



SUBMISSION BY THE GOVERNMENT OF THE REPUBLIC OF INDONESIA

Pursuant to Conclusion of SBI48 during Bonn Climate Change Conference in Bonn, April-May 2018 on **Research and Systematic Observation (RSO) (FCCC/SBSTA/2018/L.11 paragraph 16 or FCCC/SBSTA/2018/4* paragraph 54)**, the Government of the Republic of Indonesia herewith submits views on possible topics and considerations for the meetings of the research dialogue to be held in conjunction with SBSTA 50 as follows:

The impacts of the present 1.1 degree of global warming to the climate are already visible in the growing number of hydrometeorological disasters and their associated losses and damages. Indonesia urge the swift transformation of climate science into climate services to assist the society for their needs in adaptation and mitigation and as well as to strengthen their resilience. The provision of authoritative information on observation, science and actionable services is necessary in supporting those needs of the society while at the same time also supporting their development agendas. This clearly needs strengthening of the capacity of countries, especially the developing- and least developed-countries to be able to provide *transformative climate actions*.

Several elements we think are necessary in supporting the transformative climate actions are *strengthening of earth observation, climate prediction and projection as science basis, bringing science to climate actions, and research policy*. Below are efforts from Indonesia that are aimed to address each of the element:

A. Strengthening of earth observation

- Environmental monitoring in Indonesia is envisioned to be integrated in response to the ever-increasing impact of climate change and environmental degradation. To name a few efforts in the integration of earth observation: (1) The Coordinating Ministry of Marine Affairs have endorsed the establishment of the National Ocean Data Center (NODC). (2) The Agency for Meteorology Climatology and Geophysics along with the Ministry of Public Works and the Ministry of Energy and Mineral Resources have developed the System for Monitoring Hydrometeorology-Hydrogeology-and Hydrology (SIH3). This integration of the observation refers to the guidance from the WMO to develop an integrated earth observation under the WMO Integrated Global Observing System (WIGOS) which is now in pre-operational phase.

B. Projection of regional climate and extremes (spin off from research activity):

- The Coordinated Regional Downscaling Experiment in South East Asia (CORDEX-SEA) has successfully finished its first phase of the project and is now continuing to its second phase for the period 2018-2020. This project is a consortium of several South East Asian countries in which Indonesia is a member. During the first phase of the project, future climate (mean state and extreme indicators) were analyzed for the South East Asian region using several downscaled CMIP5 models that were carefully selected. The project resulted in several scientific papers and as well as a portal for climate change information in the region called the Southeast Asia Regional Climate Change Information System (SARCCIS¹). For Indonesia, the resulting analyses of the future climate from CORDEX-SEA dataset is feeding in for the scientific basis of the National Action Plan for Climate Change Adaptation (RAN-API). The National Adaptation Plan outlines further recommendations to be taken by relevant sectors (food security, transportation, energy, health, water resources) for consideration in developing their strategic development planning.

C. Bringing science to services for climate actions:

- **Climate based dengue early warning system.**
During 2017-2018, the Agency for Meteorology Climatology and Geophysics (BMKG) in close collaboration with the Regional Health Agency in Jakarta and Bandung Institute of Technology, has jointly developed climate services products for dengue early warning in Jakarta². The products consist of prediction of dengue cases and a climate suitability index up to five months lead time with considerably good skills. The development of this products truly reflects the spirit of the Global Framework for Climate Services (GFCS), in aiming to bring existing science and knowledge into services for the benefit of the society. Since its launch in late 2018, this service has assisted the public health sector to take appropriate actions in facing the outbreak in early 2019 as well as to plan their prevention program. In the long term such service will be aimed to reduce the overall economic burden associated with this disease.
- **Climate based forest fire early warning system.**
The Agency for Meteorology Climatology and Geophysics has developed a drought based early warning system for forest fire. This system provides prediction on atmospheric droughts on a seasonal timescale that are favorable for fire to develop. The system covers the whole South East Asia region and it complements the existing Fire Danger Rating System for shorter timescale warning. This system is aimed to provide early warning to assist decision makers in taking necessary measures to prevent fires from occurring in fire prone areas.
- **Increasing climate literacy.**
Increasing climate literacy is important to transform the society in understanding the climate and environment. In this respect, adoption of climate change in the curriculum should incorporate also impact of climate to the ocean (inline with the momentum of

¹ <http://www.rucore.ru.ac.th/SARCCIS>

² <http://dbd.bmkg.go.id>

the Decade of Ocean Science dan Ocean Literacy), and impact to land and settlements (inline with the momentum of Decade of Ecosystem Restoration); An example of good practice of such effort is the implementation Climate Field Schools for targeted sectors and audience such as farmers and fishermen.

- **Development of tool to support the Warsaw International Mechanism for Loss and Damage.**

In responding to the call from the Executive Committee of the Warsaw International Mechanism for Loss and Damage (L&D ExCom) build closer cooperation with the scientific community, particularly to Action Area 7 of their five year workplan (encourage, promote and coordinate with research and development processes on financial instruments and tools that address the risks of loss and damage associated with the adverse effects of climate change), Indonesia is coordinating the implementation of an innovative approach for cataloguing high-impact events³ in WMO Regional Association – V (South East Asia and West Pacific) developed by the WMO's Commission for Climatology and Commission for Basic Systems⁴ . The system leverages international standards which is flexible to account complex relationships among various types of extreme events. This system will contribute to the systematic tracking of losses and damages in the region that are associated with extreme events to support the goals of the Sendai Framework for DRR and the Warsaw International Mechanism for Loss and Damages.

D. Policy for research and technology transfer

- In a strategic level for research in Indonesia, the terminology of transdisciplinary research was introduced in the National Research Priority, replacing multidisciplinary. This will encourage and prioritize research in the relevant areas to climate change and thus strengthen efforts to fulfill the targets of NDC.
- The process of technology transfer should be based on a Clearing House Mechanism which includes the process of green technology audit. This process will warrant standardized technology applications that is projected to fulfill the NDC.

³ <https://public.wmo.int/en/events/meetings/ra-v-kick-meeting-test-cataloging-approach>

⁴ <http://www.wmo.int/pages/prog/wcp/wcdmp/meeting/international-workshop-extreme-events.html>