Session 4

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Identifying problems of SWM in HCC based on the future waste flow in case without plan

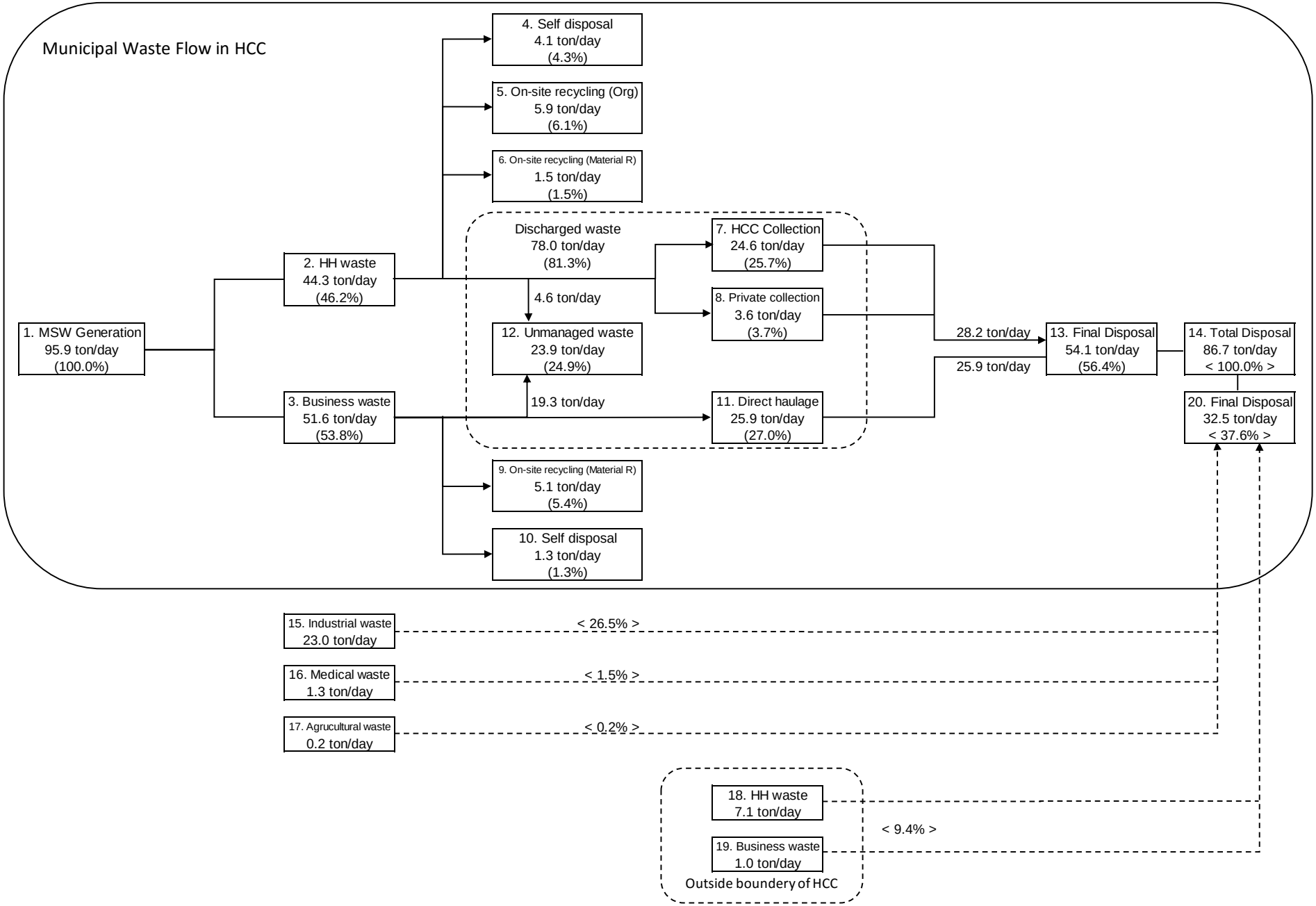
Assumptions for creating future waste flows

1. After 2017, generation rate of municipal solid waste will increase at 30% of GDP growth rate.
2. The increase in industrial waste is proportional to the growth rate of GDP.
3. Hospital garbage increases in proportion to the population.
4. Agricultural garbage maintains the present amount.
5. Increase in household waste in the surrounding area is the same as the increase in HH waste generation amount of HCC.
6. Increase in business waste in the surrounding area is the same as the increase in business waste generation amount of HCC.

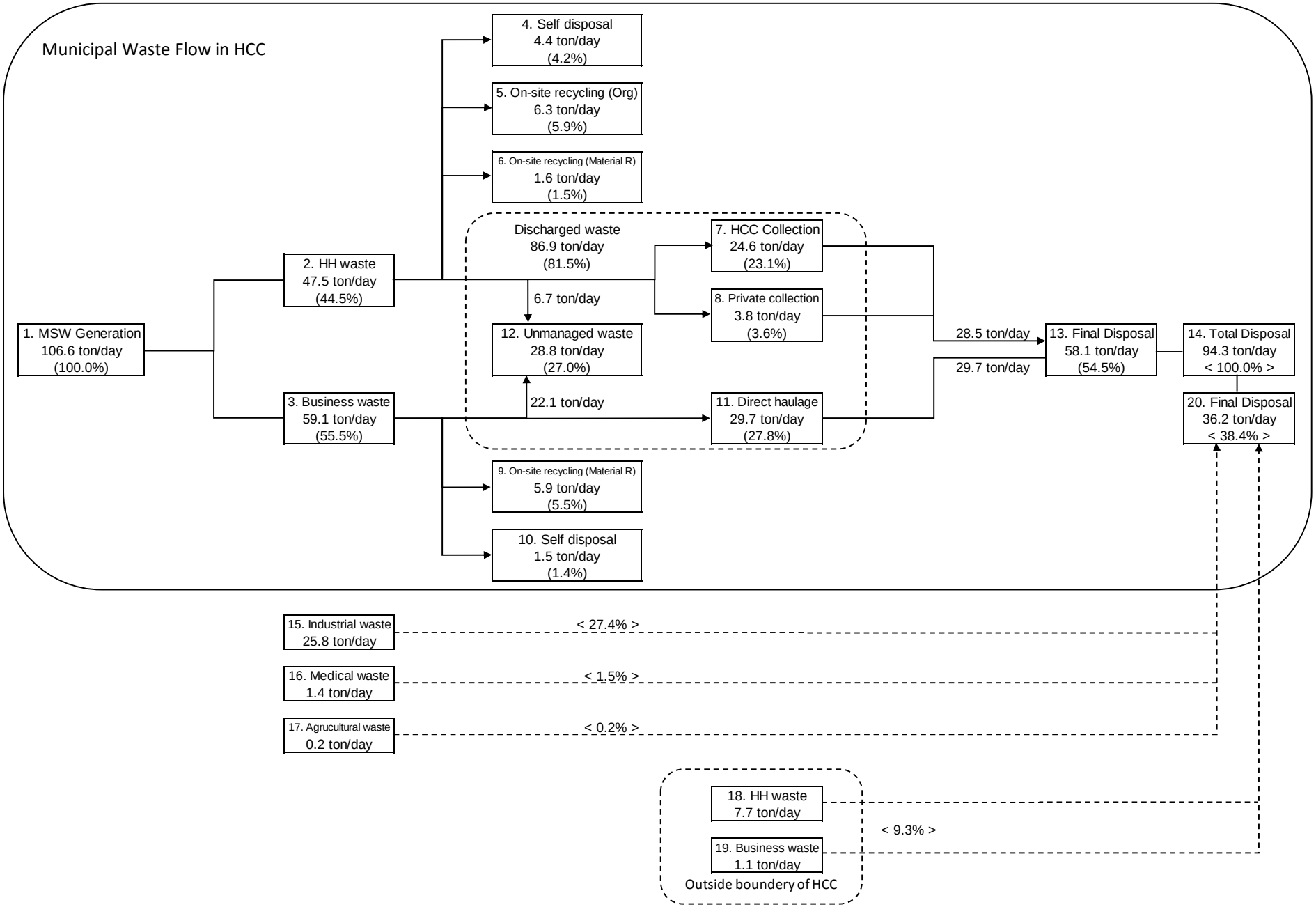
Future estimation of waste flow (ton/day)

		2017	2018	2023	2027
1	MSW generation	80.0	82.7	95.9	106.6
2	Household waste	39.0	39.9	44.3	47.5
3	Business waste	41.0	42.7	51.6	59.1
4	Self disposal (HH waste)	3.6	3.7	4.1	4.4
5	On-site recycling (HH-W organic)	5.2	5.3	5.9	6.3
6	On-site recycling (HH-W MR)	1.3	1.3	1.5	1.6
7	HH waste HCC collection	24.6	24.6	24.6	24.6
8	HH waste private collection	3.1	3.2	3.6	3.8
9	On-site recycling (Business MR)	4.1	4.3	5.1	5.9
10	Self disposal (Business)	1.0	1.1	1.3	1.5
11	Direct haulage (Business)	20.6	21.5	25.9	29.7
12	Unmanaged waste	16.4	17.7	23.9	28.8
	Unmanaged waste (HH-waste)	1.1	1.7	4.6	6.7
	Unmanaged waste (B-waste)	15.3	16.0	19.3	22.1
13	Final disposal of SWM	48.4	49.3	54.1	58.1
14	Total Final disposal	76.0	77.7	86.7	94.3
15	Industrial waste	19.2	19.8	23.0	25.8
16	Hospital waste	1.2	1.2	1.3	1.4
17	Agricultural waste	0.2	0.2	0.2	0.2
18	HH waste other than HCC	6.3	6.4	7.1	7.7
19	Business waste other than HCC	0.8	0.8	1.0	1.1
20	Final disposal other than HCC	27.6	28.4	32.5	36.2

Waste Flow in 2023



Waste Flow in 2027



4. Problems in the SWM of HCC (Technical issues)

Current problems	In 2027
• 20% of generated waste is unmanaged waste (illegal dump).	• Unmanaged waste will increase by 75% over the 10 years to 28.8 tons/day.
• The waste collection rate against the generation amount is 60.5%, and 74.7% to the discharge amount.	• The waste collection coverage against to the generation amount decreases to 54%.
• Material recovery rate is only 6.7% of generated waste	
• Self disposal is high	
• On-site recycling of organic waste is 6.5% of generated waste.	
• 36.3% of the total disposal amount is the waste excluded from HCC's solid waste management.	• The disposal amount at Ranadi will be 94 tons/day in 2027, of which about 40% is brought in from outside HCC control.

4. Problems in the SWM of HCC (Infrastructural issue)

Current problems	In 2027
• Road access is limited for collection	
• Unavailability of spare parts	
• Water supply is not available at Ranadi	
• Landfill capacity of Ranadi DS is limited	

4. Problems in the SWM of HCC (Institutional issue)

Current problems	In 2027
• Lack of waste collection capacity (Collection equipment is not enough)	
• No record system at Ranadi disposal site	
• Insufficient budget for proper waste management	
• The attitude of citizens to "make the town beautiful" is low	
• An enforcement system of regulations is not functioning	
• Limited support from National Gov.	
• The divisions responsible for municipal solid waste are dispersed.	