



Determination of Climate Change Impacts on Local Scale



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Editorial

The world and its inhabitants face the problem of climate change originated from increasing greenhouse gas (GHGs) emissions in the atmosphere. The substantial increase of population, energy demand, transportation, urbanization, industrialization, destruction of green areas, and deforestation cause to greenhouse effect leading to climate change. Climate change impacts and the level of response by inhabitants are of great importance in terms of mitigation and adaptation. Climate change mitigation means to decrease the intensity and the potential effects of global warming, while adaptation is harmonization to global warming involves acting to tolerate the actual or expected effects. The UNFCCC secretariat (UN Climate Change) was established in 1992 when countries adopted the United Nations Framework Convention on Climate Change in order to control the GHGs emissions of the countries. Emission inventory reports for GHGs for many cities/countries have been published according to years and reduction targets were designated. Committed emission reductions by partner countries have been reaching to a grade, but impact level has not been able to be determined yet. Although passing two decades, the impacts of climate change on the metro poles and small cities, especially vulnerable regions like coastal regions, geographic areas having floods and landslide risks have not been well defined. For the cities and countries, planning and implementations were summarized in steps [1,2].

The first step is essential to handle data for all areas that can be influenced by climate change. Agricultural fields, crops, sewerage and rainwater infrastructure systems, transport networks, water resources, pollen maps, aquatic life, insect population, farming, illness, tourism, economy and all other related data should be collected including long time periods. The data collection is a great problem for many cities especially in developing countries which data recording is not well established. Statistical data collecting gives reliable inferences for long time planning, therefore data production, collection and storage require a great deal of diligence. For example, in order to light out the relationship between the number of domestic and foreign tourists with snow depth in a city


where winter tourism is favorite, statistical data is of importance. If there is no data for previous years, it is not easy to conclude an interpretation about climate change impact on winter tourism of the city. Analyzing the past observation data, review responses (including existing measures) to climate change and extreme weather events should be recorded and evaluated. The second step is to monitor the climate change and impacts on mentioned environments and living organisms. This can be made by the selection of the monitoring sites and items such as climate data and systems affected by climate change. The third step is to predict future climate change and its impacts. This can be made by two ways: with governmental and national research institutes or with local government utilizing independent projections for the city. The fourth step is to assess impacts, vulnerability, resilience, and risk for the region. The choice of appropriate adaptation methods depends on the assessment of the effects on the sensitive and resilient regions and the risk assessment. The fifth step is determination of need for adaptation measures and priorities. The improvement of new tools to assess climate change impacts, threats and future projection with requirement of urgent measures to show the short-term impacts is important [3-5]. The sixth step is to design and implement adaptation measures. In order to utilize resources, it is better to incorporate the adaptation actions to existing governmental plans and projects. The seventh step is to track and assess progress and effects of adaptation policies measures and revise regularly. This step should be realized with assessing the overall progress of initiatives toward adaptation, assessing the progress of individual adaptation policies/measures and assessing the effectiveness of individual adaptation measures. The eighth step is to conduct integrated adaptation and basic capacity enhancement. It should be necessary to establish cooperation with local government departments in order to achieve coordination for the adaptation measures being conducted in individual sectors and engage in cross-sectoral initiatives. The ninth step is to communicate and share information with the public. Citizens will be aware of the public and decision-makers by informing them about risk assessment of climate change. The last step should be to review and implement

based on feedback and re-assessment. Reviews by researchers, public managers, citizens and governmental authorities should be assessed using the latest information and climate change data. If it is desired to establish more effective adaptation projects and mitigate the impacts of climate change, these steps should be implemented strictly [6-9].

In local scale, I believe that climate change impacts have been felt by all living organisms and humans. There have been many intriguing examples from all over the world. Average ambient temperature increase can lead to substantial impacts on parameters mentioned above. For example, agricultural activities, in order to grow high quality fruits, farmers use pesticides to control insecticides and other plant pests. Unexpected rain events due to climate change cause to removing of pesticides over the plant surfaces and soils, therefore farmers use additional pesticides to obtain same concentration level for plant. However, the high amount of rain falling in short-time period into the stream without infiltration causes the pesticides in agricultural areas to be transported to other clean areas and water sources causing contamination. Consequently, real-time determination of climate change impact on the local scale including data collection provides authorities to take measures and establish adaptation mitigation plans/projects [10].

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