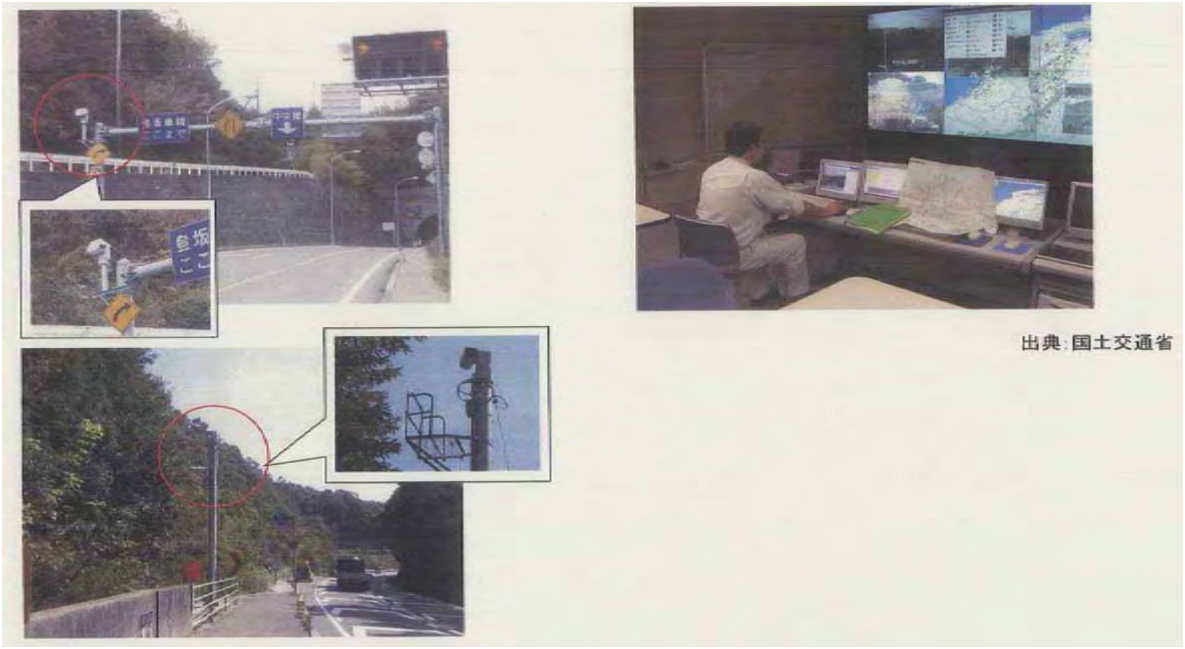
Landslide

Fallen stones

Source: MLIT

Chart 4.20 Examples of obstacles to be detected and removed by patrol work

The road condition is examined by not only patrol work but also CCTV in order to detect damages of roads so quickly.



Source: MLIT

Chart 4.21 Monitoring road condition by closed-circuit television (CCTV) system for road management

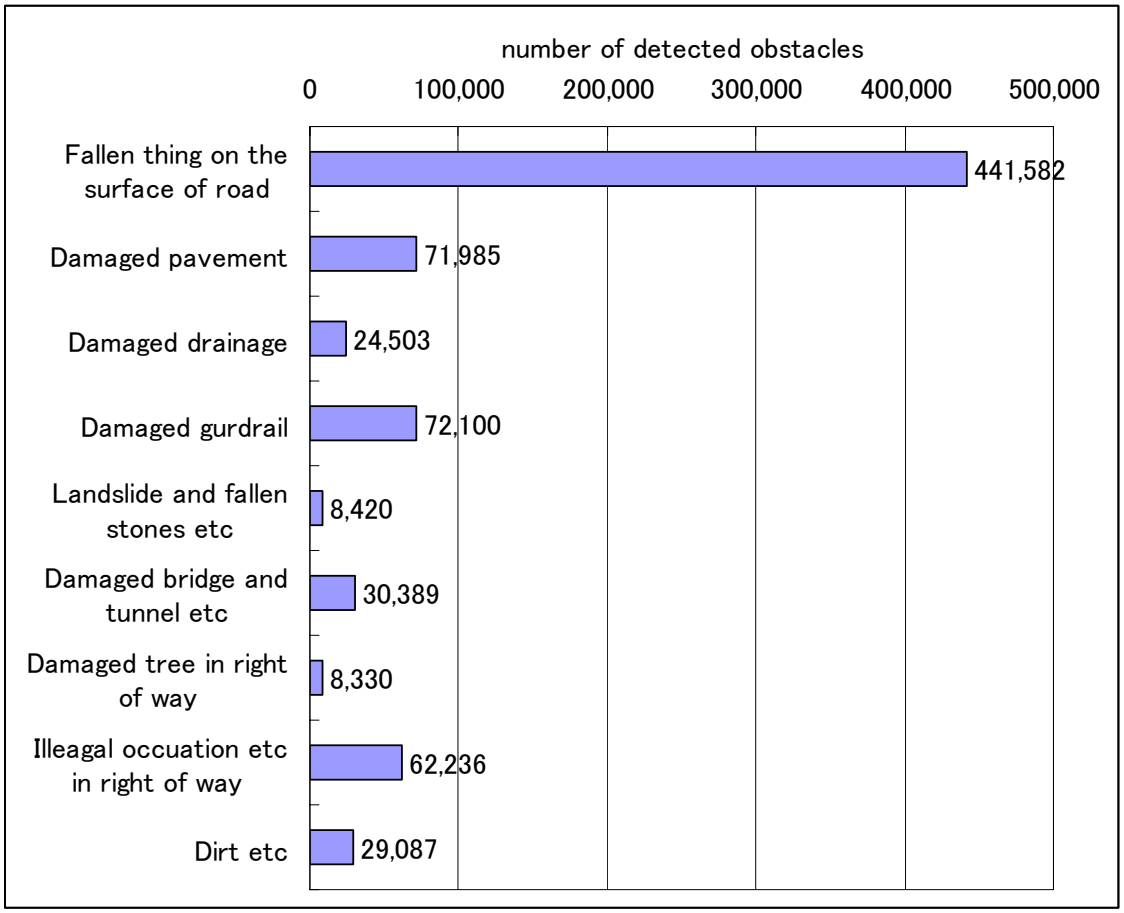


Chart 4.22 The number of cases in which obstacles are detected by a patrol (2004)

(5) Overview of maintenance work

Cleaning and weeding are executed in ordinary work.

Chart 4.23 Cleaning in nighttime work

Chart 4.24 Weeding on the slope of road shoulder

Source: MLIT

Source: MLIT

Source: MLIT

Chart 4.25 Pruning the trees in right of way

(6) Overview of inspection work

1) Bridge

Bridges on designated national highway are inspected to check occurrence of crack by viewing every 5 years.

Source: MLIT

Chart 4.26 Scenes of inspection work for bridge

2) Tunnel

Tunnels in designated national highways are also inspected every 5 years basically.

According to the result of the previous inspection, tunnels are sometimes inspected every 2 years.

Chart 4.27 Inspection of occurrence of cavities behind lining by radar

Source: MLIT

Chart 4.28 Inspection of occurrence of cavities behind lining by boring

Source: MLIT

Chart 4.29 Inspection of occurrence of cracks by viewing

Source: MLIT

Chart 4.30 Inspection of condition of lining by hammerin

Source: MLIT

The intervals of inspection work are identified by some guidelines enacted in Road Bureau. The intervals for designated national roads are shorter than undesignated national road and prefectural roads because the designated national roads usually have heavy traffic.

Table 4.7 The interval of road preservation work in Japan

Work items		Designated national road administered by MLIT	Undesignated national road and Prefectural road administered by Prefectures
The ordinary Patrol work		1 time every day	1 or 2 times every week
The periodical inspection of road structure	For bridge	1 time every 5 years	1 time every 5 years or every 15 years
	For tunnel	1 time every 5 years (or every 2 years)	Depend on Necessary
	For flatness of pavement	1 time every 3 years	Depend on Necessary

Source: MLIT

4.3.4 Comparison of the organization for preservation management of national road in Indonesia and Japan

Table 4.8 shows the comparison of the organization for preservation management of national roads in Indonesia and Japan.

The organization for national road preservation is almost same in Indonesia and Japan. The total number of sub-office at regional level is also almost same except a PPK and a site branch office in Japan. Total length of national road in Indonesia is about 35,000km and in Japan is about 23,000km, however, the length in Japan is only the designated section directly managed by central government. In Indonesia coverage of one PPK is about 119km, in Japan coverage of one site branch office is about 60km. The average construction length per a contract for road preservation work is 2 to 4 km in Indonesia while in Japan it is approximately 10km.

Table 4.8 The organization for preservation management of national road

		Indonesia	Japan
Organization	National Level	**BINA MARGA**	**Road Bureau** -Policy Making, Budgeting etc
	Regional Level	**BALAI** (10 Bureaus in the Nation)	**Road Division of Regional Development Bureau** (10 Bureaus) -Preservation Plan, Budget Control etc
		SNVT (84 Offices)	**National Highway Office** (88 Offices) -Management of Preservation work etc
		PPK (302 Offices for Preservation work)	**Site Branch Office** (268 Offices) -Preservation work, Patrol etc
Total Length of National Road		**35,283km**	**22,787km** (Designated Section only)
Coverage of site branch office for road preservation		**119 km/PPK**	**Approximately 60km/Site Branch Office** (excluding Hokkaido and Okinawa area)
Average Construction Length per a contract for road preservation work etc.		**2-4 km/contract** (Including contract for preservation and development)	**Approximately 10km/contract** (Including contract for routine maintenance, periodical maintenance and development)
Total Number of Staffs for National Road Management		**Approximately 6,000** -Technical staffs (46%), Non Technical staffs (41%), Other (13%) -High school graduated below (65%)	**Approximately 8,000** -Technical staffs (67%), Non Technical staffs (33%)
Average number of staffs for road preservation work per Site Branch Office		—	**5 staffs per Site Branch Office**

Source: BINA MARGA and MLIT

4.4 Standard for road preservation

As shown in Chart 4.31 it is very important to establish operational framework to ensure the minimum level of road condition and to unify the level between sections of roads. The minimum standard of performance of road preservation work in Indonesia should be suitable for the current legal framework and the ability of road preservation work carried out by road administrator.

-In order to provide safe and pleasant passage for road users and to secure the function as infrastructure to support efficient road transport and development national and rural economy subject to limited budget for road preservation work, It is **very important to establish operational framework to ensure the minimum level of road condition and to unify the level** between sections of road.

It is required the **minimum standard of performance of road preservation work** to be observed by all Road Administrators.

Chart 4.31 Aims and Objectives to establish standards for road preservation

Table 4.9 shows some of standards concerning road conditions for minimum service level in foreign countries.

In these standards the minimum performance is stipulated quantitatively and qualitatively. For example, international roughness index and depth of rutting in quantitative standard are used.

In Japan, no specific standard is stipulated. According to the State Redress Act, if defect of management of road causes any damage to people, the road administrator shall redress the damage. It means that if 1) the road administrator could take preventative action to avoid accidents, and 2) the road administrator could foresee the accident, and 3) the road administrator did take preventative action, then the government/local government as a road administrator has to compensates the loss by the accidents. Disputes of defect in road management which were solved over 2002 to 2006 were 131 lawsuits and 20,248 settlements out of court throughout Japan. Total of compensations were ¥870,000,000 for lawsuit, ¥3,960,000,000 for settlements out of court, which totals ¥4,830,000,000.

Table 4.9 Items of standard for road preservation (Case in foreign countries)

	Item	Example of standards (Reference)
Indiana Toll Road (United States) 	・ International roughness index	・ *The average shall not exceed 150 in/mi*
	・ Depth of rutting	・ *The average shall not exceed 3/8" in a one mile segment*
	・ Friction on pavement	・ *Friction below 30 shall require investigation by public*
	・ Duration between finding failures and reaction/repair for the failures	・ *e.g. Temporary repair for pothole: 24hours, and permanent repair for that: 1 month*
	・ Frequency of cleaning on the face and structure of bridge	・ *Mainline (not required on regular basis); clean-up of spills only, and bridges: once yearly*
Highway Agencies (United kingdom) 	・ Response to an emergency	・ *Attend site within 1.5 hours max*
	・ Carriageway, footway and cycle way free from standing waters, snow and ices, obstructions, potholes, cracks, ruts and irregularities, hazardous ironwork, damaged or defective curbs, edgings and pre-formed channels	・ *Adequate operation should be done within 24 hours. Adequate repair should be done within 6 months.*
	・ Functional drainage system maintained so that hazards are avoided, contamination is prevented and the system remains structurally sound.	・ *Adequate operation should be done within 24 hours. Adequate repair should be done within 6 months.*
New South Wales (Australia) 	・ Pothole/delamination	・ *Max depth within 600mm etc.*
	・ Edge break, edge rut, edge scour	・ *Edge break encroaching into way must not reach 200 max etc.*
	・ Rutting, Bleeding ,Flushing, stripping and raveling	・ *Rutting height/depth must not reach within 75mm max etc.*
	・ Shoving, Bump, depressions and abrupt discontinuities	・ *Height/depth or depression must not reach within 75mm etc*
	・ Cracks condition	・ *When width of a crack reaches 100m or plate size of crocodile cracking reaches 100mm, investigate should be required etc.*
	・ Joints condition	・ *When height /depth of joint stepping reaches 25mm, investigate should be required etc.*
	・ Unsealed pavement failures	・ *Adequate investigate should be required when any failure (ex. potholes) is found.*
	・ Concrete slab stability	・ *Adequate investigate should be required when any failure is found.*
	・ Shoulder grade	・ *Adequate investigate should be required when any failure is found*

4.5 Recommendation on operational issues

4.5.1 Main Issues on operational framework in Indonesia

(1) Organization framework

There are three viewpoints. At first, concerning organization framework for road preservation management, Indonesia is almost the same as Japan. However, it seems that the duties of BALAI, SNVT and PPK are not obviously authorized in the legal framework for road preservation management. According to CIRCULAR LETTER Number06/SE/Db/2009, the details of the responsibility of BALAI, SNVT and PPK for national road preservation are authorized systematically. However, this circular came into effect to TA 2010. The dissemination of the whole organization framework in Indonesia should be needed. In terms of sub national roads, the study team supposes that the same organizational framework as for national roads isn't implemented yet, though more detailed data and analyses are necessary.

It can be pointed out that road preservation work might be ineffective and inefficiency due to no clear of definition of duties for road preservation management in Indonesia. For the establishment of RPF the adequate road preservation management on the responsibility of each organization will be needed.

Current Status

- Indonesia has almost same organization framework for road preservation management compared to Japan.

Supposition

- However, the duties of BALAI, SNVT and PPK for road preservation management **might be NOT obviously authorized by legal framework in Indonesia**.
- The road preservation work **might be ineffective and inefficiency due to no clear of definition of duties** for road preservation management in Indonesia.
- The **adequate road preservation management on the responsibility of each organization** has to be secured by RPF….

(2) Coverage of site branch office for road preservation work (PPK)

Secondary, in Indonesia the average length of national road responsible for preservation work per PPK is long. More efficient deployment of PPK will be needed. And the duties of PPK for road preservation work should be clarified to check the reasonable execution of road preservation work under RPF.

Current Status

- In Indonesia, the average length of national road per PPK is longer than in Japan.

Supposition

- **The PPK might be needed to deploy more densely** for the purpose of more effective and efficiency road preservation work in Indonesia.
- Or, **the duties of PPK for road preservation work should be clarified and the organization framework** to check the reasonable execution of road preservation work under RPF should be needed

(3) Standard for Road Preservation work

Finally, concerning minimum standard for condition of road preservation, no definite standard for road preservation work is observed by road administrator except toll road in Indonesia. The definite operational framework is required to ensure the minimum level of road condition for national road and sub national road.

Supposition

- No definite standard for road preservation work to be observed by road administrator in Indonesia.
- It is **required the definite operational framework to ensure the minimum level of road condition and to unify the level under RFP** in Indonesia.

4.5.2 Recommendations on operational issues

(1) Strong and systematic hierarchy organization for road preservation

Almost the same organization of road preservation work is arranged in Indonesia and Japan. However, in Japan, for each department, division, and even down to the site office, the levels with their own activities and responsibilities are strictly determined by the government regulation. They are not clear in Indonesia. It is suggested that road preservation work in Indonesia should also be conducted under their strong and systematic hierarchy determined by the regulation.

(2) Role and responsibilities of SNVT

As for the actual preservation work, 88 national highway offices in Japan has strong responsibilities to carry out whole preservation works including planning, budgeting, and execution of inspection, maintenance, rehabilitation, and improvement. As comparison, It is suggested that role and responsibilities of SNVT, which is supposed to be functioned as national highway office in Japan, should be clarified to carry out the proper preservation works. It is supposed to be very important because the SNVT shoulder the large responsibility due to the long coverage of SNVT and PPK.

(3) Minimum standard of road condition

In Japan, road administrator has to take responsibility for accidents in right of way due to errors of operation and maintenance of roads, regardless of errors of road user. So, road administrator has to carry out the proper road preservation works to keep their jurisdiction section good condition with sense of the serious responsibility. It is suggested that minimum standard of road condition to be observed by road administrator should be examined and established in accordance with the legal framework in Indonesia.

Reference 4-1 :
Overview of the operational framework in Indonesia

For national road based on CIRCULAR LETTER Number: 06/SE/Db/2009

１． Target of preservation management

The target of preservation management is the functioning of all national road and bridge network year round and, if damage occurs in road and bridge, **the implementing of improvement measure as soon as possible before hindering the traffic**.

２． Target of asset management

The target of asset management is so that the **State Property (BMN)** of Directorate General Bina Marga, including the road, bridge and other assets in the province **can be recorded, made inventory and reported** in accordance with the current provisions in timely manner.

３． Preservation activity

a. Road
i. Routine Maintenance
ii. Periodic Rehabilitation
iii. Reconstruction / Improvement in the structure (without the widening);
iv. Implementation of emergency handling and grading operation
b. Bridge
i. Routine maintenance
ii. Periodic Rehabilitation
iii. Replacement

４． Organization and Position

(1) The head of the Hall of Balai/Balai
1) Duties
a. To **disseminate the policy, the strategy and the management guide** of the preservation and the management of assets to SNVT and SKPD
b. **Assessment of the handling program** of the road that was proposed by SNVT
c. **Review/the sharpening of the handling program** of the available road in RKAKL/DIPA (DIPA is request of budget proposed by SNVT/SKPD and submitted to MOF) to SNVT and SKPD to fill the preservation target.
d. To **coordinate the program with SKPD and SNVT** Preservation and the Development Road and Metropolitan Bridge
e. **Compilation and the submission of the road and revision of RKAKL/DIPA** of the recommendation of the handling program, after coordinating with the Director of Road and Bridge of West/East region to Director General Bina Marga;
f. **Implementation monitoring and the evaluation** of the preservation program and the development.
g. **Determination of Sub Manager Section, Sub Manager Asset and the Road Inspector** after considering the proposed personnel from the head of SNVT and the road length that must be monitored;
h. **To report periodically to Director General Bina Marga** through the Director of Road and

Bridge of West/East Region.

i) Balai/Balai carries out the **evaluation towards the proposed preservation** that is proposed by Manager Section and carries out the **assessment towards the fulfillment of the standard** of the service or the policy target of the management of the preservation and **proposed to Director General Bina Marga**.

ii) After receiving the agreement by chief of Balai/Balai, it is delivered to SNVT and SKPD for the compilation of the activity, or the activity is revised to DIPA.

i. administration BMN

i) Balai/Balai carries out the **assessment of the implementation of the management of the preservation and administration BMN** to ascertain the continuity of his implementation.

ii) **Assessment is carried out every year** and it is **reported to Director General Bina Marga**.

iii) **Assessment is carried out personally** or **by independent external service**.

(2) Section Manager (Manajer Ruas) "SNVT"

Chief of SNVT Preservation of Road and Bridge

Chief of SNVT Preservation and Road and Bridge Construction

Chief of SNVT Preservation Road and Bridge Construction Metropolitan

1) Appointment

They shall be conducted separately **through the Instruction letter of Directorate General Bina Marga**.

2) Duties

a) To **consolidate the handling activity** of the road that was proposed by Sub Section Manager

b) **Compilation and the submission of the road of the proposal of the handling activity/the program to Balai/Balai**

c) **Implementation and coordination of implementation of preservation**, with SNVT, SKPD and PPK related headed the Standard of the Minimum Service (SPM) in order that the road is not interrupted more than 24 hours to the main passage;

d) **Recruitment process of the Road Inspectors and the other manpower**

e) To **coordinate the technical planning** with SNVT P2JJ

f) To **coordinate administration the Asset** with SNVT P2JJ, SNVT the Development Road and Bridge, SKPD-TP

g) **To report Periodically to Balai/Balai**

h) Sharpening of the proceeding year activity

The Section Manager **makes and proposes the annual activity and carries out the sharpening of the proceeding year activity** so as the service target or the policy of the management of the preservation can be reached.

i) The Manager Section to **consolidate the activity proposal** that is proposed by Sub manager section and coordinated with correlated SNVT/SKPD and **to propose annual preservation activity**, three yearly and exacerbated the available activity including proposing DIPA revision to SNVT/SKPD related to Balai/Balai;

(3) Asset Manager (Manajer Aset)

The Administration Coordinator of BMN Directorate General Bina Marga **located in the province**

SNVT Preservasi Road and Bridge handed over BMN the road and bridge that is be handled by SNVT Pembangunan Street and Bridge or SKPD.

After the work is finished, in each of SNVT and SKPD handed over BMN to Satker, the Preservation Road and Bridge. This BMN Surrender was accompanied with the document of the final contract or that was equal to the ownership document etc.
If SNVT because the certain task must handle the province road and the regency road/the city or the strategic national road that the status of his use not to the Public Works Minister then after **his handling was finished** then this **SNVT must carry out the handover to the regional government** obeyed Public Works Minister's Regulation of No. 02/PRT/M/2009 about the Guide the Implementation of the Determination of the Status of the Use, the Utilization, the Abolition and the Transfer of the Thing belonging to the Country in the Department's Environment of the Public Works.
1) Appointment
They shall be conducted separately **through the Instruction letter of Directorate General Bina Marga**.
2) Duties
It's the same of Section Manager (Manajer Ruas).

(4) Section Sub-Manager (Sub Manajer Ruas) "PPK"
All PPK serving concurrently as Section Sub-Manager submits a report on **road condition** and **management** to **Section Manager (SNVT) periodically**.
1) Appointment
They are conducted **through the Instruction issued by Chief of Balai Besar/Balai**.
2) Duties
a) **To monitor the condition for the road and bridge daily**;
i) Every time Sub Manager Section must be carried out the **monitoring** and the **condition research** as well as **determined the field requirement** and **report to Manager Section** (SNVT).
b) To **arrange the requirement for handling** of the road and bridge to achieve target management of the preservation;
c) To **propose handling of needed preservation** including **drawing**, **budget plan** (RAB) and the work program;
d) To **propose sharpening of the activity to DIPA** in order conformed with preservation management target;
e) To **coordinate the implementation of the preservation by all of PPK** among to work territory of Sub Manager Section;
f) To **arrange job distribution of Road Inspector**;
g) **Reporting to Manager Section (SNVT)**.

(5) Asset Sub-Manager (Sub Manajer Aset)
1) Appointment
They are conducted **through the Instruction issued by Chief of Balai Besar/Balai**.
2) Duties
a. To **coordinate administration** of BMN (State Property)
b. **Administration of BMN SNVT Preservation** as UPKPB SNVT Preservation;
c. **Report to Manager Asset**.

(6) Road Inspector (Penilik Jalan) "PPK"

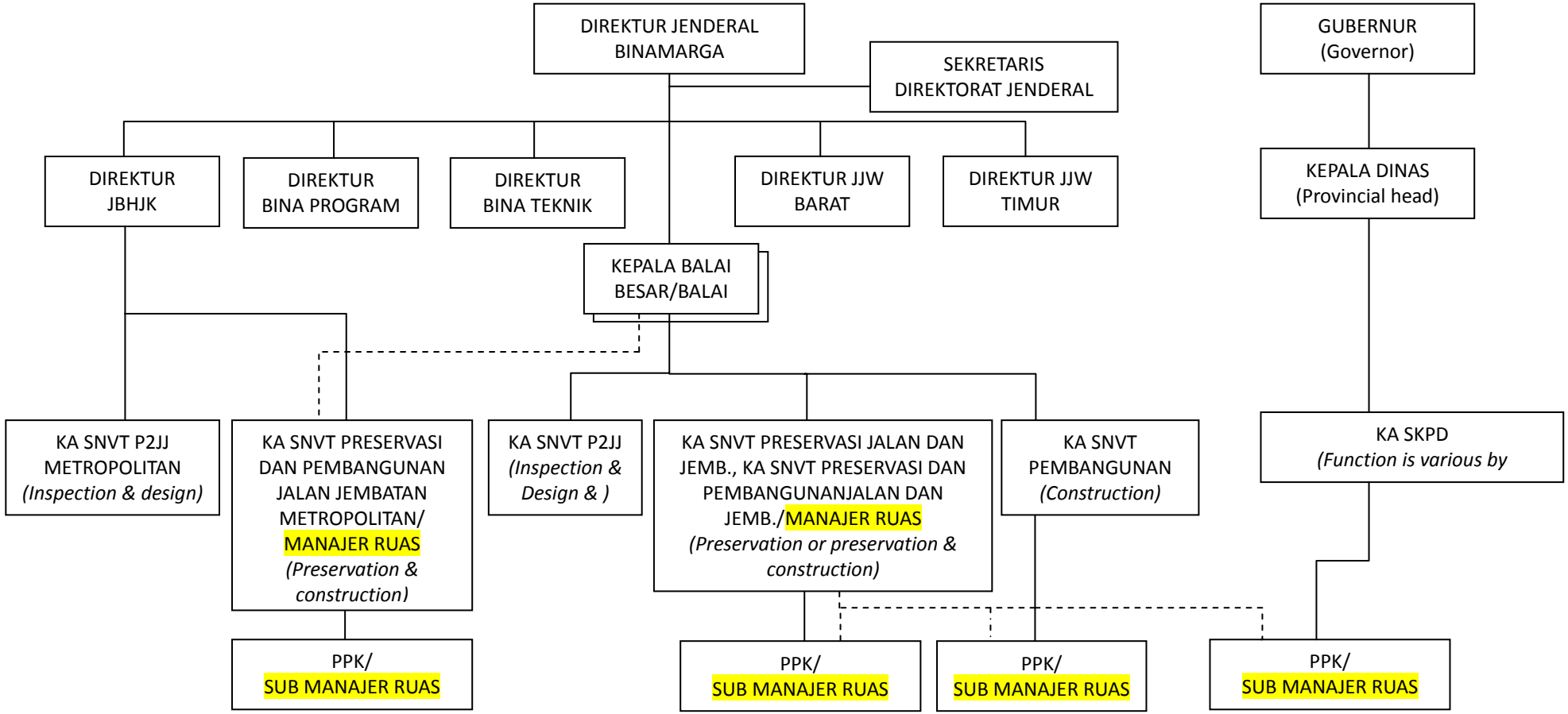
Appointment
They are conducted **through the Instruction issued by Chief of Balai Besar/Balai**).
Duties
a) **Observed the utilization and the condition for road parts and bridge every day**;
b) **Sent the report produced by observation in writing to Section Sub-Manager (PPK), at least one time every month**;
c) **Propose the countermeasure towards the results of observation to Section Sub-Manager (PPK)**

(7) Other
1) Director Road and Bridge of West/East Region
Assigned to **give the guidance and preservation counseling to Balai/Balai**
2) Director of Freeway and Urban Road
Assigned to **give the guidance and preservation counseling to Balai/Balai**
3) Director Bina Teknik
Assigned to **give the guidance and preservation counseling to Balai/Balai**
Assigned to **arrange the guidance of the management of the preservation** and to **carry out the evaluation**
i) **Applied pavement preservation technology** that in accordance with the guide who was published by Directorate Bina Teknik
4) Secretary of Directorate General
Assigned to **give the technical guidance and the guide in the implementation BMN administration**.
5) Director Bina Program
Assigned to **compile the preservation program** of the network of the road and his change on the basis of input from Directorate freeway and Urban Road, and Balai/Balai.

Organization structure for preservation management of national road

Gambar 2 STRUKTUR ORGANISASI PENANGANAN JALAN NASIONAL UNTUK MANAJEMEN PRESERVASI

(Organization structure for preservation management of national road)



Jakarta, 27 Juli 2009
Direktur Jenderal Bina Marga
A. HERMANTO DARDAK

5. ASSET ADMINISTRATION BELONGING TO THE COUNTRY

Administration to the asset covered administration in the User Authority of Asset/User of Asset and administration to the Manager of Asset.

Administration the asset in the User Authority of the Asset/User of the Asset in the neighborhood of Director General Bina Marga was:

a. The Echelon unit 3 in Directorate General's Secretariat as the Unit Administrator User of the Asset Es 1 (**UPPB-E1**) that was Bina Marga;
b. The Echelon unit 4 in Balai/Balai Implementation Road as the User Administrator Unit of the Region Asset (**UPPB-W**) that in this case Balai
c. The Echelon unit 4 or that equal to SNVT/SKPD as the Administration User Authority Unit of the Asset (**UPKPB**);

(1) UPPB-E1

UPPB-E1 **assembled the data from UPPB-W** and sent the **report to the Director General DJKN (BINA MARGA)** and the **Centre of the Country Asset of Departemen PU**.

(2) UPPB-W

UPPB-W **assembled the data from UPKPB** and **sent the report to the Head Local Government Office DJKN** (it means branch office of MOF at regional level) and **UAPPB-E1**.

(3) UPKPB

UPKPB carried out the task and the function of accountancy as follows:

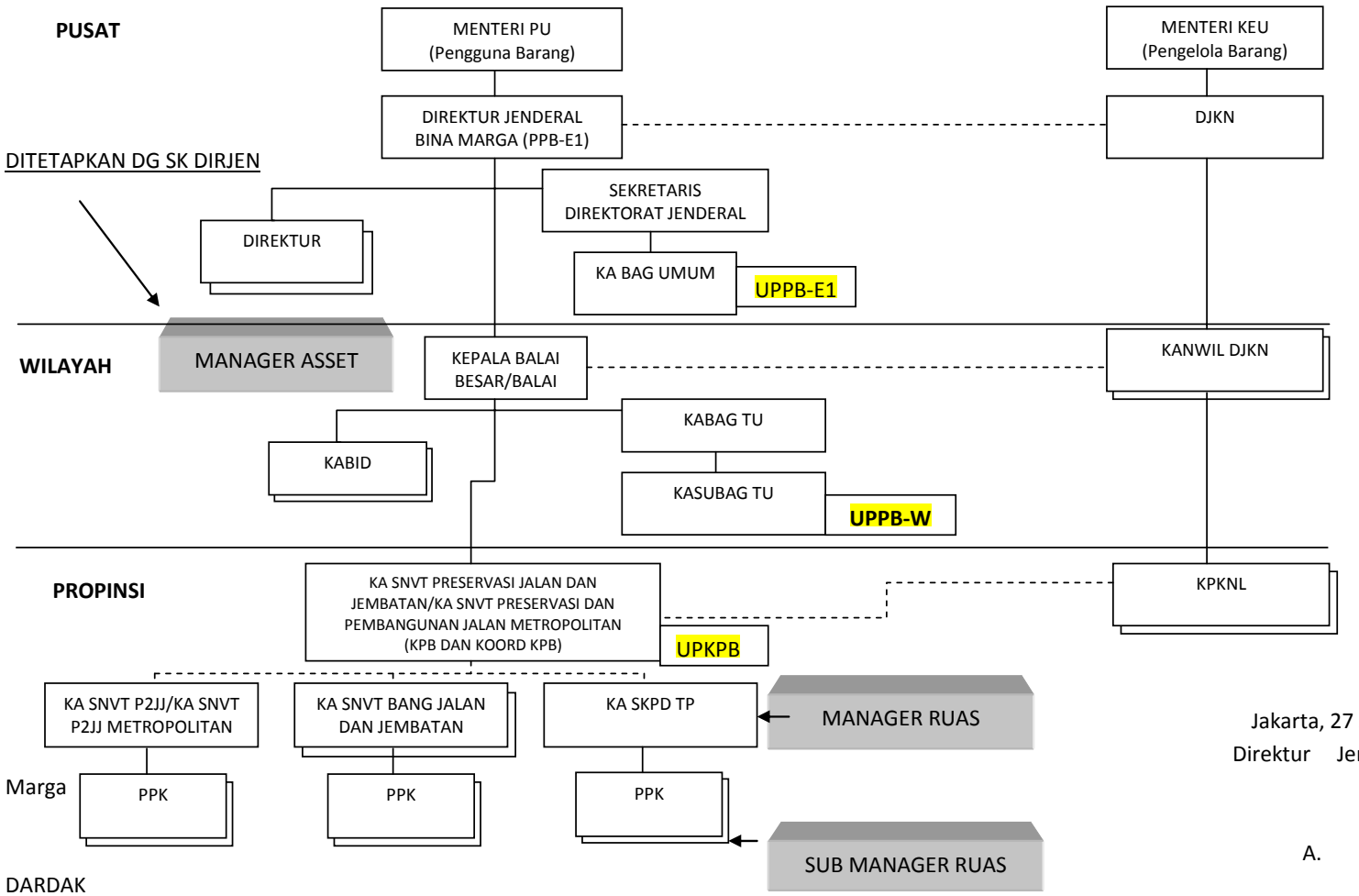
a. BMN registration
i. **Registered and recorded BMN** in the List of the User Authority of Asset (**DBKP**);
ii. **Recorded the activity in the BMN management** including the determination of the BMN status, the BMN utilization, the BMN management, the BMN transfer and BMN stocktaking;
b. Investigation BMN through
i. Asset **census at least once every 5 years**;
ii. **Physical observation the Asset** (except the supplies asset and the construction in the execution) **once a year**;
c. BMN report
i. **Compiled Report** on the User Authority of Asset (**LBKP**) that served the **BMN position** at the beginning and the end a period and delivered to UPPB-W, UPPB-E1 and copies to KPKNL (Wealth Service Country Office and the Auction, it means branch of MOF);
ii. The report period was sixth monthly and yearly.

7. TRANSITION PERIOD

Implementation of the management preservation and management assets were done began to TA (year budget) 2009 and this circular came into effect to TA 2010.

This Circular Letter was made to use as a guide in the implementation of the task as it should be.

ORGANIZATION FOR ROADS on administration BMN



Jakarta, 27 Juli 2009 f

Direktur Jenderal Bina

A. HERMANTO

Reference 4-2 : Japanese cases of defect in managing roads

Name of incident	Overview of incident	Overview of the decision of court
The Collision with a tree, Route 42 in Wakayama (Car accident) (1/12/1970)	A truck entered the shoulder of the road to avoid the oncoming lorry and such movement resulted to roof of the truck to hit the pine tree which was sticking out of the branch campus of Kushimoto town hall. The driver of the track, by impact of hitting the tree, lost control of its track and therefore the track collided with the concrete wall of the house.	The road administrator is responsible for removing any objects that obstructs smooth entry to shoulder of the road. The government neglects the exclusion of such object and therefore this accident occurred. The town, owner of the pine tree, had a responsibility to remove objects that is dangerous in the usage of the national highway.
Avalanche incident, Route 157 in Ishikawa, (1 death) (26/2/1974)	A car while driving the highway was trapped under an avalanche that occurred from the nearby mountain, resulting to the death of the driver.	[District Court] Considering that there were small but frequent avalanches occurring in little inland and that weather conditions was not good, the avalanche that resulted to the death was easily predictable, and therefore it must be said that there is defect in managing the road(danger sings of avalanche or traffic restriction was an action that should have been taken). [High Court] As there is foresee-ability in occurrence of avalanche, it is reasonable to believe that there was a defect in managing the road, so the government or public organization should be responsible to redress this, and therefore put effort to stop the further distribution, as State Redress Act mentions. Since such defect exists, it can be logically assumed that there is obligation to take preventative measures to avoid the risk of danger.
Shoulder Crash, Route 24 in Wakayama (1 death) (6/8/1983)	About 2:42 a.m., a motorcycle, running parallel in left of the truck, fall because of the giant step of the street due to lack of maintenance, and therefore was run over and got	In this case where there is heavy traffic, it can be easily estimated that there will be some occasions when two vehicles run in parallel using the shoulder of the road. Such then, we can also predict that one of the vehicles can fall easily and that there is a risk of the driver falling in front of the other vehicle. Just because road traffic laws prohibit the usage of shoulder of the road, it cannot

	killed by the truck.	easily be presumed that such rules will be immediately made by all drivers. The administrator of the road should have taken preventative actions. It is judged that the administrator did have a defect in taking such majors to manage properly. （Same decision made by the high court. comparative fault became half）
Bridge fall incident, Route 3 in Fukuoka (1 death) (6/4/1969)	Around 0:20 a.m., a car drove straight to the shoulder of the road, and fell from it, resulting to death.	The scene is a straight road, and since prospects look good from the front, this incident is largely based on victim's fault. The road administrator is responsible of meeting legal obligations to provide and maintain safe driving conditions to the drivers. However, as the driver is an average person who does not have any expertise, only setting a mirror and safety post on the road side implies that there should have been more majors taken to provide enough safety, and in that sense, there was a defect on its management.
Guard post crash case, Route19 in Gifu (2deaths) 7/9/1970)	About 03:30 a.m., five-passenger van in 50km per hour was driving straight the road, not noticing that the width of the road decreased by one meters, leading to van crashing into the middle of the guard post (the end-post), resulting to 2 death.	If the width of the road decreased by 1 meters and there exists the end-post in the middle of the guard post, and since it was easily predictable that if driver did not notice this quickly there would be a danger, such a road has intrinsic risks and therefore can be judged to say that it lacks in safety and stability. Even if the structure of the road fulfill the prerequisite of the ordinance of road structure, as in a concrete example, the administrator must use its common sense and think of appropriate safety conditions. The road condition in which there is a sharp decrease in the width of the road, therefore, must be said that it lacks its safety condition. For vehicle traveling at night such measures such as providing a warning sign of a decrease in width and lighting equipment to recognize traffic conditions in the very front, or failing to take measures such as applying a fluorescent dye at the end part of the post, should have been taken, and not taking such actions concludes that there was a defect in management.
Motorcycle crash Route56 in Kochi (1 injury) (4/4/1967)	Plaintiff sitting on back part of the motorcycle, as the road had become uneven due to under construction, a motorcycle fallen, and plaintiff thrown out resulting to head	As construction was not done, there was small bump between two roads, but it is a minor bump which should not have any effect to the vehicle. However, the incident occurred at night, and this made the driver to not notice of the bump, and therefore not easy to avoid it. Therefore, the defendant was expected to noticed that night time underlies different risks as that of evening, and so should have installed signs during

	contusion.	night at least, but negligent to doing as so.
Walnut-tree, Route349 in Fukuoka (1 death) (16/1/1976)	While a truck carrying wooden materials was driving, the wire which fixed that wood got stuck in trees that were overhanging, and this resulted to wood falling onto the motorcycle nearby, killing the driver. The road administrator asked the owner of the tree to cut down its overhanging part but did not give in to the request, and the incident occurred.	From the State Redress Act, it can be assumed that, as the tree which have risks exists, not taking any measures to notify or show that dangerous exists shows that there was defect in managing the road for safety purpose. The administrator of the road states that there was no way to enforce the cutting down of the tree, but such a statement can not be understood easily.

CHAPTER 5 Recommendations

5.1 Overall scenario

As for the introduction of Road Preservation Fund, the following overall schedule has been prepared by the Indonesian government. The schedule is divided into 2 stages; the Transition Stage until 2012, and the Permanent Stage after 2012, and 3 issues; institutional issues, financial issues, and operational issues, are planned to be studied step by step through the stages.

In this chapter, the study team presents the overall scenario for the implementation of Road Preservation Fund, and point out the detailed tasks to be conducted in the transition stage and the permanent stage respectively. Also, the study team would like to recommend the execution of a pilot project in an appropriate district to study the effectiveness of Road Preservation Fund. Finally, The study team would like to state the superiority of Road Preservation Fund to the earmarked accounting system in comparison with the merit and demerit of both systems.

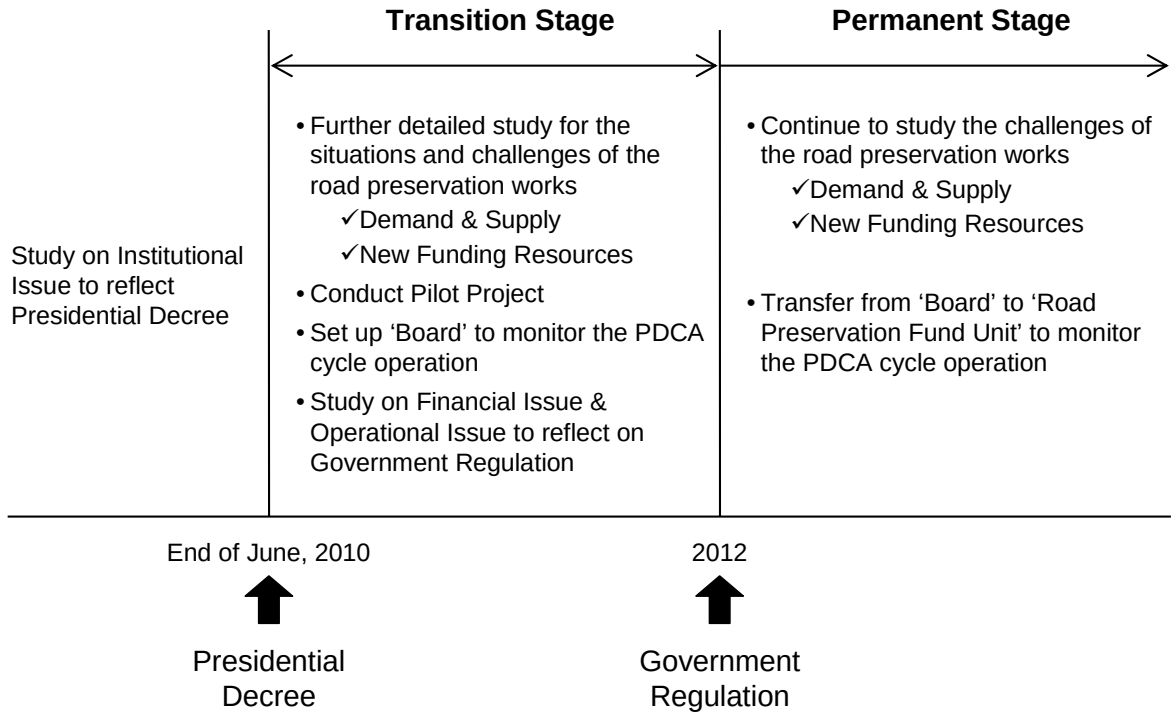


Chart 5.1 Overall scenario of the RPF implementation

5.2 Transition stage

Table 5.1 shows recommendations on three issues in the transition stage. In the transition stage, the main scope should be the implementation of 'Board'.

While utilization of the existing funding, BINA MARGA should set up 'Board' inside the existing organization, establish PDCA cycle of the monitoring, and provide the 'Board' with a manual to check the cycle. Sub-national road administrative office and BALAI or SNVT, if necessary, should take responsibility for the execution of PDCA cycle.

Concerning the financial and operational issues, it is important to collect more data for the permanent stage, and to regulate the strong and systematic hierarchy with clarifying the role and responsibility of SNVT and local government office respectively.

Table 5.1 Recommendations in the transition stage 1 & 2

<table>
<tr><th>Issues</th><th>For National Road (if necessary)</th><th>For Sub National Road</th></tr>
<tr><td rowspan="4">Institution</td><td colspan="2"><u>BINA MARGA should concentrate on its suitability for Presidential Decree</u> which will be revised in a soon time</td></tr>
<tr><td><u>◆Utilization of Existing funding (APBN etc)</u></td><td><u>◆Utilization of Existing funding (HIBAH, DAK, Local Tax)</u></td></tr>
<tr><td colspan="2"><u>◆Implementation of Board</u>
-BINA MARGA should set up <u>independent 'Board'</u> in order to monitor and grasp the current budget allocation and actual use for road preservation works as described earlier under PDCA cycle.
◆"Role of Existing Organizations"
-<u>BINA MARGA should establish the PDCA Cycle</u> and <u>Road preservation management under PDCA cycle should be executed by Road Administrator</u> like BALAI and SNVT. So <u>BINA MARGA should train the Road Administrator for the implementation of PDCA cycle</u>.
-<u>BINA MARGA should also provide the 'Board' with a manual</u> to check the proper use of road fund.</td></tr>
<tr><td>-<u>BALAI should have accountability of road preservation to 'Board'</u> based on the report submitted by SNVT and also <u>direct SNVT</u> based on 'Board's decision.
-<u>SNVT should make the request of budget, the implementation plan and the report etc for road preservation work</u>.
-<u>PPK should manage road preservation work</u> as site branch office.</td><td>-<u>Sub-national Road Administrative Office should have accountability of Sub National road preservation to 'Board', including the allocation of Local Tax, DAK and HIBAH to road preservation.</u>
-<u>BALAI should give technical assistance to road administrator in provincial, district and island</u> to implement road preservation under PDCA cycle.</td></tr>
<tr><td>Finance</td><td colspan="2">We propose to <u>collect more data including length and bridge length of sub-national road</u> because we have to improve the amount solely for road preservation.</td></tr>
<tr><td rowspan="2">Operation (implementation of Road Preservation)</td><td colspan="2">Road preservation works in Indonesia <u>should be conducted under their strong and systematic hierarchy determined by the regulation.</u></td></tr>
<tr><td><u>The Role and responsibilities of SNVT</u>, which is supposed to be functioned as national highway office in Japan, <u>should be clarified to carry out the proper preservation works.</u></td><td><u>The Role and responsibilities of Sub-national Road Administrator should be clarified to carry out the proper preservation works for Sub National Road.</u></td></tr>
</table>

Chart 5.2 shows PDCA Cycle and role of 'Board' for national roads in the transition stage 2, if necessary. BINA MARGA, BALAI, SNVT, and PPK should perform their own works with PDCA cycle, and 'Board' should monitor and advise the roles and activities of each party.

As shown in Chart 5.2, it is obvious that SNVT should take the major responsibility for road

preservation works. SNVT is responsible for reporting the allocation and execution of APBN to road preservation works, and responsible for submitting actual work plan for road preservations to 'Board' through BALAI. 'Board' should monitor and check the report or submission, judge the appropriateness of the activities of SNVT, and then advise SNVT through BALAI to improve the road preservation management. 'Board' should also advice MOF and BINA MARGA to secure the budget for road preservation from APBN.

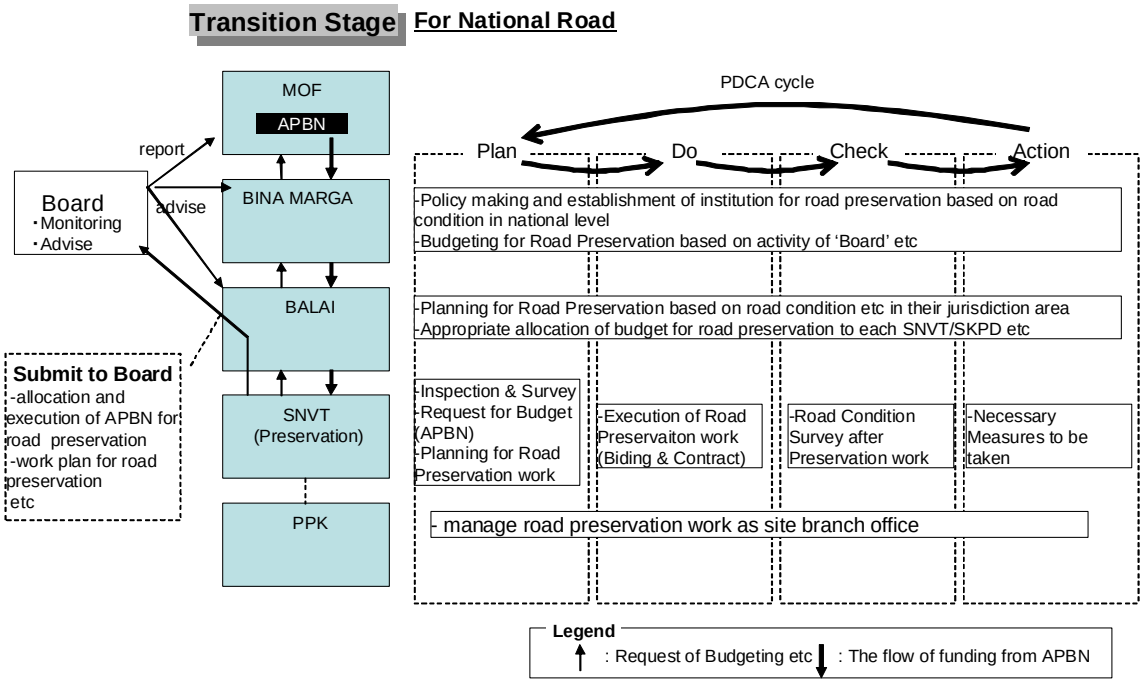


Chart 5.2 PDCA cycle and role of 'Board' for national roads in the transition stage 2 (optional)

Chart 5.3 shows PDCA cycle and role of 'Board' for sub-national roads in the transition stage 1 & 2. Sub-national Road Administrative Office should take the major responsibility of road preservation management with PDCA cycle, and 'Board' should monitor and advise their roles and activities. The sub-national road administrative office should report the allocation and execution of Provincial Tax, DAK and HIBAH, and work plan for road preservation to 'Board'. BALAI should provide technical assistance for the provincial office.

'Board' should monitor and check the allocation and execution of APBD, Local Taxes, DAK and HIBAH to the road preservation works. 'Board' should also monitor the actual work plan of the sub-national road administrative offices and advice them to do necessary amendment. Furthermore, 'Board' should advice the office, MOF and BINA MARGA to secure the budget for road preservation.

As for the use of DAK or HIBAH, it is recommended that 'Board' should assist the

sub-national road administrative office to apply these financial supports to MOF as necessary.

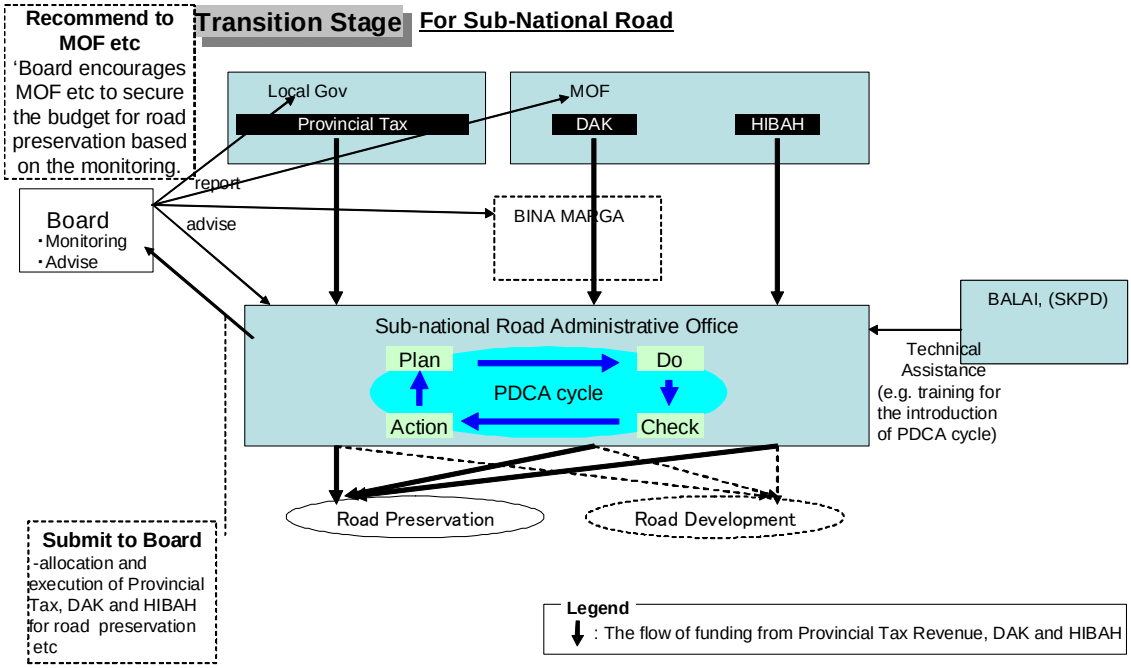


Chart 5.3 PDCA cycle and role of 'Board' for sub-national roads in the transition stage 1 & 2

5.3 Permanent stage

The following table shows recommendations on three issues in the permanent stage.

In the permanent stage, the main scope should be the implementation of 'Road Preservation Fund' (RPF). RPF should be independent of national or local budget or account. 'RPF Unit' should monitor appropriate distribution of RPF to national and sub-national roads. Also, 'RPF Unit' should provide some incentives with road administrators to use RPF. BINA MARGA should establish and manage the incentive system together with RPF funding schemes concretely.

Table 5.2 Recommendations in the permanent stage

<table>
<tr><th>Issues</th><th>For National Road</th><th>For Sub National Road</th></tr>
<tr><td rowspan="4">Institution</td><td>◆Existing funding (APBN etc) <u>& RPF</u>
-RPF should be functioned as a wallet of funding resources which is <u>independent of national budget</u></td><td>◆Existing funding (HIBAH, DAK, Local Tax) <u>& RPF</u>
-RPF should be functioned as a wallet of funding resources which is <u>independent of national and local budget</u></td></tr>
<tr><td colspan="2">◆Implementation of RPF Unit
-<u>The function of 'Board' will be added to monitoring and advise for RPF and execution</u> in permanent stage. Board should monitor whether RPF could provide incentive to regional government for preservation works.
-Especially, '<u>RPF Unit' should monitor appropriate distribution of RPF to National and Sub National Road</u>, and <u>whether RPF could provide incentive to regional government for preservation work</u>.
◆"Role of Existing Organizations"
-<u>BINA MARGA should establish and manage a system to provide some incentive</u> for preservation works of National and Sub National Road to solve the problems with inefficient preservation works.</td></tr>
<tr><td>◆Role of BALAI and SNVT/SKPD
-Basically, They should have the responsibility as mentioned in Transition stage, however it is important for SKVT/SKPD to have accountability for the allocation and execution of APBN and RPF to road preservation in order to provide them incentives.</td><td>◆Role of Sub-national Road Administrative Office and BALAI
-Basically, they should have the responsibility as mentioned in the Transition stage, however it is important for Sub-national Road Administrative Office to have accountability for the allocation and execution of Local Tax, APBD and RPF to road preservation in order to provide Sub-national Road incentives.</td></tr>
<tr><td>Finance</td><td colspan="2">BINA MARGA should establish RPF funding schemes concretely (e.g. Introduction of New Tax and New tariff) .</td></tr>
<tr><td>Operation (implementation of Road Preservation)</td><td colspan="2">Minimum standard of road condition to be observed by road administrator should be examined and established in accordance with the legal framework in Indonesia.</td></tr>
</table>

As shown in Chart 5.4 and Chart 5.5, 'RPF Unit' in the permanent stage should advise BINA MARGA to provide incentive funding from RPF to SNVT based on the monitoring for national roads. 'RPF Unit' should also monitor whether RPF could provide incentives to improve road preservation based on the SNVT submission. The same rules and systems should be applied for sub-national roads.

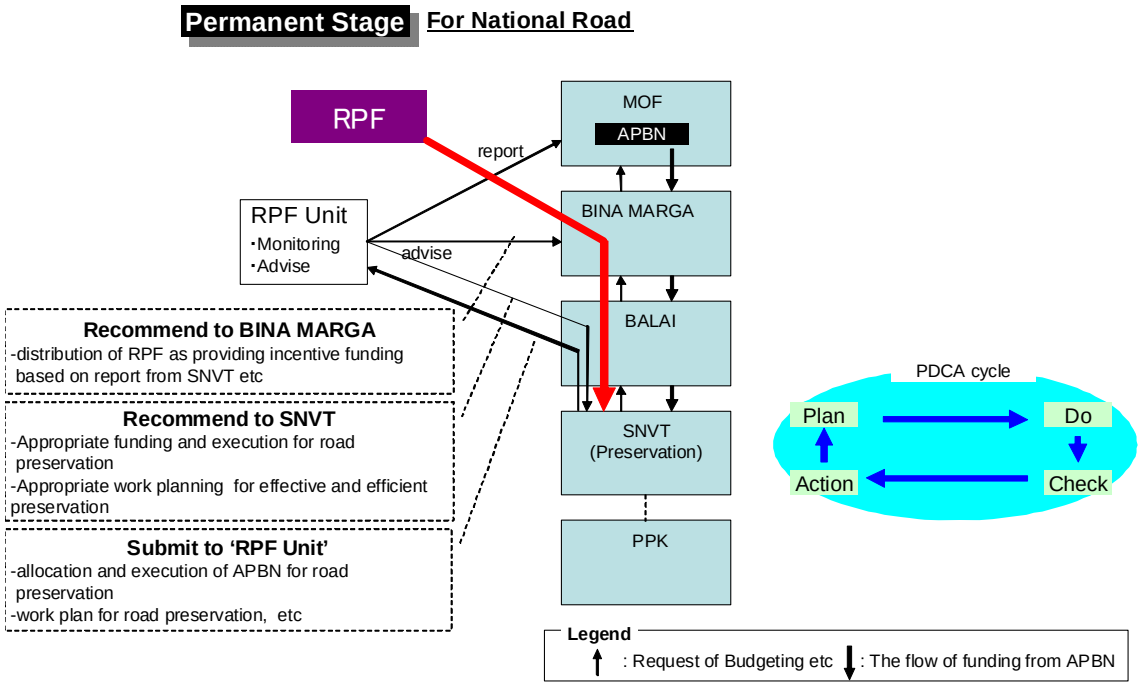


Chart 5.4 PDCA cycle and role of 'RPF Unit' for national roads in the permanent stage

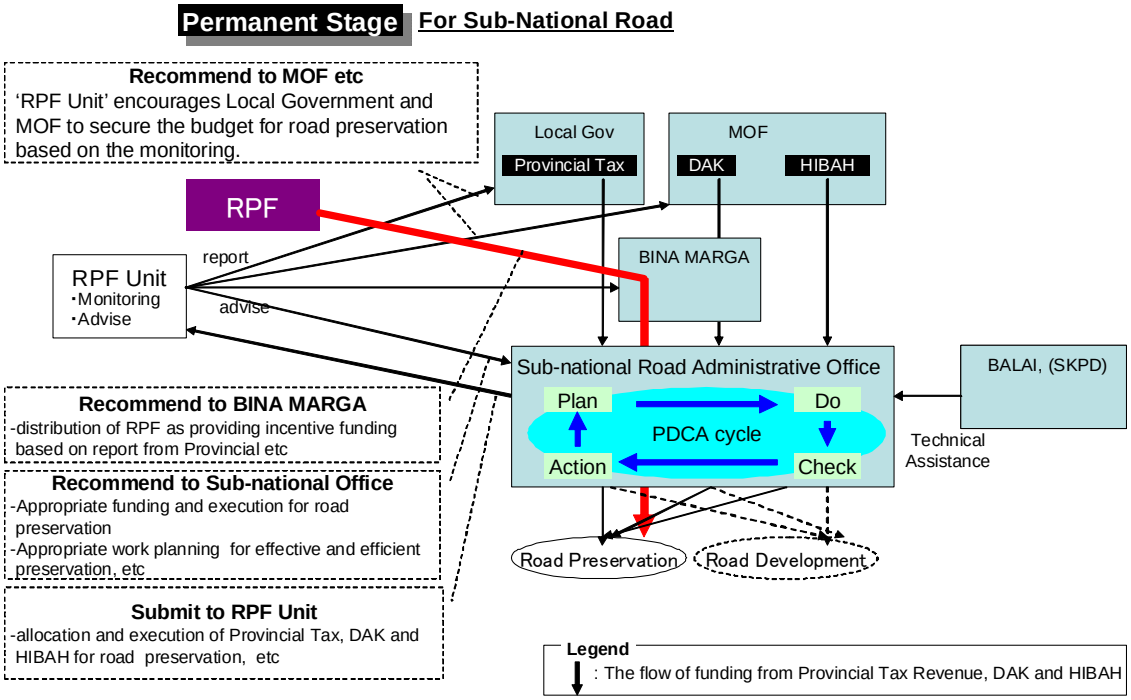


Chart 5.5 PDCA cycle and role of 'RPF Unit' for sub-national road in the permanent stage

5.4 Execution of pilot project

It is obvious that quite a lot of tasks and studies have to be conducted toward the implementation of RPF in Indonesia. Therefore, it is very effective and useful to execute the pilot project in a certain province in order to understand the challenges and problems in actual basis.

In the pilot project, the following issues should be clarified at least.

- ✓ Future preservation costs for national and sub-national roads
- ✓ Future revenues or funding resources for the road preservation works
- ✓ Gaps between the above, and any possibilities of additional funding resources
- ✓ To what extent the Board is able to monitor and understand the current operation and expense for the road preservations
- ✓ Items to be stated on the guideline or manual for Road Preservation Fund Unit

Regarding the selection of the province for the pilot project, it is favorable that the province would meet the following conditions.

- ✓ Budget for road preservation is in around average level among the provinces.
- ✓ Budget for preservation and development is well balanced.
- ✓ Budget for national / provincial / kabupaten / municipal roads is well balanced.
- ✓ Road conditions are at a moderate level and not so heavily damaged.
- ✓ Road networks are not so large, and isolated from the other provinces
- ✓ Traffic volumes at a certain level are secured.

Considering the above issues, it is recommended that Bali province should be one of the candidates for the pilot project.

5.5 Superiority of road preservation fund

Following to the studies, the study team summarized the merit and demerit of the earmarked accounting systems and preservation fund, and figured out the superiority of the preservation fund system as follows;

Table 5.3 Road preservation fund

	Road Preservation Fund	Earmarked Accounting
Merit	・ No constrains of one-year budget, which enables preservation management conducted during multiple years. ・ No need of the congress decision, which makes it possible to use the fund flexibly on emergency spending etc. ・ Available to spend for private corporations conducting PPP ・ Available to lend money to provincial governments or private corporations ・ Possible to give an incentive for provincial governments and regional governments to distribute their own revenue sources to the road budgets, instead of distributing the fund. ・ Possible to monitor road conditions and road sector budgets of provincial governments and regional governments, which has been discussed as an issue at Road Directorate General. ・ Possible to secure Preservation budgets, making road preservation management smoothly.	・ Possible to secure stable revenue sources contributed by taxes. ・ Has greater accountability as expenditures have to be approved by the congress. ・ Possible to conduct road preservation management systematically and continually depending on fixed revenue sources. ・ Likely to manage coherently, clarifying the distribution ratio among the central government and provincial governments by the law.
Demerit	・ Difficult to build a rule for the fund management and operation. ・ Needs to secure the management transparency and explain to the public. ・ Unstable to maintain the fund due to the lack of the confident expectation concerning taxes and fees which serve as revenue sources. ・ Possible of the Preservation budget decrease, in the case that the road sectors budget from APBN decreases due to the existence of the Fund.	・ Likely to lead to budget waste because of the guaranteed budget. ・ Low flexibility regarding time schedule of preservation maintenance, since the budget could be only used when approved by the congress. ・ Troublesome of letting the public understand the needs of the tax system to maintain the accounting and of performing the congress procedures. ・ Difficult to spend for private corporations or to finance to local governments.