

Table A6.2.1 Projection of Operation Program from 2004 to 2019
(Surabaya - Banjarmasin)

Operational Conditions:

1. Route Distance	256 NM
2. Boat Size:	5,000GRT
3. Capacity of Boat:	Pax : 800 Car : 76
4. Berthing Hour per Trip:	3 hours
5. Number of Berth	1berth

Year	Annual Demand Forecast		Peak-day demand		Frequency of Trip (e) (Round day)	Peak-day Transportation Capacity		Load Factor on Peak-day		Berthing hour/day (j) (e)x 2hour	Number of Boat (k)	Transportation Capacity after Saturation	
	(a) Pax.	(b) Car	(c) Pax. (A)x1/280	(d) Car (B)x1/330		(f) Pax. 800x2x(e)	(g) Car 76x2x(e)	(h) Pax. (e)(f)	(i) Car (d)(g)			(l) Pax.	(m) Car
2004	559,800	63,589	1,999	193	2	3,200	304	0.62	0.63	6	3		
2005	606,400	69,450	2,166	210	2	3,200	304	0.68	0.69	6	3		
2006	656,800	75,690	2,346	230	2	3,200	304	0.73	0.76	6	3		
2007	711,500	82,870	2,541	251	3	4,800	456	0.53	0.55	9	5		
2008	770,700	90,460	2,753	274	3	4,800	456	0.57	0.60	9	5		
2009	834,800	98,730	2,981	299	3	4,800	456	0.62	0.66	9	5		
2010	904,300	108,050	3,230	327	3	4,800	456	0.67	0.72	9	5		
2011	979,500	117,840	3,498	357	3	4,800	456	0.73	0.78	9	5		
2012	1,061,000	128,500	3,789	389	4	6,400	608	0.59	0.64	12	6		
2013	1,149,300	140,110	4,105	425	4	6,400	608	0.64	0.70	12	6		
2014	1,244,900	152,710	4,446	463	4	6,400	608	0.69	0.76	12	6		
2015	1,348,500	166,450	4,816	504	4	6,400	608	0.70	0.80	12	6	1,254,000	161,000
2016	1,460,700	181,370	5,217	550	4	6,400	608	0.70	0.80	12	6	1,254,000	161,000
2017	1,582,200	198,100	5,651	600	4	6,400	608	0.70	0.80	12	6	1,254,000	161,000
2018	1,713,900	215,760	6,121	654	4	6,400	608	0.70	0.80	12	6	1,254,000	161,000
2019	1,856,500	234,960	6,630	712	4	6,400	608	0.70	0.80	12	6	1,254,000	161,000

Note: On condition that Surabaya-Banjarmasin route will be operated by one berth at both port, the transportation volume will level off after 2015 as the frequency is limited to 4 round trip due to the berthing capacity.

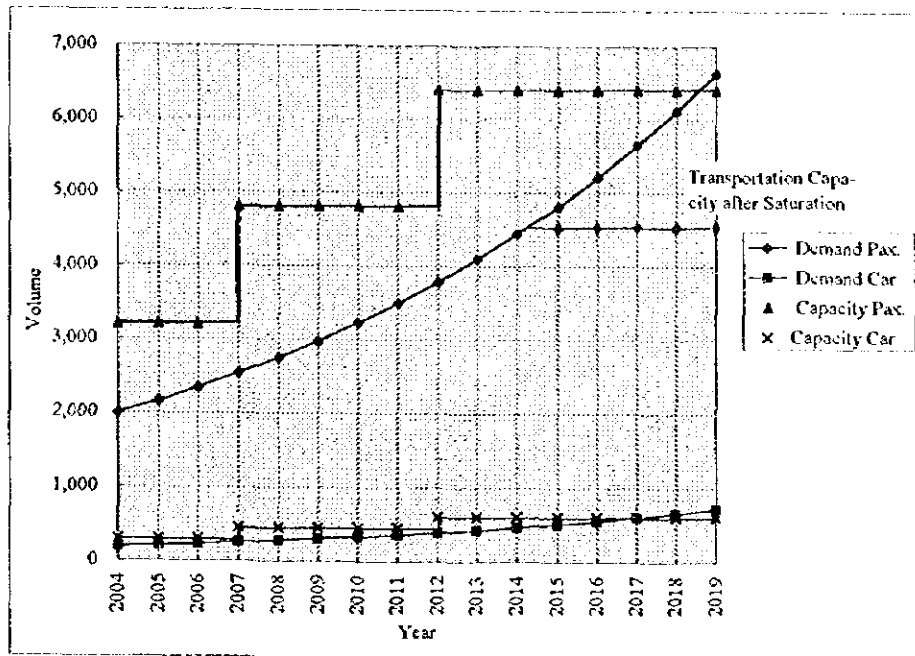


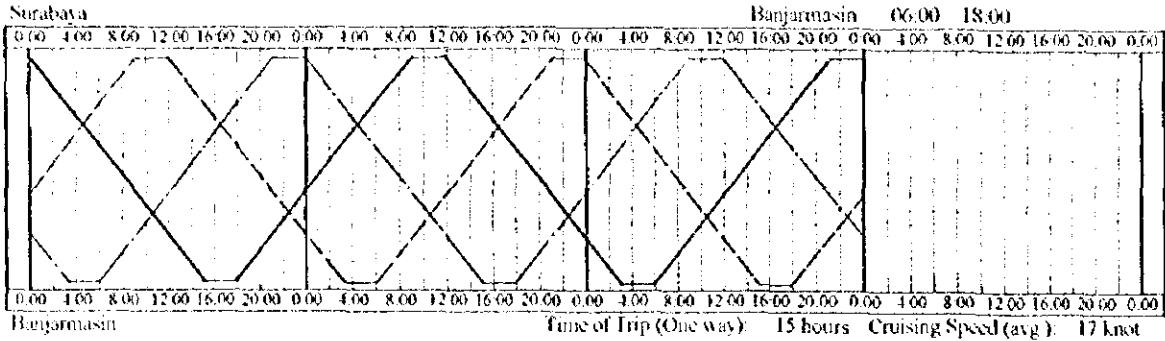
Figure A 6.2.1(1) Transition of Demand and Capacity on Peak-day
(Surabaya - Banjarmasin)

Route Distance: 256NM Boat Size: 5,000GRT

1) 2 round trips /day by 3 boats

Departure Schedule (everyday)

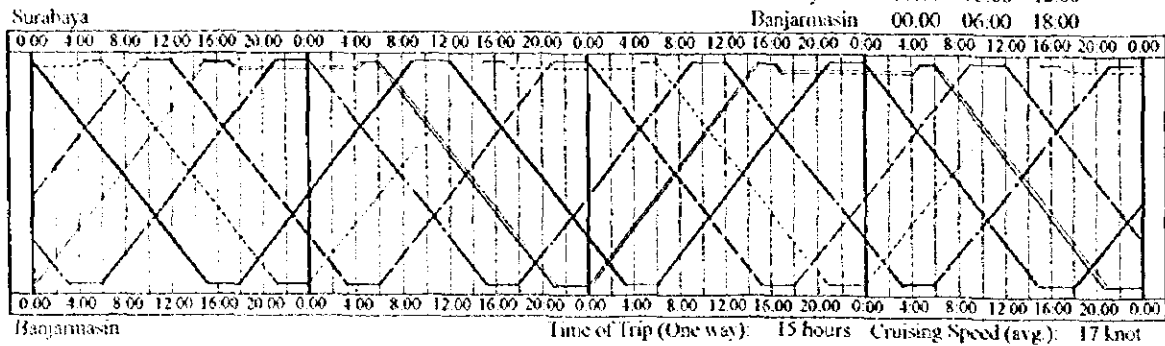
Surabaya 00.00 12.00
Banjarmasin 06.00 18.00



2) 3 round trips /day by 5 boats

Departure Schedule (everyday)

Surabaya 00.00 06.00 12.00
Banjarmasin 00.00 06.00 18.00



3) 4 round trips /day by 6 boats

Departure Schedule (everyday)

Surabaya 00.00 06.00 12.00 18.00
Banjarmasin 00.00 06.00 12.00 18.00

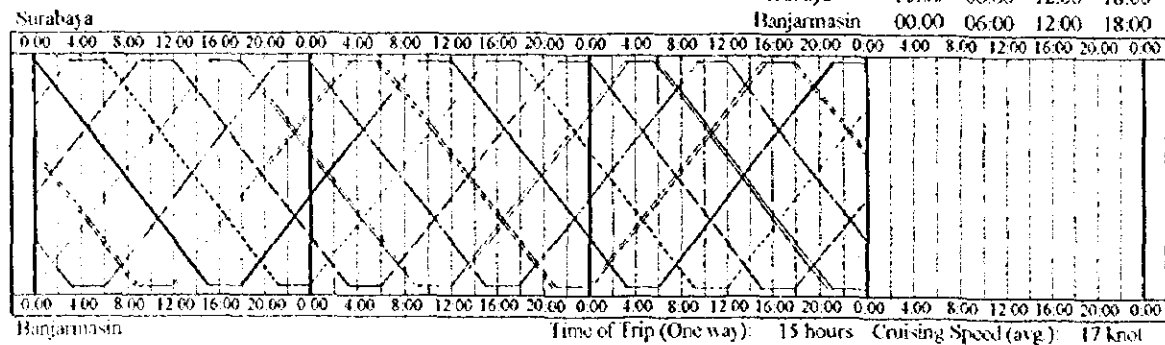


Figure A6.2.1(2) An Example of Operation Schedule (Surabaya - Banjarmasin)

Table A6.2.2 Projection of Operation Program from 2004 to 2019
(Selayar - Labuhan Bajo)

Operational Conditions:

1. Route Distance	135 NM
2. Boat Size:	1,000GRT
3. Capacity of Boat:	Pax: 500 Car: 42
4. Berthing Hour per Trip:	2 hours
5. Number of Berth	1berth

Year	Annual Demand Forecast		Peak-day demand		Frequency of Trip (e) (Round/day)	Peak-day Transportation Capacity		Load Factor on Peak-day		Berthing hour/day (j) (e)x 2hour	Number of Boat (k)	Transportation Capacity after Saturation	
	(a) Pax	(b) Car	(c) Pax (A)x1280	(d) Car (B)x1330		(f) Pax 500x2x(e)	(g) Car 42x2x(e)	(h) Pax (e)(f)	(i) Car (d)(g)			(l) Pax	(m) Car
2004	81,500	9,550	302	29	1/2 (day)	500	42	0.60	0.69	2h/day	1		
2005	92,200	10,380	329	31	1/2 (day)	500	42	0.66	0.75	2h/day	1		
2006	100,600	11,260	359	34	1/2 (day)	500	42	0.72	0.81	2h/day	1		
2007	109,800	12,240	392	37	1	1,000	84	0.39	0.44	2h/day	1		
2008	119,800	13,360	428	40	1	1,000	84	0.43	0.48	2h/day	1		
2009	130,700	14,510	467	44	1	1,000	84	0.47	0.52	2h/day	1		
2010	142,700	15,780	510	48	1	1,000	84	0.51	0.57	2h/day	1		
2011	155,700	17,160	556	52	1	1,000	84	0.56	0.62	2h/day	1		
2012	169,900	18,690	607	57	1	1,000	84	0.61	0.67	2h/day	1		
2013	185,400	20,390	662	62	1	1,000	84	0.66	0.74	2h/day	1		
2014	202,300	22,170	723	67	1	1,000	84	0.72	0.80	2h/day	1		
2015	220,700	24,110	788	73	2	2,000	168	0.39	0.43	4h/day	2		
2016	240,900	26,230	860	79	2	2,000	168	0.43	0.47	4h/day	2		
2017	262,900	28,560	939	87	2	2,000	168	0.47	0.52	4h/day	2		
2018	286,800	31,170	1,024	94	2	2,000	168	0.51	0.56	4h/day	2		
2019	313,000	33,950	1,118	103	2	2,000	168	0.56	0.61	4h/day	2		

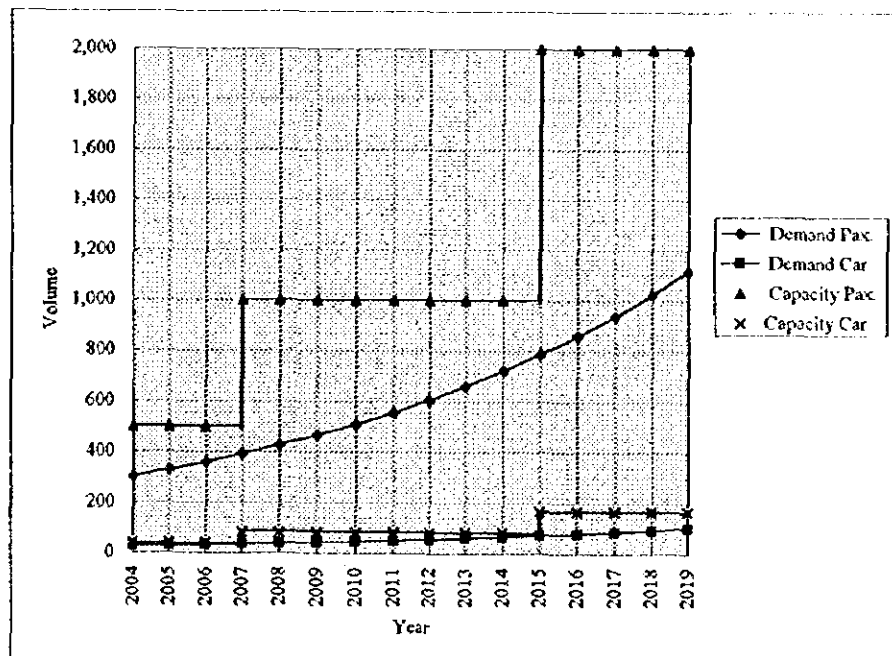


Figure A6.2.2(I) Transition of Demand and Capacity on Peak-day
(Selayar - Labuhan Bajo)

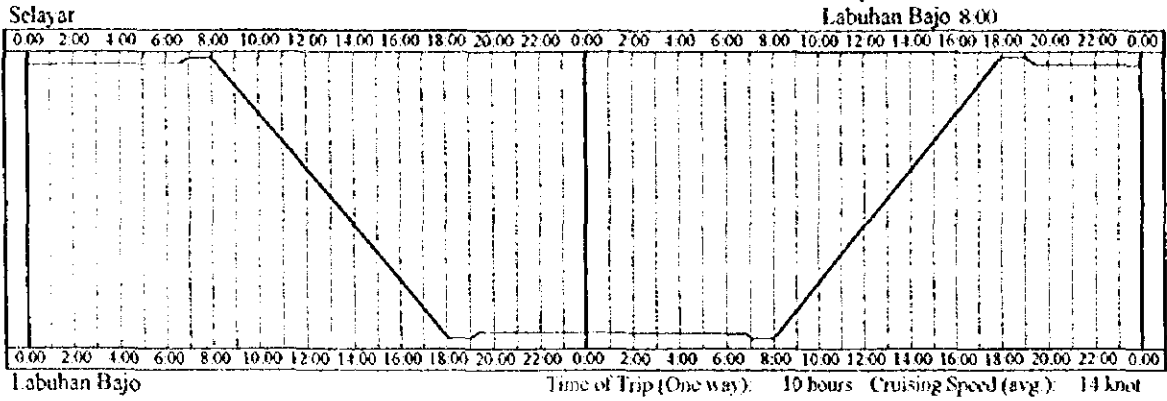
Route Distance: 135NM Boat Size: 1,000GRT

1) 1/2 round trip /day by 1 boat

Departure Schedule: (every two days)

Selayar 8:00

Labuhan Bajo 8:00

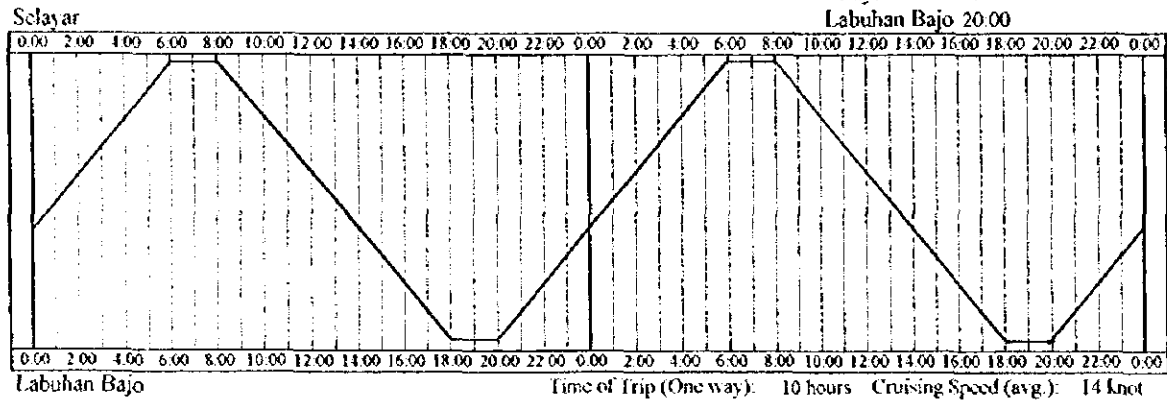


2) 1 round trip /day by 1 boat

Departure Schedule: (everyday)

Selayar 8:00

Labuhan Bajo 20:00



3) 2 round trips /day by 2 boats

Departure Schedule: (everyday)

Selayar 8:00 20:00

Labuhan Bajo 8:00 20:00

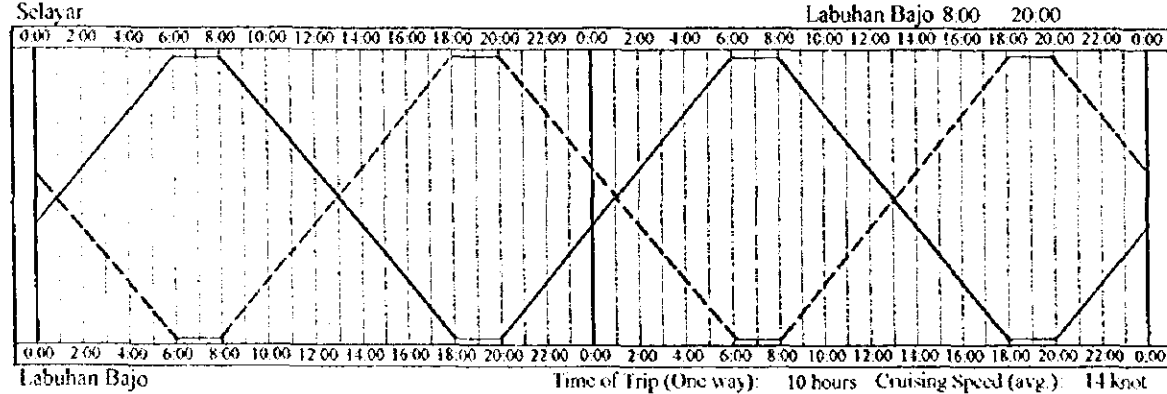


Figure A6.2.2(2) An Example of Operation Schedule (Selayar - Labuhan Bajo)

Table A6.2.3 Projection of Operation Program from 2004 to 2019
(Manokwari- Biak)

Operational Conditions:

1. Route Distance	144 NM
2. Boat Size:	1000GRT
3. Capacity of Boat:	Pax: 500 Car: 42
4. Berthing Hour per Trip:	2 hours
5. Number of Berth	1berth

Year	Annual Demand Forecast		Peak-day demand		Frequency of Trip (e)	Peak-day Transportation Capacity		Load Factor on Peak-day		Berthing hour/day (j)	Number of Boat (k)	Transportation Capacity after Saturation	
	(a) Pax.	(b) Car	(c) Pax. (A)x1/280	(d) Car (B)x1/330		(f) Pax. 500x2x(e)	(g) Car 42x2x(e)	(h) Pax. (e)(f)	(i) Car (d)(g)			(l) Pax	(m) Car
2004	72,600	8,230	259	25	1/2 (day)	500	42	0.52	0.59	2h/2day	1		
2005	78,900	8,890	282	27	1/2 (day)	500	42	0.56	0.64	2h/2day	1		
2006	85,800	9,610	306	29	1/2 (day)	500	42	0.61	0.69	2h/2day	1		
2007	93,400	10,430	334	32	1/2 (day)	500	42	0.67	0.75	2h/2day	1		
2008	101,500	11,310	363	34	1/2 (day)	500	42	0.73	0.82	2h/2day	1		
2009	110,400	12,280	394	37	1	1,000	84	0.39	0.44	2h/day	1		
2010	120,000	13,280	429	40	1	1,000	84	0.43	0.48	2h/day	1		
2011	130,500	14,410	466	44	1	1,000	84	0.47	0.52	2h/day	1		
2012	141,900	15,570	507	47	1	1,000	84	0.51	0.56	2h/day	1		
2013	154,300	16,970	551	51	1	1,000	84	0.55	0.61	2h/day	1		
2014	167,800	18,380	599	56	1	1,000	84	0.60	0.66	2h/day	1		
2015	182,500	19,920	652	60	1	1,000	84	0.65	0.72	2h/day	1		
2016	198,500	21,630	709	66	1	1,000	84	0.71	0.78	2h/day	1		
2017	215,800	23,450	771	71	2	2,000	168	0.39	0.42	4h/day	2		
2018	234,700	25,520	838	77	2	2,000	168	0.42	0.46	4h/day	2		
2019	255,200	27,690	911	84	2	2,000	168	0.46	0.50	4h/day	2		

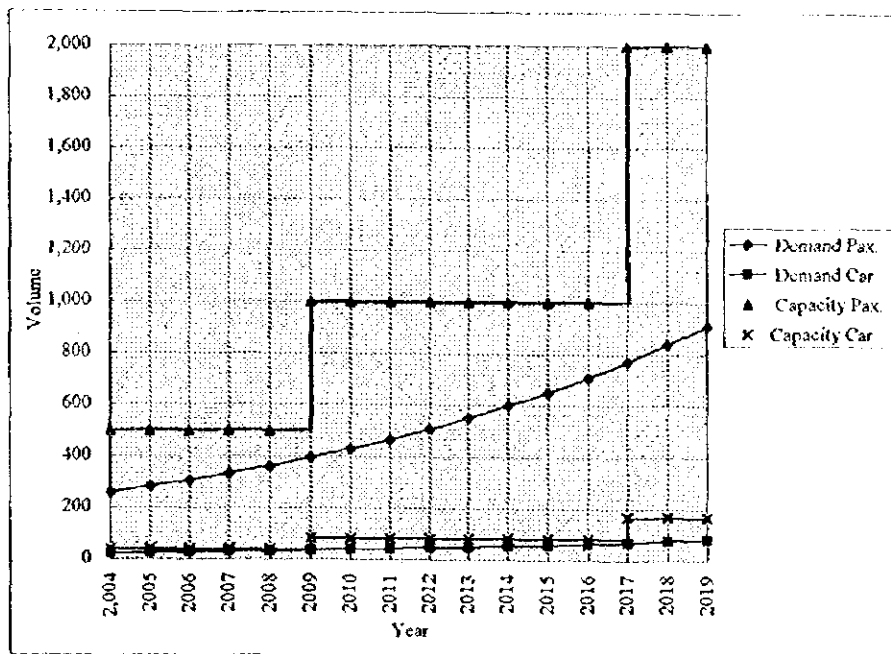


Figure A 6.2.3(1) Transition of Demand and Capacity on Peak-day
(Manokwari - Biak)

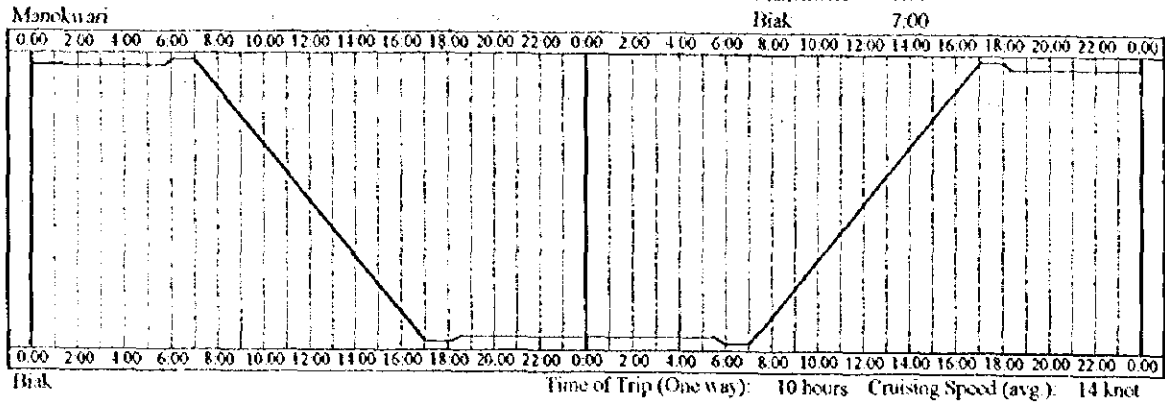
Route Distance: 144NM Boat Size: 1,000GRT

1) 1/2 round trip /day by 1 boat

Departure Schedule: (every two days)

Manokwari 7:00

Biak 7:00

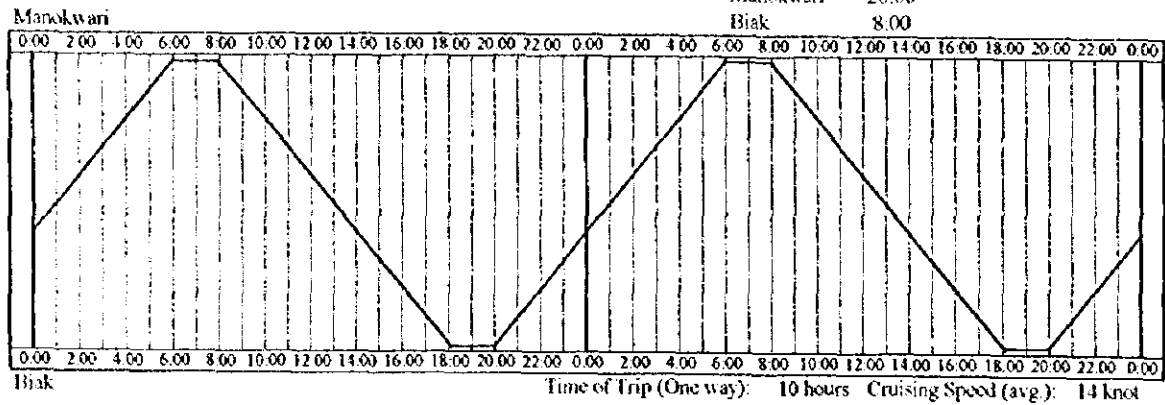


2) 1 round trip /day by 1 boat

Departure Schedule: (everyday)

Manokwari 20:00

Biak 8:00



3) 2 round trips /day by 2 boats

Departure Schedule: (everyday)

Manokwari 8:00 20:00

Biak 8:00 20:00

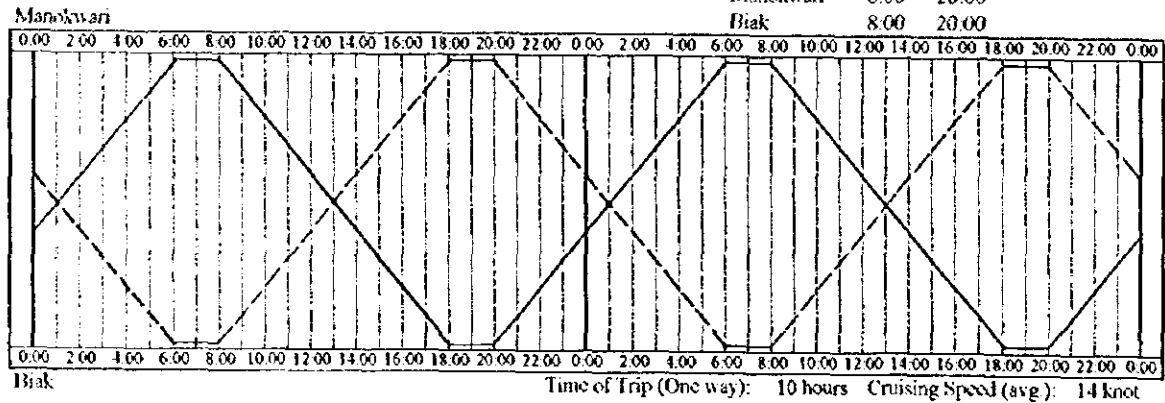


Figure A6.2.3(2) An Example of Operation Schedule (Manokwari - Biak)

Table A 6.2.4 Projection of Operation Program from 2004 to 2019
(Wahai - Babang)

Operational Conditions:

1. Route Distance	178 NM
2. Boat Size:	1,000GRT
3. Capacity of Boat:	Pax.: 500 Car: 42
4. Berthing Hour per Trip:	2 hours
5. Number of Berth	1berth

Year	Annual Demand Forecast		Peak-day demand		Frequency of Trip (e) (Round day)	Peak-day Transportation Capacity		Load Factor on Peak-day		Berthing hour/day (j) (e)x 2hour	Number of Boat (k)	Transportation Capacity after Saturation	
	(a) Pax.	(b) Car	(c) Pax. (A)x 1/280	(d) Car (B)x 1/330		(f) Pax. 500x 2x(e)	(g) Car 42x 2x(e)	(h) Pax. (c):(f)	(i) Car (d):(g)			(l) Pax.	(m) Car
2004	47,700	5,370	170	16	2/week	286	24	0.60	0.68	4/week	1		
2005	52,900	5,960	189	18	2/week	286	24	0.66	0.75	4/week	1		
2006	58,600	6,560	209	20	2/week	286	24	0.73	0.83	4/week	1		
2007	64,900	7,230	232	22	1/2 (day)	500	42	0.46	0.52	2h/2day	1		
2008	71,900	8,010	257	24	1/2 (day)	500	42	0.51	0.58	2h/2day	1		
2009	79,700	8,880	285	27	1/2 (day)	500	42	0.57	0.64	2h/2day	1		
2010	88,300	9,800	315	30	1/2 (day)	500	42	0.63	0.71	2h/2day	1		
2011	97,800	10,800	349	33	1/2 (day)	500	42	0.70	0.78	2h/2day	1		
2012	108,300	11,920	387	36	1	1,000	84	0.39	0.43	2h/day	2		
2013	120,000	13,200	429	40	1	1,000	84	0.43	0.48	2h/day	2		
2014	133,000	14,590	475	44	1	1,000	84	0.48	0.53	2h/day	2		
2015	147,400	16,100	526	49	1	1,000	84	0.53	0.58	2h/day	2		
2016	163,300	17,780	583	54	1	1,000	84	0.58	0.64	2h/day	2		
2017	180,900	19,660	646	60	1	1,000	84	0.65	0.71	2h/day	2		
2018	200,500	21,780	716	66	1	1,000	84	0.72	0.79	2h/day	2		
2019	222,100	24,070	793	73	1	1,000	84	0.79	0.87	2h/day	2		

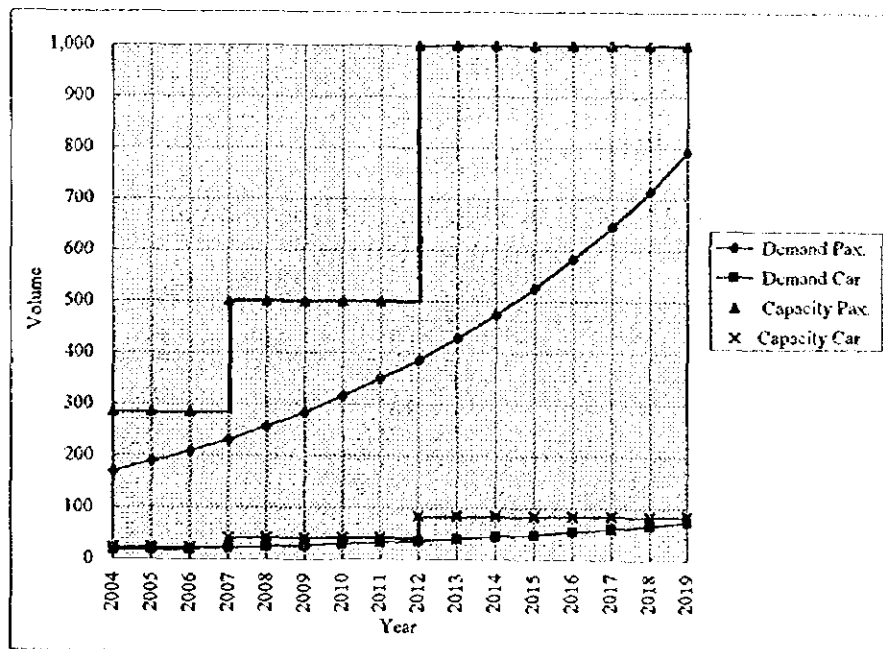


Figure A 6.2.4(1) Transition of Demand and Capacity on Peak-day
(Wahai - Babang)

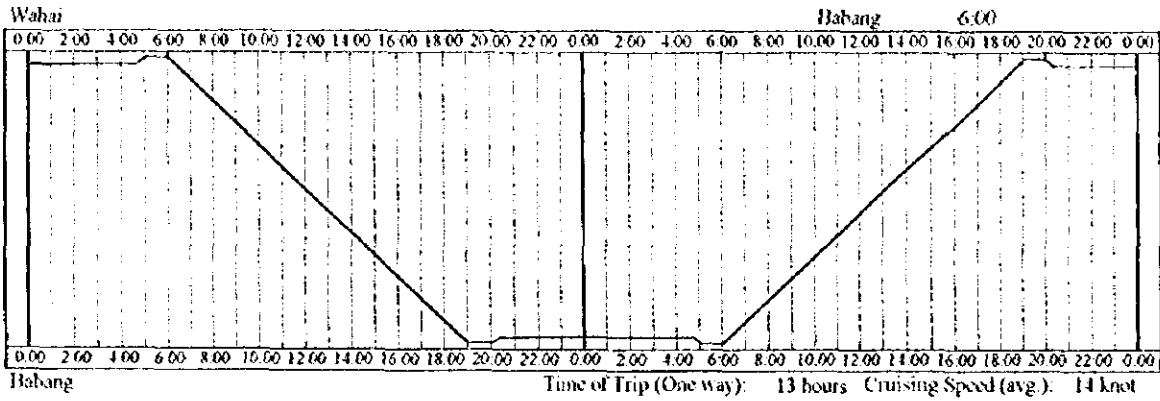
Route Distance: 178NM Boat Size: 1,000GRT

1) 2 round trips /week, 1/2 round trip /day by 1 boat

Departure Schedule: (two days a week)

Wahai 6:00

Babang 6:00



2) 1 round trip /day by 2 boats

Departure Schedule: (every two days)

Wahai 6:00

Babang 6:00

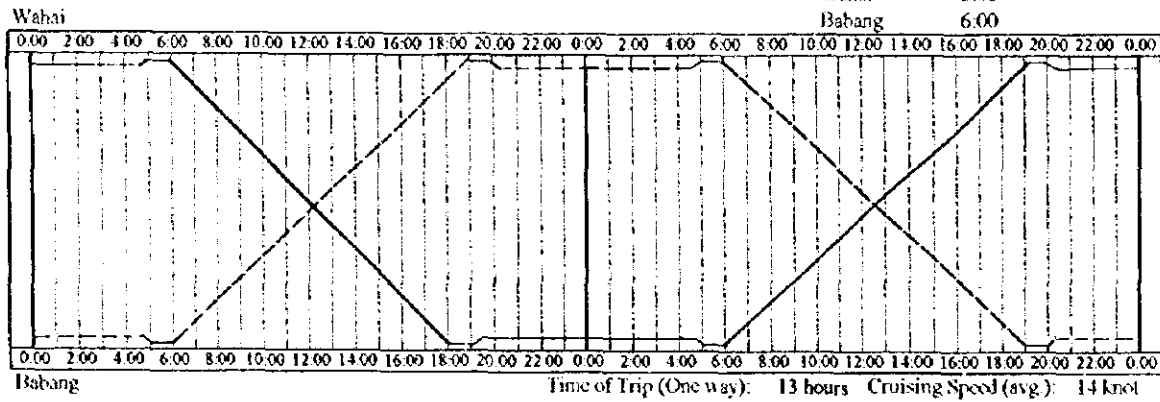
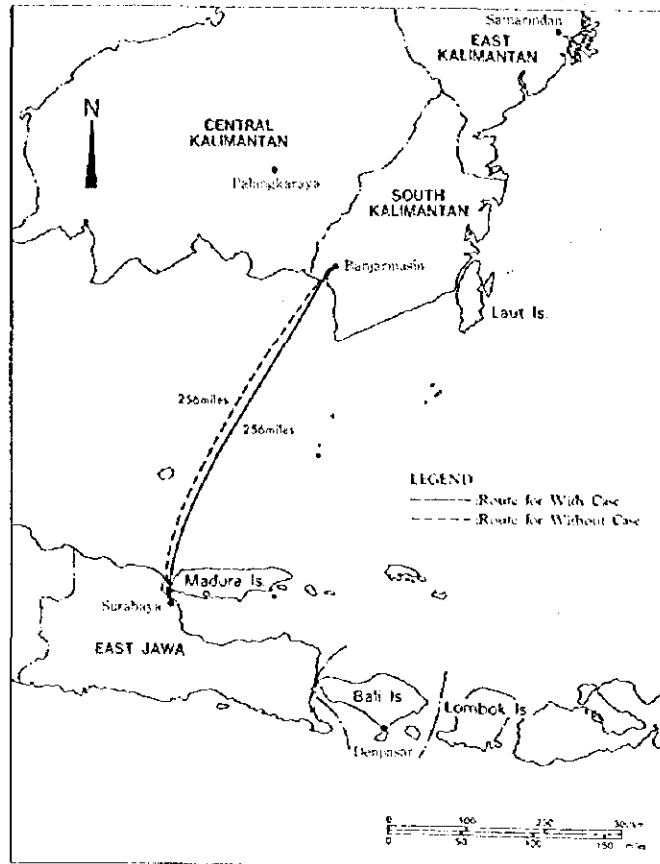


Figure A6.2.4(2) An Example of Operation Schedule (Wahai - Babang)

Route : Surabaya - Banjarmasin



Route : Selayar - Labuhan Bajo

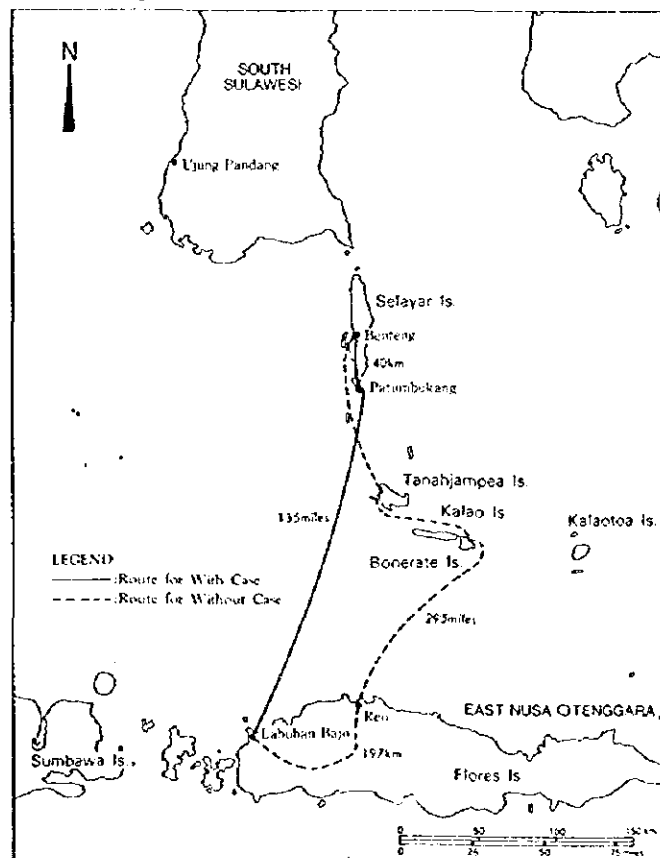
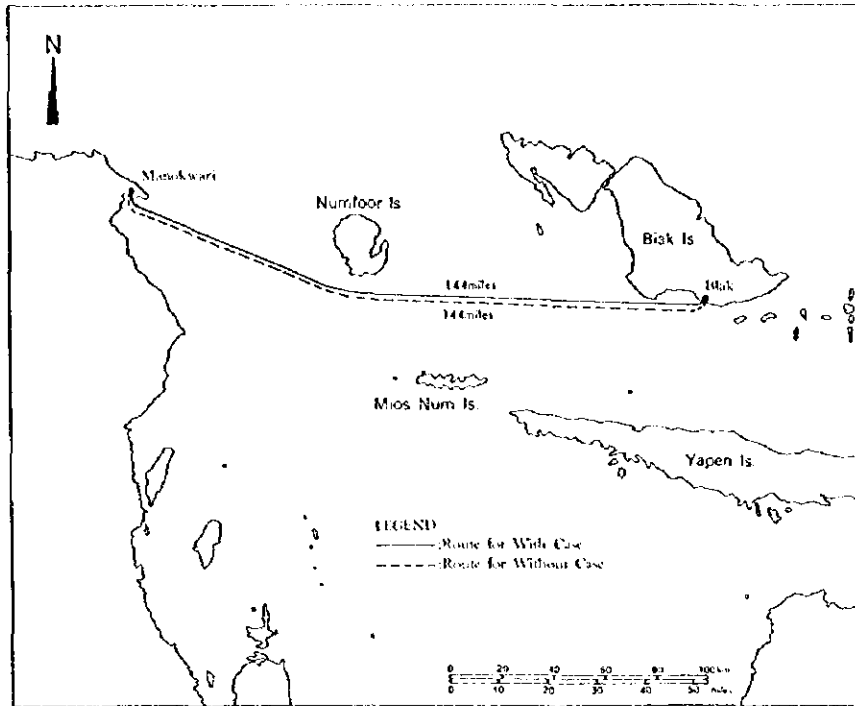


Figure A8.3.1(1) Conceptual Route Map

Route : Manokwari - Biak



Route : Wahai - Babang

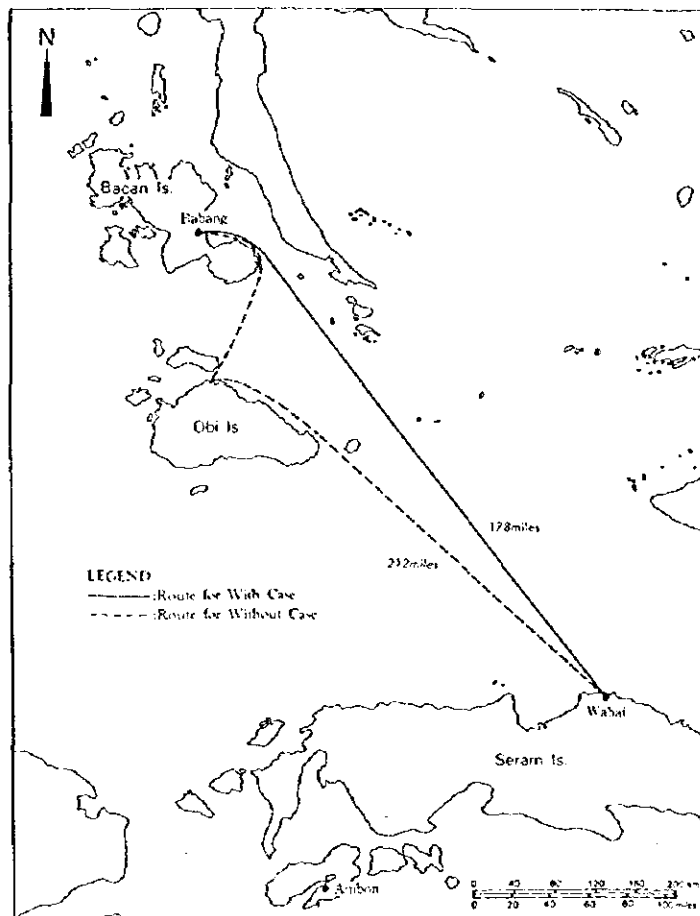


Figure A8.3.1(2) Conceptual Route Map

Table A8.3.1(1) Traffic Demand by Year

Route : Surabaya - Banjarmasin

Year	Passenger	Cargo	4 wheel-Vehicle				Small Bus and Truck	Large Bus and Truck
			Sedan, Pickup	Truck	Bus	Total		
2004	559,800	166,300	19,070	34,970	9,540	63,580	15,580	28,930
2005	606,400	184,300	20,840	38,190	10,420	69,450	17,010	31,600
2006	656,800	204,300	22,770	41,740	11,380	75,890	18,590	34,530
2007	711,500	226,300	24,860	45,580	12,430	82,870	20,300	37,710
2008	770,700	250,500	27,140	49,750	13,570	90,460	22,160	41,160
2009	834,800	277,200	29,620	54,300	14,810	98,730	24,190	44,920
2010	904,300	307,500	32,420	59,420	16,210	108,050	26,470	49,160
2011	979,500	339,900	35,350	64,810	17,680	117,840	28,870	53,620
2012	1,061,000	375,600	38,550	70,670	19,280	128,500	31,480	58,470
2013	1,149,300	414,900	42,030	77,060	21,020	140,110	34,330	63,750
2014	1,244,900	458,100	45,810	83,990	22,910	152,710	37,420	69,480
2015	1,254,400	461,600	48,310	88,570	24,160	161,040	39,460	73,270
↓								
2033	1,254,400	461,600	48,310	88,570	24,160	161,040	39,460	73,270

Route : Selayar - Labuhan Bajo

Year	Passenger	Cargo	4 wheel-Vehicle				Small Bus and Truck	Large Bus and Truck
			Sedan, Pickup	Truck	Bus	Total		
2004	84,500	16,700	3,340	5,250	960	9,550	2,180	4,030
2005	92,200	18,800	3,630	5,710	1,040	10,380	2,360	4,390
2006	100,600	21,100	3,940	6,190	1,130	11,260	2,560	4,760
2007	109,800	23,700	4,280	6,740	1,220	12,240	2,790	5,170
2008	119,800	26,700	4,680	7,340	1,340	13,360	3,040	5,640
2009	130,700	29,900	5,080	7,920	1,450	14,510	3,300	6,130
2010	142,700	33,500	5,520	8,680	1,580	15,780	3,590	6,670
2011	155,700	37,500	6,010	9,430	1,720	17,160	3,900	7,250
2012	169,900	42,000	6,540	10,280	1,870	18,690	4,250	7,900
2013	185,400	47,100	7,140	11,210	2,040	20,390	4,640	8,610
2014	202,300	52,600	7,760	12,190	2,220	22,170	5,040	9,370
2015	220,700	58,700	8,440	13,260	2,410	24,110	5,480	10,190
2016	240,900	65,500	9,180	14,430	2,620	26,230	5,970	11,080
2017	262,900	73,100	10,000	15,700	2,860	28,560	6,490	12,070
2018	286,800	81,700	10,910	17,140	3,120	31,170	7,090	13,170
2019	313,000	91,100	11,880	18,670	3,400	33,950	7,730	14,340
2020	339,200	100,700	12,830	20,170	3,670	36,670	8,350	15,490
2021	365,400	110,700	13,800	21,680	3,940	39,420	8,970	16,650
2022	391,600	121,000	14,750	23,180	4,220	42,150	9,590	17,810
2023	392,900	123,900	15,710	24,680	4,490	44,880	10,190	18,980
↓								
2033	392,900	123,900	15,710	24,680	4,490	44,880	10,190	18,980

Table A8.3.1(2) Traffic Demand by Year

Route : Manokwari - Biak

Year	Passenger	Cargo	4 wheel-Vehicle				Small Bus and Truck	Large Bus and Truck
			Sedan, Pickup	Truck	Bus	Total		
2004	72,600	14,400	2,880	4,530	820	8,230	1,870	3,480
2005	78,900	16,100	3,110	4,890	890	8,890	2,020	3,760
2006	85,800	18,000	3,360	5,290	960	9,610	2,190	4,060
2007	93,400	20,200	3,650	5,740	1,040	10,430	2,370	4,410
2008	101,500	22,600	3,960	6,220	1,130	11,310	2,570	4,780
2009	110,400	25,300	4,300	6,750	1,230	12,280	2,790	5,190
2010	120,000	28,200	4,650	7,300	1,330	13,280	3,020	5,610
2011	130,500	31,500	5,040	7,930	1,440	14,410	3,280	6,090
2012	141,900	35,000	5,450	8,560	1,560	15,570	3,540	6,580
2013	154,300	39,200	5,940	9,330	1,700	16,970	3,860	7,170
2014	167,800	43,600	6,430	10,110	1,840	18,380	4,180	7,770
2015	182,500	48,500	6,970	10,960	1,990	19,920	4,530	8,420
2016	198,500	54,000	7,570	11,900	2,160	21,630	4,920	9,140
2017	215,800	60,000	8,210	12,890	2,350	23,450	5,330	9,910
2018	234,700	66,900	8,930	14,040	2,550	25,520	5,810	10,780
2019	255,200	74,300	9,690	15,230	2,770	27,690	6,300	11,700
2020	275,700	81,900	10,440	16,410	2,980	29,830	6,790	12,600
2021	296,200	89,700	11,180	17,570	3,190	31,940	7,270	13,490
2022	316,700	97,900	11,940	18,750	3,410	34,100	7,750	14,410
2023	337,200	106,600	12,720	19,990	3,640	36,350	8,270	15,360
2024	357,700	115,200	13,460	21,150	3,850	38,460	8,750	16,250
2025	378,200	124,000	14,200	22,300	4,060	40,560	9,220	17,140
2026	392,000	130,900	14,950	23,480	4,270	42,700	9,710	18,040
2027	392,000	130,900	15,670	24,630	4,480	44,780	10,190	18,920
2028	392,000	130,900	15,710	24,680	4,490	44,880	10,190	18,980
↓								
2033	392,000	130,900	15,710	24,680	4,490	44,880	10,190	18,980

Route : Wahai - Babang

Year	Passenger	Cargo	4 wheel-Vehicle				Small Bus and Truck	Large Bus and Truck
			Sedan, Pickup	Truck	Bus	Total		
2004	47,700	9,400	1,880	2,950	540	5,370	1,220	2,270
2005	52,900	10,800	2,090	3,270	600	5,960	1,350	2,520
2006	58,600	12,300	2,300	3,600	660	6,560	1,490	2,770
2007	64,900	14,000	2,530	3,980	720	7,230	1,650	3,050
2008	71,900	16,000	2,800	4,410	800	8,010	1,830	3,380
2009	79,700	18,300	3,110	4,880	890	8,880	2,020	3,750
2010	88,300	20,800	3,430	5,390	980	9,800	2,230	4,140
2011	97,800	23,600	3,780	5,940	1,080	10,800	2,460	4,560
2012	108,300	26,800	4,170	6,560	1,190	11,920	2,710	5,040
2013	120,000	30,500	4,620	7,260	1,320	13,200	3,000	5,580
2014	133,000	34,600	5,110	8,020	1,460	14,590	3,320	6,160
2015	147,400	39,200	5,640	8,850	1,610	16,100	3,660	6,800
2016	163,300	44,400	6,220	9,780	1,780	17,780	4,050	7,510
2017	180,900	50,300	6,880	10,810	1,970	19,660	4,470	8,310
2018	200,500	57,100	7,620	11,980	2,180	21,780	4,960	9,200
2019	222,100	64,600	8,420	13,240	2,410	24,070	5,480	10,170
2020	243,700	72,400	9,230	14,500	2,640	26,370	6,000	11,140
2021	265,300	80,400	10,020	15,750	2,860	28,630	6,510	12,100
2022	286,900	88,700	10,820	16,990	3,090	30,900	7,020	13,060
2023	308,500	97,500	11,630	18,290	3,320	33,240	7,570	14,040
2024	330,100	106,300	12,420	19,520	3,550	35,490	8,080	14,990
2025	351,700	115,400	13,210	20,760	3,770	37,740	8,580	15,950
2026	373,300	124,700	13,990	21,980	4,000	39,970	9,090	16,890
2027	394,900	134,300	14,770	23,210	4,220	42,200	9,600	17,830
2028	416,500	144,500	15,590	24,500	4,450	44,540	10,130	18,820
2029	438,100	154,600	16,360	25,710	4,680	46,750	10,640	19,750
2030	459,700	165,000	17,140	26,940	4,900	48,980	11,150	20,690
2031	481,300	175,700	17,920	28,170	5,120	51,210	11,650	21,640
2032	502,900	186,600	18,690	29,380	5,340	53,410	12,150	22,570
2033	524,500	198,300	19,520	30,670	5,580	55,770	12,690	23,560

Table A8.4.1 Estimation of Cargo Handling Cost by Year

(A) Unit Freight Cost

1) Route : Surabaya - Banjarmasin

Item	Unit Cost ①	Loading and Unloading ①×2
General cargo	8,635 Rp./ton·m ³	17,270 Rp./ton·m ³
Sedan, Pickup	94,985 Rp./unit *1)	189,970 Rp./unit
Small Bus and Truck	138,160 Rp./unit *1)	276,320 Rp./unit
Large Bus and Truck	328,130 Rp./unit *1)	656,260 Rp./unit

Note : *1) Unit freight cost of vehicle is calculated by multiplying by the average volume of vehicle.

2) Route : Selayar - Labuhan Bajo, Manokwari - Biak, Wahai - Babang

Item	Unit Cost ①	Loading and Unloading ①×2
General cargo	8,635 Rp./ton·m ³	17,270 Rp./ton·m ³
Sedan, Pickup	94,985 Rp./unit *1)	189,970 Rp./unit
Small Bus and Truck	138,160 Rp./unit *1)	276,320 Rp./unit
Large Bus and Truck	250,415 Rp./unit *1)	500,830 Rp./unit

Note : *1) Unit handling cost of vehicle is calculated by multiplying by the average volume of vehicle.

(B) Cargo Handling Cost of Each Route

(Unit : Million Rp.)

Year	Surabaya - Banjarmasin	Selayar - Labuhan Bajo	Manokwari - Babang	Wahai - Babang
2004	29,785	3,544	3,055	1,993
2005	32,580	3,865	3,310	2,219
2006	35,651	4,204	3,588	2,448
2007	38,988	4,583	3,906	2,706
2008	42,617	5,015	4,247	3,007
2009	46,578	5,463	4,624	3,343
2010	51,045	5,960	5,015	3,700
2011	55,752	6,498	5,458	4,089
2012	60,880	7,099	5,913	4,528
2013	66,472	7,764	6,463	5,028
2014	72,551	8,468	7,021	5,571
2015	76,137	9,235	7,630	6,165
2016	76,137	10,074	8,308	6,829
2017	76,137	11,000	9,032	7,573
2018	76,137	12,039	9,856	8,412
2019	76,137	13,148	10,724	9,323
2020	76,137	14,242	11,584	10,241
2021	76,137	15,351	12,438	11,151
2022	76,137	16,461	13,317	12,068
2023	76,137	17,446	14,235	13,017
2024	76,137	17,446	15,103	13,935
2025	76,137	17,446	15,971	14,862
2026	76,137	17,446	16,819	15,782
2027	76,137	17,446	17,529	16,708
2028	76,137	17,446	17,567	17,682
2029	76,137	17,446	17,567	18,609
2030	76,137	17,446	17,567	19,549
2031	76,137	17,446	17,567	20,496
2032	76,137	17,446	17,567	21,434
2033	76,137	17,446	17,567	22,439

Table A8.4.2 Estimation of Sea Transportation Cost by Year

(A) Unit Freight Cost

1) Route : Surabaya - Banjarmasin

Surabaya - Banjarmasin ----- Existing Route : Surabaya - Banjarmasin, Distance = 256mile

	Unit Freight Cost	Freight Cost
	① per mile	① × 256mile
Passenger	146.32 Rp./person	37,458 Rp./person
General cargo	96.4 Rp./ton·m ³	24,678 Rp./ton·m ³
Sedan, Pickup	1,060 Rp./unit *1)	271,462 Rp./unit
Small Bus and Truck	1,542 Rp./unit *1)	394,854 Rp./unit
Large Bus and Truck	3,663 Rp./unit *1)	937,779 Rp./unit

Note : *1) Unit freight cost of vehicle is calculated by multiplying by the average volume of vehicle.

2) Route : Selayar - Labuhan Bajo, Manokwari - Biak, Wahai - Babang

Selayar -Labuhan Bajo ----- Existing Route : Selayar (Benteng) - Reo, Distance = 295mile

Manokwari - Biak ----- Existing Route : Manokwari - Biak, Distance = 144mile

Wahai - Babang ----- Existing Route : Wahai - Babang, Distance = 212mile

	Unit Freight Cost	Selayar-Labuhan Bajo	Manokwari - Biak	Wahai - Babang
	① per mile	Freight Cost ① × 295mile	Freight Cost ① × 144mile	Freight Cost ① × 212mile
Passenger	63.5 Rp./person	18,733 Rp./person	17,516 Rp./person	18,733 Rp./person
General cargo	57.2 Rp./ton·m ³	16,874 Rp./ton·m ³	13,882 Rp./ton·m ³	12,126 Rp./ton·m ³
Sedan, Pickup	629 Rp./unit *1)	185,614 Rp./unit	152,698 Rp./unit	133,390 Rp./unit
Small Bus and Truck	915 Rp./unit *1)	269,984 Rp./unit	222,106 Rp./unit	194,022 Rp./unit
Large Bus and Truck	1,659 Rp./unit *1)	489,346 Rp./unit	402,566 Rp./unit	351,666 Rp./unit

Note : *1) Unit freight cost of vehicle is calculated by multiplying by the average volume of vehicle.

(B) Transportation Cost of Each Route

Year	(Unit : Million Rp.)			
	Surabaya - Banjarmasin	Selayar - Labuhan Bajo	Manokwari - Babang	Wahai - Babang
2004	63,532	5,045	3,728	2,042
2005	69,270	5,504	4,043	2,270
2006	75,547	5,992	4,387	2,508
2007	82,364	6,534	4,775	2,774
2008	89,767	7,144	5,191	3,079
2009	97,828	7,786	5,651	3,420
2010	106,816	8,496	6,133	3,787
2011	116,358	9,266	6,673	4,188
2012	126,739	10,119	7,239	4,637
2013	138,038	11,059	7,898	5,146
2014	150,305	12,063	8,583	5,702
2015	155,785	13,157	9,330	6,313
2016	155,785	14,356	10,155	6,993
2017	155,785	15,673	11,040	7,753
2018	155,785	17,135	12,033	8,606
2019	155,785	18,710	13,090	9,536
2020	155,785	20,269	14,141	10,472
2021	155,785	21,844	15,186	11,401
2022	155,785	23,420	16,252	12,336
2023	155,785	24,389	17,349	13,293
2024	155,785	24,389	18,405	14,229
2025	155,785	24,389	19,462	15,170
2026	155,785	24,389	20,385	16,107
2027	155,785	24,389	20,956	17,048
2028	155,785	24,389	20,986	18,021
2029	155,785	24,389	20,986	18,965
2030	155,785	24,389	20,986	19,915
2031	155,785	24,389	20,986	20,871
2032	155,785	24,389	20,986	21,820
2033	155,785	24,389	20,986	22,817

Table A8.4.3 Economic Unit Vehicle Operating Cost

Item	(Unit : Rp./km)				
	Sedan	Small Truck	Large Truck	Small Bus	Large Bus
Fuel Consumption	38	44	44	70	38
Engine Oil Consumption	3	5	5	5	6
Tire Wear	19	53	194	13	57
Maintenance Cost on Parts	30	80	157	97	156
Maintenance Hour of Labor	1	2	2	4	4
Depreciation	136	58	114	33	53
Interest	113	31	61	17	27
Insurance	13	6	12	2	4
Travelling Hours for Wages		56	56	46	54
Overhead		34	65	29	40
Unit Operation Cost	353	370	710	316	438

Table A8.4.4 Estimation of Land Transportation Cost

Route : Selayar - Labuhan Bajo

(A) Distance of Land Transportation (km)

Labuhan Bajo - Reo	197 km
Patumbukan - Benteng	40 km
①	157 km

(B) Composite Vehicle Operating Cost

Vehicle Type	Speed Condition (50km/hour)	
	Rp./km/car ②	Rp./car ①×②
Sedan	353	55,421
Small Bus and Truck	362	56,786
Large Bus and Truck	668	104,900

Note : The composition of truck and bus are assumed to be 84.6% and 15.4% respectively.

(C) Estimation of Land Transportation Cost by Year

Year	(Unit : Million Rp.)			Total
	Sedan	Small Bus & Truck	Large Bus & Truck	
2004	185	124	423	732
2005	201	134	461	796
2006	218	145	499	863
2007	237	158	542	938
2008	259	173	592	1,024
2009	282	187	643	1,112
2010	306	204	700	1,209
2011	333	221	761	1,315
2012	362	241	829	1,433
2013	396	263	903	1,562
2014	430	286	983	1,699
2015	468	311	1,069	1,848
2016	509	339	1,162	2,010
2017	554	369	1,266	2,189
2018	605	403	1,382	2,389
2019	658	439	1,504	2,602
2020	711	474	1,625	2,810
2021	765	509	1,747	3,021
2022	817	545	1,868	3,230
2023	871	579	1,991	3,440
↓				
2033	871	579	1,991	3,440

Table A8.4.5 Estimation of Unit Passenger Time Value

(A) Per Capita GRDP at Current Price (excluding Oil & Gas) (Unit : '000Rp.)

Route Province	1988	1989	1990	1991	1992	1993	1994	1995	Average Annual Growth Ratio 88 - '95	Estimated 1997 ①
Surabaya - Banjarmasin										
East Jawa	659	769	899	1,042	1,164	1,472	1,705	1,961		
East Kalimantan	1,802	2,123	2,337	2,574	2,641	3,849	4,383	4,939		
(Average)	1,231	1,446	1,618	1,808	1,902	2,661	3,044	3,450	15.9%	4,631
Selayar - Labuhan										
South Sulawesi	530	589	644	747	855	1,023	1,180	1,369		
West Nusa Tenggara	296	334	398	461	539	719	828	955		
East Nusa Tenggara	299	326	368	423	490	605	703	811		
(Average)	375	416	470	544	628	782	904	1,045	15.8%	1,401
Manokwari - Biak										
Irian Jaya	648	843	1,175	1,418	1,583	2,465	2,726	3,503	27.3%	5,672
Wahai - Baban										
Maluku	651	760	822	937	1,013	1,220	1,371	1,492	12.6%	1,890

(B) Trip purpose composition

Trip Purpose	(%)	Factor *1)	Value Factor
Government Official	6.8%	1.0	6.8%
State Owned Corporation	2.5%	1.0	2.5%
Private/Company/Business	11.5%	1.0	11.5%
Visiting Family/Friend	49.1%	0.5	24.6%
Tour/Recreation	8.0%	0.5	4.0%
School/College	4.7%	0.5	2.4%
Shopping	2.5%	0.5	1.3%
Trading	5.4%	1.0	5.4%
Others	9.5%	0.5	4.8%
	100.0%	②=	63.1%

Source: Pelaksanaan Pekerjaan Data Entry, Desain Sistem, Pengolahan Data dan Analisa Data Asal Tujuan Transportasi Nasional 1988

Note: *1) Coefficient factor is assumed as 1.0 for "official", "business" and "trading" and 0.5 for others.

(C) Estimation of unit passenger time cost

Route	Estimated 1997 Per capita GRDP ('000Rp.)	Estimated 1997 Per capita GRDP per Day ③ (Rp./day)	Unit Passenger Time Value	
			Financial ③×② (Rp./day)	Economic (×0.95) (Rp./day)
Surabaya - Banjarmasin	4,631	12,688	8,006	7,606
Selayar - Labuhan Bajo	1,401	3,838	2,422	2,301
Manokwari - Biak	5,672	15,540	9,806	9,315
Wahai - Babang	1,890	5,178	3,267	3,104

Table A8.4.6 Estimation of Unit Vehicle Time Value

(A) Unit vehicle time value at economic price

Type of Vehicle	Market Price ('000 Rp.)	Conversion Factor *1)	Economic Price ('000 Rp.)	Life Service (year)	Unit Vehicle Time Value (Rp./day)
Sedan	85,900	0.44	37,796	10	10,355
Small Truck (2ton)	46,300	0.77	35,651	7	13,953
Large Truck (8ton)	90,550	0.77	69,724	7	27,289
Small Bus (10pax)	37,250	0.77	28,683	7	11,226
Large Bus (24pax)	60,000	0.77	46,200	7	18,082
Large Bus (53pax)	181,000	0.77	139,370	7	54,548

Note : *1) The Feasibility Study on Urban Arterial Road System Development Project in Jakarta Metropolitan Area, Ministry of Public Works Republic of Indonesia, January, 1995

Note : Pax means passenger

(B) Estimated composite vehicle time value for each route

1) Route : Surabaya - Banjarmasin

Type of Vehicle	Value (Rp./day)
Sedan	10,355
Small Bus and Truck *1)	13,370
Large Bus and Truck *2)	29,221

Note : *1) The composition of truck and bus are assumed to be 78.6% and 21.4% respectively.

Note : *2) The composition of truck ,bus(24pax) and bus(53pax) are assumed to be 78.6%, 10.7 and 10.7% respectively.

2) Route : Selayar - Labuhan Bajo, Manokwari - Biak, Wahai - Babang

Type of Vehicle	Value (Rp./day)
Sedan	10,355
Small Bus and Truck *1)	13,533
Large Bus and Truck *2)	25,871

Note : *1) The composition of truck and bus are assumed to be 84.6% and 15.4% respectively.

Note : *2) The composition of truck and bus(24pax) are assumed to be 84.6% and 15.4% respectively.

Table A8.4.7 Estimation of Saving of Travel Time Cost for Each Route

1) Route : Surabaya - Banjarmasin, Selayar - Labuhan Bajo

(Unit : Million Rp.)

Year	Surabaya - Banjarmasin				Selayar - Labuhan Bajo			
	For Passenger	For General Cargo	For Vehicle	Total	For Passenger	For General Cargo	For Vehicle	Total
2004	894	348	1,664	2,906	292	44	401	737
2005	969	386	1,818	3,172	318	50	436	804
2006	1,049	427	1,986	3,463	347	56	473	876
2007	1,136	473	2,169	3,779	379	63	514	956
2008	1,231	524	2,367	4,123	413	71	561	1,045
2009	1,333	580	2,584	4,497	451	79	609	1,139
2010	1,444	643	2,828	4,915	492	89	662	1,244
2011	1,565	711	3,084	5,360	537	100	720	1,357
2012	1,695	786	3,363	5,844	586	112	784	1,482
2013	1,836	868	3,667	6,371	640	125	856	1,621
2014	1,988	958	3,997	6,943	698	140	931	1,768
2015	2,004	966	4,215	7,184	762	156	1,012	1,930
2016	2,004	966	4,215	7,184	831	174	1,101	2,106
2017	2,004	966	4,215	7,184	907	194	1,199	2,300
2018	2,004	966	4,215	7,184	990	217	1,308	2,515
2019	2,004	966	4,215	7,184	1,080	242	1,425	2,747
2020	2,004	966	4,215	7,184	1,171	268	1,539	2,977
2021	2,004	966	4,215	7,184	1,261	294	1,654	3,209
2022	2,004	966	4,215	7,184	1,351	322	1,769	3,442
2023	2,004	966	4,215	7,184	1,353	329	1,884	3,566
↓								
2033	2,004	966	4,215	7,184	1,353	329	1,884	3,566

Note : All costs are converted to economic prices.

2) Route : Manokwari - Biak, Wahai - Babang

(Unit : Million Rp.)

Year	Manokwari - Biak				Wahai - Babang			
	For Passenger	For General Cargo	For Vehicle	Total	For Passenger	For General Cargo	For Vehicle	Total
2004	-88	29	164	105	99	21	158	279
2005	-96	32	177	114	110	24	176	310
2006	-104	36	191	124	122	28	193	343
2007	-113	40	208	135	135	32	213	379
2008	-123	45	225	148	150	36	236	422
2009	-134	51	245	162	166	41	261	469
2010	-145	56	265	176	184	47	289	519
2011	-158	63	287	192	203	53	318	575
2012	-172	70	310	208	225	61	351	637
2013	-187	78	338	230	250	69	389	707
2014	-203	87	366	250	277	78	430	784
2015	-221	97	397	273	307	89	474	869
2016	-240	108	431	299	340	100	524	964
2017	-261	120	467	326	376	114	579	1,069
2018	-284	134	508	358	417	129	641	1,187
2019	-309	149	552	391	462	146	709	1,317
2020	-334	164	594	424	507	164	777	1,447
2021	-359	179	636	457	552	182	843	1,577
2022	-384	196	679	492	597	200	910	1,707
2023	-408	213	724	529	642	220	979	1,841
2024	-433	230	766	563	686	240	1,045	1,972
2025	-458	248	808	598	731	261	1,111	2,104
2026	-475	262	851	638	776	282	1,177	2,235
2027	-475	262	892	679	821	304	1,243	2,368
2028	-475	262	895	681	866	327	1,312	2,504
2029	-475	262	895	681	911	349	1,377	2,637
2030	-475	262	895	681	956	373	1,442	2,771
2031	-475	262	895	681	1,001	397	1,508	2,906
2032	-475	262	895	681	1,046	422	1,573	3,041
2033	-475	262	895	681	1,091	448	1,642	3,181

Note : All costs are converted to economic prices.

A8.6 Estimation of Economic Prices

8.6.1 Method for Converting to Economic Prices from Market Prices

1. In general, the value of goods and services quoted at market price do not always represent the true value of national resources actually consumed from the view point of the national economy. The market price of the national economy often includes sales tax, subsidies, customs duties, etc., and is influenced by the national economic system such as a minimum wage system. Therefore, "Economic pricing" should be conducted for the economic analysis.
2. There are several method to convert the market prices into economic prices. Here, the benefits and costs are divided into five categories: tradable goods, non-tradable goods, skilled labor, unskilled labor and transfer items. Then, they are revised to "Border prices (Economic prices)" in an effort to determine a more rational valuation.
3. In general, these "Border prices" are intended to represent the international market value or the world prices. The market prices are changed to "border prices" by various conversion factors such as "Standard Conversion Factor", "Conversion Factor for Consumption Factor" and so on.
4. Import/export duties, other taxes and subsidies are merely transfer items, which do not actually reflect consumption of national resources. Therefore, these transfer items should be excluded in the calculation of the costs and benefits of the project for the economic analysis.
5. The prices of tradable goods are expressed in CIF (Cost, Insurance and Freight) and FOB (Free on Board) value for import goods and export goods respectively. These values show the actual border prices.
6. In this economic analysis non-tradable goods are assumed to be equivalent to the local currency portion after reduction of labor and transfer items. As the border price of non-tradable goods cannot be converted directly, the border price of the inputs needed to produce the non-tradable goods is considered. After some classification of the non-tradable goods, the economic price of a small amount of the non-tradable goods is calculated by multiplying the market prices by the Standard Conversion Factor (SCF) directly.

7. The economic price of skilled labor is obtained by multiplying the market wage by the "Conversion Factor for Skilled Labor". On the other hand, that of unskilled labor is determined by multiplying the nominal wage by the "Conversion Factor for Unskilled Labor".

8.6.2 Conversion Factors

8. Conversion factors for goods and labor are determined as follows:

(1) Standard Conversion Factor (SCF)

9. The standard conversion factor is used to determine the economic prices of certain goods which cannot be directly revalued at border prices. These goods include most non-tradable goods and services. The standard conversion factor is expressed by the following equation:

$$SCF = \frac{(E + I)}{\{(E - T_e) + (I + T_i)\}}$$

where, E: Total value of exports

I: Total value of imports

T_e: Total value of export duties and subsidies

T_i: Total value of import duties

10. The calculated result of SCF is as shown in Table A8.6.1. In this study, SCF is estimated to be 0.98.

Table A8.6.1 Estimation of Standard Conversion Factor

(Unit : Million US\$)

Items	1993/1994	1994/1995	1995/1996	1996/1997
Total value of import (CIF)	28,954.8	33,948.8	41,303.5	43,972.1
Total value of export (FOB)	36,418.5	41,730.0	46,484.0	50,982.4
Total value of import duties	1,685.0	1,772.8	1,312.6	1,178.0
Total value of export duties	6.5	59.4	80.6	29.4
Conversion Factor (Average Conversion Factor)	0.975	0.978	0.986	0.988 (0.98)

(2) Conversion Factor for Consumption (CFC)

11. The Conversion Factor for Consumption (CFC) is used to convert the market prices of consumption goods into the border prices, and is applied for converting of the

domestic prices of labor to the border prices. The CFC is usually calculated in the same manner as the SCF, replacing total imports and exports by those of consumption goods only. In this study, the CFC is stated as 0.95.

(3) Conversion factor for skilled labor

12. The opportunity cost of skilled labor is judged to be the same as the actual wage, assuming the number of labor is limited and the market mechanism is functioning properly. However, since these are domestic prices, they should be converted into border prices. The wages can be evaluated by the purchasing power of consumption goods. Therefore, they are converted into border prices by multiplying the market wages by the CFC; that is, the "Conversion Factor for Skilled Labor" is stated as 0.95 in this study.

$$\begin{aligned} \text{Conversion Factor for Skilled Labor} &= \frac{\text{Skilled Labor Opportunity Cost}}{\text{Skilled Labor Wage}} \times \text{CFC} \\ &= 1.0 \times 0.95 = 0.95 \end{aligned}$$

(4) Conversion factor for unskilled labor

13. The opportunity cost of unskilled labors is generally far below the actual wage rate, since the potential number of labor is high and the market mechanism generally does not function well. As the wages paid to unskilled labors by a project are usually far below the above opportunity cost, these market wages should not be used for calculation of the economic value of the unskilled labors. Therefore, in this study, the economic cost of unskilled labor is considered to be equivalent to the minimum wage. The conversion factor for unskilled labor is calculated by the following equation:

$$\text{Conversion Factor for Unskilled Labor} = \frac{\text{Opportunity cost}}{\text{Worker's Cost of Construction}} \times \text{CFC}$$

14. As a result, the conversion factor for unskilled labor is estimated for each route as shown in Table A8.2.2.

Table A8.6.2 Estimation of Conversion Factor for Unskilled Labor

Route	Province	Worker's Cost	Opportunity Cost	Conversion Factor	
		(RP./month)			Average
Surabaya-Banjarmasin	East Jawa	15,000	5,521	0.37	0.36
	South Kalimantan	15,000	5,208	0.35	
Selayar-Labuhan Bajo	South Sulawesi	10,000	4,688	0.47	0.38
	N.T.B	15,000	4,438	0.30	
Manokwari-Biak	Irian Jaya	10,500	7,083	0.67	0.67
Wahai-Babang	Maluku	10,000	5,667	0.57	0.57

8.6.3 Economic Pricing

(1) Terminal construction cost

15. The portion of foreign currency is directly adapted. For the portion of non-traded goods, the SFC is applied. The labor portion is divided into the portions of skilled and unskilled, and the conversion factors for skilled labor and unskilled labor are applied to the above portions respectively.

16. The construction cost (at the economic prices) of each route is shown in Table A8.6.3.

Table A8.6.3 Estimated Terminal Construction Cost at Economic Prices

(Unit: Million Rp.)

	Foreign Currency Total	Local Currency Total	Non-trade	Skilled Labor	Unskilled Labor	Transfer Item	Total
Route : Surabaya - Banjarmasin							
Financial Price	184,858	288,117	242,542	1,101	1,476	42,998	472,974
Conversion Factor	1.00		0.98	0.95	0.36	0.00	0.897
Economic Price	184,858	239,268	237,691	1,046	531	0	424,126
Route : Selayar - Labuhan Bajo							
Financial Price	16,972	27,589	22,914	265	359	4,051	44,561
Conversion Factor	1.00		0.98	0.95	0.38	0.00	0.894
Economic Price	16,972	22,844	22,456	252	137	0	39,816
Route : Manokwari - Biak							
Financial Price	17,206	27,853	23,094	288	374	4,096	45,058
Conversion Factor	1.00		0.98	0.95	0.67	0.00	0.896
Economic Price	17,206	23,157	22,632	273	251	0	40,362
Route : Wahai - Babang							
Financial Price	17,684	24,262	19,957	219	273	3,813	41,947
Conversion Factor	1.00		0.98	0.95	0.57	0.00	0.897
Economic Price	17,684	19,922	19,558	208	156	0	37,606

(2) Operation and maintenance cost of terminal

17. Personnel costs are based on the estimation in Chapter 9 "Financial analysis", and the costs are converted to economic prices by multiplying by the conversion factors for skilled labor.

18. The administration costs are estimated as 50% of the personnel costs in economic price.

19. Since the maintenance cost of the terminal is estimated as 1.0% of the terminal construction cost, the results of adjustment are same as those of the terminal construction cost.

20. The terminal operation and maintenance cost (at economic prices) of each route are estimated in Table A8.6.4.

Table A8.6.4 Estimated Terminal Operation and Maintenance Cost at Economic Prices

Route : Surabaya - Banjarmasin (Unit : Million Rp./year)

Year	Financial Price		Economic Price			Total
	Personnel ①	Mainte. ②	Personnel C.F.=0.95 ③=①×0.95	Adomini. ③×0.5	Mainte. C.F.=0.897 ②×0.897	
2004 - 2006	301	4,081	286	143	3,661	4,090
2007 - 2011	356	4,081	338	169	3,661	4,168
2012 - 2033	475	4,081	451	226	3,661	4,338

Route : Selayar - Labuhan Bajo Route (Unit : Million Rp./year)

Year	Financial Price		Economic Price			Total
	Personnel ①	Mainte. ②	Personnel C.F.=0.95 ③=①×0.95	Adomini. ③×0.5	Mainte. C.F.=0.894 ②×0.894	
2004 - 2014	128	336	122	61	300	483
2015 - 2033	174	336	165	82	300	548

Route : Manokwari - Biak Route (Unit : Million Rp./year)

Year	Financial Price		Economic Price			Total
	Personnel ①	Mainte. ②	Personnel C.F.=0.95 ③=①×0.95	Adomini. ③×0.5	Mainte. C.F.=0.896 ②×0.896	
2004 - 2016	119	387	113	56	347	516
2017 - 2033	174	387	165	82	347	594

Route : Wahai - Babng Route (Unit : Million Rp./year)

Year	Financial Price		Economic Price			Total
	Personnel ①	Mainte. ②	Personnel C.F.=0.95 ③=①×0.95	Adomini. ③×0.5	Mainte. C.F.=0.897 ②×0.897	
2004 - 2011	110	378	104	52	339	495
2012 - 2018	137	378	130	65	339	534
2019 - 2027	174	378	165	82	339	586
2028 - 2033	247	378	234	117	339	691

(3) Procurement cost of ferry boats

21. The procurement cost of ferry boat is estimated by deducting the transfer item from financial price and by applying the SCF.

(4) Operation and maintenance cost of ferry boats

22. The Operation and maintenance cost of ferry boat are based on the estimation in Chapter 9 "Financial analysis", and the costs are converted to economic prices by applying the CCF. The operation and maintenance costs of ferry boat are estimated in Table A8.6.5(1), (2).

Table A8.6.5(1) Estimated Operation and Maintenance Cost of New Ferry Boat at Economic Prices

Year	Boat size (GRT)	Number of Boat	Frequency of Trip (Round/day)	Operation and Maintenance Cost		
				Financial Price (MillionRp./year)	Conversion Factor	Economic Price (MillionRp./year)
Route : Surabaya - Banjarmasin						
2004 - 2006	5,000	3	2	27,874	0.95	26,480
2007 - 2011	5,000	5	3	44,692	0.95	42,457
2012 - 2033	5,000	6	4	55,576	0.95	52,797
Route : Selayar - Labuhan Bajo						
2004 - 2006	1,000	1	1/2days	2,353	0.95	2,235
2007 - 2014	1,000	1	1	2,904	0.95	2,759
2015 - 2033	1,000	2	2	5,686	0.95	5,402
Route : Manokwari - Biak						
2004 - 2008	1,000	1	1/2days	2,392	0.95	2,273
2009 - 2016	1,000	1	1	2,984	0.95	2,835
2017 - 2033	1,000	2	2	5,845	0.95	5,553
Route : Wahai - Babng						
2004 - 2006	1,000	1	2/week	2,236	0.95	2,124
2007 - 2011	1,000	1	1/2days	2,562	0.95	2,434
2012 - 2018	1,000	2	1	5,001	0.95	4,751
2019 - 2027	1,000	3	2	8,202	0.95	7,792
2018 - 2033	1,000	4	3	11,402	0.95	10,832

Table A8.6.5(2) Estimated Operation and Maintenance Cost of Used Ferry Boat at Economic Prices

Year	Boat size (GRT)	Number of Boat	Frequency of Trip (Round/day)	Operation and Maintenance Cost		
				Financial Price (MillionRp/year)	Conversion Factor	Economic Price (MillionRp/year)
Route : Surabaya - Banjarmasin						
2004 - 2006	5,000	3	2	20,556	0.95	19,529
2007 - 2011	5,000	5	3	32,569	0.95	30,940
2012 - 2033	5,000	6	4	40,942	0.95	38,895
Route : Selayar - Labuhan Bajo						
2004 - 2006	1,000	1	1/2days	1,782	0.95	1,693
2007 - 2014	1,000	1	1	2,334	0.95	2,217
2015 - 2033	1,000	2	2	4,545	0.95	4,318
Route : Manokwari - Biak						
2004 - 2008	1,000	1	1/2days	1,822	0.95	1,731
2009 - 2016	1,000	1	1	2,414	0.95	2,293
2017 - 2033	1,000	2	2	4,705	0.95	4,469
Route : Wahai - Babng						
2004 - 2006	1,000	1	2/week	1,647	0.95	1,564
2007 - 2011	1,000	1	1/2days	1,959	0.95	1,861
2012 - 2018	1,000	2	1	3,794	0.95	3,605
2019 - 2027	1,000	3	2	6,358	0.95	6,040
2018 - 2033	1,000	4	3	8,922	0.95	8,476

(5) Benefits

1) Reduction of cargo handling cost

23. The cargo handling cost is converted to economic prices based on the following factors.

Table A8.6.6 Estimated Conversion Factor for Cargo Handling Cost

	*1) Composition	Conversion Factor			
		Surabaya/ Banjarmasin	Selayar/ Labuhan Bajo	Manokwari/ Biak	Wahai/ Babang
Labor Portion					
Skilled Labor	7%	0.95	0.95	0.95	0.95
Unskilled Labor	28%	0.36	0.38	0.67	0.57
Remain Portion	65%	0.95	0.95	0.95	0.95
Weighted Factor		0.78	0.79	0.87	0.84

Note : *1) These compositions are assumed based on data of DGSC

- 2) **Saving of transportation cost**
24. **The transportation cost is converted to economic prices by applying the CCF.**
- 3) **Saving of travel time cost**
25. **The converted travel time costs are referred in Tables A8.4.5 and A8.4.6.**
- 4) **Other benefits**
26. **The other benefits are converted to economic prices by applying the CCF.**

Table A8.7.1(1) Economic Analysis for Surabaya-Banjarmasin Route (Pattern A)

(Unit: Million Rp.)

Year	Cost				Benefit				Net Present Value (NPV)					
	Ferry Terminal Facilities		Ferry Boats		Cargo Handling	Transportation	Travel Time	O/M (existing)	Total	Benefit - Cost	Benefit	Cost		
	Construction	Re-Investment	O/M	Procurement									O/M	
2000	15,708	0	0	0	0	0	0	0	0	-15,708	0	15,708	-15,708	
2001	67,937	0	0	0	0	0	0	0	0	-67,937	0	62,200	-62,200	
2002	192,119	0	0	0	0	0	0	0	0	-192,119	0	161,041	-161,041	
2003	148,362	0	0	423,360	0	0	0	0	0	-571,722	0	438,767	-438,767	
2004	0	0	4,090	0	21,735	23,233	60,355	2,906	798	87,291	61,466	18,146	43,189	
2005	0	0	4,090	0	21,735	25,412	65,807	3,172	864	95,255	69,430	16,613	44,665	
2006	0	0	4,090	282,240	21,735	27,808	71,770	3,463	936	103,976	-204,088	181,444	-120,204	
2007	0	0	4,168	0	34,549	30,410	78,246	3,779	1,014	113,449	74,732	20,878	40,298	
2008	0	0	4,168	0	34,549	33,241	85,279	4,123	1,098	123,741	83,024	19,115	41,977	
2009	0	0	4,168	0	34,549	36,330	92,937	4,497	1,190	134,954	96,237	17,500	43,500	
2010	0	0	4,168	0	34,549	39,815	101,475	4,915	1,289	147,494	108,777	61,039	45,016	
2011	0	0	4,168	141,120	34,549	43,486	110,540	5,360	1,396	160,781	-19,055	60,919	-7,220	
2012	0	0	4,338	0	43,307	47,644	120,402	5,844	1,512	175,244	127,599	16,528	44,264	
2013	0	3,834	4,338	0	43,307	51,848	131,136	6,371	1,638	190,993	139,515	16,349	44,310	
2014	0	0	4,338	0	43,307	47,644	142,789	6,943	1,774	208,096	160,452	13,854	46,656	
2015	0	0	4,338	0	43,307	47,644	147,996	7,184	1,788	216,354	168,710	12,684	44,915	
2016	0	0	4,338	0	43,307	47,644	147,996	7,184	1,788	216,354	168,710	11,613	41,122	
2017	0	0	4,338	0	43,307	47,644	147,996	7,184	1,788	216,354	168,710	10,632	37,649	
2018	0	0	4,338	0	43,307	47,644	147,996	7,184	1,788	216,354	168,710	9,734	34,470	
2019	0	0	4,338	0	43,307	47,644	147,996	7,184	1,788	216,354	168,710	8,912	31,559	
2020	0	0	4,338	0	43,307	47,644	147,996	7,184	1,788	216,354	168,710	8,160	28,894	
2021	0	0	4,338	0	43,307	47,644	147,996	7,184	1,788	216,354	168,710	7,471	26,454	
2022	0	0	4,338	0	43,307	47,644	147,996	7,184	1,788	216,354	168,710	6,840	24,220	
2023	0	3,834	4,338	0	43,307	51,478	147,996	7,184	1,788	216,354	164,876	6,766	21,671	
2024	0	0	4,338	0	43,307	47,644	147,996	7,184	1,788	216,354	168,710	5,753	20,302	
2025	0	0	4,338	0	43,307	47,644	147,996	7,184	1,788	216,354	168,710	5,249	18,587	
2026	0	0	4,338	0	43,307	47,644	147,996	7,184	1,788	216,354	168,710	4,806	17,018	
2027	0	0	4,338	0	43,307	47,644	147,996	7,184	1,788	216,354	168,710	4,400	15,581	
2028	0	14,429	4,338	423,360	43,307	485,433	147,996	7,184	1,788	216,354	-269,079	18,293	-22,752	
2029	0	0	4,338	0	43,307	47,644	147,996	7,184	1,788	216,354	168,710	16,749	13,060	
2030	0	0	4,338	0	43,307	47,644	147,996	7,184	1,788	216,354	168,710	15,334	11,957	
2031	0	0	4,338	282,240	43,307	329,884	147,996	7,184	1,788	216,354	-113,530	14,039	-7,367	
2032	0	0	4,338	0	43,307	47,644	147,996	7,184	1,788	216,354	168,710	12,854	10,023	
2033	0	0	4,338	-638,427	43,307	-590,782	147,996	7,184	1,788	216,354	807,137	2,831	43,903	
Total	424,126	22,096	128,541	913,893	1,190,697	2,679,353	3,872,656	47,470	187,865	5,652,004	2,972,651	1,225,518	1,225,518	0

Note : O/M means operation and maintenance cost.

EIRR= 9.29%

Table A8.7.1(2) Economic Analysis for Surabaya-Banjarmasin Route (Pattern B)

(Unit: Million Rp.)

Year	Cost										Benefit					Net Present Value (NPV)	
	Ferry Terminal Facilities			Ferry Boats			Total	Cargo Handling	Transportation	Travel Time (existing)	O/M (existing)	Total	Benefit - Cost	Benefit	Cost	Benefit - Cost	
	Construction	Re-Investment	O/M	Procurement	O/M	O/M											
2000	15,708	0	0	0	0	15,708	0	0	0	0	0	0	0	15,708	0	-15,708	
2001	67,937	0	0	0	0	67,937	0	0	0	0	0	0	0	67,937	0	-67,937	
2002	192,119	0	0	0	0	192,119	0	0	0	0	0	0	0	192,119	0	-192,119	
2003	148,362	0	0	169,344	0	317,706	0	0	0	0	0	0	0	317,706	0	-317,706	
2004	0	0	4,090	0	17,630	21,721	23,233	60,355	2,906	798	87,291	65,571	51,136	12,724	38,412		
2005	0	0	4,090	0	17,630	21,721	25,412	65,807	3,172	864	95,255	73,534	48,818	11,192	37,686		
2006	0	0	4,090	112,896	17,630	134,617	27,808	71,770	3,403	936	103,976	-30,640	46,620	60,358	-13,778		
2007	0	0	4,168	0	27,777	31,945	30,410	78,246	3,779	1,014	113,449	81,504	44,501	12,531	31,971		
2008	0	0	4,168	0	27,777	31,945	33,241	85,279	4,123	1,098	123,741	91,796	42,464	10,963	31,502		
2009	0	0	4,168	0	27,777	31,945	36,330	92,937	4,497	1,190	134,954	103,009	40,517	9,591	30,926		
2010	0	0	4,168	0	27,777	31,945	39,815	101,475	4,915	1,289	147,494	115,549	38,741	8,391	30,350		
2011	0	0	4,168	56,448	27,777	88,393	43,486	110,540	5,360	1,396	160,781	72,388	36,946	20,312	16,634		
2012	0	0	4,338	0	35,099	39,436	47,486	120,402	5,844	1,512	175,244	135,808	35,230	7,928	27,302		
2013	0	3,834	4,338	0	35,099	43,270	51,848	131,136	6,371	1,638	190,993	147,723	33,591	7,610	25,981		
2014	0	0	4,338	0	35,099	39,436	56,590	142,789	6,943	1,774	208,096	168,660	32,019	6,068	25,951		
2015	0	0	4,338	0	35,099	39,436	59,387	147,996	7,184	1,788	216,354	176,918	29,124	5,309	23,815		
2016	0	0	4,338	0	35,099	39,436	59,387	147,996	7,184	1,788	216,354	176,918	22,291	4,063	18,228		
2017	0	0	4,338	0	35,099	39,436	59,387	147,996	7,184	1,788	216,354	176,918	19,502	18,819	683		
2018	0	0	4,338	169,344	35,099	208,780	59,387	147,996	7,184	1,788	216,354	176,918	17,061	3,110	13,951		
2019	0	0	4,338	0	35,099	39,436	59,387	147,996	7,184	1,788	216,354	176,918	14,926	2,721	12,205		
2020	0	0	4,338	0	35,099	39,436	59,387	147,996	7,184	1,788	216,354	176,918	13,058	9,194	3,864		
2021	0	0	4,338	112,896	35,099	152,332	59,387	147,996	7,184	1,788	216,354	176,918	11,424	2,082	9,342		
2022	0	0	4,338	0	35,099	39,436	59,387	147,996	7,184	1,788	216,354	176,918	9,995	1,999	7,996		
2023	0	3,834	4,338	0	35,099	43,270	59,387	147,996	7,184	1,788	216,354	176,918	8,744	1,594	7,150		
2024	0	0	4,338	0	35,099	39,436	59,387	147,996	7,184	1,788	216,354	176,918	7,650	1,394	6,255		
2025	0	0	4,338	0	35,099	39,436	59,387	147,996	7,184	1,788	216,354	176,918	6,692	2,966	3,726		
2026	0	0	4,338	56,448	35,099	95,884	59,387	147,996	7,184	1,788	216,354	176,918	5,855	1,067	4,788		
2027	0	0	4,338	0	35,099	39,436	59,387	147,996	7,184	1,788	216,354	176,918	5,122	1,275	3,847		
2028	0	14,429	4,338	0	35,099	53,865	59,387	147,996	7,184	1,788	216,354	176,918	4,481	817	3,664		
2029	0	0	4,338	0	35,099	39,436	59,387	147,996	7,184	1,788	216,354	176,918	3,920	715	3,206		
2030	0	0	4,338	0	35,099	39,436	59,387	147,996	7,184	1,788	216,354	176,918	3,430	625	2,805		
2031	0	0	4,338	0	35,099	39,436	59,387	147,996	7,184	1,788	216,354	176,918	3,001	547	2,454		
2032	0	0	4,338	0	35,099	39,436	59,387	147,996	7,184	1,788	216,354	176,918	2,625	-508	3,133		
2033	0	0	4,338	-81,285	35,099	-41,849	59,387	147,996	7,184	1,788	216,354	258,203	2,625	-508	3,133		
Total	424,126	22,096	128,541	596,091	963,944	2,134,797	1,544,012	3,872,656	47,470	187,865	5,652,004	3,517,207	664,965	664,965	0	0	

Note : O/M means operation and maintenance cost.

EIRR= 14.3%

Table A8.7.2(1) Economic Analysis for Selayar-Labuhan Bajo Route (Pattern A)

(Unit: Million Rp.)

Year	Cost				Benefit				Total		Benefit - Cost		Net Present Value (NPV)	
	Ferry Terminal Facilities		Ferry Boats		Cargo Handling	Transportation	Travel Time	O/M (existing)	Total	Benefit	Cost	Benefit - Cost	Benefit	Cost
	Construction	Re-Investment	O/M	Procurement										
2000	1,810	0	0	0	0	0	0	0	0	0	0	0	1,810	-1,810
2001	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	26,718	0	0	0	0	0	0	0	0	0	0	0	21,412	-21,412
2003	11,289	0	0	62,093	0	0	0	0	0	0	0	0	52,648	-52,648
2004	0	0	483	0	2,235	2,799	5,525	737	120	9,181	6,464	5,897	1,746	4,151
2005	0	0	483	0	2,235	3,053	6,024	804	131	10,013	7,295	5,757	1,563	4,195
2006	0	0	483	0	2,235	3,321	6,556	876	143	10,896	8,179	5,609	1,399	4,210
2007	0	0	483	0	2,759	3,620	7,146	956	156	11,878	8,636	5,473	1,494	3,980
2008	0	0	483	0	2,759	3,962	7,810	1,045	171	12,988	9,746	5,358	1,337	4,021
2009	0	0	483	0	2,759	4,316	8,509	1,140	186	14,151	10,909	5,226	1,197	4,029
2010	0	0	483	0	2,759	4,708	9,281	1,244	203	15,436	12,195	5,103	1,072	4,032
2011	0	0	483	0	2,759	5,133	10,117	1,357	222	16,830	13,588	4,981	959	4,022
2012	0	0	483	0	2,759	5,608	11,045	1,483	242	18,378	15,136	4,869	859	4,010
2013	0	4,856	483	0	2,759	6,134	12,068	1,621	264	20,087	11,989	4,765	1,921	2,844
2014	0	0	483	62,093	2,759	6,690	13,159	1,769	288	21,906	43,428	4,652	13,873	-9,222
2015	0	0	548	0	5,402	7,295	14,347	1,930	314	23,887	17,938	4,541	1,131	3,410
2016	0	0	548	0	5,402	7,958	15,648	2,106	343	26,056	20,107	4,434	1,012	3,422
2017	0	0	548	0	5,402	8,690	17,078	2,301	375	28,444	22,494	4,333	906	3,427
2018	0	0	548	0	5,402	9,510	18,667	2,515	409	31,102	25,152	4,242	811	3,430
2019	0	0	548	0	5,402	10,387	20,376	2,747	446	33,956	28,007	4,146	726	3,419
2020	0	0	548	0	5,402	11,251	22,066	2,978	483	36,777	30,828	4,020	650	3,370
2021	0	0	548	0	5,402	12,127	23,772	3,210	521	39,630	33,681	3,878	582	3,296
2022	0	0	548	0	5,402	13,005	25,479	3,443	558	42,484	36,535	3,721	521	3,200
2023	0	4,856	548	0	5,402	13,782	26,610	3,567	559	44,517	33,711	3,491	847	2,644
2024	0	0	548	0	5,402	13,782	26,610	3,567	559	44,517	38,568	3,125	418	2,707
2025	0	0	548	0	5,402	13,782	26,610	3,567	559	44,517	38,568	2,798	374	2,424
2026	0	0	548	0	5,402	13,782	26,610	3,567	559	44,517	38,568	2,505	335	2,170
2027	0	0	548	0	5,402	13,782	26,610	3,567	559	44,517	38,568	2,242	300	1,942
2028	0	7,635	548	62,093	5,402	13,782	26,610	3,567	559	44,517	-31,160	2,007	3,412	-1,405
2029	0	0	548	0	5,402	13,782	26,610	3,567	559	44,517	38,568	1,797	240	1,557
2030	0	0	548	0	5,402	13,782	26,610	3,567	559	44,517	38,568	1,609	215	1,394
2031	0	0	548	0	5,402	13,782	26,610	3,567	559	44,517	38,568	1,440	192	1,248
2032	0	0	548	0	5,402	13,782	26,610	3,567	559	44,517	38,568	1,289	172	1,117
2033	0	0	548	-70,537	5,402	13,782	26,610	3,567	559	44,517	109,105	1,154	-1,674	2,829
total	39,816	17,347	15,716	115,741	131,410	281,172	547,380	73,493	11,722	913,768	593,737	114,461	-1,674	0

Note: O/M means operation and maintenance cost.

EIRR= 11.7%

Table A8.7.2(2) Economic Analysis for Selayar-Labuhan Bajo Route (Pattern B)

(Unit: Million Rp.)

Year	Cost						Benefit				Total		Benefit - Cost		Net Present Value (NPV)		
	Ferry Terminal Facilities		Ferry Boats		Total		Cargo Handling	Transportation	Travel Time	O/M (existing)	Total	Benefit	Cost	Benefit	Cost	Benefit - Cost	Benefit - Cost
	Construction	Re-Investment	O/M	Procurement	O/M	Total											
2000	1,810	0	0	0	0	1,810	0	0	0	0	0	0	0	0	-1,810	0	-1,810
2001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	26,718	0	0	0	0	26,718	0	0	0	0	0	0	0	0	-26,718	0	-19,482
2003	11,289	0	0	24,837	0	36,126	0	0	0	0	0	0	0	0	-36,126	0	-22,493
2004	0	0	483	0	1,693	2,176	2,799	5,525	737	120	9,181	4,881	1,157	4,881	7,005	4,881	3,725
2005	0	0	483	0	1,693	2,176	3,053	6,024	804	131	10,013	4,546	988	4,546	7,837	4,546	3,558
2006	0	0	483	0	1,693	2,176	3,321	6,556	876	143	10,896	4,224	844	4,224	8,720	4,224	3,381
2007	0	0	483	0	2,217	2,700	3,620	7,146	956	156	11,878	3,932	894	3,932	9,178	3,932	3,038
2008	0	0	483	0	2,217	2,700	3,962	7,810	1,045	171	12,988	3,671	763	3,671	10,288	3,671	2,908
2009	0	0	483	0	2,217	2,700	4,316	8,509	1,140	186	14,151	3,416	652	3,416	11,451	652	2,764
2010	0	0	483	0	2,217	2,700	4,708	9,281	1,244	203	15,436	3,182	557	3,182	12,736	557	2,625
2011	0	0	483	0	2,217	2,700	5,133	10,117	1,357	222	16,830	2,962	475	2,962	14,130	475	2,487
2012	0	0	483	0	2,217	2,700	5,608	11,045	1,483	242	18,378	2,762	406	2,762	15,678	406	2,356
2013	0	4,856	483	0	2,217	7,556	6,134	12,068	1,621	264	20,087	2,578	308	2,578	17,901	308	1,608
2014	0	0	483	0	2,217	27,537	6,690	13,159	1,769	288	23,887	2,401	455	2,401	19,021	455	1,780
2015	0	0	548	0	4,318	4,866	7,295	14,347	1,930	314	26,056	2,235	389	2,235	21,190	389	1,693
2016	0	0	548	0	4,318	4,866	7,958	15,648	2,106	343	28,444	1,941	332	1,941	23,578	332	1,609
2017	0	0	548	0	4,318	4,866	8,690	17,078	2,301	375	31,102	1,812	271	1,812	25,290	271	1,447
2018	0	0	548	0	4,318	29,703	9,510	18,667	2,515	409	33,956	1,689	207	1,689	27,267	207	1,356
2019	0	0	548	0	4,318	4,866	10,387	20,376	2,747	446	36,777	1,563	177	1,563	29,214	177	1,381
2020	0	0	548	0	4,318	4,866	11,251	22,066	2,978	483	39,630	1,438	151	1,438	31,192	151	1,261
2021	0	0	548	0	4,318	4,866	12,127	23,772	3,210	521	42,484	1,316	125	1,316	33,172	125	1,165
2022	0	0	548	0	4,318	4,866	13,005	25,479	3,443	558	45,337	1,194	99	1,194	35,147	99	1,069
2023	0	4,856	548	0	4,318	9,722	13,782	26,610	3,567	599	48,191	1,072	73	1,072	37,120	73	920
2024	0	0	548	0	4,318	4,866	13,782	26,610	3,567	559	51,047	959	47	959	39,143	47	896
2025	0	0	548	0	4,318	4,866	13,782	26,610	3,567	559	53,903	837	21	837	41,165	21	872
2026	0	0	548	0	4,318	4,866	13,782	26,610	3,567	559	56,759	715	0	715	43,187	0	848
2027	0	0	548	0	4,318	4,866	13,782	26,610	3,567	559	59,615	593	0	593	45,209	0	824
2028	0	7,635	548	0	4,318	12,501	13,782	26,610	3,567	559	62,471	471	0	471	47,231	0	799
2029	0	0	548	0	4,318	29,703	13,782	26,610	3,567	559	65,327	349	0	349	49,253	0	775
2030	0	0	548	0	4,318	4,866	13,782	26,610	3,567	559	68,183	227	0	227	51,275	0	751
2031	0	0	548	0	4,318	4,866	13,782	26,610	3,567	559	71,039	105	0	105	53,297	0	727
2032	0	0	548	0	4,318	4,866	13,782	26,610	3,567	559	73,895	83	0	83	55,319	0	703
2033	0	0	548	0	4,318	-16,494	13,782	26,610	3,567	559	76,751	61	0	61	57,341	0	679
total	39,816	17,347	15,716	77,989	104,865	255,734	281,172	547,380	73,493	11,722	913,768	59,275	59,275	658,034	658,034	59,275	0

Note : O/M means operation and maintenance cost.

EIRR= 17.1%

Table A8.7.3(1) Economic Analysis for Manokwari-Biak Route (Pattern A)

(Unit: Million Rp.)

Year	Cost				Benefit				Total		Benefit - Cost		Net Present Value (NPV)	
	Ferry Terminal Facilities		Ferry Boats		Cargo Handling	Transportation	Travel Time	O/M (existing)	Total	Benefit	Cost	Benefit - Cost	Benefit	Cost
	Construction	Re-Investment	O/M	Procurement										
2000	1,835	0	0	0	0	0	0	0	0	0	0	-1,835	0	1,835
2001	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	23,081	0	0	0	0	0	0	0	0	0	0	-23,081	0	19,841
2003	15,446	0	0	62,093	0	0	0	0	0	0	0	-77,539	0	61,796
2004	0	0	516	0	2,789	2,658	3,541	105	103	6,408	3,619	4,735	4,735	2,061
2005	0	0	516	0	2,789	2,880	3,841	114	112	6,947	4,158	4,759	4,759	1,911
2006	0	0	516	0	2,789	3,121	4,167	124	122	7,534	4,746	4,786	4,786	1,771
2007	0	0	516	0	2,789	3,398	4,537	135	133	8,203	5,414	4,831	4,831	1,642
2008	0	0	516	0	2,789	3,695	4,932	148	145	8,919	6,130	4,869	4,869	1,523
2009	0	0	516	0	2,835	4,023	5,368	162	157	9,710	6,559	4,915	4,915	1,696
2010	0	0	516	0	2,835	4,363	5,826	176	171	10,535	7,185	4,944	4,944	1,573
2011	0	0	516	0	2,835	4,748	6,359	192	186	11,466	8,115	4,989	4,989	1,458
2012	0	0	516	0	2,835	5,145	6,877	208	202	12,432	9,081	5,015	5,015	1,352
2013	0	4,901	516	0	2,835	5,623	7,503	230	220	13,575	9,523	5,077	5,077	3,087
2014	0	0	516	0	2,835	6,108	8,154	250	239	14,751	11,400	5,115	5,115	1,162
2015	0	0	516	0	2,835	6,638	8,864	273	260	16,035	12,684	5,155	5,155	1,077
2016	0	0	516	0	2,835	7,228	9,647	299	283	17,456	14,556	5,203	5,203	19,508
2017	0	0	594	0	5,553	7,858	10,488	326	308	18,979	16,332	5,245	5,245	1,699
2018	0	0	594	0	5,553	8,575	11,432	358	334	20,699	18,552	5,304	5,304	1,575
2019	0	0	594	0	5,553	9,330	12,436	391	364	22,521	20,374	5,350	5,350	1,460
2020	0	0	594	0	5,553	10,078	13,434	424	393	24,329	22,182	5,359	5,359	1,354
2021	0	0	594	0	5,553	10,821	14,427	457	422	26,127	24,048	5,335	5,335	1,255
2022	0	0	594	0	5,553	11,586	15,439	492	451	27,968	25,827	5,295	5,295	1,164
2023	0	4,901	594	0	5,553	12,385	16,481	529	481	29,876	27,980	5,244	5,244	1,939
2024	0	0	594	0	5,553	13,139	17,485	563	510	31,697	29,876	5,159	5,159	1,000
2025	0	0	594	0	5,553	13,895	18,489	598	539	33,521	31,697	5,058	5,058	928
2026	0	0	594	0	5,553	14,632	19,366	638	559	35,195	33,521	4,924	4,924	860
2027	0	0	594	0	5,553	15,250	19,908	679	559	36,396	35,195	4,721	4,721	797
2028	0	8,584	594	0	5,553	15,283	19,937	681	559	36,460	36,396	4,384	4,384	9,238
2029	0	0	594	0	5,553	15,283	19,937	681	559	36,460	36,460	4,065	4,065	685
2030	0	0	594	0	5,553	15,283	19,937	681	559	36,460	36,460	3,769	3,769	635
2031	0	0	594	0	5,553	15,283	19,937	681	559	36,460	36,460	3,494	3,494	589
2032	0	0	594	0	5,553	15,283	19,937	681	559	36,460	36,460	3,240	3,240	546
2033	0	0	594	0	5,553	15,283	19,937	681	559	36,460	36,460	3,004	3,004	567
total	40,362	18,387	16,808	111,270	128,439	278,875	368,601	11,959	10,604	670,038	354,771	143,343	143,343	0

Note : O/M means operation and maintenance cost.

EIRR= 7.9%

Table A8.7.3(2) Economic Analysis for Manokwari-Biak Route (Pattern B)

(Unit: Million Rp.)

Year	Cost				Benefit				Net Present Value (NPV)				
	Ferry Terminal Facilities		Ferry Boats		Cargo Handling	Transportation	Travel Time	O/M (existing)	Total	Benefit - Cost	Benefit	Cost	
	Construction	Re-Investment	O/M	Procurement									Benefit
2000	1,835	0	0	0	1,835	0	0	0	0	-1,835	0	1,835	-1,835
2001	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	23,081	0	0	0	23,081	0	0	0	0	-23,081	0	18,367	-18,367
2003	15,446	0	0	24,837	40,283	0	0	0	0	-40,283	0	28,596	-28,596
2004	0	0	1,731	0	2,247	2,658	3,541	105	103	4,161	4,058	1,423	2,635
2005	0	0	1,731	0	2,247	2,880	3,841	114	112	4,700	3,924	1,269	2,655
2006	0	0	1,731	0	2,247	3,121	4,167	124	122	5,287	3,797	1,132	2,664
2007	0	0	1,731	0	2,247	3,398	4,537	135	133	5,956	3,687	1,010	2,677
2008	0	0	1,731	0	2,247	3,695	4,932	148	145	6,672	3,576	901	2,675
2009	0	0	2,293	0	2,809	4,023	5,368	162	157	6,901	3,473	1,005	2,469
2010	0	0	2,293	0	2,809	4,363	5,826	176	171	7,726	3,362	896	2,466
2011	0	0	2,293	0	2,809	4,748	6,339	192	186	8,657	3,264	800	2,464
2012	0	0	2,293	0	2,809	5,145	6,877	208	202	9,623	3,157	713	2,444
2013	0	4,901	2,293	0	7,710	5,623	7,503	230	220	13,575	3,075	1,747	1,328
2014	0	0	2,293	0	2,809	6,108	8,154	250	239	11,942	2,981	568	2,413
2015	0	0	2,293	0	2,809	6,638	8,864	273	260	13,226	2,891	506	2,384
2016	0	0	2,293	24,837	27,646	7,228	9,647	299	283	-10,190	2,807	4,446	-1,639
2017	0	0	4,469	0	5,063	7,858	10,488	326	308	13,915	2,723	726	1,996
2018	0	0	4,469	24,837	29,901	8,575	11,432	358	334	17,456	2,649	3,826	-1,177
2019	0	0	4,469	0	5,063	9,330	12,436	391	364	20,699	2,571	578	1,993
2020	0	0	4,469	0	5,063	10,078	13,434	424	393	22,521	2,477	516	1,962
2021	0	0	4,469	0	5,063	10,821	14,427	457	422	24,329	2,373	460	1,913
2022	0	0	4,469	0	5,063	11,586	15,439	492	451	26,127	2,266	410	1,856
2023	0	4,901	4,469	15,523	25,488	12,385	16,481	529	481	29,876	2,160	1,842	317
2024	0	0	4,469	0	5,063	13,139	17,485	563	510	31,697	2,044	327	1,717
2025	0	0	4,469	0	5,063	13,895	18,489	598	539	33,521	1,928	291	1,637
2026	0	0	4,469	0	5,063	14,632	19,366	638	559	35,195	1,806	-260	1,546
2027	0	0	4,469	0	5,063	15,250	19,908	679	559	36,396	1,666	232	1,434
2028	0	0	4,469	0	5,063	15,283	19,937	681	559	36,460	1,489	207	1,282
2029	0	0	4,469	0	5,063	15,283	19,937	681	559	36,460	1,328	184	1,144
2030	0	0	4,469	0	5,063	15,283	19,937	681	559	36,460	1,185	165	1,020
2031	0	0	4,469	24,837	29,901	15,283	19,937	681	559	36,460	6,559	867	190
2032	0	0	4,469	0	5,063	15,283	19,937	681	559	36,460	31,396	131	812
2033	0	0	4,469	-34,474	-29,410	15,283	19,937	681	559	36,460	65,870	-678	1,519
total	40,362	9,803	16,808	80,398	250,349	278,875	368,601	11,959	10,604	670,038	75,558	75,558	0

Note : O/M means operation and maintenance cost.

EIRR= 12.1%

Table A8.7.4(1) Economic Analysis for Wahai-Babang Route (Pattern A)

(Unit: Million Rp.)

Year	Cost					Benefit					Net Present Value (NPV)			
	Ferry Terminal Facilities		Ferry Boats		Total	Cargo Handling	Transportation	Travel Time	O/M (existing)	Total	Benefit - Cost	Benefit	Cost	Benefit - Cost
	Construction	Re-Investment	O/M	Procurement										
2000	1,710	0	0	0	0	0	0	0	0	0	-1,710	0	1,710	-1,710
2001	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	23,766	0	0	0	23,766	0	0	0	0	0	-23,766	0	22,178	-22,178
2003	12,149	0	0	62,093	74,242	0	0	0	0	0	-74,242	0	66,925	-66,925
2004	0	0	495	0	2,619	1,675	1,940	279	68	3,961	1,341	3,449	2,281	1,168
2005	0	0	495	0	2,619	1,864	2,157	310	75	4,406	1,786	3,706	2,203	1,502
2006	0	0	495	0	2,619	2,057	2,383	343	84	4,866	2,246	3,954	2,129	1,825
2007	0	0	495	0	2,929	2,273	2,635	379	92	5,380	2,451	4,223	2,299	1,924
2008	0	0	495	0	2,929	2,526	2,925	422	102	5,975	3,045	4,531	2,221	2,309
2009	0	0	495	0	2,929	2,808	3,249	469	114	6,640	3,710	4,864	2,146	2,718
2010	0	0	495	0	2,929	3,108	3,598	519	126	7,551	4,422	5,202	2,073	3,129
2011	0	0	495	62,093	65,022	3,435	3,978	575	139	9,000	-56,895	5,556	44,446	-38,891
2012	0	0	534	0	5,286	3,804	4,405	637	154	9,000	3,715	5,943	3,490	2,453
2013	0	3,358	534	0	8,644	4,224	4,889	707	171	9,990	1,347	6,373	5,513	859
2014	0	0	534	0	5,286	4,679	5,417	784	190	11,070	5,785	6,821	3,257	3,564
2015	0	0	534	0	5,286	5,179	5,998	869	210	12,256	6,970	7,295	3,146	4,149
2016	0	0	534	0	5,286	5,736	6,644	964	233	13,576	8,290	7,806	3,039	4,767
2017	0	0	534	0	5,286	6,361	7,365	1,069	258	15,053	9,767	8,361	2,936	5,425
2018	0	0	534	62,093	67,379	7,066	8,175	1,187	286	16,714	-50,664	8,969	36,154	-27,185
2019	0	0	586	0	8,378	7,831	9,059	1,317	316	18,524	10,145	9,602	4,343	5,259
2020	0	0	586	0	8,378	8,602	9,948	1,447	347	20,345	11,966	10,187	4,195	5,992
2021	0	0	586	0	8,378	9,367	10,831	1,577	378	22,153	13,774	10,715	4,053	6,663
2022	0	0	586	0	8,378	10,137	11,719	1,707	409	23,972	15,594	11,201	3,915	7,286
2023	0	3,358	586	0	11,736	10,934	12,628	1,841	440	25,842	14,106	11,664	5,297	6,367
2024	0	0	586	0	8,378	11,706	13,517	1,972	470	27,665	19,287	12,063	3,653	8,410
2025	0	0	586	0	8,378	12,484	14,411	2,104	501	29,500	21,122	12,425	3,529	8,896
2026	0	0	586	0	8,378	13,257	15,302	2,235	532	31,326	22,947	12,746	3,409	9,337
2027	0	0	586	62,093	70,471	14,034	16,195	2,368	563	33,160	-37,311	13,034	27,699	-14,665
2028	0	6,734	691	0	80,349	14,853	17,121	2,504	594	35,072	-45,277	13,316	30,508	-17,191
2029	0	0	691	0	11,523	15,632	18,016	2,637	624	36,910	25,387	13,538	4,226	9,311
2030	0	0	691	0	11,523	16,421	18,919	2,771	655	38,767	27,244	13,753	4,083	9,653
2031	0	0	691	0	11,523	17,216	19,827	2,906	686	40,636	29,113	13,908	3,944	9,964
2032	0	0	691	0	11,523	18,005	20,729	3,041	717	42,491	30,968	14,049	3,810	10,239
2033	0	0	691	-141,075	-129,552	18,849	21,676	3,181	747	44,453	174,005	14,198	-1,378	55,576
total	37,626	13,449	17,124	169,389	424,512	256,121	295,658	43,120	10,281	605,179	180,668	273,433	273,433	0

Note : O/M means operation and maintenance cost.

EIRR= 3.5%

Table AS.7.4(2) Economic Analysis for Wabai-Babang Route (Pattern B)

(Unit: Million Rp.)

Year	Cost						Benefit						Net Present Value (NPV)		
	Ferry Terminal Facilities			Ferry Boats			Cargo Handling	Transportation	Travel Time	OM (existing)	Total	Benefit - Cost	Benefit	Cost	Benefit - Cost
	Construction	Re-Investment	O/M	Procurement	O/M	O/M									
2000	1,710	0	0	0	0	0	0	0	0	0	0	0	1,710	0	-1,710
2001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	23,766	0	0	0	0	0	0	0	0	0	23,766	0	23,766	0	-23,766
2003	12,149	0	0	24,837	0	0	0	0	0	0	36,987	0	36,987	0	-36,987
2004	0	0	495	0	1,564	0	1,675	1,940	279	68	3,961	1,901	2,929	1,523	1,406
2005	0	0	495	0	1,564	0	1,864	2,157	310	75	4,406	2,346	3,021	1,412	1,609
2006	0	0	495	0	1,564	0	2,057	2,383	343	84	4,866	2,806	3,094	1,310	1,784
2007	0	0	495	0	1,861	0	2,273	2,635	379	92	5,380	3,024	3,173	1,389	1,783
2008	0	0	495	0	1,861	0	2,526	2,925	422	102	5,975	3,619	3,267	1,288	1,979
2009	0	0	495	0	1,861	0	2,808	3,249	469	114	6,640	4,284	3,367	1,195	2,172
2010	0	0	495	0	1,861	0	3,108	3,598	519	126	7,351	4,995	3,457	1,108	2,349
2011	0	0	495	0	1,861	24,837	3,435	3,978	575	139	8,127	-19,066	3,544	11,859	-8,314
2012	0	0	534	0	3,605	0	3,804	4,405	637	154	9,000	4,861	3,640	1,674	1,966
2013	0	3,338	534	0	3,605	0	4,224	4,889	707	171	9,990	2,494	3,747	2,811	935
2014	0	0	534	0	3,605	0	4,679	5,417	784	190	11,070	6,951	3,850	1,439	2,410
2015	0	0	534	0	3,605	0	5,179	5,998	869	210	12,256	8,117	3,952	1,335	2,618
2016	0	0	534	0	3,605	0	5,736	6,644	964	233	13,576	9,437	4,060	1,238	2,822
2017	0	0	534	0	3,605	0	6,361	7,365	1,069	258	15,053	10,914	4,174	1,148	3,027
2018	0	0	534	0	3,605	49,674	7,066	8,175	1,187	286	16,714	-37,099	4,298	13,839	-9,541
2019	0	0	586	0	6,040	0	7,831	9,059	1,317	316	18,524	11,897	4,418	1,580	2,837
2020	0	0	586	0	6,040	0	8,602	9,948	1,447	347	20,345	13,718	4,499	1,465	3,034
2021	0	0	586	0	6,040	0	9,367	10,831	1,577	378	22,153	15,526	4,543	1,359	3,184
2022	0	0	586	0	6,040	0	10,137	11,719	1,707	409	23,972	17,346	4,559	1,260	3,299
2023	0	3,338	586	0	6,040	0	10,934	12,628	1,841	440	25,842	15,858	4,557	1,761	2,797
2024	0	0	586	0	6,040	0	11,706	13,517	1,972	470	27,665	21,039	4,524	1,084	3,441
2025	0	0	586	0	6,040	0	12,484	14,411	2,104	501	29,500	22,873	4,474	1,005	3,469
2026	0	0	586	0	6,040	24,837	13,257	15,302	2,235	532	31,326	-138	4,405	4,425	-19
2027	0	0	586	0	6,040	24,837	14,034	16,195	2,368	563	33,160	1,696	4,325	4,103	221
2028	0	6,734	691	0	8,476	0	14,853	17,121	2,504	594	35,072	19,172	4,242	1,923	2,319
2029	0	0	691	0	8,476	0	15,632	18,016	2,637	624	36,910	27,743	4,139	1,028	3,111
2030	0	0	691	0	8,476	0	16,421	18,919	2,771	655	38,767	29,600	4,032	953	3,078
2031	0	0	691	0	8,476	0	17,216	19,827	2,906	686	40,636	31,469	3,919	884	3,035
2032	0	0	691	0	8,476	0	18,005	20,729	3,041	717	42,491	33,325	3,800	820	2,980
2033	0	0	691	0	8,476	-35,269	18,849	21,676	3,181	747	44,453	70,556	3,687	-2,165	5,851
total	37,626	13,449	17,124	113,754	144,443	-35,269	256,121	295,658	43,120	10,281	605,179	278,783	117,697	117,697	0

Note : O/M means operation and maintenance cost.

EIRR = 7.89%

Table A9.1.1 Port Terminal Tariff

May, 1995

Tariff of Ferry Port Service of Sea, Straits and Bay	
1. Tariff of Berthing service	
a. Concrete Quay with Movable Bridge	Rp. 85 /hour/m(ship length)
b. Concrete Quay	Rp. 80 /hour/m(ship length)
c. Log Bridge	Rp. 55 /hour/m(ship length)
d. Beach/Ridges	Rp. 16 /hour/m(ship length)
2. Tariff of Port Enter Sign Service	
a. Port Enter Sign/Terminal (Passenger etc.)	Rp. 200 /person/once enter
b. Monthly Enter Sign of Company Employee at Port	Rp. 1,500 /person/month
c. Monthly Pass of 4 wheel vehicle or more which operate in Port	Rp. 4,000 /person/month
d. Vehicle Enter Sign of Group I:(Bicycle)	Rp. 50 /unit/once enter
e. Vehicle Enter Sign of Group IIa:(Motorcycle)	Rp. 100 /unit/once enter
f. Vehicle Enter Sign of Group IIb:(3 wheel vehicle)	Rp. 200 /unit/once enter
g. Vehicle Enter Sign of Group III(4 wheel vehicle:Sedan, Jeep, Minicab, Minibus, Microlet, Pick Up, Combi, Station, Wagon)	Rp. 300 /unit/once enter
h. Vehicle Enter Sign of Group IV(4 wheel vehicle:Bus, Medium Truck)	Rp. 400 /unit/once enter
i. Vehicle Enter Sign of Group V(4 wheel vehicle:Bus, Large Truck, Head Truck, Tank Truck)	Rp. 450 /unit/once enter
j. Heavy and Large Equipment Enter Sign (Rubber Wheel, Iron Wheel)	Rp. 500 /unit/once enter
3. Tariff of Quay Maintenance Service	
a. Vehicle Group IIa:(Motorcycle)	Rp. 100 /unit
b. Vehicle Group IIb:(3 wheel vehicle)	Rp. 200 /unit
c. Vehicle Group III(4 wheel vehicle:Sedan, Jeep, Minicab, Minibus, Microlet, Pick Up, Combi, Station, Wagon)	Rp. 400 /unit
d. Vehicle Group IV(4 wheel vehicle:Bus, Medium Truck)	Rp. 600 /unit
e. Vehicle Group V(4 wheel vehicle:Bus, Large Truck, Head Truck, Tank Truck)	Rp. 600 /unit
f. Heavy and Large Equipment (Rubber Wheel)	Rp. 10,000 /unit
(Iron Wheel)	Rp. 15,000 /unit
g. Loading Goods on Vehicle	Rp. 200 /ton
4. Tariff of Vehicle Weighing Service	
a. Vehicle Group III/IV	Rp. 300 /unit
b. Vehicle Group V	Rp. 400 /unit
c. Heavy and Large Equipment (Rubber/Iron)	Rp. 700 /unit
5. Tariff of Goods Accumulation Service	
	Rp. 100 /day
6. Tariff of Land and Building Hire	
a. Tariff of Land Hire	
1) For Shop	Rp. 750 /m ² /year
2) For Office	Rp. 300 /m ² /year
3) For Advertisement	Rp. 2,500 /m ² /year
b. Tariff of Room Hire	
1) For Ferry Company Office	Rp. 800 /m ² /month
2) For Office	Rp. 1,000 /m ² /month
3) For Shop, Canteen	Rp. 2,000 /m ² /month

Source: MOC

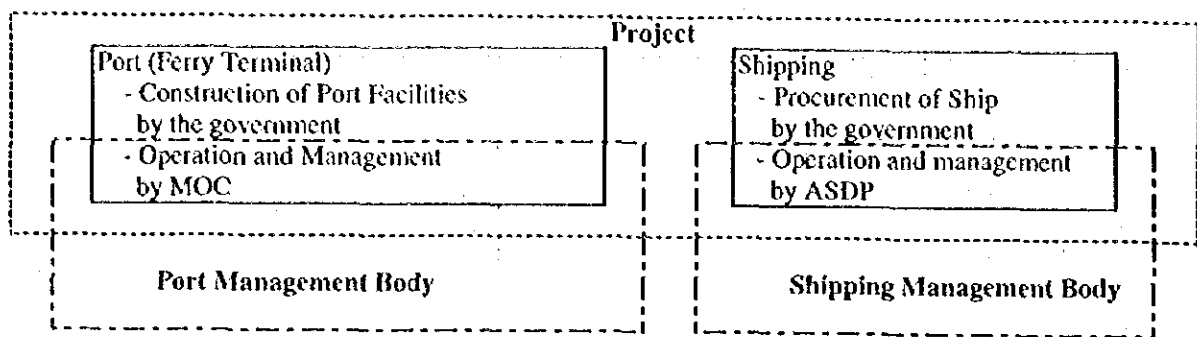


Figure A9.1.1 Scope of Financial Analysis

Table A9.1.2 Yearly Construction Cost of Each Route

(Unit: Million Rp.)

Route	1st Year	2nd Year	3rd Year	4th Year	Total
Surabaya-Banjarmasin	17,518	75,762	214,246	165,449	472,975
Selayar-Labuhan Bajo	2,026	-	29,902	12,634	44,562
Manakwari-Biak	2,048	-	25,767	17,243	45,058
Wahai-Babang	1,907	-	26,495	13,544	41,946

Source: Study Team

Table A9.1.3 Construction Cost Divided Local and Foreign Loan of Each Route

(Unit: Million Rp.)

Route	Local	Foreign	Total
Surabaya-Banjarmasin	273,809	199,166	472,975
Selayar-Labuhan Bajo	25,969	18,593	44,562
Manakwari-Biak	26,214	18,844	45,058
Wahai-Babang	22,737	19,209	41,946

Source: Study Team

Table A9.1.4 Service Life of Terminal Facilities

		(Unit: Year)
Facilities		Service Life
Waterfront Facilities		
Quay and Loading Deck		50
Breaking Dolphin		50
Mooring Dolphin		50
Catwalk		50
Movable Bridge		50
Trestle		50
Causeway		50
Terminal Facilities		
Revetment and Slope Protection		50
Terminal Building and Gate House		25
Pavement		10
Landscaping and Fence		50
Utilities		
Water Supply		30
Electric Supply		25
Generators		10
Mobilization and Demobilization		-
Site Clearance and Grading		-
Dredging		10
Reclamation		-