

Meeting Report

Third EGM on Disaster related Statistical Geospatial Indicators for SDGs

30-31 January 2019, Almaty, Kazakhstan

ESCAP, in collaboration with the ESCAP Sub-regional Office for North and Central Asia (SONCA), the Center for Emergency Situations and DRR (CESDRR), the National Research Foundation of Korea (NRF), and the Environmental GIS/RS Center of Korea University, organized the third expert group meeting (EGM) on disaster-related statistical geospatial indicators for SDGs in Almaty, Kazakhstan from 30 to 31 January 2019. The key objectives of the meeting were to discuss the proposed draft statistical and geospatial frameworks and indicators, and share key findings of pilot applications of proposed frameworks and indicators in Japan, Korea and Kazakhstan.

The disaster-related statistical geospatial indicators are expected to support policymakers and technical officials of member States to prepare more effective and better policies and actions in support of reducing disaster risks, preventing or mitigating human sufferings and economic and environmental damages before disasters occur. Fourteen (14) government officials from Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, and 10 regional experts from Japan, Kazakhstan, South Korea, Russia, as well as six graduate students as observers, attended the the EGM.

The EGM was inaugurated with welcome speeches by Mr. Hirohito Toda, Head of Subregional Office for North and Central Asia (SONCA) and Dr. Valeriy Petrov, Director of Center for Emergency Situation and Disaster Risk Reduction (CEDRR) in Almaty. Mr. Hirohito expressed his appreciation to the government of the Republic of Korea (donor) as well as the Center for Emergency Situations and Disaster Risk Reduction (CESDRR) for making the meeting possible. He briefed that the meeting aims to sharpen frameworks and methodologies of combining statistical data and geospatial data to monitor disaster-related risks before disaster break-outs, and review proposed sets of statistical geospatial indicators. He emphasized that reliable data is crucial to make a right decision and mitigate the impact of disasters for the Central Asia which has been suffered from disasters, mostly flood and drought. He highlighted the efforts in the United Nations on integrating geospatial data and information in official statistics for monitoring the progress toward sustainable development goals. He looked forward to working together to promote statistical geospatial data to assess, monitor and report on disaster-related SDGs in Central Asia.

Mr. Valeriy Petrov, Director of CESDRR brought the second part of welcome speech. He addressed this meeting as a good opportunity to find suitable approaches and methods connecting economics, statistics, and management in disaster risk reduction. He encouraged to being close to reducing disasters, facilitating, and decreasing

victims from disasters by cooperation, strengthening partnership in managing and preventing disaster. He also shared information on new projects and programmes of CESDRR related to disaster risk reduction in Central Asia by using geospatial data. He anticipated a future improvement and close collaboration among Central Asian countries and Russian Federation.

Prof. Woo-Kyun Lee from Korea University shared the concept and outputs of his research on framework and pilot applications in Korea and Kazakhstan in the four areas such as drought, flood, sand and dust storm, and air pollution. What he focused on is the concept to assess the risks of disaster based on methodology for disaster risk assessment with the following criteria: vulnerability, exposure, sensitivity and adaptive capacity. He emphasized that exposure is uncontrollable given situation of the country, and that sensitivity is somewhat controllable environmental condition, which can be controlled by infra structure. According to him, the most important thing that we have to focus on is adaptive capacity, which shows the socio-economic condition of the country. It is the most controllable factor of all three, and it shows the effort that the government puts to reduce the risk of disaster. Furthermore, the exposure can be changed easily due to the extreme weather condition. He also assessed the vulnerability only with sensitivity and adaptive capacity to show the importance of adaptive capacity. In conclusion, he showed how his research can be related to SDGs, and some limitation of his research.

With this approach, he used data of South Korea as reference to verify disaster risks if the initial findings of the research could match with real situation of South Korea. He found the research results were reasonable when compared to data and record of disasters in the past years. He applied the same approach to assess the risks of disaster in Kazakhstan. His presentation demonstrated the comparison of results between Korea and Kazakhstan as pilots. He added that low access to data set or lack of certain data, subsequent research is highly recommended to get more reliable and tangible results of applications of statistical geospatial indicators in Kazakhstan. Finally he emphasized sub-regional cooperation to build or strengthen the shared open source of data among Central Asian countries and the important role of UN including UNESCAP in the region.

Prof. Byung-gul Lee of Former Chair of WG4 for UNGGIM-AP delivered the presentation on the key concepts of the framework of disaster risk reduction. He pointed out that development of disaster-related statistical geospatial indicators for SDGs needs to be incorporate three pillars of sustainable development such as economic, environment and social dimensions in the framework of indicators. In terms of disaster risks, he categorized the types of disaster risks: risks before disaster and results of after disasters. He also supported the approach by Prof. Woo Kyun Lee who emphasized the importance of adaptive capacity in reducing disaster risks before disaster breakout, while taking an example of Japan who has high risks and high adaptive capacity.

Mr. Daniel Clarke from the Statistics Division of ESCAP provided the issues of integrating data for risk assessment of disasters and briefed risk measurement models. He explained the basic data requirements of models for geo-based risk assessment. He briefed that the key is to select simple baseline indicators, including, inter alia, exposure of population, area of exposure, disaggregation of potential vulnerability and coping capacity variables. He also shared ESCAP initiatives on building disaster resilience are linked with the Disaster-related Statistics Framework (DRSF) and activities of the UNECE Task Force on Measuring Extreme Events and Disasters (TF-MEED). Main challenges include the need to ensure accuracy, coherence and consistency of national and international publicly available data. As a step forward, it was proposed to put the data together for bringing exact results. He demonstrated risk measurement models as useful tools to integrate different sources of data for monitoring disasters. The strength of the model is flexible scale of analysis by city, people, building, whole landscape or whole population with same model and same data. It can be applicable to multi-hazard disasters. Also, he introduced a previous pilot study conducted at Bangladesh for analysis of flood which was designed to understand the powerfulness of the model. In his research, he followed definition of risk provided by the Sendai Framework for Disaster Risk Reduction (SFDRR) defining that risk is the function of hazard, exposure, vulnerability, and capacity. His model used various statistical and geospatial data for measuring risks and all data were integrated by a simple overlay tool for gathering data. He emphasized the importance of building regional and sub-regional statistics and geospatial database for broad applications in SDGs.

Mr. Tae-Hyung Kim, Economic Affairs Officer, IDD, UNESCAP, presented a new approach reflecting three pillars of sustainable development and emphasized government efforts and its coping capacity in reducing disaster-related risks, rather than counting or measuring results of disasters. He pointed out that existing DRR indicators didn't demonstrate clearly disaster risks before disaster breakout, and incorporate geospatial data in its indicator framework. Based on this logics, he introduced his research as a horizontal approach, which tried to reflect three pillars of sustainable development and additional infrastructure and regulatory institutional dimensions and proposed 25 indicators under five dimensions.

Mr. Jun Sato, the Senior Executive Officer of the Geospatial Information Authority of Japan (GSI) shared recent activities against natural disaster by the Japanese government. Japan is a hazard prone country and has natural disasters like earthquake, tsunami, volcanic eruption, tropical storm, flood and landslide. Geospatial information is crucial for disaster risk management. His presentation identified close relationship between SDGs and the Sendai Framework, and which aims to build greater awareness on the concept of "before" DRR indicators. It was stressed that "before" indicators are leading indicators predicting disaster risks, while "after" indicators are lagging indicators analyzing aftermaths of a disaster. In Japan, GSI is now providing various thematic maps to help people understand topographic

features and also preparing to provide disaster history information to the public. He argued that appropriate geospatial information is very useful and necessary to prevent various kinds of natural disasters and evacuate people from incoming disasters. The guidelines for disaster risk reduction using geospatial information, which was developed by WG2 for UNGGIM-AP are now available.

Dr. Chul-hee Lim from Korea University introduced some case of DRR in Republic of Korea. First part was using geo-statistical data for assessing the SDG implementation of South Korea. Most of the SDG indicators and SDSN indicators did not take into account the data at local and sub-local level. He suggested that the data at local level be required for assessing and monitoring the implementation in each region. Second part was the result of estimating changes in water supply and soil loss by reforestation using the forest type map (geospatial data) and national forest inventory data (statistical data). The integration of the geospatial data and statistical data can contribute to identifying regional differences and the amount of afforestation for disaster risk reduction. The final part was the geostatistical analysis framework to improving prediction accuracy of forest fire risk. He briefed that spatial modelling can assess disaster risk and reduction capacity, using machine learning algorithm can estimate disaster risk more accurately.

Mr. Rashad Gasimzade from the Ministry of Emergency Situation (MES) in Azerbaijan presented the current circumstances of disaster data management in Azerbaijan. He introduced that Azerbaijan has national monitoring mechanisms of SDGs with three pillars. Main activities of government are in compliance with the SDGs disaster data which were identified at the Baku forum. He also pointed out that MES are focal point to develop disaster risk reduction by identifying emergency situation and analyzing the data with the BVIM software. Therefore, he highlighted that managing disaster related data and its collection is important process for MES to measure natural disaster risks. To achieve the national target, the government has tried to provide statistical information per administrate unit. However, it still has several challenges such as the lack of gender-based data and the fragmentation of agency that collected the disaster data separately as well as the shortage of budget allocation for disaster data collection.

Ms. Dani Sarsekova, Head, Department of Forest Resources and Forestry, Ministry of Agriculture of the Republic of Kazakhstan delivered the topic of disaster-related data impact in Kazakhstan from the Ministry of Emergency Situations (MES). Key challenges addressed by the presenters included: deforestation, forest fire prevention, the Aral Sea crisis, need to ensure the sustainable use of natural resources. She shared the necessity of using GIS in forestry sector. She highlighted that the need for information in forestry has increased significantly in sustainable management aspect. Demand for information is increasing among policy makers and stakeholders. Thus, creating and compiling reliable data in monitoring forestry related challenges is crucial for decision-making. She delivered the case of Kazakhstan which has been using GIS to maintain forest while increasing products from forest. She enumerated

the strength of using GIS in forestry such as possibility of forecasting tree growth, designing the landscape, modelling scenario of forest fires and tactical planning of forest. She also emphasized future prospects of GIS in forest planning and optimization of forest management funds. She introduced some examples of creating map and database on nursery, detecting changes of plant grow in Aral Sea, and detecting and tracking forest fires. In these cases, geospatial data and GIS technology helped to make quick decision or proper management decision.

Ms. Anar Tuleubaeva, the Chief Expert of Division of Information Technology, Committee on Statistics, from the Ministry of National Economy of the Republic of Kazakhstan, explained the business process of producing official statistical data in integrated information system “e-Statistics”. “e-Statistics” provides collecting an administrative data from different sources, as well as other government offices. Within the framework of integration system receives administrative data which includes information such as administrative units, migration of population, legislated persons, civil status act, etc. Official statistical data produced at the end of the whole process uploads to the web-site www.stat.gov.kz and automatically displays on the information-analytical system “Taldau”. The Taldau analytical system serves as a data visualization platform pulling together sets of up-to-date country-wide statistical information. There are about 3,000 statistical indicators. They are aggregated and disseminated through a certain process and schedule. They are visualized by graphics, tables or maps in order to make students and foreigners understand the statistics territorially. The spatial level of the data can be down to district, but more detailed level of data is impossible to be shared because of confidentiality. She briefed that the emergency situation related statistics is still not enough to collect and analyze because the owner of this information is the Committee on Emergency situations of the Ministry of Internal Affairs of the Republic of Kazakhstan. As a step forward, participants proposed to advance collaboration within the region to ensure coherence of the data retrieved from multiple sources. Participants showed interest in developing adaptable models and methodologies applicable at the regional level, and welcomed in this connection the development of a technical manual. In this case she recommended to invite representatives from the Committee on Emergency situations of the Ministry of Internal Affairs of the Republic of Kazakhstan.

Ms. Ainur Dossanova, Head of Division of SDG Statistics from Committee on Statistics, Ministry of National Economy of the Republic of Kazakhstan, explained the indicators produced from Kazakhstan in the context of SDG monitoring. The Ministry of National Economy of Kazakhstan highlighted the importance of the integrated administrative data for SDG monitoring and briefed the meeting on some recent developments in the information system Taldau. The Taldau analytical system serves as a data visualization platform pulling together sets of up-to-date country-wide statistical information. To monitor the SDG implementation, the government authorities conducted rapid assessment, had consultation, and held seminars and training events with the help of the UN agencies like UNDP, UNEP and World Bank.

The Statistics Committee also worked in a working group to monitor SDG implementation and conducted preliminary analyses. Over 60% of the SDG indicators are not the topic of the Statistics Committee. She explained that the Kazakhstan government created interagency committee for this. The committee published reports, held discussions on indicators to decide the priority among indicators, and held trainings for the government bodies with the aim of localizing the indicators at sub-regional level. In accordance with Sendai Framework for DRR, the Kazakhstan government already implemented measures for the framework in both local and national level in order to mitigate natural disasters. For monitoring the progress of SDGs, she expressed the Statistics Committee would like to coordinate a national system of indicators, submit the first voluntary national review, develop a roadmap and national platform for reporting, and plan pilot version of studies on geospatial and statistical information to see if they can be adaptive and available for Kazakhstan.

Ms. Aigul Yepbaeva, the Deputy Director, Department for the Development of Economic Sectors in the Ministry of National Economy of Kazakhstan, informed that Kazakhstan government put efforts on agriculture and disaster at the same time. For agricultural sector, government tries to develop smart farm by using recent technology such as space monitoring, and drone imagery, which are relatively cheaper. For infrastructure sector, they constructed smart mine with safety system. Findings from disaster related indicator research that was discussed this meeting can contribute to connect technogenic disaster and the government planning in Kazakhstan. For that, they want to see the forecast of disaster and the assessment of disaster risks to know where and how to put the budget.

Mr. Anarkul Aitaliev from the Department of Emergency Monitoring and Forecasting, Ministry of Emergency Situations of Republic of Kyrgyzstan introduced the Kyrgyzstan natural disaster monitoring system. He briefed the framework of monitoring and automated systems of prediction for disasters and various emergency situations after disaster breakout. In particular, natural disaster modeling and predictive monitoring are important, focusing on emergency situation. He introduced data collection system, monitoring station, web sites and app services on the analyses of disasters in Kyrgyzstan. Kyrgyz experts highlighted the need for establishing a regional integrated data exchange platform and further acceleration of GIS technologies in disaster prevention. Capacity development in disaster information management is envisaged through further enhancement of the national web-based information portal for emergency monitoring and prevention. These services provide some videos on emergency management and public services on daily online, where users can be upload emergency information directly. The disaster locations can be confirmed using geospatial system. He emphasized the monitoring and real-time services can reduce disaster risks in line with Sendai Framework for DRR. Participants briefed the growing use of GIS-based technologies focusing in particular on functionalities of the Automated Disaster Information Management System. This visualization platform enables to create and monitor disaster-prone areas of

Kyrgyzstan. Ultimately, appropriate regulatory mechanisms need to be designed for building disaster resilience towards achieving SDGs.

Mr. Dzhamshedzhon Khalikov reported on the establishment of the Crisis Management Center (CMC) under the Committee for Emergency Situations of Tajikistan. He introduced the current situation and possible future action. The Center is working on the interface of disaster risk reduction and social protection. Tailored to national institutional and regulatory circumstances, the National Disaster Risk Reduction Strategy of Tajikistan for 2019-2030 ensures complete coherence with the Sendai Framework for Disaster Risk Reduction 2015-2030 and Tajikistan National Development Strategy for the period until 2030. He identified main disasters occurred in Tajikistan such as drought, flood, extreme cold, heavy snowing and flash flood. Compared to the year 2017, the disaster decreased from 883 to 168 times, but the economic loss increased. In January 2018, they had heavy rainfall. The CMC plays a key role in collecting data, making the hazards map and sending to the research centers and ministries to take immediate decisions. He pointed out that the CMC established the strategy 2019-2030 which starts this year. Based on its strategy, they will implement the activities in compliance with the Sendai Framework and SDGs. He believes that the strategy will contribute to stimulating the countries to improve capacity building and achieve disaster risk reduction.

Mr. Rahmanberdi Hanekov, programme management officer of UNDP Turkmenistan, introduced the earthquake assessment issues in Turkmenistan and governmental efforts to reduce hazard from seismic disasters. In Turkmenistan, seismic disaster is the major natural disaster. As natural disaster brings huge damage and economic loss in Central Asian countries, strengthened resilience from natural disaster and reducing negative effect is critical. He reaffirmed the importance of capacity-building initiatives on seismic risk management, in particular, earthquake prevention and mitigation. Government of Turkmenistan put their efforts to have comprehensive policy and allocate fund for disaster risk reduction in cooperation with UNDP for sustainable development. He emphasized that it is significant to consider social and economic aspect as well as monitoring and detecting disaster geologically and physiologically for improving preparedness and increasing resilience. Participants were shared with good example of a capacity-building project carried out by UNDP Turkmenistan Country Office in collaboration with the Institute of Seismology and Physics of Atmosphere under the Academy of Sciences of Turkmenistan. The presentation illustrated close links and coordination between different stakeholders. Analyzing existing disaster-related threats, participants reported on the development of statistical and geospatial database developed as a measure for strengthening national DRR capacities.

Mr. Alisher Makhamov, senior expert of the Ministry of Innovative Development of Uzbekistan delivered a good case of Uzbekistan on spatial data infrastructure for the SDGs. He said that Uzbekistan is working on the development and creation of the

National Geographic Information System (NGIS) of the Republic of Uzbekistan. NGIS is a multifunctional automated integrated information system covering the entire territory of the Republic of Uzbekistan, covering information of the main sectors of the economy and fields of activity and containing: geospatial data in the form of their computer representations; a task-related set of functionalities in which geo-information technology operations are implemented. Through the system, acceleration and improvement of the quality of work with ordinary maps and plans, as well as with electronic maps and databases will be achieved. Also, effective and rational management, maximizing the benefits of existing services by working more closely with each other and providing data to users will be available. The objects of activity in the field of creation are: geospatial objects; geodetic and cartographic materials and data; spatial data and metadata databases; spatial data set; and National Spatial Data Infrastructure. Currently, a draft law on the National Spatial Data Infrastructure in the Republic of Uzbekistan has been submitted and discussed, which will make the government more open, transparent and efficient.

At the wrap up session, many experts and participants from governments of Central Asian countries identified the focus areas for further work and welcomed the initiative of the Uzbek delegation to establish a subregional platform providing centralized statistical and geospatial data. The platform is a unified portal that has database to forecast disasters. In this connection, the participants requested UN agencies and international organizations to strengthen regional cooperation to build open sourced data infrastructure and platforms to achieve SDGs including disaster risk reduction. In this connection, sub regional fund for data infrastructure and data platform was suggested as one of feasible actions.

Finally, Economic Affairs Officer, IDD, UNESCAP shared incoming project and programmes with participants including the 2019 SPECA working group on knowledge-based development (WG on KBD) in June 2019, the 2019 KOICA-ESCAP Fellowship Programme in September 2019 inviting government officials from Central Asia countries, and the new project on geo-indicators for drought monitoring and early warning for 2019-2020. Participants expressed interest in ESCAP's project and programme including a new ESCAP project on "Enhancing the capacity of the developing countries in Central Asia on the effective use of space applications for drought monitoring and early warning through the Regional Drought Mechanism".