

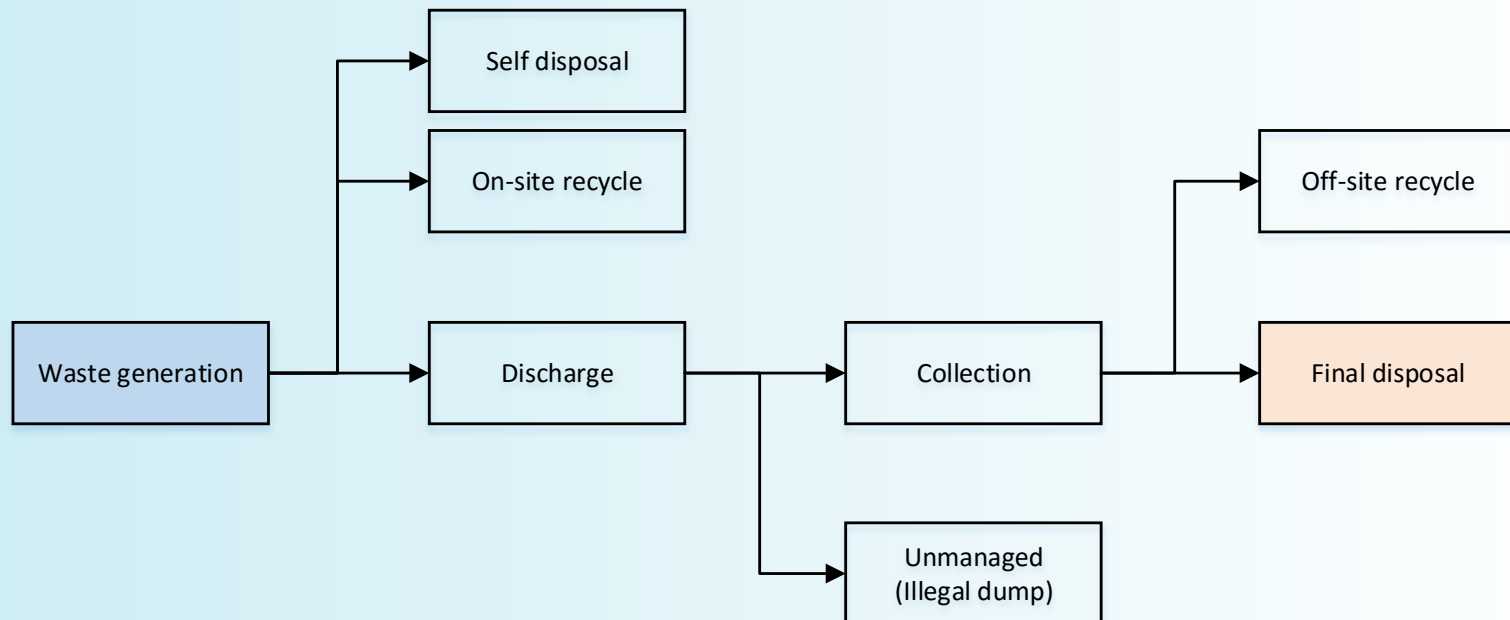
Session 2

JICA Expert: Junji ANAI

Current SWM situation clarified
based on the waste flow

1. Waste Flow

1. Final disposal amount \Rightarrow obtain by incoming amount survey
2. Generation amount \Rightarrow estimate by population, waste generation rate
3. Other data \Rightarrow obtain the data by public opinion survey and estimate each amount.



2. Create the current waste flow

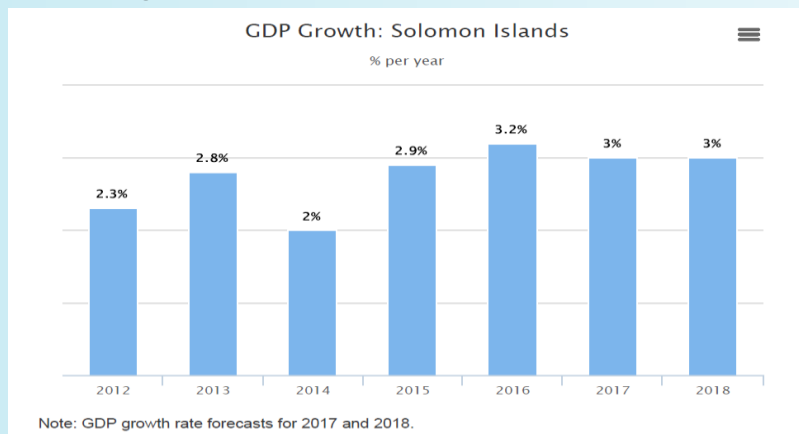
(1) Estimation of Municipal Solid Waste (MSW) generation

a. Population forecast

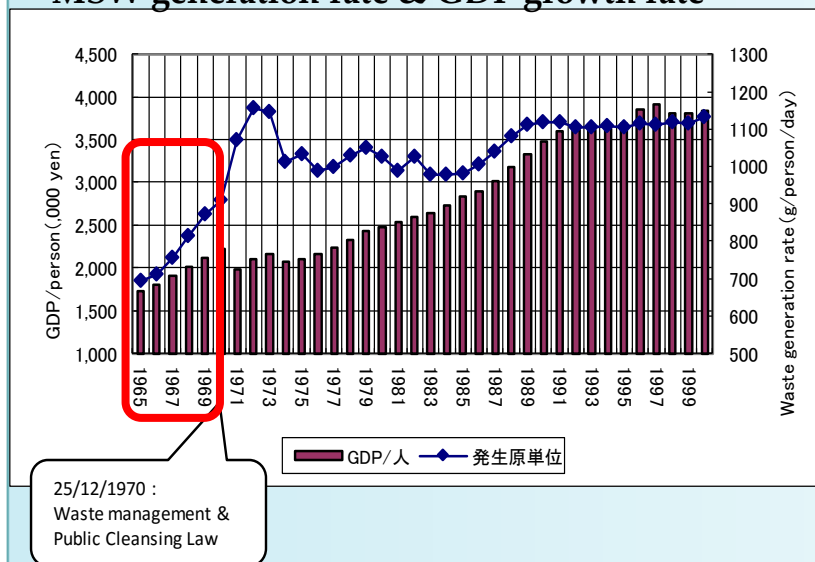
Year	Choiseul	Western	Isabel	Central	Rennel	Guadalcanal	Malaita	Makira	Temotu	Honiara	Total	G-rate	
2009						93,613				64,609			
2010	28,480	82,187	28,150	27,852	3,274	103,059	146,143	43,627	22,679	70,002	555,453	8.347%	
2011	29,293	83,931	28,876	28,392	3,361	107,979	147,905	44,832	22,970	72,079	569,620	2.967%	
2012	30,106	85,650	29,597	28,912	3,449	112,988	149,573	46,020	23,250	74,168	583,714	2.898%	-0.069%
2013	30,918	87,344	30,311	29,415	3,539	118,078	151,152	47,190	23,520	76,260	597,726	2.821%	-0.078%
2014	31,731	89,015	31,020	29,902	3,632	123,239	152,647	48,344	23,779	78,346	611,656	2.735%	-0.085%
2015	32,548	90,673	31,728	30,375	3,726	128,479	154,079	49,489	24,032	80,424	625,554	2.652%	-0.083%
2016	33,370	92,319	32,434	30,837	3,823	133,790	155,457	50,625	24,278	82,485	639,418	2.563%	-0.090%
2017	34,197	93,953	33,139	31,289	3,923	139,164	156,787	51,755	24,520	84,522	653,248	2.470%	-0.093%
2018	35,030	95,579	33,843	31,732	4,026	144,592	158,076	52,880	24,757	86,529	667,044	2.375%	-0.095%
2019	35,869	97,197	34,548	32,168	4,131	150,067	159,333	54,001	24,991	88,501	680,806	2.279%	-0.096%
2020	36,719	98,820	35,257	32,603	4,239	155,605	160,583	55,126	25,227	90,441	694,619	2.192%	-0.087%
2021	37,581	100,448	35,970	33,039	4,351	161,197	161,832	56,257	25,463	92,344	708,482	2.104%	-0.088%
2022	38,453	102,083	36,688	33,476	4,465	166,838	163,085	57,396	25,701	94,206	722,392	2.016%	-0.088%
2023	39,336	103,724	37,410	33,915	4,582	172,520	164,345	58,545	25,940	96,026	736,343	1.932%	-0.084%
2024	40,227	105,367	38,135	34,358	4,701	178,237	165,613	59,705	26,180	97,802	750,325	1.849%	-0.082%
2025	41,131	107,023	38,866	34,809	4,822	184,002	166,908	60,886	26,422	99,544	764,412	1.781%	-0.068%
2026										101,249		1.713%	-0.068%
2027										102,914		1.644%	-0.068%

b. MSW generation rate

GDP growth rate



MSW generation rate & GDP growth rate



MSW generation rate

Year	GDP	MSW Generation rate (kg/person/day)	
2009	-4.9%		
2010	6.9%		
2011	12.9%	0.860	
2012	4.7%	0.880	50%
2013	3.0%	0.893	50%
2014	1.5%	0.900	50%
2015	3.7%	0.917	50%
2016	3.0%	0.931	50%
2017	3.5%	0.947	50%
2018	3.0%	0.955	30%
2019	3.0%	0.964	30%
2020	3.0%	0.973	30%
2021	3.0%	0.981	30%
2022	3.0%	0.990	30%
2023	3.0%	0.999	30%
2024	3.0%	1.008	30%
2025	3.0%	1.017	30%
2026	3.0%	1.026	30%
2027	3.0%	1.036	30%

c. MSW generation amount

- HCC population in 2017: 84,522 person
- MSW generation rate in 2017: 947g/person/day
- MSW generation amount in 2017:
 $947\text{g/person/day} \times 84,522 \text{ person}$
 $= 80.0 \text{ ton/day}$

This amount consists of household waste and business waste.

(2) Final disposal

Incoming survey conducted Oct 18th to 24th 2017.

- The amounts of household waste, business waste are identified.
- Industrial waste, hospital waste and agricultural waste is identified.
- Waste disposed brought from outside of boundary of HCC is identified

HH waste collected (ton/day)

Service providers	Disposal amount
HH waste collected by HCC	24.64
HCC (Zone 1 - 6)	18.68
Philip (Zone 7)	1.37
Matthew (Zone 8)	2.86
Suia (Zone 9 & 10)	1.72
HH waste collected by other than HCC	3.14
Total HH waste collected in HCC	27.78

Type of waste collected in HCC (ton/day)

Type of waste	Disposal amount
MSW collected	48.38
HH waste	27.78
Business waste	20.59
Hospital waste	1.17
Industrial waste	19.23
Agricultural waste	0.15

Type of waste collected outside boundary of HCC (ton/day)

Type of waste	Disposal amount
HH waste	6.29
Business waste	0.76

(3) Other data & assumptions

a. HH waste flow at generation source (by JICA survey in 2015)

Burn	6.8%	2.50
Bury	2.6%	0.94
Rubish bin	66.8%	24.57
Direct haulage	4.5%	1.65
Feed to animals	9.3%	3.43
Composting	3.9%	1.44
Sell to recycle company	3.4%	1.24
Unmanaged waste	2.8%	1.03
	100.0%	36.80

1.5

38.30ton/day

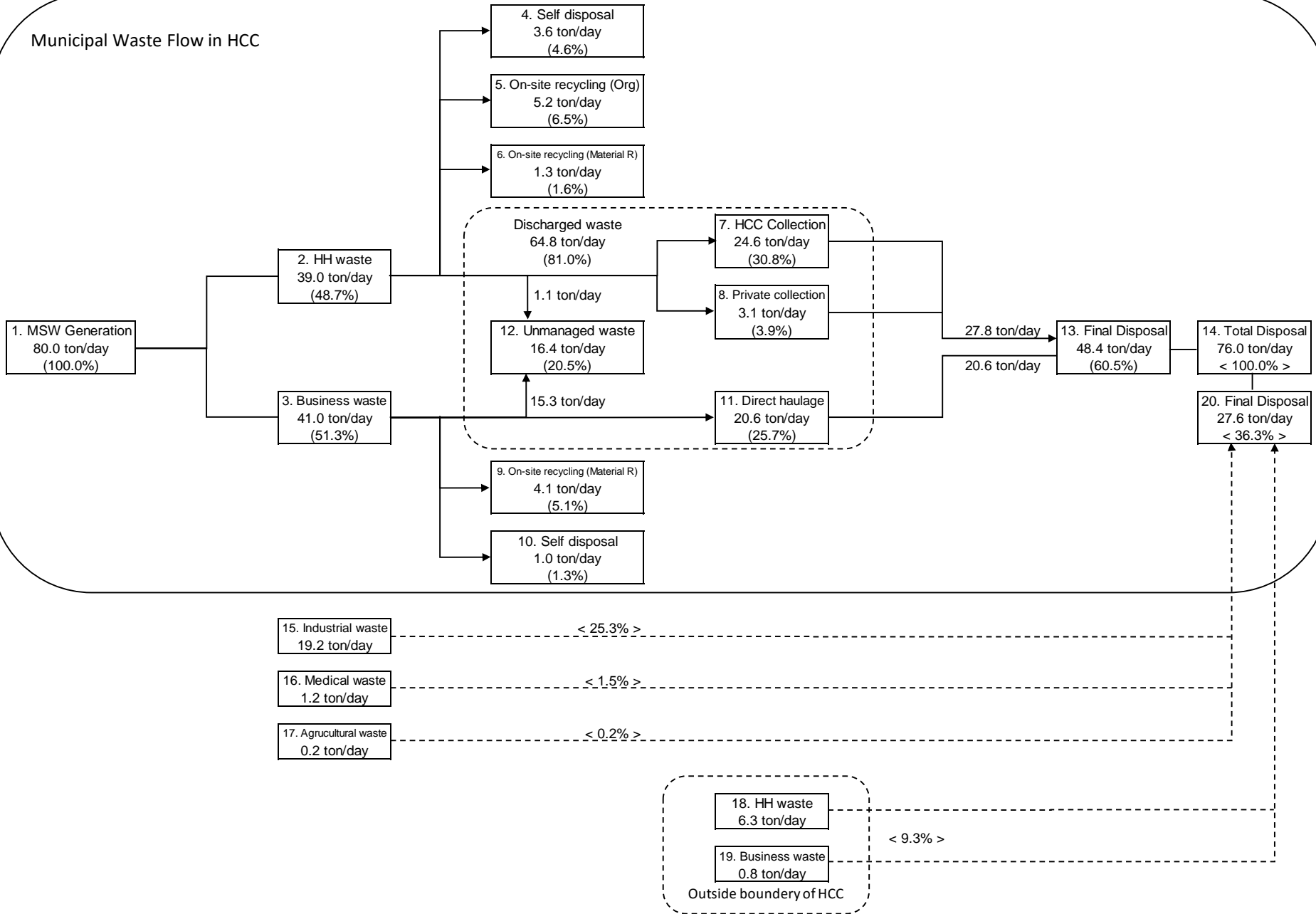
Self disposal	9.3%
HCC collection	66.8%
Direct	4.5%
On-site R (organic)	13.2%
On-site R (material R)	3.4%
Unmanaged	2.8%
	100.0%

b. Assumption for business waste

- Business waste generation amount = Total generation amount - Household waste
- Business waste disposed to Ranadi was measured in 2017= 20.6 ton/day (fixed)
 - On-site recycling (sell recyclables to recycler) = 20% of remaining business waste
 - Self disposal (burn) = 5% of remaining business waste
 - Unmanaged waste = 75% of remaining business waste

Waste Flow in 2017

Municipal Waste Flow in HCC





A. Technical issues clarified based on the current waste flow

1. 20% of generated waste is unmanaged waste (illegal dump).
2. The waste collection rate against the generation amount is 60.5%, and 74.7% to the discharge amount.
3. Material recovery rate is only 6.7% of generated waste
4. Self disposal is high
5. On-site recycling of organic waste is 6.5% of generated waste.
6. 36.3% of the total disposal amount is the waste excluded from HCC's solid waste management.