Economic Value of Domestic Waste Processing In Puri Cipageran Indah

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Abstract

The In making compost, especially for the household scale, it takes a tool or container called a composter. This composter can be made of plastic barrels or modified cement boxes and placed indoors or outdoors. Here is How to Use Composter. Organic materials referred to in the definition of compost are grass, straw, remnants of twigs and branches, animal manure, fallen flowers, urine of livestock, and other organic materials. All of these organic materials will experience weathering caused by microorganisms that thrive in moist and wet environments. This study is an explain about the economic value of domestic waste processing by a simple waste composting in Puri Cipageran Indah. The waste problem arises because the community care less about managing it. Public still throwing a lot of trash carelessly, especially in residential areas. Dirty environment due to piles and scattered garbage.. Garbage causes pollution of water, soil and air, disturbing health, comfort and unparalleled views delicious

INTRODUCTION

Based on Sub directorate of statistic environment waste is the residue of human daily activities and/or natural processes in solid form[1]. According to the Government Regulation of the Republic of Indonesia Number 81 of 2012[2], household waste is waste that comes from daily activities in the household which does not include feces and specific waste. Household waste includes organic, inorganic and B3 waste (Toxic and Hazardous Materials). Garbage has the potential

to cause environmental disturbances in the form of water, soil and air pollution. Further pollution can cause health and socio-economic problems.

The population rate in Cimahi is increasing every year, based on Badan Pusat Statistik (Center Statistic Board) the statistic of Cimahi people can be seen below.

Tabel 1

Population Data Of Cimahi Utara

Years	Cimahi Utara
2000	105,921
2010	147,484
2020	165,652

Tabel 2

Population Data Of Cimahi Tengah

Years	Cimahi Tengah
2000	142,800
2010	163,070
2020	161,758

Tabel 3

Population Data Of Cimahi Selatan

Years	Cimahi Selatan
2000	193,356
2010	230,623
2020	240,990

Tabel 4

Population Data Of Kota Cimahi

Years	Kota Cimahi
2000	442,077
2010	541,177
2020	568,400

Overall the population of Cimahi can be seen below :

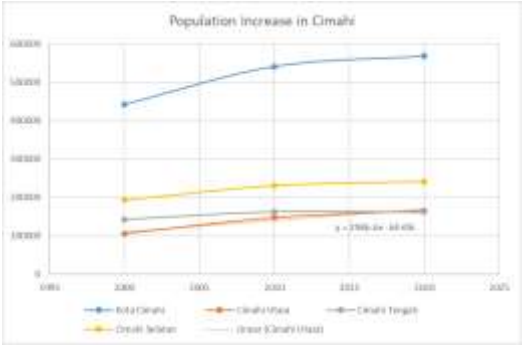

Figure 1 Increasing Of Population in Cimahi

One of housing in Cipageran, such as Puri Cipageran have a big concern about the waste processing, it's RT Bayu have a future concept about waste processing in his area. He is a chief of Blok H6 RT06 RW24 which have 192 population.

Methodology

In order to determine the economic value of waste processing in Puri Cipageran, we need to know how much population potential in n year, the population projection is :

$Pn = Po\ (1+r)^n$

To calculate the economic value of the waste processing we need to know the base value of the output product. The output product of waste processing is a fertilizer, the value of fertilizer is around Rp. 6000 per kg.

ANALYSIS AND DISCUSSION

Type of waste

a. Easy to rot type
   - Leaves
   - Leftovers food
   - Vegetables
   - Eggshell
   - Leftover Fish and meat
   - Cattle Manure

b. Uneasy to rot type
   - Plastic
   - Paper
   - Bottle
   - Can
   - Wood

Waste management which can be held by communities

The waste problem arises because the community care less about managing it. Public still throwing a lot of trash carelessly, especially in residential areas. Dirty environment due to piles and scattered garbage.. Garbage causes pollution of water, soil and air, disturbing health, comfort and unparalleled views delicious.

Reduction of waste generation should be a top priority in reducing waste generation, and this can only be done if the waste generator itself is aware of it. One wrong reason for increasing the amount of waste is because of the consumption pattern of society itself. For this reason, in this article, we invite the public to reduce household waste through this composting activity.

Pile Of Household Waste

Garbage generated from household based on the research I've done at Cipageran based on SNI obtained that waste generation per person/day is 0.49 kg/day, or 2.4 l/person/day, and organic waste reaches 96%.

Garbage Sorting in the Household

Don't litter, waste should be separated into dry waste (an organic) such as plastic and cans) and wet (organic) waste such as leaves and vegetable residue

other). Dry waste can be reused or sold to an organic garbage collector is the economic value (recycling) while Wet waste is processed into compost

Active Composting Process

During the active composting process, that is since the compost pile was arranged until the time ripening, quality control is carried out by marking, and reversal. This stage is an advanced sorting. Must be done correct so as to ensure the achievement of composting perfect, and separate Every household should have must provide two baskets/plastic rubbish. One basket/plastic filled with trash one that rots easily, and another with garbage which does not rot easily. This activity is required care and willingness of housewives to do, then the role of community leaders such as RW and RT to support this program very much determine. Basal (organic) waste is made

compost and inorganic waste (not easy rot) are collected for further sale. Organic compost is the result of processing and processing of sorted organic waste First, it comes from household waste.

Ripe Compost Criteria

- Compost temperature is close to air temperature
- C/N Comparison < 20
- Weight loss > 60%
- Compost color dark brown
- Smells like earth
- The structure has been destroyed
- N-NH5 content < 10% of total N

Based on Sahwan [3] weight decreasing can be seen below :

Days	Weight Decreasing (%)	Percentage Difference
1	0	
14	39.58	39.58
28	53.01	13.43
35	59.54	6.53
42	62.8	3.26
49	64.68	1.88
56	67.15	2.47

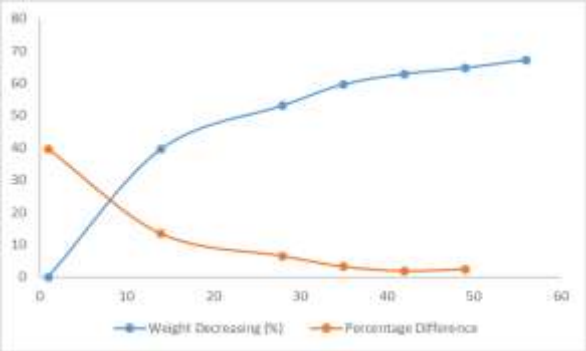

Figure 2 Weight decreasing of waste based compost

RESULTS

Population and Waste in Puri Cipageran Analysis

Based on population data from BPS, the increasing population rate in Cimahi Utara district the location of Puri Cipageran is around 5%.

Population in Puri Cipageran in 2030 is :
$Pn = Po\ (1+r)^n$
$Pn = 192\ (1+56\%)^{10} = 312$
Population in Puri Cipageran in 2040 is :
$Pn = Po\ (1+r)^{20}$
$Pn = 192\ (1+56\%)^{20} = 509$
Population in Puri Cipageran in 2050 is :
$Pn = Po\ (1+r)^{30}$
$Pn = 192\ (1+56\%)^{30} = 830$

Based on population projection above we can calculate how much the financial benefit from the waste processing.

FB = Ep – (PaC+Ma)
Ep = Bruto Price
BP =W * fp
W = w * wd
W = Fix Weight
w = Waste Weight (kg)
wd = Weight decreasing (%)
fp = Fertilizer Price (Rp)
PaC = Packaging Cost
Ma = Maintenance Cost

Potentially domestic waste is around 0.7 kg / person / day. So it could be around 0.7 x 192 person such around 134.4 kg / day and it also potentially 5.644 kg/ 42 day. Based on Figure 2 we can see that the percentage decrease is start to stagnant in 42 days, so we use 42 days as cycling time.

The calculation for early population is :
W = w * wd
W = 5.644.8 kg * (100-62.8)%\
= 2.099.9 kg
Ep =W * fp
= 2.099.9 kg * Rp 6.000 / kg
= Rp. 12.599.193,60
PaC = Rp. 500/kg x W
= Rp. 500/kg x 2.099.9 kg
= Rp 1.049.933
Ma = 10% x Ep
= 10% x Rp. 12.599.193,60
= Rp. 1.259.919,36
FB = Ep – (PaC+Ma)
= Rp. 12.599.193,60 – (Rp 1.049.933 + Rp. 1.259.919,36)
= Rp. 10.289.341,44

Based on calculation above we can use the formula for the next 10, 20 and 30 years. The results can be seen below :

No	Projection (Years)	FB (Rp)
1	10	16.720.179,84
2	20	27.277.472,86
3	30	44.479.965,60

CONCLUSION

Composting can be very useful for several things, like :
Renaturation for soil
Carbon degradation
Soil fertilization
Increase groundwater quality
Financial benefit from the domestic waste processing is also very interesting, it can duplicate almost three times in 30 years.

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