

Paradigm Shift From End of Pipe to Circular Economy in Waste Management: Improving Urban Environmental Quality in Indonesia

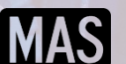
Henry Bastaman, Ph.D.

Thursday, 19 July 2018

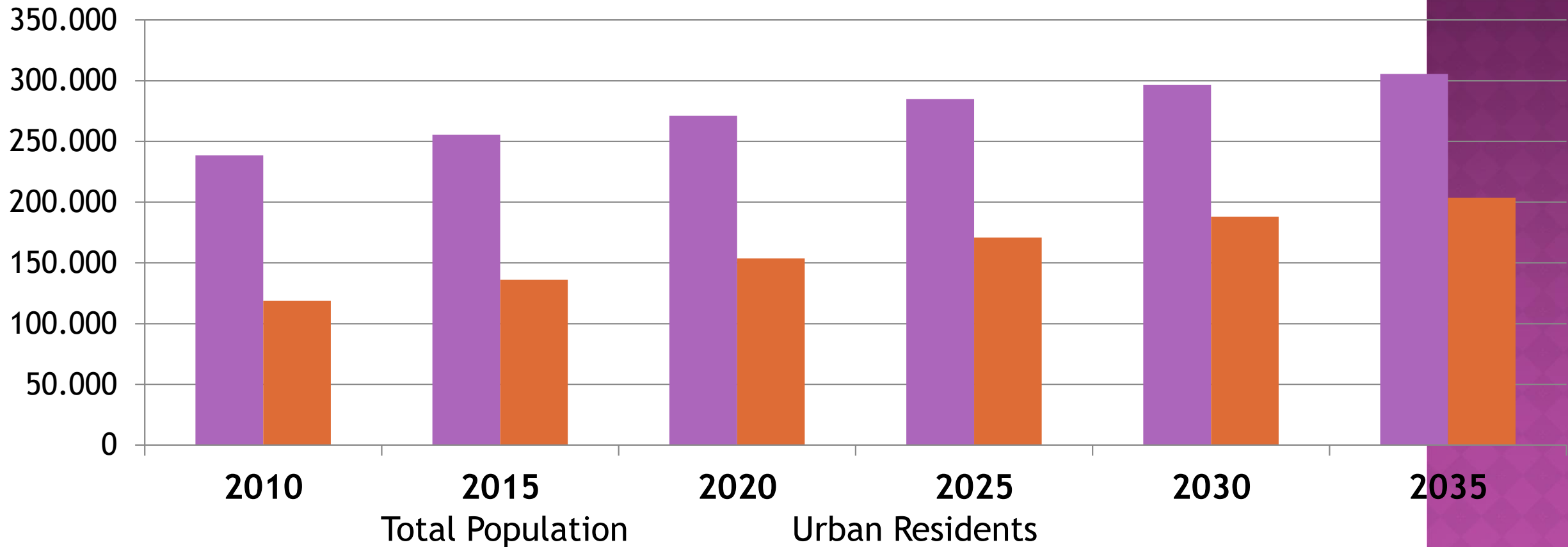
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TOTAL POPULATION & URBAN RESIDENTS IN INDONESIA (IN THOUSANDS)



CONSUMER PROFILE, INDONESIA

29% below 15 years old

50% below 30 years old

And consumer profiling says.....

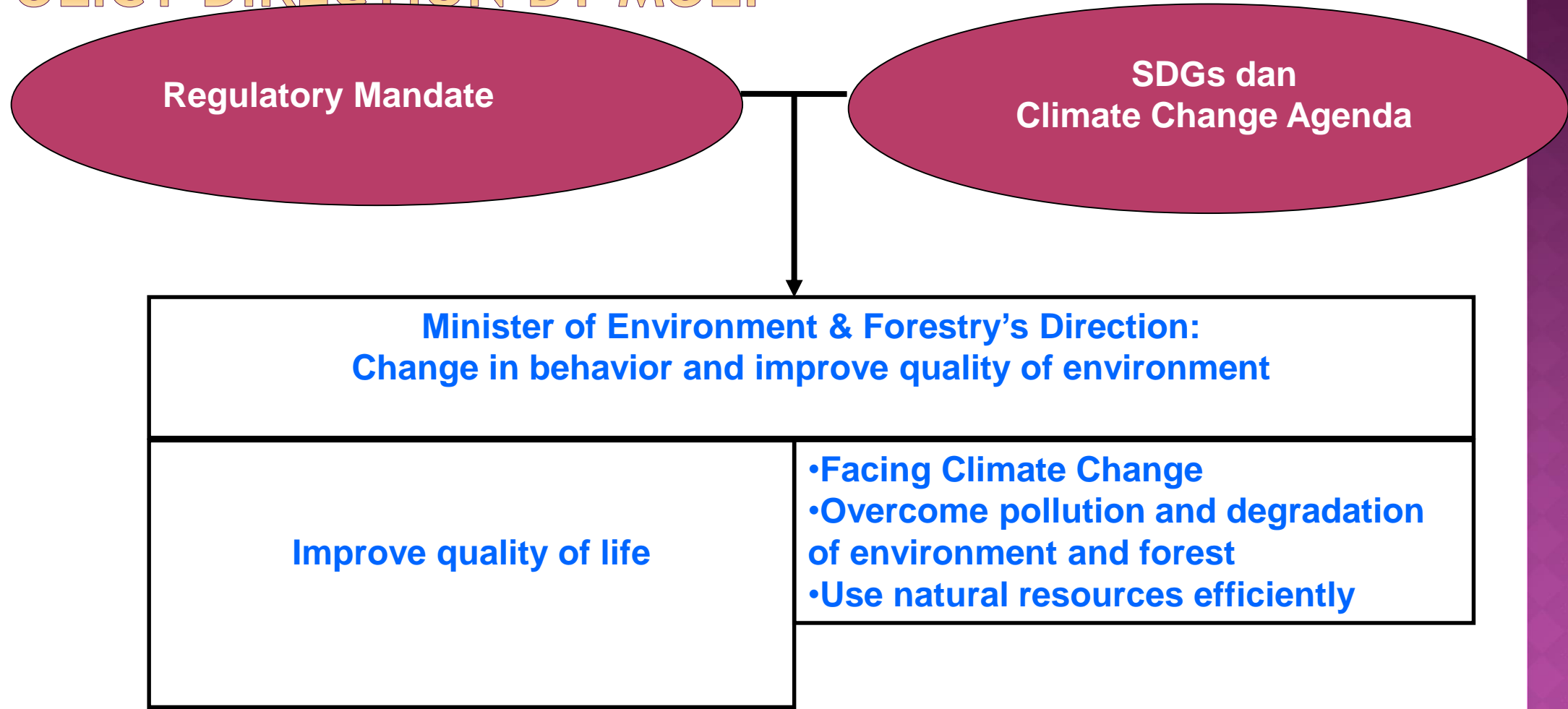
Convenience

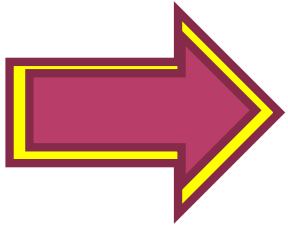
Healthy

Looking Good

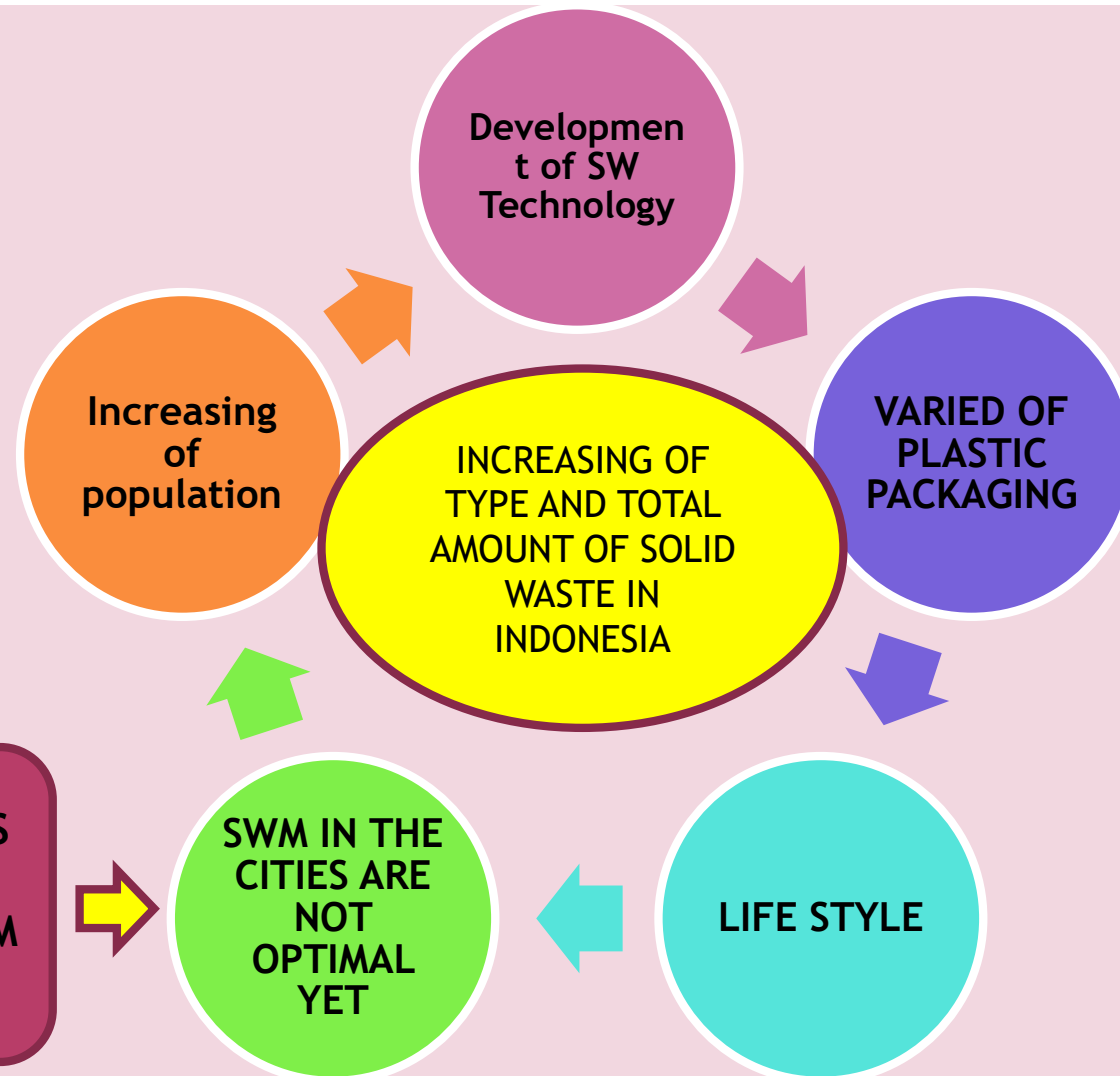
Q: where is Green? Sustainability?

POLICY DIRECTION BY MOEF





NATIONAL SITUATIONS ON SOLID WASTE MANAGEMENT



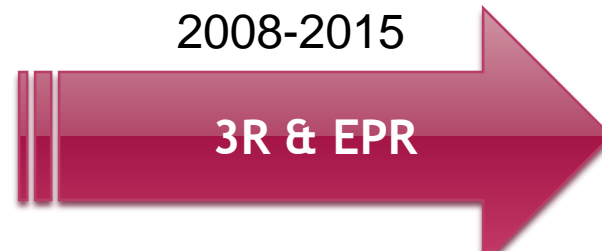
- LACK OF PUBLIC AWARENESS
- LESS INFRASTRUCTURE
- LOCAL BUDGETING OF SWM IS NOT PRIORITY YET

SHIFTING PARADIGM

(Act No. 18/2008 and Govt Reg No 81/2012)



- WASTE JUST POLLUTANT LOADS
- NO WASTE REDUCTION
- NO WASTE TO RESOURCE
- NO RESOURCE EFFICIENCY
- FULL VIRGIN RESOURCE EXTRACTION
- LINIER ECONOMY



- REDUCE WASTE AS POLLUTANT LOADS
- REDUCTION AT SOURCE
- WASTE TO RESOURCE
- RESOURCE EFFICIENCY
- LIMIT VIRGIN RESOURCE EXTRACTION
- PRODUCER RESPONSIBILITY



- MAKE WASTE A NEW LIFE AS LONG AS POSSIBLE
- SUSTAINABLE CITIES AND COMMUNITIES (SDG GOAL NO 11)
- RESPONSIBLE CONSUMPTION AND PRODUCTION (SDG GOAL NO 12)

WHO IS RESPONSIBLE OF SWM IN INDONESIA

Act Number 18 Year 2008 on SWM

Central Government and Local government are obligated to guarantee the SWM are implemented well and sustainable

SOLID WASTE REDUCTION

1. SOLID WASTE RESTRICTIONS
2. RECYCLE
3. REUSE

SOLID WASTE HANDLING

1. SEGREGATION
2. COLLECTION
3. TRANSPORTATION
4. TREATMENT
5. FINAL PROSES (TPA)



NATIONAL STRATEGY AND POLICY ON SWM REGULATIONS APPROACHES

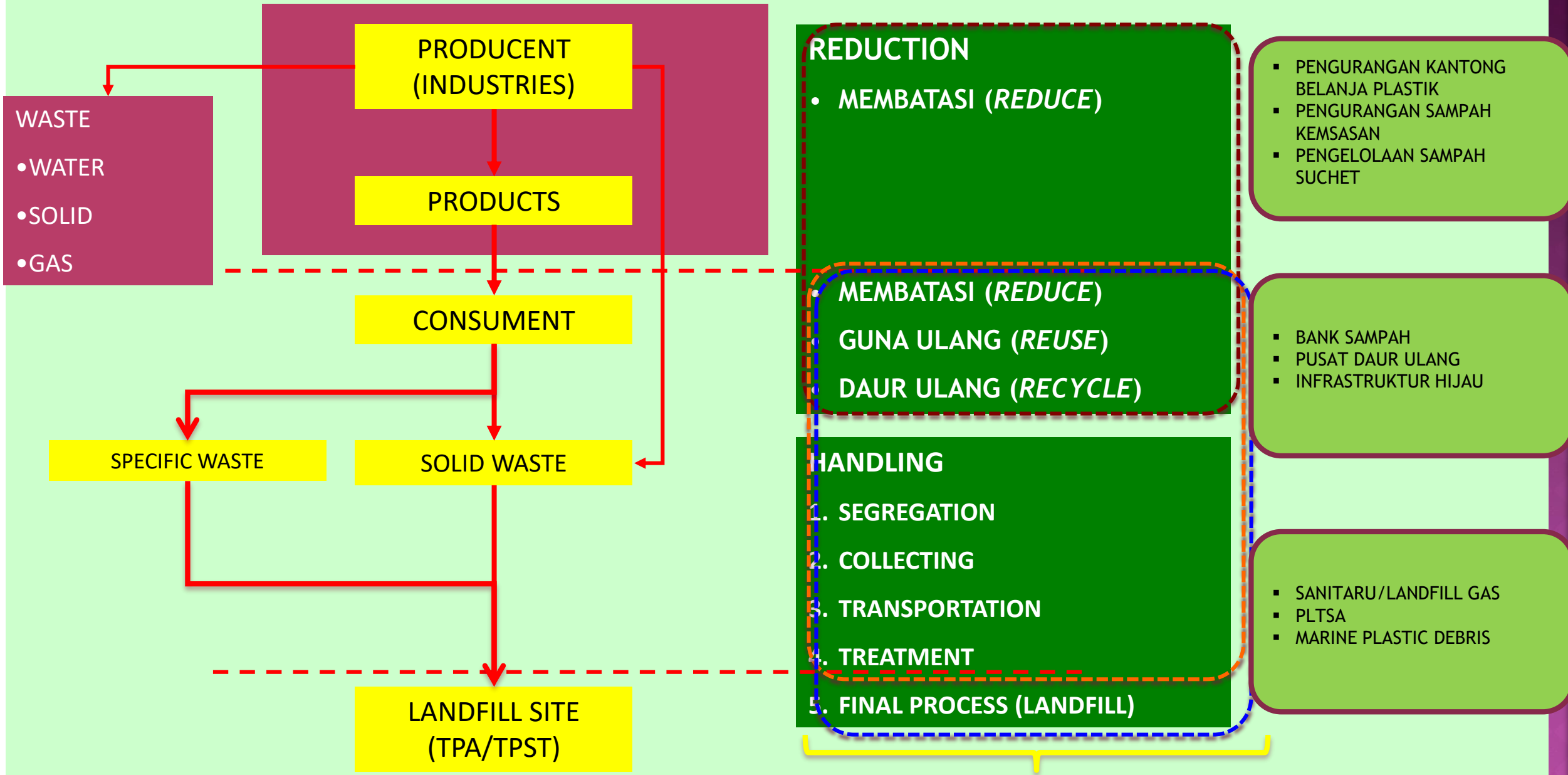
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- ACT NO 18/2008 → SOLID WASTE MANAGEMENT
 - GOVT REG 81/2012 → SOLID WASTE MANAGEMENT
 - MINISTERIAL DECREE NO 13/2012 → 3R AND WASTE BANK
 - MINISTERIAL DECREE NO 53/2016 → CLEAN CITY (ADIPURA)
 - MINISTERIAL DECREE NO 59/2016 → STANDAR FOR LEACHET FROM SW LANDFILL SITE
 - MINISTERIAL DECREE NO 70/2016 → EMISSION STANDAR FOR THERMALS PROCESS
 - CAMPAIGN FOR CLEAN INDONESIA 2020
 - PRESIDENTIAL DECREE NO 97/2017 ON NATIONAL STRATEGY AND POLICY OF SWM (TARGET UNTIL YEAR 2025)

NATIONAL TARGET ON SWM (PRESIDENTIAL DECREE NO 97/2017)

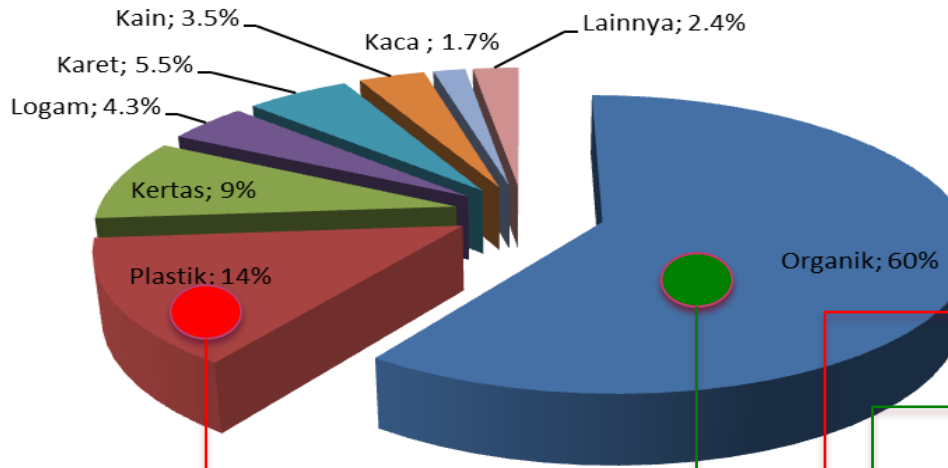
Indicator	National Target on Solid Waste Management										
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Solid Waste Estimation (Million Ton)	64.4	65.2	65.8	66.5	67.1	67.8	68.5	69.2	69.9	70.6	71.3
Solid Waste Reduction (Million Ton)	10% (6.44)	12% (7.82)	15% (9.89)	18% (12)	20% (13.4)	22% (14.)	24% (16.4)	26% (17.99)	27% (18.9)	28% (19.7)	30% (20.9)
Solid Waste Handling (Million Ton)	70% (45)	71% (46)	72% (47.3)	73 % (48,5)	75% (50.3)	75% (50.8)	74% (50.7)	73% (50.52)	72% (50.3)	71% (50.1)	70% (49.9)

- Under the Presidential Decree No. 97/2017 stated the national target of solid waste management are 100% well managed in years 2025 with;
 - 30% of waste reduction
 - 70% of waste handled
- In year 2025 target there is no littering of solid waste in the river, beach, ocean, open dumping system and open burning

SOLID WASTE MANAGEMENT APPROACHES UNDER ACT NO. 18/2008

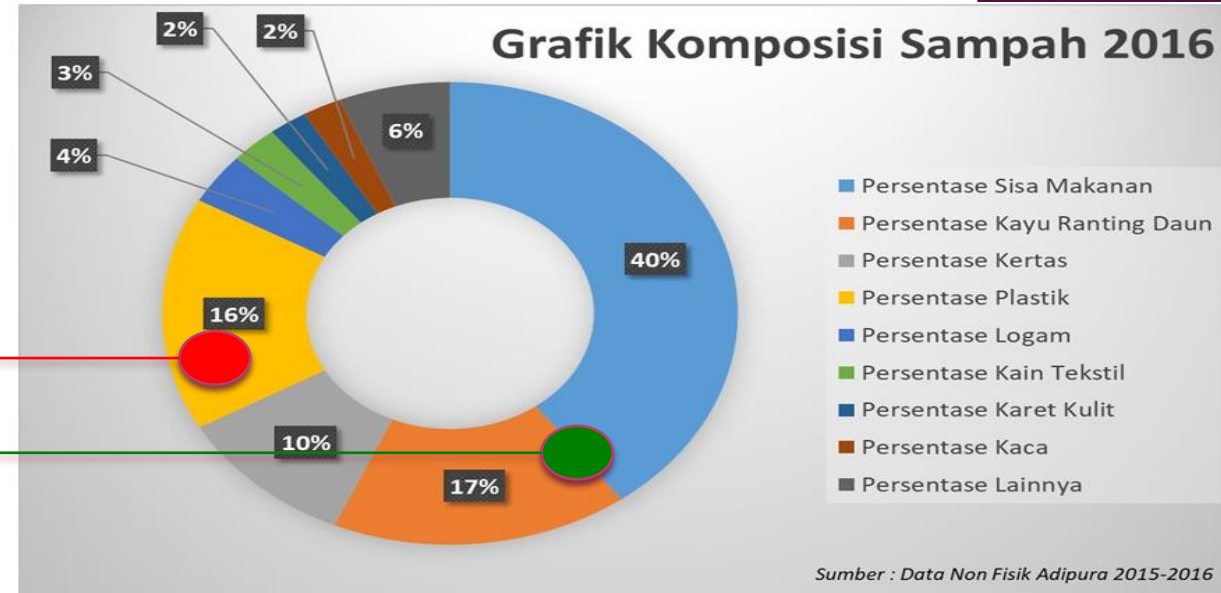


NATIONAL ON SOLID WASTE PROFILE



Source: Adipura Secretariat, 2013

Grafik Komposisi Sampah 2016

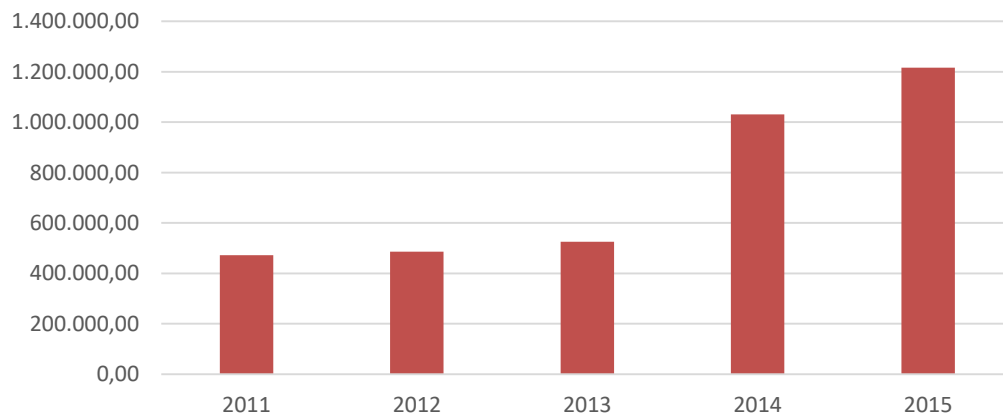


Sumber : Data Non Fisik Adipura 2015-2016

Perubahan komposisi:

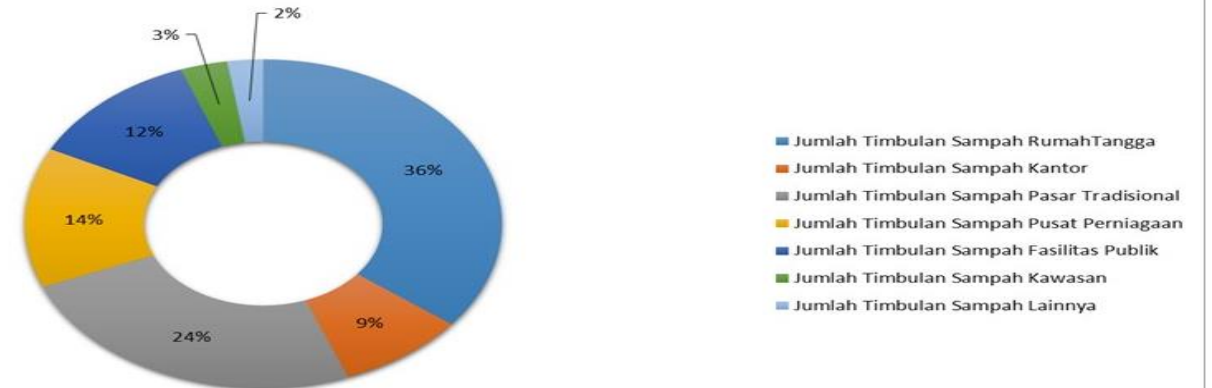
- Sampah organik: 60% (2013) → 57% (2016)
- Sampah plastik : 14% (2013) → 16% (2016)

Pertambahan Volume Timbulan Sampah Plastik di 22 Kota Metropolitan dan Besar



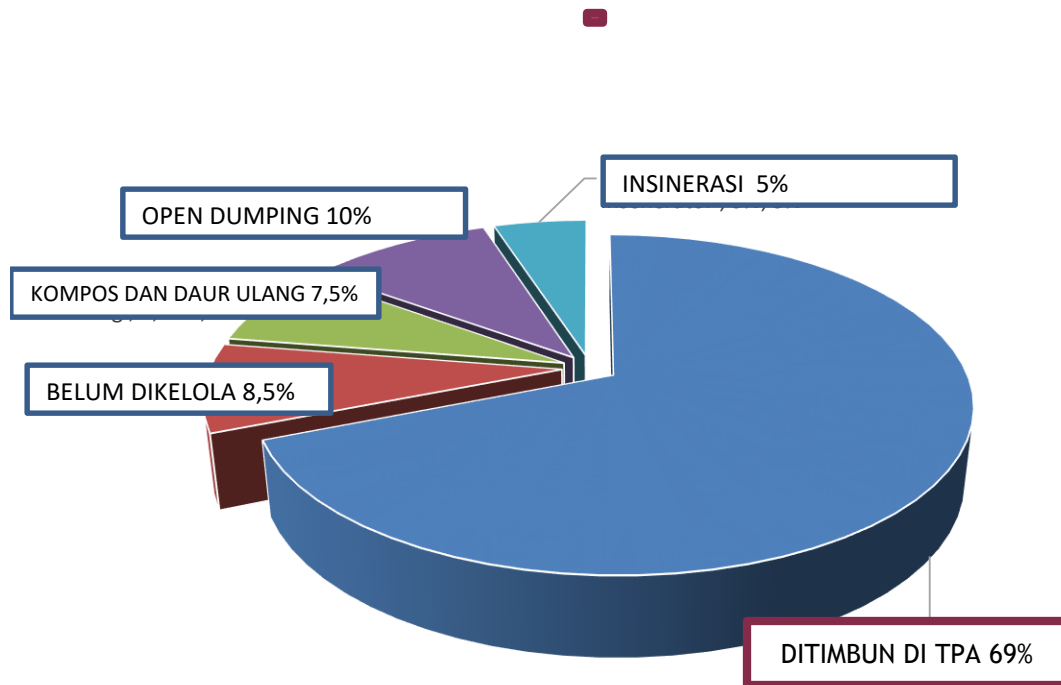
Persentase Sumber Sampah

sumber : Laporan Nonfisik Adipura 2015-2016



Sumber : Data Non Fisik Adipura 2015-2016

NATIONAL SOLID WASTE MANAGEMENT PROFILE



- ❑ 69% solid waste are dumped into landfill (TPA), which is 45% is controlled landfill and 55% are still open dumping.
- ❑ 8,5% solid waste are not managed in proper manner
- ❑ 7,5% solid waste are recycled

Solid waste treatment alternatives in Indonesia:

1. Refuse Derived Fuel (RDF) using solid waste as alternative fuel in cement Kiln
2. Thermal process
3. Biogas process (Biodigester)
4. COMPOSTING
5. 3R through Waste Bank
6. Final Treatment Facility (TPA)



Circular Economy Concept on Solid Waste Management (Ministerial Decree No. 13/2012)

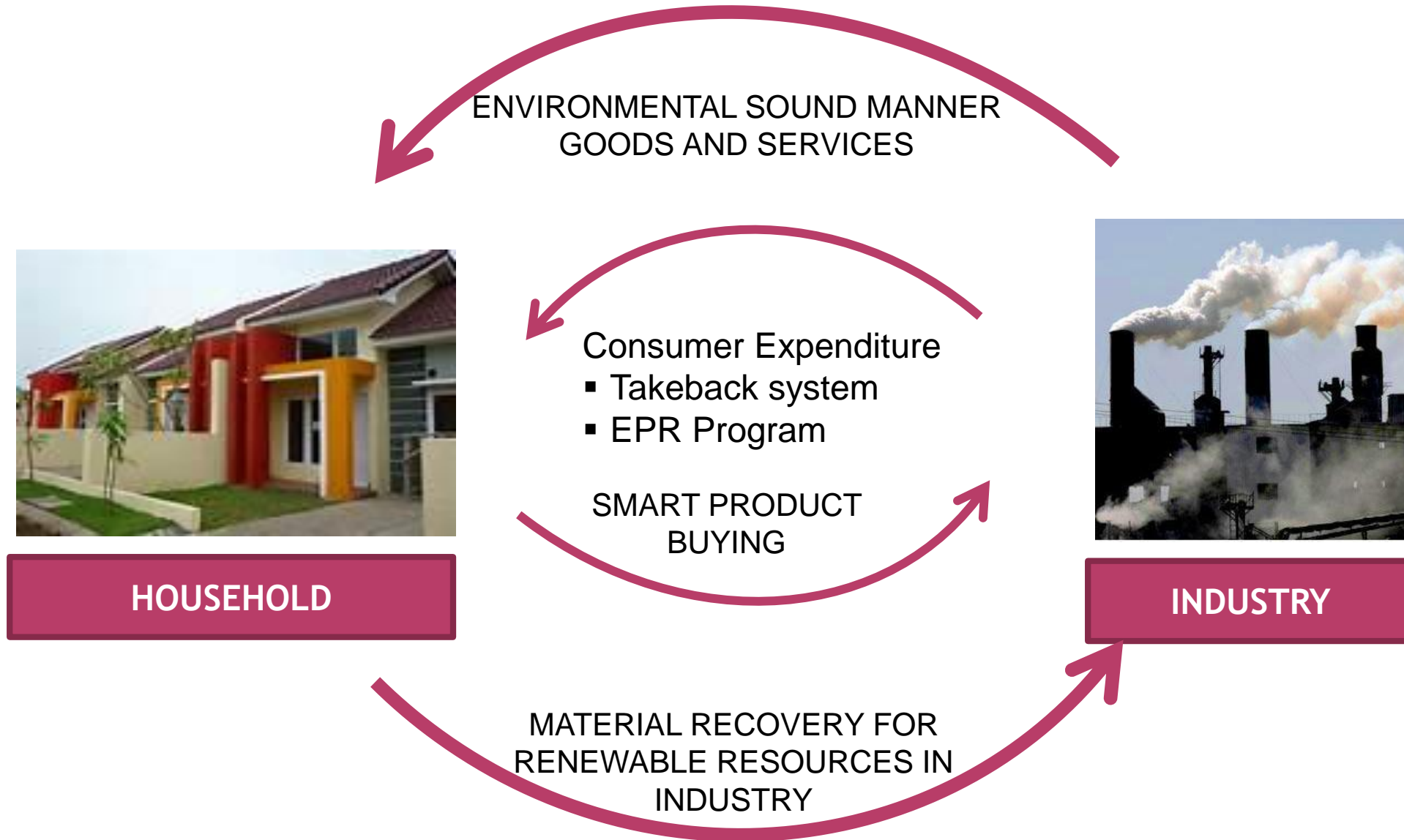
- ❑ Integrated solid waste management is managed from the sources to the final treatment (TPA) with promoting the 3R (reduce-reuse-recycle) and economic circular concepts by using Waste Bank mechanism
- ❑ Waste Bank is kind of solid waste facility to collect recyclable solid waste by educating people to segregate the waste from the source and bring its waste to the Waste Bank
- ❑ People get economical benefit by segregating the waste and waste is handled from the sources (circular economy and environmental conservation concept)



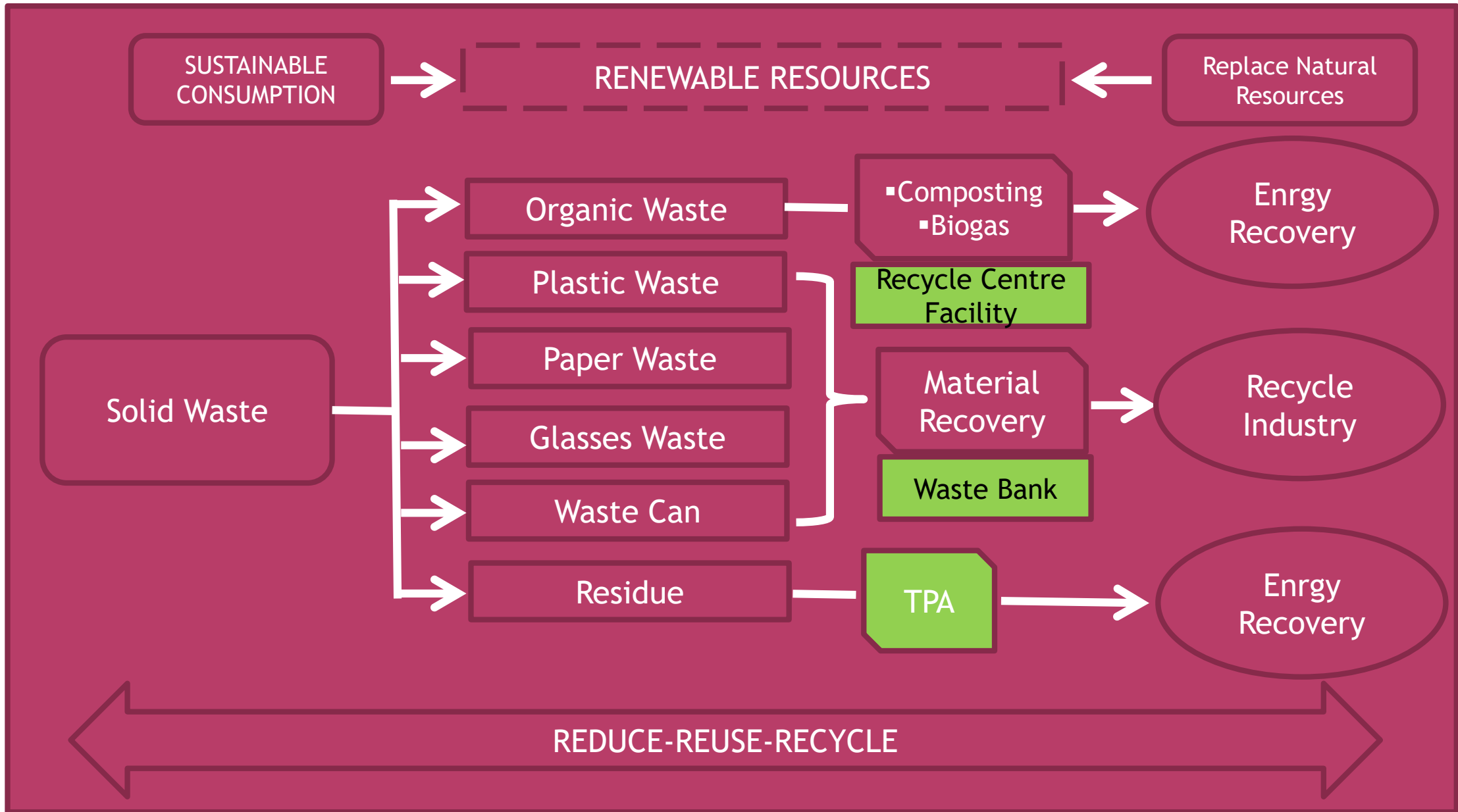
Foto: Joni/Padangkini.com



SUSTAINABLE CONSUMPTION



Approach of Solid Waste Management by Promoting Circular Economy and Resource Efficiency



NATIONAL APPROACH ON SOLID WASTE MANAGEMENT IN THE RIVER OCEAN AND BEACH

Land Based Management

1. Industries/Producers

- Policy on reducing of plastic waste :
 - ✓ roadmap EPR of plastic waste
 - ✓ Reducing of plastic bag
- Product re-design for plastic packaging reduction
- Environmental raw material substitution
- Take back system of plastic wastes

2. Community

- Community rising awareness is a major program to handle the solid waste from the sources
- Support the implementation of waste segregation from household
- Implementation of 3R principles by using Waste Bank mechanism to promote resource efficiency and circular economy

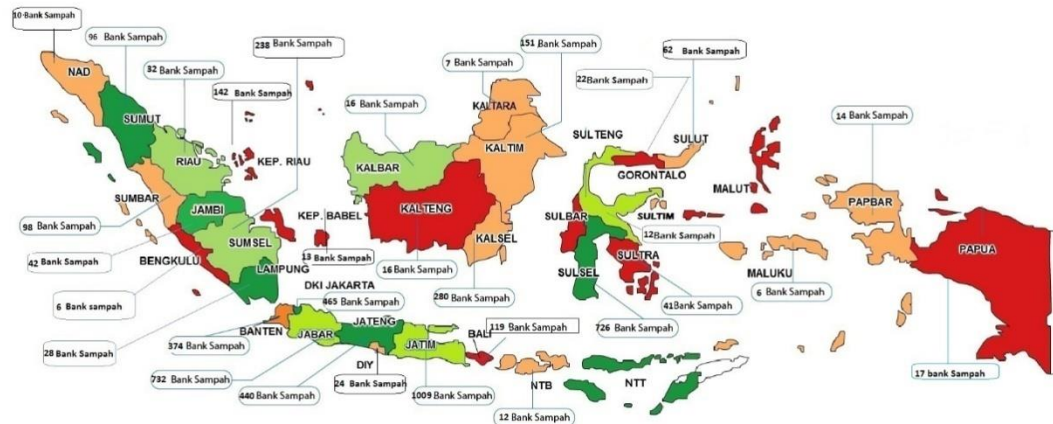
3. Governments

- Education of Integrated solid waste management for community and young generation
- Provide recycle and waste bank facilities for promoting resources efficiency and circular economy
- Applied technology of river waste trapping in some cities
- Solid waste final disposal/ TPA ;control landfill/sanitary landfill
- Clean City Program (ADIPURA)
- Monitoring and enforcement needed for littering the solid waste to the river, beach and ocean

SeaBased Management

- Education of plastic waste management for visitor of tourist destinations
- Community action on river, marine and beach clean up between community, governments, and business sectors
- Provide a guideline of solid waste management in tourist destination with bases of river, marine and beaches
- Provide integrated facilities of solid waste management in tourist destination

1 Circular Economy Profile in Indonesia

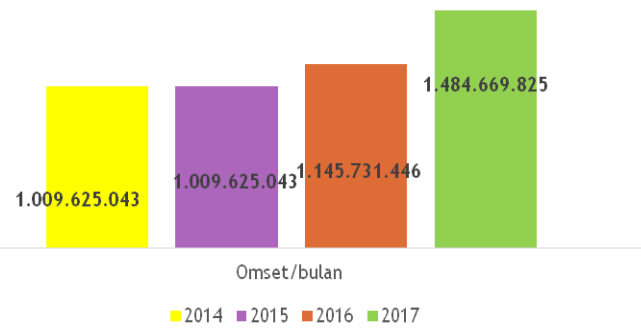


Jumlah Bank Sampah 2017:

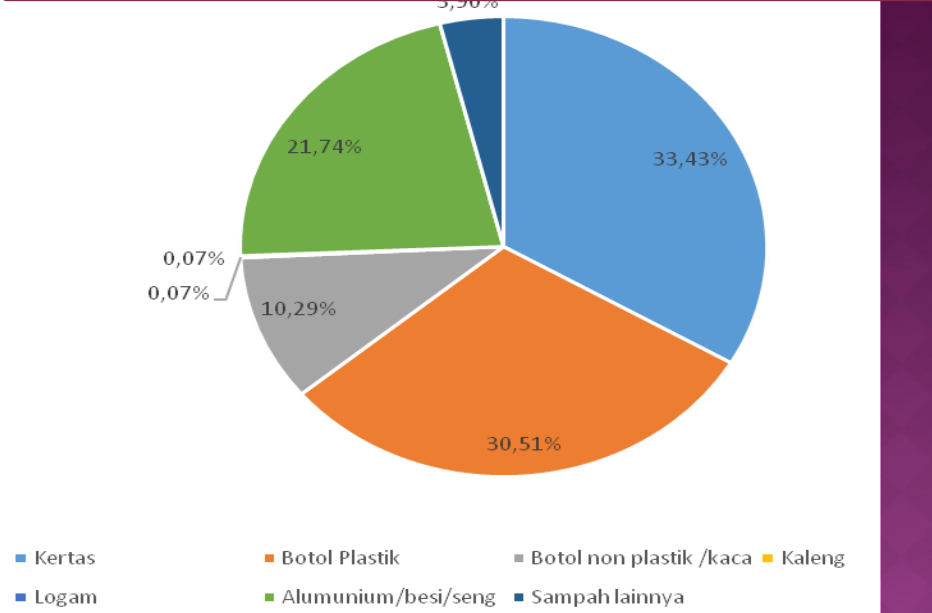
5.244

- BUILD OF SOCIAL ENGINEERING OF 3R PROCESS IN THE COMMUNITY
- WASTE REDUCTION FROM THE SOURCES
- NEED MORE TIME AND PROPERT METHOD TO EDUCATE AND INCREASE PEOPLE PARTICIPATION ON 3R IMPLEMENTATION

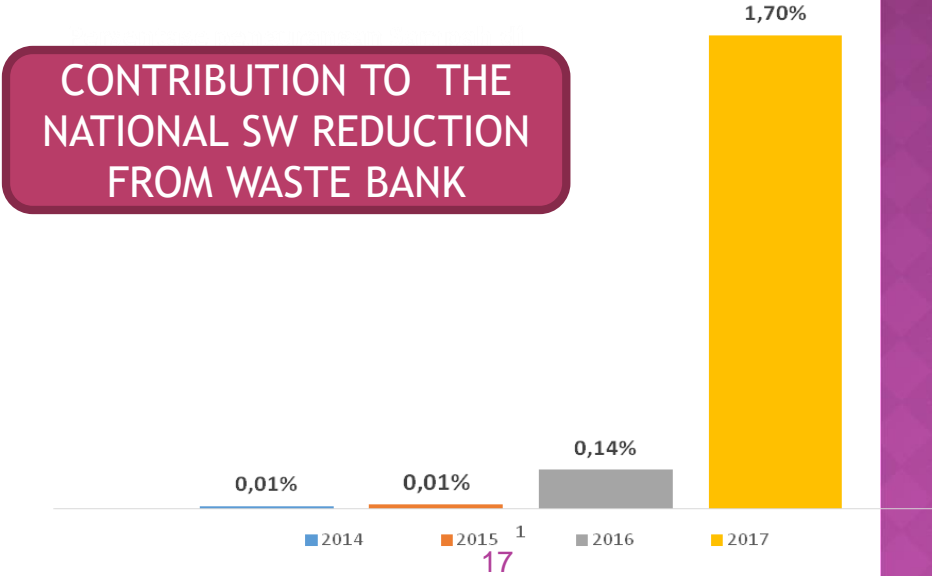
Circular Economy (Income)



SW HANDLING IN WASTE BANK

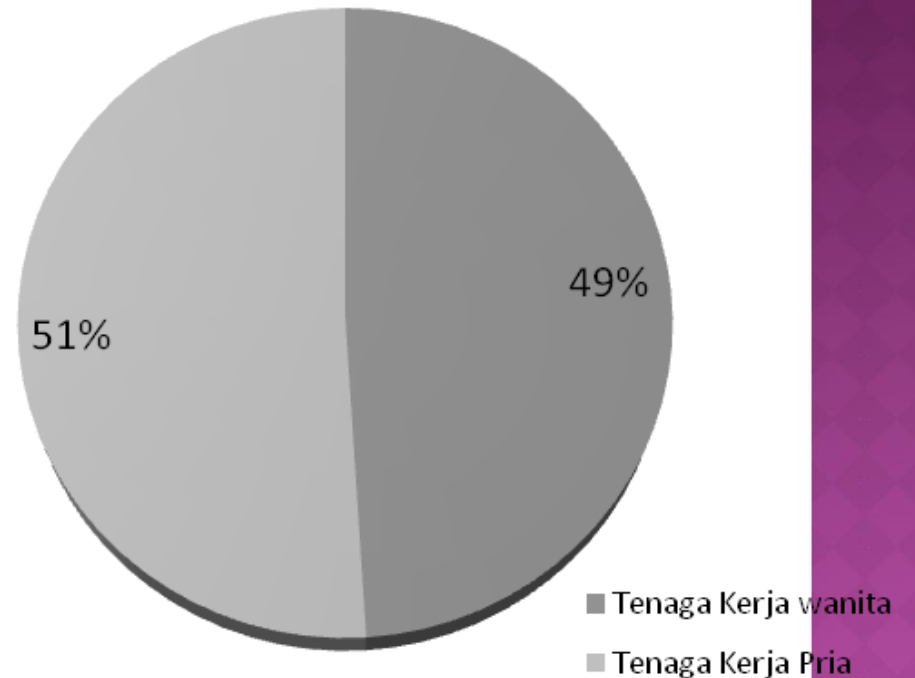


CONTRIBUTION TO THE NATIONAL SW REDUCTION FROM WASTE BANK



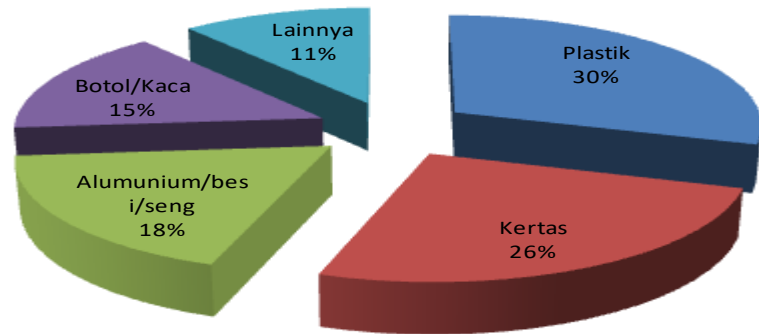
Public Participation to the Waste Bank

- ❑ Total public participation in Waste Bank is 179.904 people from 34 provinces and 219 cities
- ❑ Women participation in solid waste management is about 49%
- ❑ Women are important actor to educate family members of solid waste management in the household

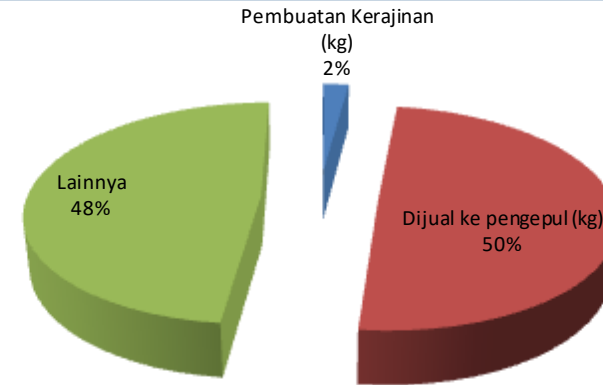


Solid Waste Management Profile in Waste Bank

Kind of SW Managed in Waste Bank



SWM in Waste Bank



- ❑ 50% *Material Recovery* are used in recycle industry
- ❑ 48% organik waste are composted
- ❑ 2% recycable material is created for handycraft
- ❑ 1.7% is National waste reduction from Waste bank



2

PLASTIC BAG PROGRAM

10-YEARLY EPR
IMPLEMENTATION
ROADMAP

1. PRODUCERS OBLIGUE TO REDUCE WASTE DERIVED FROM THEIR PRODUCT AND PACKAGING BY DOING RE-DESIGN, RECYCLE, AND REUSE
2. MAIN PRODUCERS: BRAND OWNER, RETAIL, AND FOOD/BEVERAGE SERVICE

SINGLE USE PLASTIC
BAG REDUCTION

1. PLASTIC BAG FEE
2. NO PROVISION PLASTIC BAG INSTEAD OF REUSABLE SHOPPING BAG
3. PROVIDE BIO-BASED SHOPPING BAG
4. PROVIDE RECYCLEABLE AND REUSABLE PLASTIC BAG BUT MUST BE TAKEN BACK FOR RECYCLING

- RITAIL INDUSTRY
- MANUFACTURE/BRAND OWNER
- FOOD & BAVERAGE SERVICES

MARINE LITTER PROGRAM

LAND-BASED SOURCES

- ❑ POLICY AND REGULATION:
 - ⦿ SOLID WASTE MANAGEMENT LAW NO. 18/2008
 - ⦿ ENVIRONMENT PROTECTION & MANAGEMENT LAW NO. 32/2009
 - ⦿ GOVERNMENT REGULATION NO. 81/2012 DOMESTIC SOLID WASTE MANAGEMENT
 - ⦿ GOVERNMENT REGULATION NO. 101/2014 HAZARDOUS WASTE MANAGEMENT
 - ⦿ SHIPPING LAW NO. 17/2008
 - ⦿ JAKSTRANAS
- ❑ IMPLEMENTATION CLEAN & GREEN CITY (PROGRAM ADIPURA)
- ❑ IMPLEMENTATION 3R THROUGH TRASH BANK
- ❑ IMPLEMENTATION WASTE TRAPPING IN RIVERS

SEA-BASED SOURCES

- ❑ POLICY AND REGULATION:
 - GOVERNMENT REGULATION NO. 19/1999 COASTAL & MARINE POLLUTION AND DEGRADATION
 - MINISTERIAL REGULATION NO 51/2004 SEA WATER QUALITY STANDARD
 - MINISTERIAL REGULATION NO. 29/2014 ENVIRONMENTAL MARITIME POLLUTION CONTROL
 - MINISTERIAL REGULATION NO. 45/1996 SUSTAINABLE COASTAL AND MARINE MANAGEMENT
 - MARPOL CONVENTION 73/78 ANNEX V GARBAGE MANAGEMENT
- ❑ IMPLEMENTATION RIVER, COASTAL AND SEA CLEAN UP

CURRENT SITUATION ON PLASTIC AND MARINE LITTER PROGRAM

- ◉ Implementation of plastic bag fee since 2016 with tagline *#Less Plastic More (Fun)tastic*, some cities and retail are still implement the plastic fee bag, such as Banjarmasin City, Superindo, AEON Mall;
- ◉ Plastic take back program by implementing 3R program through Waste Bank;
- ◉ Ocean and sea clean up program focused on tourist destination, such as Thousand Islands (Jakarta), Labuan Bajo, Bali
- ◉ Public participating on Indonesia Clean Program 2020 signed by 30 local governments and private sectors
- ◉ In regional sector, Indonesia has co-sponsor for resolution of Marine Plastic Debris and Microplastic which was nominated by Norway in the United Nations Environment Assembly (UNEA) 1 and UNEA 2 meeting.
- ◉ 25 cities committed to the pledge program of marine plastic debris; Banda Aceh, Padang, Surabaya, Pangkal Pinang, Bandar Lampung, Palembang, Ambon, Balikpapan, Makassar, Tarakan, Manado, Palu, Banjarmasin, Pandeglang, Indramayu, Belitung Timur, Berau, Administrative Kepulauan Seribu, Banyuwangi, Wakatobi, Manokwari, Raja Ampat, Badung (Bali), Manggarai Barat and Lombok.

CHALLENGES


- ❑ Needs political will and multy stakeholder participation including community, business sector and government to promote resource efficiency and circular economy in order to manage plastic and marine litter,
- ❑ Create incentive and disincentive program for the successful of implementation in circular economy and material recovery program of solid waste management,
- ❑ Improve national capacity building including infrastructure and HRD,
- ❑ Develop national technical guideline on circular economy and potential material recovery of solid waste.

Thank You

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