Economy-wide impacts of flood and its adaptation measures in Indonesia*

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Background

- Climate change issue becomes one of the priority issue to be linked with long-term development plan of the Indonesian government (BAPPENAS 2019);
- Due to the limited national budget, it is also necessary to be linked with flood and other disasters risk reduction and SDGs in Indonesia (BAPPENAS 2020; Ministry of Finance 2020);
- This study aims to examine the effects of selected local and national floods and the effectiveness of adaptation measures (including international climate adaptation finance and public-private risk transfer) in Indonesia using the AIM/CGE.

Method and scenario setting

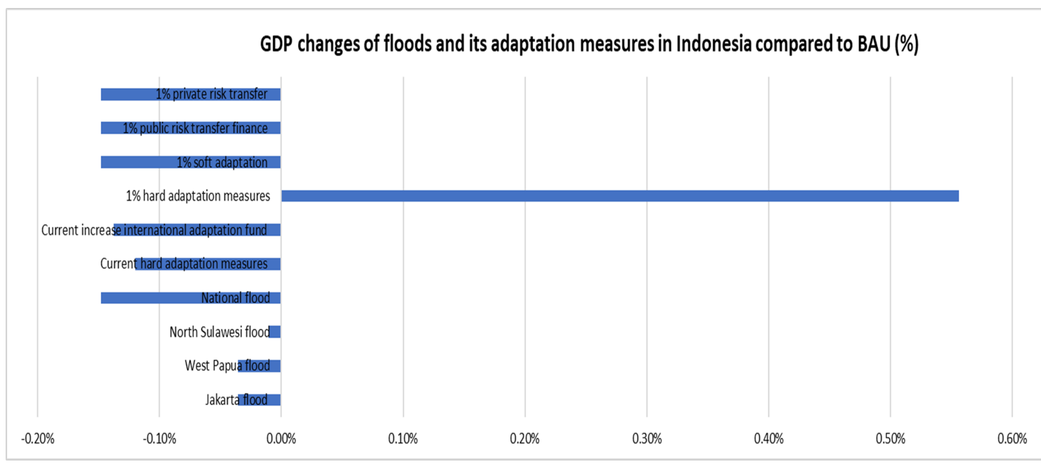
- This study uses the AIM/CGE [Indonesia] model with 2010 base year;
- The scenarios setting in this study consists of three parts: (i) BAU (under situation of no flood occurs); (ii) SIM 1 (flood without adaptation); (iii) SIM 2 (flood with adaptation measures);
- This study applies two types of adaptation measures: (i) current budget scale of government budget and international donors budget spent for adaptation measures in Indonesia; (ii) expected increase of domestic and international budget scales for adaptation measures.

Table 1: Flood losses and adaptation measures used in this study (%)

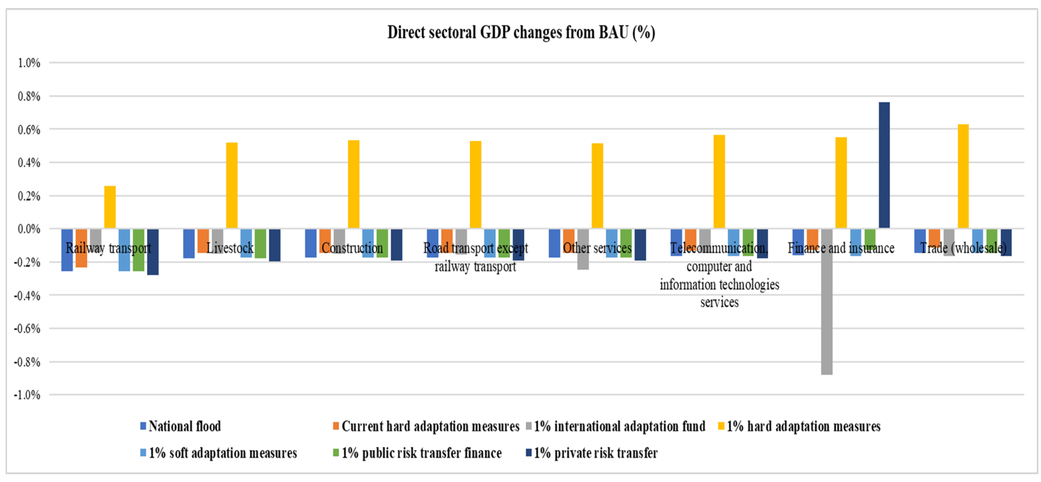
No	Affected sectors	Jakarta flood losses	West Papua flood losses	North Sulawesi flood losses	National flood losses
1.	Construction	-0.04	-0.02	-0.07	-0.72
2.	Road transportation	-0.35	-0.02	0	-2.06
3.	Electricity	-0.17	0	-0.06	-1.32
4.	City gas	-1.04	0	0	-5.79
5.	Water supply	-0.01	-0.03	-0.01	-0.14
6.	Flood with current domestic adaptation budget measures (SIM 2a)				0.39
7.	Flood with current international adaptation measures (SIM 2b)				0.88
8.	Flood with expected 1% increase of selected adaptation measures				1

Source: Authors' compilation based on several national assessment and ADB documents

Results



Source: Authors' calculation



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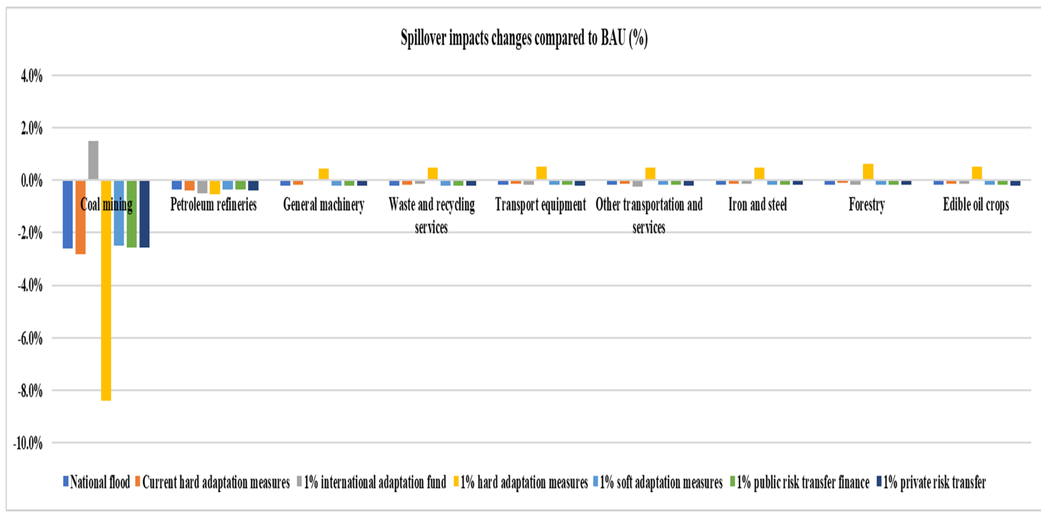

Source: Authors' calculation

Discussion and conclusion

- Flood without any adaptation measures causes approximately -0.15% GDP loss compared to 2010 BAU;
- Moreover, the spillover effects and negative impacts on household consumption are larger than total GDP loss;
- The current domestic government and international donor adaptation budgets are not adequate to cover all losses of floods;
- The hard adaptation measures of flood need to be prioritized and linked with other adaptation measures (soft adaptation, public and private risk transfer finances, and international climate adaptation).