

The impact assessment of market-based economic instruments
on NDC targets of waste sector in Indonesia: AIM/CGE

(Please do not quote the contents of this presentation as it is
still on working progress and will be updated accordingly).

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1. Background (Part 1)

- In 2016, the Indonesian government had set target to reduce total GHG emissions from waste sector for approximately 0.4% and 1% by 2030 without and with any international assistances;
- Total GHG emissions from waste sector is the third largest in Indonesia;
- GHG emissions from municipal solid waste is accounted for largest share of total GHG emissions from waste sector;
- According to the statistical data of the Ministry of Environment and Forestry of Indonesia, the MSW composition in Indonesia in 2017 consists of organic waste (60%), plastic waste (14%), and paper (9%);

1. Background (Part 2)

- Managing food waste and plastic waste (especially marine plastic waste) are crucial issues for the Indonesian government;
- The issue is complex and needs the comprehensive mitigation actions;
- Some new regulations related to waste sector had been announced by the Indonesian government;
- One of the current key policies is the Presidential Regulation number 97/2017 about “the National Policy and Strategy on municipal solid waste management” (was issued on October 23, 2017);

1. Background (Part 3)

- This regulation aims to reduce approximately 30% of MSW reduction and to increase for approximately 70% of MSW handling rate by 2025;
- The 2017 National Action Plan on Marine Debris also targets to reduce up to 70% of plastic waste amount in Indonesia by 2025;
- Three market-based economic instruments had been set to support the realization of national targets on waste sector: (i) consumption tax or levy on plastic bag; (ii) production and import taxes on all plastic products; and (iii) special financial supports for MSW treatment at final disposal site.

2. Objectives and research questions

- Aims are to examine the impacts of three market-based economic instruments on NDC targets of waste sector in Indonesia;
- Research questions are:
 - 1) What are the macroeconomic impacts of three market-based economic instruments related to waste sector in Indonesia?
 - 2) What are the impacts of three market-based economic instruments on NDC targets of waste sector in Indonesia?
 - 3) What are the impacts of three market-based economic instruments on climate budget of the Indonesian government?

3. Data, model and scenarios (Part 1)

- Data

1. *2010 Indonesian IO table* published by Bureau of Central Statistics of Indonesia. The original sectors classification has 185 sectors without specific sectors related to renewable energy sourced electricity sectors and no detailed of taxes accounts.
2. *Several national statistical data* from the Ministry of Energy and Mineral Resources of Indonesia (such as the Handbook of energy and economic statistics, the state-owned electricity company, etc.) and *GTAP 9* database to disaggregate electricity sector and taxes accounts respectively.

3. Data, model and scenarios (Part 2)

3) This study uses 46 sectors classification with *the detailed electricity sector and taxes accounts (consumption and production taxes)* as the main data for CGE model used in this study;

4) *GHG emission data and emission factor* are based on inventory data published by the Ministry of Environment and Forestry and MEMR and BPPT respectively;

- Model

This study uses the AIM/CGE [country] model developed by Dr. Toshihiko Masui at the National Institute for Environmental Studies (NIES), Japan.

3. Data, model and scenarios (Part 3)

- Scenarios (the more detailed scenarios are in progress):

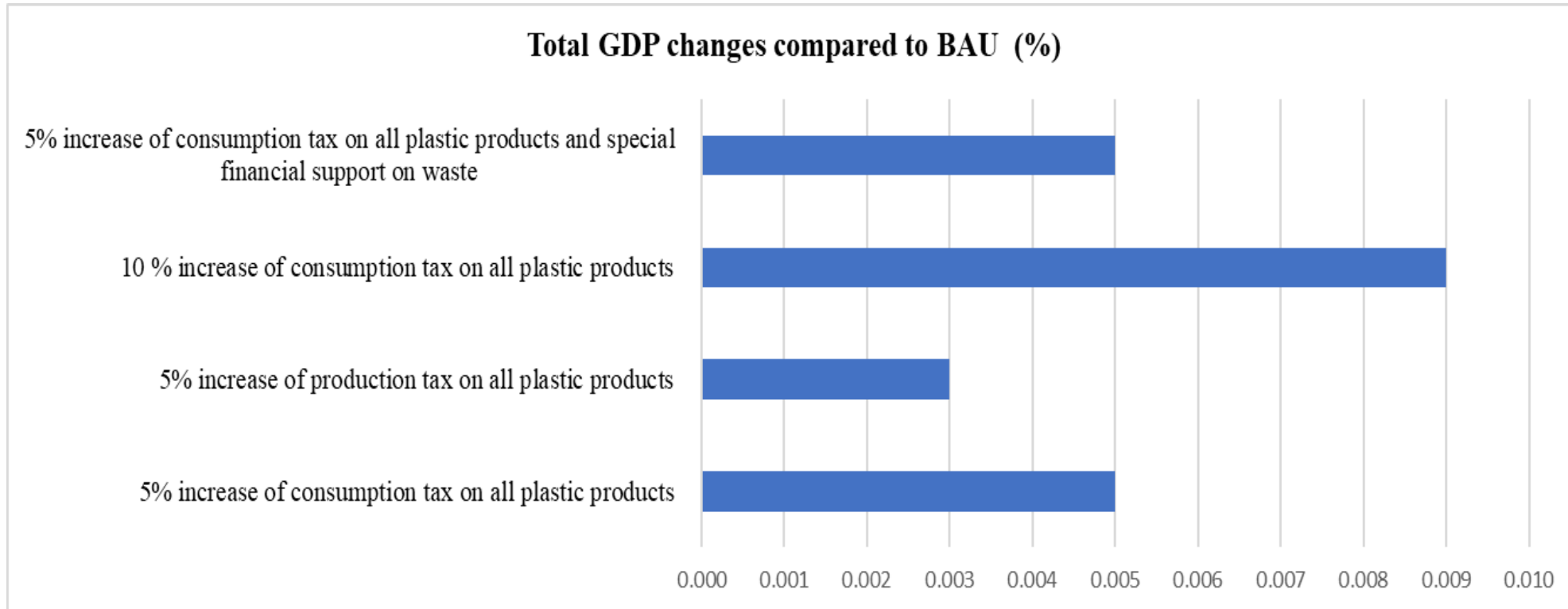
This study uses three simulation scenarios to represent three market-based economic instruments related to waste sector in Indonesia (see Table 1)

No	Exogenous shock	SIM 1	SIM 2	SIM 3
1.	Consumption tax on plastic bag (plastic products)	5%	10%	5%
2.	Production tax on plastic products	5%	10%	NA
3.	Feed-in tariff for MSW electricity power plant	5%	10%	NA
4.	Special financial support for waste and recycling sector	5%	10%	5%

Source: Authors' compilation

4. Preliminary findings (Part 1)

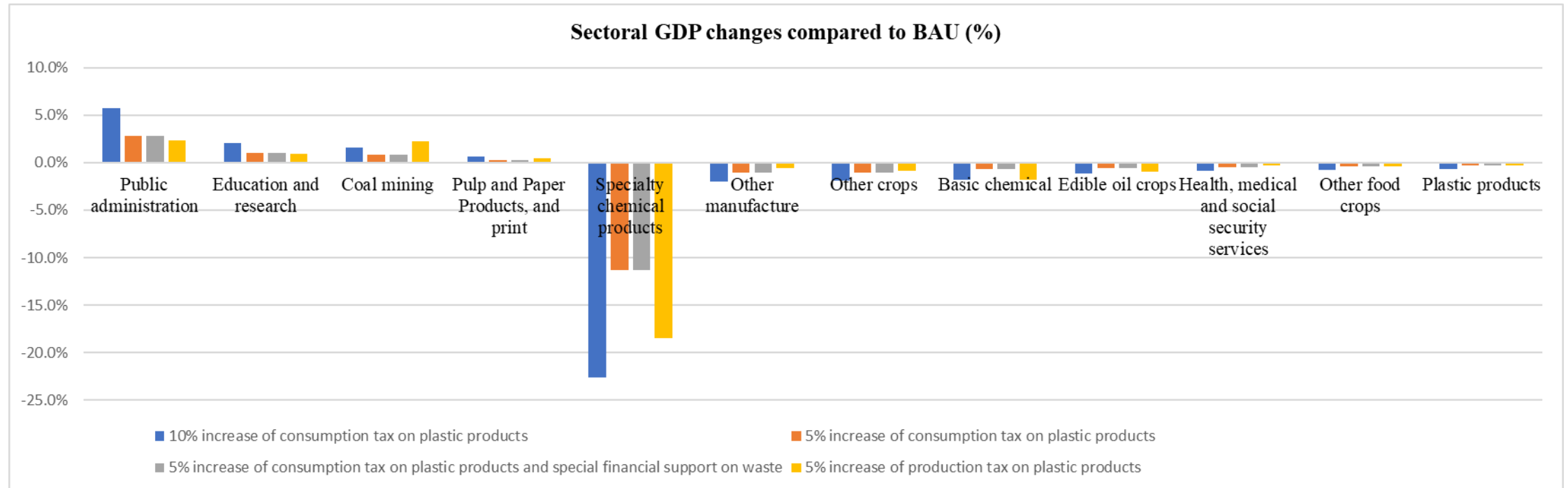
- Total GDP changes compared to BAU



Source: Authors' compilation

4. Preliminary findings (Part 2)

- Sectoral GDP changes compared to BAU



Source: Authors' compilation

5. Preliminary conclusion and next steps

- The implementation of 10% increase of both consumption and production taxes on plastic products causes the larger amounts of GDP surplus and budget but also causes the larger amounts of sectoral GDP losses on plastic products and related sectors;
- 5% increase of both consumption and production taxes on plastic products are less costly option for the Indonesian government;
- This policy can be combined with implementation of special financial funds for waste recycling treatment at final disposal side;
- Next steps are analyzing deeper on GHG emissions and budget with more precise tax rates and simulation scenarios (are in working progress now).