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**Regional cooperation on the applications of space
technology and geographic information systems for
disaster risk reduction****Promoting regional cooperation on the applications of
space technology and geographic information systems for
effective disaster risk reduction****Note by the secretariat***Summary*

The present document highlights the importance of regional cooperation towards effective applications of space technology and geographic information systems (GIS) for disaster risk reduction in the Asia-Pacific region. It provides a brief overview of the secretariat's work in providing efficient and effective services, such as timely provision of near real-time satellite imagery, to the member States affected by severe natural disasters, promoting the establishment and use of geo-referenced information systems for disaster management, and enhancing capacity-building in developing countries in the region within the context of using space-based information for disaster risk reduction. This document also highlights the key activities and achievements under the Regional Cooperative Mechanism for Disaster Monitoring and Early Warning, as well as collaboration with other international and regional initiatives. The Committee's guidance on enhancing regional cooperation in building resilience to disasters, through the effective use of space technology and GIS, is also sought in the present document. A number of issues which the Committee may wish to consider are also presented.

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I. Introduction

1. Space technology and geographic information systems (GIS) applications provide a scientific and analytical basis for decision-making with regard to improving risk resilience and mitigation, as well as the products and tools necessary for the collection, storage, processing, dissemination and use of disaster geospatial data and other environment-related geospatial data. Analyses, such as risk assessments and situation awareness as well as impact assessments, optimized relief solutions and recovery policies, are made possible at all phases of disaster management by geospatial data, products and services, such as multi-hazard early warning systems, near real-time satellite imagery, online geo-referenced information systems, emergency communications tools and rapid damage and impact assessments. Many disaster-prone countries, in particular countries with special needs, including the least developed countries, landlocked developing countries and small island developing States, could benefit from the use of space technology and GIS applications for disaster management and sustainable development.

2. In recognition of the significant contribution of space technology and GIS applications for disaster management and sustainable development, the Economic and Social Commission for Asia and the Pacific (ESCAP) adopted resolution 68/5 on the Asia-Pacific Years of Action for Applications of Space Technology and the Geographic Information System for Disaster Risk Reduction and Sustainable Development, 2012–2017 and resolution 69/11 on the implementation of the Asia-Pacific Plan of Action for Applications of Space Technology and Geographic Information Systems for Disaster Risk Reduction and Sustainable Development, 2012–2017. In these resolutions, the importance of enhancing regional cooperation for accessing space technology applications for disaster management and the urgent need to promote the sharing of relevant information, knowledge and technology applications for sustainable development in the region are emphasized. In addition, in resolution 69/11, the Commission called for a ministerial conference on space applications for disaster risk reduction and management and sustainable development to evaluate the progress made in implementing the Asia-Pacific Plan of Action, provide further guidance for its successful implementation and build stronger political support and ownership among all stakeholders.

3. These mandates also fall under and support broader global agreements adopted in 2015, specifically the Sendai Framework for Disaster Risk Reduction 2015–2030, which was adopted by the Third United Nations World Conference on Disaster Risk Reduction,¹ and the sustainable development goals of the post-2015 development agenda. During the seventy-first session of the Commission, held in 2015, it adopted resolution 71/12, in which it urged member States and the secretariat to support the implementation of the Sendai Framework in Asia and the Pacific.

4. In the Sendai Framework, space applications are specifically identified as important for disaster management under priority 1, “Understanding disaster risk”, and the critical role of regional organizations, such as ESCAP, in supporting the development of regional mechanisms for this purpose at the local, national and regional levels is recognized. This includes promoting real-time access to reliable data as well as the use of space-derived information, GIS, and information and communications technology for the collection, analysis and dissemination of data.

5. In the outcome document of the United Nations Conference on Sustainable Development, “The future we want,”² the sharing of reliable geospatial information in the context of multi-approach hazard risk assessments was emphasized, and the importance of space-technology-based data, in-situ monitoring and reliable geospatial information for sustainable development policymaking, programming and project operations was recognized.

6. The important role of science, technology and innovation was also acknowledged as a key means of implementation of many of the sustainable development goals. Under goal 17, “Strengthen the means of implementation and revitalize the global partnership for sustainable development,” as proposed by the Open Working Group on Sustainable Development Goals, targets identify enabling technologies as a way to achieve many of the other goals through South-South, North-South and regional triangular and international cooperation. The proposed targets also call for support for the development, transfer, dissemination and diffusion of environmentally sound technologies and recognize the importance of capacity-building in technology transfer, particularly for least developed countries. Space technology applications and GIS are already being used for many activities, such as monitoring land degradation, climate change, drought and other disasters, crops, urbanization and water resource use, among the many other applications possible, that support the implementation of other sustainable development goals.

7. Regional cooperation has an important role to play in supporting access to these innovative technologies and applications for disaster management and sustainable development, as detailed in the above-mentioned global and regional agreements. ESCAP, as the only regional commission with a space technology applications programme, has long recognized and supported this through the 20-year-old Regional Space Applications Programme for Sustainable Development (RESAP). In particular, ESCAP operates as a regional hub for harnessing the latest advances in these innovative technologies for member States by bringing together space agencies and other sectoral stakeholders to address the challenges of accessing space applications and GIS for disaster management and sustainable development.

¹ General Assembly resolution 69/283, annex II.

² General Assembly resolution 66/288, annex.

8. Despite the significant progress achieved in the Asia-Pacific region, challenges to effectively accessing and utilizing these technology applications still remain, particularly for many countries with special needs which may have limited access due to the lack of basic infrastructure, low human and technical capacity, and less mainstreaming into national development plans. On the other hand, the efforts of ESCAP and other partners to continue to work towards enhancing the accessibility, availability and affordability of primary geospatial data and technology will greatly reduce these barriers.

II. Enhanced regional cooperation on space and geographic information system applications for effective disaster risk reduction

9. Since the last Committee session, the secretariat has been promoting a number of programmes to enhance access to space technology and GIS applications for disaster risk reduction, while harmonizing and coordinating existing global and regional initiatives, programmes and resources through the following core activities: (a) the timely provision of near real-time satellite imagery to countries affected by severe disasters; (b) operationalization of the Regional Cooperative Mechanism for Disaster Monitoring and Early Warning; (c) the strengthening of institutional capacity-building to address gaps and emerging challenges; and (d) the expansion of applications of emerging technology. ESCAP's major areas of work in promoting space technology and GIS applications for disaster risk reduction are highlighted below.

A. Timely provision of near real-time satellite imagery to countries affected by severe disasters

10. The secretariat, through the RESAP network, the United Nations Institute for Training and Research (UNITAR) and the Operational Satellite Applications Programme (UNOSAT), facilitated timely access to space-based data for member States after receiving requests from disaster-affected countries. Subsequently, disaster-affected member States could get support for effective response measures, post-disaster impact assessment and recovery policy advice. This service is of particular benefit to countries with special needs in the region that do not have a well-integrated monitoring, early warning and response mechanism in place.

11. For example, in 2014 and 2015, ESCAP provided approximately 300 satellite imagery and damage maps to Afghanistan, Bangladesh, China, India, Malaysia, Myanmar, Nepal, Pakistan, the Philippines, the Solomon Islands, Vanuatu and Viet Nam for early warning, response and damage assessment of earthquakes, floods, typhoons/cyclones and landslides. These space-based data, products and services, equivalent to approximately \$640,000 (data and product) and \$350,000 (service) respectively, were provided free of charge by the member States in the region through the regional cooperation mechanism network and partnerships with other United Nations agencies and international and regional initiatives.

12. In order to validate the use of space-based data and products by the end users in disaster-affected countries, the secretariat, in collaboration with the Government of the Philippines, conducted a capacity-building training course on applications of GIS and geospatial data management for disaster risk reduction in Manila, from 29 April to 1 May 2014, to review the effectiveness and efficiency of the near real-time space-based data and damage maps that were provided by member States and the international community through the ESCAP secretariat to the Philippines during Typhoon

Haiyan. Furthermore, the secretariat, in collaboration with the Association of Southeast Asian Nations (ASEAN) Coordinating Centre for Humanitarian Assistance on Disaster Management, UNOSAT and the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER), is developing standard operating procedures on space applications for disaster risk reduction under the memorandum of understanding on ASEAN-United Nations cooperation. Standard operating procedures will improve the operations in ASEAN member States for effective and efficient acquisition and utilization of satellite imagery during emergency response and relief. The secretariat intends to take this product to the rest of Asia and the Pacific and to customize it to satisfy the needs of other member States.

B. Operationalization of the Regional Cooperative Mechanism for Disaster Monitoring and Early Warning

13. Drought has affected more than 1.31 billion people over the past 29 years in the Asia-Pacific region, causing damages of more than 53 billion dollars.³ Many countries in the region face significant challenges in the area of drought monitoring and early warning. This includes low capacity to access and analyse source information, lack of effective methodology to combine satellite information products with ground-based information for appropriate decision-making on drought management, very few regional platforms for sharing knowledge and good practices, and a lack of coordination among agencies and institutions at the national level.

14. Given the fact that agricultural drought is a serious but forgotten problem in the Asia-Pacific region, where many people are reliant on the agricultural sector for their basic livelihood needs and the economies of many countries are at least partially dependent on the sector, ESCAP launched the Regional Cooperative Mechanism for Disaster Monitoring and Early Warning. The Mechanism mobilizes regional resources in space technology and GIS applications and enhances capacities for integrated analysis of space and in-season ground data and information, in order to build resilience among agrarian communities in developing countries that are perennially affected by drought. Under this Mechanism, participating pilot countries in Asia and the Pacific have benefited from enhanced access to space-based data, products and services, strengthened institutional capacity-building in drought preparedness and response, strengthened institutional coordination and policies at the country level, and enhanced regional and South-South cooperation and support. The implementation of the Mechanism will enhance the capacity of countries in the Asia-Pacific region to address food security, which is included in proposed goal 2 of the sustainable development goals.

15. Currently, seven countries have asked to join the Mechanism's pilot programme, namely, Afghanistan, Cambodia, Kyrgyzstan, Mongolia, Myanmar, Nepal and Sri Lanka. Two regional service nodes to support the Mechanism have been established, the National Remote Sensing Centre of China and the National Remote Sensing Centre of the Indian Space Research Organization, both of which have been providing space-based data and products and capacity-building assistance for effective drought monitoring and early warning.

16. The secretariat, with support from member States, developed preliminary standard operating procedures for the Mechanism. The current

³ Data from the International Disaster Database.

standard operating procedures cover country profiles, drought assessment and monitoring indicators, customization of inputs for administration, capacity-building, and the role of the interim ad hoc secretariat for the Mechanism,⁴ which will support the implementation of the standard operating procedures.

17. Since 2014, a series of regional forums, workshops, institutional capacity-building trainings and inter-agency briefings have been organized by the secretariat together with the two regional service nodes. During these events, the experiences of the pilot countries and other drought-prone countries were shared, workplans were finalized, terms of reference for a thematic working group to review and guide the work of the regional service nodes was endorsed and strategic partnerships with key international organizations important for agriculture, irrigation and drought monitoring were established and enhanced.

18. The pilot project on drought monitoring in Mongolia made good progress. Key personnel of the National Remote Sensing Centre of Mongolia were trained in technical capacity areas by personnel from the two existing regional service nodes. Topics included how to compile and analyse space-derived data and how to develop and assess indices appropriate for Mongolia. A drought watch system for monitoring has been operating in the National Remote Sensing Centre of Mongolia, and field validation was conducted in 2015 to verify the customized drought indices and methodology. The Centre in Mongolia has developed drought maps with the new methodology and, in the central part of the country which is being affected by a severe drought, is in the process of testing and validating them.

19. The pilot programme in Sri Lanka has also made good progress. In February 2014, Mechanism experts provided technical advisory services and customized training programmes to personnel in Sri Lanka and developed a road map for implementation of the Mechanism. The secretariat and the National Remote Sensing Centre of the Indian Space Research Organization in Hyderabad, India organized advanced training for 10 experts from key Sri Lankan ministries on the effective use of these data for drought monitoring in late July 2014. An additional one-week training course was held in Sri Lanka in February 2015 on the installation and use of the drought monitoring system and the drought watch system developed by the two regional service nodes.

20. During the Regional Forum on Space Technology Applications for Drought Monitoring and Early Warning in early July 2014, eight Sri Lankan ministries doing key work related to drought mitigation committed to working closely as a national team. Furthermore, a series of memorandums of understanding for the implementation of the Mechanism in Sri Lanka have been signed between key ministries and agencies working in the areas of agriculture, irrigation and disaster mitigation.

21. Since late 2014, the secretariat and experts, under the aegis of the Mechanism, have provided a series of technical advisory and institutional capacity development services in Cambodia, Myanmar and Nepal. Each country's status, gaps and institutional arrangements related to drought have been discussed and the establishment of a country team is under way.

22. Thailand has been affected by severe drought since mid-2015. As requested by the Geo-Informatics and Space Technology Development

⁴ The Information and Communications Technology and Disaster Risk Reduction Division of ESCAP is acting as the ad hoc secretariat of the Mechanism.

Agency of Thailand, the secretariat, together with experts from the regional service nodes, provided technical advisory services and assistance to appropriate ministries and departments on the use of space-derived products for early warning and management for drought.

23. ESCAP is in discussions with various initiatives, such as the Group on Earth Observations Global Agricultural Monitoring Initiative and Asia-RiCE, on the possibility of extending drought monitoring to crop monitoring, as a number of countries have requested assistance on this matter.

C. Strengthening of institutional capacity-building to address gaps and emerging challenges

24. Although the Asia and Pacific region has a growing number of space-faring countries, space technologies are not yet fully benefiting the vulnerable in these societies because of the lack of capacity in human, scientific, technological and institutional resources. Since the 2013 Committee session, the secretariat has made efforts towards capacity development for member States through a series of specialized programmes, which have been based on the needs identified through surveys and regional inventory on space technology and GIS applications. The focus areas include mainstreaming space applications into disaster risk management, using space applications and GIS in flood-risk mapping, drought monitoring and early warning, facilitating the establishment and use of the Geo-referenced Information System for Disaster Risk Management (Geo-DRM)⁵ in countries with special needs and providing technical advisory services in effective use of space technology and GIS for disaster management.

25. Since 2014, approximately 470 government officials, practitioners and managers from more than 30 member States in the region benefited from the Commission's capacity-building programmes. These activities are aimed at assisting high-risk and low-capacity developing countries. At national and local government levels, the training programmes have significantly improved awareness, knowledge and skills of end users regarding the management of geospatial information for effective disaster risk reduction and management. For example, the secretariat worked with local governments in the Philippines and held a forum for senior policymakers on space technology applications for disaster risk management and sustainable development, in Manila in February 2015, with the goal of enhancing the awareness and capacity of decision makers and end users at the local level. As a result, 22 participating mayors from the Philippines signed a manifestation of gratitude and collective request for pilot projects, to request the secretariat to provide continued support and pilot projects in promoting utilization of space technology and GIS for disaster management.

26. Pacific island developing countries are exposed to a variety of disaster risks, such as tsunamis, drought, tropical cyclones, storm surges and coastal zone flooding. Despite these risks, coastal areas continue to attract people and are growing more rapidly than those inland, putting additional people at risk to coastal hazards. Since 2014, the secretariat provided six specific training programmes on geo-portal and geospatial data management for disaster risk reduction for Pacific countries, in order to build resilience to disasters in these high-risk areas and end-to-end multi-hazard early warning systems.

⁵ A geo-referenced information system is a computer-based platform that combines data management with mapping, allowing planners and those managing emergency situations to graphically display hazard impact areas and relate them to people and property at risk.

More substantive work is ongoing to further strengthen the timely access of space applications and GIS for Pacific island developing States.

27. The secretariat also worked with the Centre for Space Science and Technology Education in Asia and the Pacific, which serves as the node of the RESAP training network, to provide a nine-month postgraduate course on remote sensing and GIS applications. Since 2014, the secretariat has sponsored four government officials from Fiji, Kyrgyzstan and Mongolia to attend this course, with a scholarship provided by the Indian Government.

28. The secretariat is facilitating the development of a manual on rapid assessment for resilient recovery through the use of innovative tools, techniques and space applications. This manual will provide a guideline for enhancing the capacity of practitioners of government agencies to conduct rapid post-disaster needs assessments. In particular, this manual will illustrate how to utilize innovative technologies, including space applications, GIS, geospatial databases and crowdsourcing, for collecting and analysing data for specific sectors such as agriculture, housing and infrastructure. It is expected to assist the evidence-based decision-making process for mobilizing internal and external resources for recovery after the disaster.

D. Expansion of applications of emerging technology

1. Geo-referenced Information System for Disaster Risk Management: supporting evidence-based decision-making for disaster risk management

29. Disaster risk management requires a multidisciplinary approach and the collation and consolidation of information from various sources. Incorporating location-based data into existing disaster information can provide a major advantage in making informed decisions and, ultimately, save more lives. Since 2012, ESCAP has worked with countries with special needs in Asia and the Pacific to develop Geo-DRM, which combines socioeconomic information with satellite imagery and other disaster-related data, to provide the right information to the right person at the right time. The result is a highly effective tool that supports evidence-based decision-making for essential disaster preparedness, response and impact assessment from one online platform.

30. The secretariat promoted the use of online Geo-DRM portals and provided technical assistance to Bangladesh, the Cook Islands, Fiji, Kyrgyzstan, Mongolia and Nepal, which have now established Geo-DRM portals. A national Geo-DRM portal has been recognized as an essential tool by many national authorities and agencies. Geo-DRM portals have been positioned within the appropriate in-country national authorities for collecting, analysing and disseminating disaster-related data in a centralized, credible and inclusive manner, together with satellite imagery and socioeconomic information, to support decision-making.

31. The Cook Islands have successfully formed a GIS taskforce consisting of GIS experts from other ministries, and its Geo-DRM portal was launched in August 2014, after the island of Atiu was fully mapped. The National Emergency Management Agency of Mongolia established a Geo-DRM portal and will connect it to the Agency's emergency operation and early warning centre. The Geo-DRM portal is also used for mapping resources, groundwater, land use, ecosystems, provincial borders, forests, soil, grasslands and special protected areas. The Ministry of Home Affairs of Nepal has formally launched its portal, and all stakeholders are using this online system and continually uploading disaster-related data. The country is also in the process of using the system for wider disaster management planning.

32. Other countries such as Afghanistan, Bhutan, Cambodia, Kiribati, the Lao People's Democratic Republic, Maldives and Myanmar have also requested the secretariat to provide technical support on establishing Geo-DRM portals. In this regard, the secretariat organized a series of regional and subregional meetings to build awareness among policymakers and practitioners on the benefits of geo-referenced information systems and capacity-building programmes at subregional and country levels. For example, since 2014, the secretariat has sent its technical advisory team to Bhutan, Fiji and Kyrgyzstan to support the establishment and operation of national Geo-DRM portals and conducted a series of specialized training workshops.

33. To further support the capacity-building activities of the secretariat at the regional level, an online e-learning platform on geo-referenced information systems for disaster risk management has been developed. The platform provides innovative courses that help practitioners to further develop their core skills of analysis and problem solving using space technology and GIS applications for disaster risk management. The online e-learning platform will enhance and facilitate improved information exchange regarding the application and operation of and policy developments in space technology and GIS applications for disaster risk management and will strengthen key initiatives aimed at institutional strengthening and knowledge-building through the provision of knowledge products, which are based on state-of-the-art learning design theory.

2. Regional land cover data set: monitoring land cover change and understanding potential risk

34. Remote sensing and GIS applications have long been recognized as cost-effective tools for broad-scale land cover mapping. As a result, a number of land cover data sets at a global scale with resolutions ranging from 300 m to 1 km have been developed and widely used. However, the quality of these products is far from satisfactory for many applications in various fields related to disaster risk reduction and sustainable development, which need improved spatial resolution and accuracy for enhancing the effectiveness and efficiency of space-derived data and products. Global LandCover data products at 30 m resolution, based on space-derived data as of 2010 (GLC30), were contributed to the United Nations by China in 2014. Such products are considered a superior option for the next generation of GLC30 maps, since most significant human activities on the land system can be captured at this scale. Regularly updated databases and maps on land cover change at the regional level will be critical for monitoring the implementation of the Sendai Framework and the post-2015 development goals. They will also provide baseline maps for various thematic applications for agricultural land use, urban development, disaster risk assessment, damage impact, forestry, water management, natural resource management and environmental monitoring.

35. In this regard, the secretariat, in collaboration with the National Administration of Surveying, Mapping and Geo-information of China, UNOSAT, the Geo-Informatics and Space Technology Development Agency of Thailand and the Chinese University of Hong Kong, is developing customized methodology and tools for a 30 m resolution regional land cover data set, for monitoring land cover changes. The pilot project was implemented in Bangladesh, Cambodia, Kazakhstan, Kyrgyzstan, Mongolia, Myanmar and Thailand. The initial results showed the buffers around urban areas, including water, wetlands and permanent snow and ice, have decreased rapidly in some pilot countries due to urbanization, which may have a negative effect on mitigating the impacts of climate extremes and reveal environment degradation. In the near future, the secretariat will work with

pilot countries to enhance their capacity for developing their own data sets, tools and products to assess risk and monitor land cover changes. Proposals include updating the data sets every five years and for each pilot country to conduct thematic research and operations on urbanization, disaster management, agriculture, forestry, coastal hazard, environment, land degradation and deforestation. This project will also be in collaboration with the National Administration of Surveying, Mapping and Geo-information of China, the United Nations Initiative on Global Geospatial Information Management, UNOSAT, the Group on Earth Observations and relevant United Nations agencies and regional organizations.

E. Delivering as one: building strong regional partnerships

36. The secretariat delivers its work through RESAP networks and in partnership with international and regional organizations, including UNITAR and UNOSAT, UN-SPIDER, the United Nations Development Programme, the United Nations Office for Disaster Risk Reduction, the United Nations Initiative on Global Geospatial Information Management, the Food and Agriculture Organization of the United Nations, the World Meteorological Organization, the Asia-Pacific Regional Space Agency Forum and Sentinel Asia, the Asia-Pacific Space Cooperation Organization, International Charter Space and Major Disasters, the Group on Earth Observations, the ASEAN Coordinating Centre for Humanitarian Assistance on Disaster Management, the South Asian Association for Regional Cooperation, the Centre for Space Science and Technology Education in Asia and the Pacific, the Regional Integrated Multi-hazard Early Warning System for Africa and Asia, the Applied Geoscience and Technology Division of the Secretariat of the Pacific Community, the Asian Institute of Technology, the Chinese University of Hong Kong and the Global Water Partnership.

37. The secretariat also promotes regional cooperation through institutional arrangements in order to provide geospatial products and services in a systematic manner. For instance, the secretariat signed memorandums of agreement in early 2015 with the National Disaster Management Institute of the Republic of the Korea to strengthen strategic partnerships on comprehensive access to innovative solutions for disaster management and capacity-building. Working with some of the above partners during the Third United Nations World Conference on Disaster Risk Reduction, the secretariat played an important role, from a regional perspective, in the development of a white paper on earth observations in support of national strategies for disaster risk management. The secretariat is currently working with the United Nations Initiative on Global Geospatial Information Management on a series of regional capacity-building programmes for 2015–2016 on geospatial information management for disaster management and sustainable development.

38. The secretariat will continue to work with its partners in the United Nations system and other global and regional organizations to strengthen cooperation on utilization of space technology and GIS for effective disaster management.

III. Plan and future activities

39. Taking guidance from recently adopted resolution 71/4 on the implementation of the SIDS Accelerated Modalities of Action (SAMOA) Pathway and resolution 71/12, the secretariat has been tasked by the member States to help with the implementation of the global mandate contained in the SAMOA Pathway, which includes a strong emphasis on disaster risk

reduction. In this regard, the secretariat is working towards expanding the accessibility of space applications, GIS and multi-hazard early warning systems to small island developing States in the Pacific.

40. Furthermore, as drought is a serious challenge for many countries in the region, ESCAP will work to further expand the Regional Cooperative Mechanism for Disaster Monitoring and Early Warning to other member States, particularly in Central Asia, but also to other countries with special needs, upon their request. The secretariat will also work to enhance the Mechanism to establish greater opportunities for other activities, such as crop monitoring, and to build further partnerships to ensure the long-term sustainability of the programme.

41. The secretariat will start the work on developing a 30 m resolution regional land cover data set. This regional data set will be updated every five years beginning in 2015. Experts from member States will be trained on developing the country-level data sets and the use of geospatial information for thematic applications in the critical areas related to implementation of the proposed goals of the post-2015 development agenda.

42. Based on the secretariat's exercises on developing standard operating procedures for utilization of space-based data, products and services for disaster response, it will work with its partners in the United Nations system and member States to extend the standard operating procedures on geospatial information for disaster early warning and damage assessment.

IV. Issues for consideration by the Committee

43. The secretariat, in collaboration with all partners and stakeholders, will continue to focus on providing assistance to member States for reducing disaster risks at all levels. In particular, the secretariat will make more efforts to strengthen regional cooperation and integration through RESAP and the implementation of the Asia-Pacific Plan of Action for Applications of Space Technology and Geographic Information Systems for Disaster Risk Reduction and Sustainable Development, 2012–2017; to promote the operationalization of the Regional Cooperative Mechanism for Disaster Monitoring and Early Warning; to strengthen the capacity-building of member States with a focus on countries with special needs; and to improve analytical research on identifying relevant challenges and needs.

44. While considering the issues raised above, the Committee may wish to:

(a) Strengthen the work of the secretariat on the Regional Cooperative Mechanism and recommend and contribute to expanding the knowledge, tools and experiences gained during the operationalization of the Mechanism to other slow-onset disasters, such as land degradation, coastal erosion and deforestation;

(b) Support and contribute to efforts by the secretariat in assisting developing countries gain from advances in applications of space technology and GIS, by increasing access to and use of geospatial information, particularly the regional land cover data set and change monitoring, and strengthening disaster risk modelling for flooding and monitoring and impact assessment through the development of a series of customized standard operating procedures;

(c) Encourage member States to carry out activities identified in, and inform the secretariat on steps taken to implement, resolutions 69/11 and 71/12, and support and contribute to efforts by the secretariat on the survey of the capacity of developing countries in geospatial information management, which will provide guidance for the regional plan on capacity-building for 2016–2020, with a focus on countries with special needs;

(d) Invite member States to host a ministerial conference on space applications for disaster risk reduction and disaster management and sustainable development in Asia and the Pacific, to be convened in 2016 or 2017, in accordance with the Asia-Pacific Plan of Action, as contained in resolution 69/11;

(e) Share, through ESCAP e-learning platforms, the experience, technological know-how and training programmes of member States in space technology and GIS applications for the countries that are at high risk but have low capacity to cope with disaster mitigations.
