

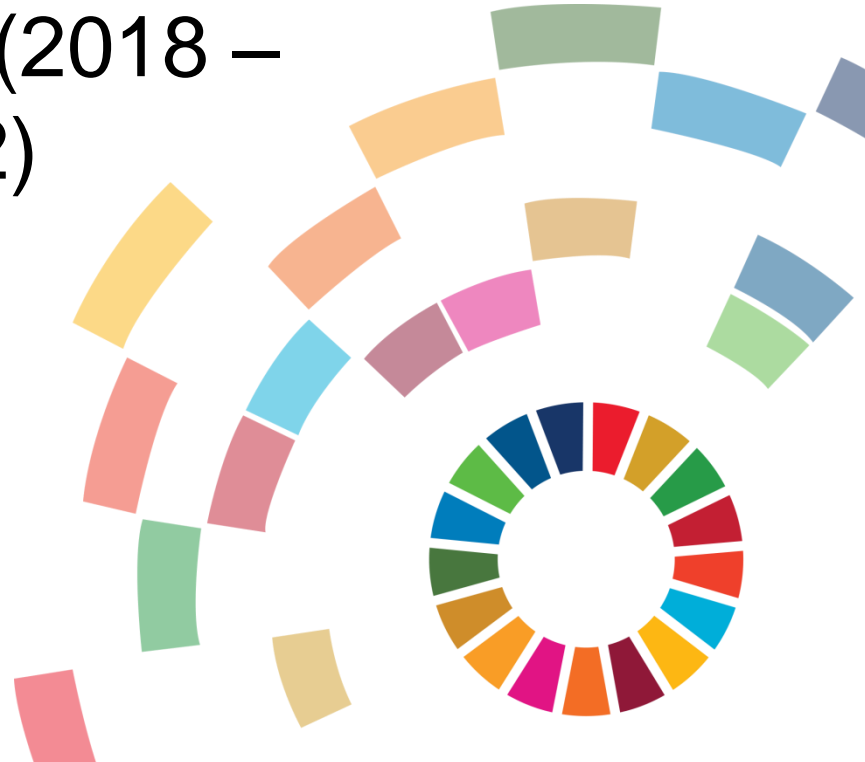
# Survey on needs and contributions to the implementation of the Asia-Pacific Plan of Action on Space Applications for Sustainable Development (2018 – 2030), Phase I (2018-2022)

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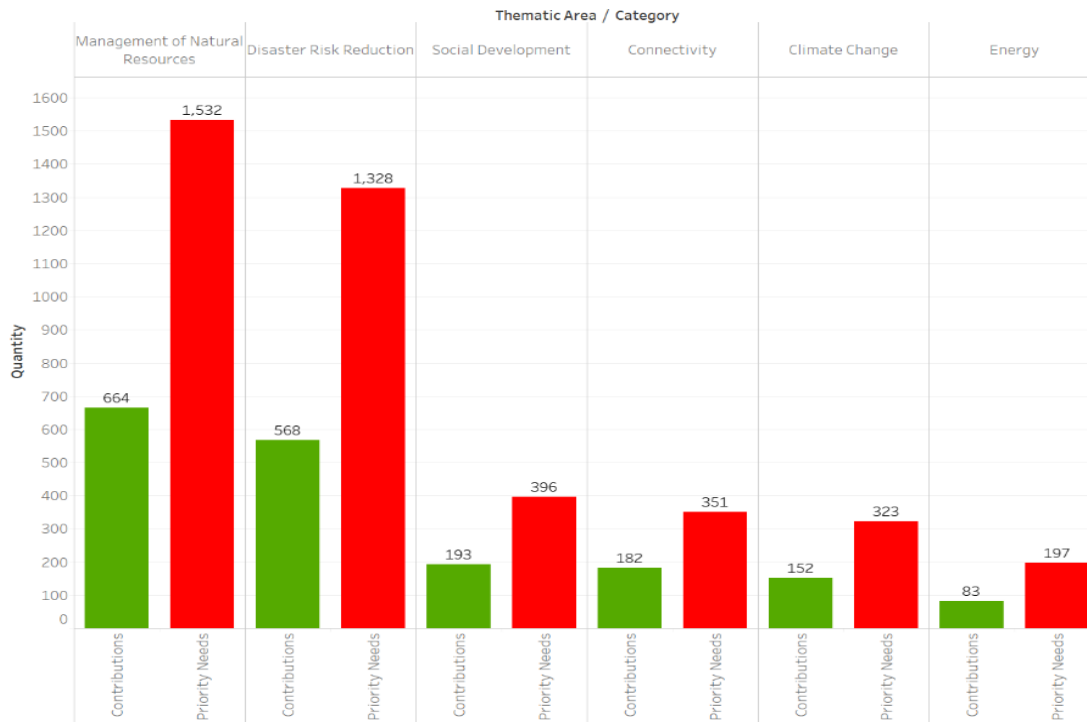


# Introduction to the survey

- Circulated in 2019, with the last submission recorded in October.
- Purpose to identify priorities for the Plan of Action, and possible support that countries and organizations can provide.
- 17 responses – 16 from member and associate member States, 1 from an international organization.
- Central Asia – 2; Pacific – 2; SEA – 4; South Asia – 5; E&NE Asia - 3



# Number of requests for support by thematic area



# Many of the needs requested could also be supported by others in the region

Figure 2. Total priority needs matched to contributions by thematic area

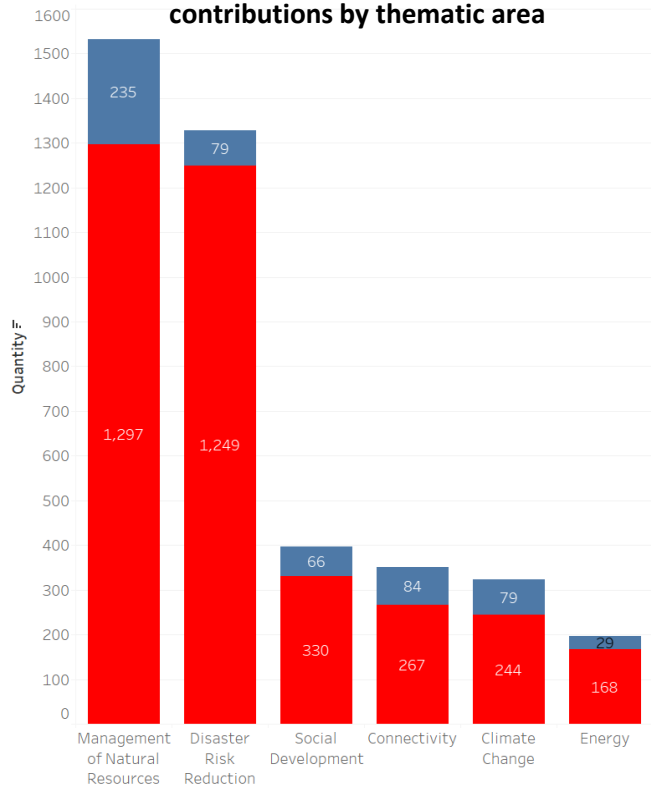
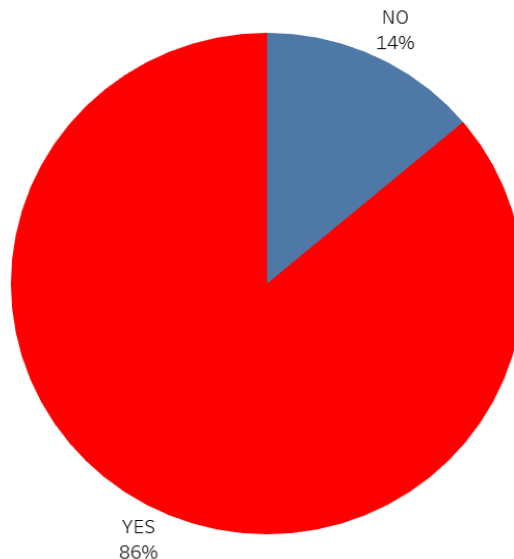


Figure 3. Total priority needs matched to contributions proposed from countries



Rank	Action Name	Thematic Area	Action Area
1	Share good practices from the health sector, and work with existing intergovernmental mechanisms, international and regional organizations and relevant implementing agencies that could benefit from the use of geo-information science.	Social Development	AA3
2	Develop capacity for mapping and modelling urban and peri-urban areas and settlements.	Management of Natural Resources	AA2
3	Develop capacity to map health risk hotspots using geospatial information and big data.	Social Development	AA2
4	Develop capacity in integrating and utilizing space and geo-informatics applications with new methods, tools and technologies, from other digital innovations, for the mapping process.	Disaster Risk Reduction	AA2
5	Research opportunities for including Global Satellite Navigation System for infrastructure and utilities mapping, relevant to disaster damage assessment and early warning systems.	Disaster Risk Reduction	AA1
6	Provide technical support on how to integrate, enhance and strengthen multi-hazard monitoring and early warning systems and real-time situational analysis for rapid-onset disasters, including flash floods from high-altitude lake and glacial outbursts, as well as slow-onset disasters, including drought and sand and dust storms.	Disaster Risk Reduction	AA2
7	Promote the use of geospatial information management systems, global navigation satellite systems and communications satellite systems towards disaster risk reduction and management at the policy level.	Disaster Risk Reduction	AA3
8	Identify interfaces between, and integration of, traditional space-based information and frontier technologies to address disaster risk management and build resilience.	Disaster Risk Reduction	AA1
9	Develop community-based hazard maps to raise awareness on preparedness and mitigation.	Social Development	AA2
10	Carry out risk mapping of highly vulnerable areas and communities by identifying hazards, vulnerabilities and exposure to risks.	Disaster Risk Reduction	AA2



**Top  
20  
needs**

Priorities are  
health, urban  
development  
and disaster  
risk reduction

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1	Share good practices from the health sector, and work with existing intergovernmental mechanisms, international and regional organizations and relevant implementing agencies that could benefit from the use of geo-information science.	Social Development	AA3
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4	Develop capacity in integrating and utilizing space and geo-informatics applications with new methods, tools and technologies, from other digital innovations, for the mapping process.	Disaster Risk Reduction	AA2
5	Research opportunities for including Global Satellite Navigation System for infrastructure and utilities mapping, relevant to disaster damage assessment and early warning systems.	Disaster Risk Reduction	AA1
6	Provide technical support on how to integrate, enhance and strengthen multi-hazard monitoring and early warning systems and real-time situational analysis for rapid-onset disasters, including flash floods from high-altitude lake and glacial outbursts, as well as slow-onset disasters, including drought and sand and dust storms.	Disaster Risk Reduction	AA2
7	Promote the use of geospatial information management systems, global navigation satellite systems and communications satellite systems towards disaster risk reduction and management at the policy level.	Disaster Risk Reduction	AA3
8	Identify interfaces between, and integration of, traditional space-based information and frontier technologies to address disaster risk management and build resilience.	Disaster Risk Reduction	AA1
9	Develop community-based hazard maps to raise awareness on preparedness and mitigation.	Social Development	AA2
10	Carry out risk mapping of highly vulnerable areas and communities by identifying hazards, vulnerabilities and exposure to risks.	Disaster Risk Reduction	AA2

Submissions  
were in 2019

# Top 20 needs

Other priority  
needs include  
forestry, land  
degradation,  
and climate  
change

Rank	Action Name	Thematic Area	Action Area
11	Provide support to mitigate the effects of disasters occurring in Asia and the Pacific through the International Charter on Space and Major Disasters.	Disaster Risk Reduction	AA3
12	Integrate ground-based and satellite systems for effective monitoring of hazards, disasters and critical infrastructure using global navigation satellite systems.	Disaster Risk Reduction	AA2
13	Develop capacity in terms of seasonal forecasting and its impact on agriculture.	Disaster Risk Reduction	AA2
14	Strengthen the capacity of countries to use satellite data for agroecosystem resilience, including analysing geospatial data for multi-hazard early warning and damage assessment, such as for flood, drought and cyclone/typhoon/hurricane.	Disaster Risk Reduction	AA2
15	Provide technical support, including satellite data, tools and knowledge, to monitor forest dynamics and to aid in forest management.	Management of Natural Resources	AA2
16	Provide technical support to develop capacity to identify land degradation and desertification	Management of Natural Resources	AA2
17	Provide technical support on monitoring and measuring greenhouse gas emissions and absorption.	Climate Change	AA2
18	Provide support and access to pre-, during-and post-disaster satellite data to vulnerable and affected countries for damage assessment.	Disaster Risk Reduction	AA2
19	Discuss and promote the potential concept of a common regional information technology system to support activities related to space applications for sustainable development.	Disaster Risk Reduction	AA3
20	Develop capacity for using space applications for climate modelling and scenario development, including impact and vulnerability mapping, through existing programmes.	Climate Change	AA2

# Top 5 for disaster risk reduction

Rank	Action Name	Action Area
1	Develop <b>capacity</b> in integrating and utilizing space and geo-informatics applications with <b>new methods, tools and technologies</b> , from other digital innovations, for the <b>mapping</b> process.	AA2
2	<b>Research</b> opportunities for including Global Satellite Navigation System for <b>infrastructure and utilities mapping</b> , relevant to disaster damage assessment and early warning systems.	AA1
3	Provide <b>technical support</b> on how to integrate, enhance and strengthen <b>multi-hazard monitoring and early warning systems</b> and real-time situational analysis for rapid-onset disasters, including flash floods from high-altitude lake and glacial outbursts, as well as slow-onset disasters, including drought and sand and dust storms.	AA2
4	<b>Promote the use</b> of geospatial information management systems, global navigation satellite systems and communications satellite systems towards <b>disaster risk reduction and management</b> at the <b>policy level</b> .	AA3
5	<b>Identify interfaces between</b> , and integration of, traditional space-based information and <b>frontier technologies</b> to address disaster risk management and build resilience.	AA1

Japan offered to share disaster related products / information through Sentinel Asia

Bhutan requested data sharing for this



# Offers of contributions for DRR

## #1 priority need

Action Name	Action Item	Contributing Country
Develop capacity in integrating and utilizing space and geoinformatics applications with new methods, tools and technologies, from other digital innovations, for the mapping process.	Assessment / management	Sri Lanka
	Awareness workshops towards available geospatial data and information	Sri Lanka
	Dissemination of space-based information to disaster managers	India
		Pakistan
	Flood and drought hazard assessment and monitoring.	Pakistan
	Geospatial training (GIS, RS, GNSS)	Tajikistan
		China
	Install and operationalize sector specific tools and systems	Indonesia
	Rapid damage assessment in the event of flood.	Pakistan
	Sharing tools and data repository	China
	Technical support	Indonesia
		China
		Tajikistan
		Sri Lanka
		Philippines
		Pakistan
		India
	Training and capacity building	ADRC
		Tajikistan
		Philippines
		Indonesia
		ADRC



# Top 5 for natural resource management

Rank	Action Name	Action Area
1	Develop <b>capacity</b> for mapping and modelling <b>urban and peri-urban</b> areas and settlements.	AA2
2	Provide <b>technical support</b> to develop capacity to identify <b>land degradation and desertification</b>	AA2
3	Provide <b>technical support</b> , including satellite data, tools and knowledge, to monitor <b>forest dynamics</b> and to aid in forest management.	AA2
4	Develop <b>capacity</b> to assess <b>deforestation and forest changes</b> over time using satellite data.	AA2
5	Provide <b>technical support</b> and develop capacity on <b>monitoring land use change</b> across all terrestrial ecosystems.	AA2

Japan offered to provide available open data access by GCOM-C/W on JAXA home page and share the knowledge of APRSAF space application working group

# Contributions for top 2 NRM needs

Action Name	Action Item	Country
Develop capacity for mapping and modelling urban and peri-urban areas and settlements.	Geospatial training (GIS, RS, GNSS)	Philippines
		China
	Install and operationalize sector specific tools and systems	India
	Sharing tools and data repository	Thailand
		Tajikistan
		China
	Technical support	China
	Training and capacity building	Tajikistan
		India
		Tajikistan
Provide technical support to develop capacity to identify land degradation and desertification	Awareness workshops towards available geospatial data and information	Tajikistan
	Geospatial training (GIS, RS, GNSS)	Philippines
		China
	Install and operationalize sector specific tools and systems	Tajikistan
		Indonesia
	Share the knowledge of APRSAF space application working group	Japan
	Sharing tools and data repository	India
		China
	Technical support	China
	Training and capacity building	Tajikistan
		Indonesia



# Top 5 for connectivity

Rank	Action Name	Action Area
1	<b>Research</b> the integration of satellite data and global navigation <b>satellite systems with ground information</b> and other sources of data, to identify <b>traffic</b> conditions, hazardous areas and driving behaviours.	AA1
2	Develop <b>capacity</b> to monitor <b>ground, air and marine transport</b> using space applications and other data and information.	AA2
3	Promote ongoing <b>research</b> in space, applications for sustainable development, through <b>scholarships and research grants</b> , and share knowledge on relevant innovative research.	AA1
4	Continue to provide <b>capacity</b> development opportunities through <b>scholarships, exchange programmes</b> and remotely through massive open <b>online courses</b> , to support the use of space applications for sustainable development.	AA2
5	<b>Research</b> how space applications, information and communications technology and frontier technologies can support the development of <b>smart and safe transport and logistics</b> services and systems.	AA1

Sri Lanka requested the development of a data repository

Bhutan requested knowledge expansion


# Contributions for top 2 Connectivity needs

Action Name	Action Item	Contributing Country
Research the integration of satellite data and global navigation satellite systems with ground information and other sources of data, to identify traffic conditions, hazardous areas and driving behaviours.	Develop data repository	Thailand
		Tajikistan
		Philippines
		China
	Develop guidelines/ manuals/ handbooks	Thailand
		Tajikistan
	Expand existing knowledge	Tajikistan
		China
	Identify and list good practices	Thailand
	Identify areas of training and capacity building	China
Develop capacity to monitor ground, air and marine transport using space applications and other data and information.	Assessment / management	Thailand
		Philippines
		China
		Tajikistan
		Philippines
		China
	Geospatial training (GIS, RS, GNSS)	Tajikistan
		China
	Install and operationalize sector specific tools and systems	Tajikistan
		Tajikistan
	Sharing tools and data repository	Tajikistan
		India
	Technical support	China
		China



# Top 5 for social development

Rank	Action Name	Action Area
1	<b>Share good practices</b> from the <b>health</b> sector, and work with existing intergovernmental mechanisms, international and regional organizations and relevant implementing agencies that could benefit from the use of geo-information science.	AA3
2	Develop <b>capacity</b> to <b>map health risk hotspots</b> using geospatial information and big data.	AA2
3	Develop <b>community-based hazard maps</b> to raise awareness on preparedness and mitigation.	AA2
4	<b>Research</b> methodologies on how to utilize space applications to identify and distinguish <b>socioeconomic development</b> , e.g., poverty mapping, satellite data for night lights.	AA1
5	<b>Economic mapping</b> to understand the impacts of <b>climate-related events</b> on the socioeconomic conditions of vulnerable groups.	AA1



Sharing good practices relating to covid-19 is a priority for all countries

# Contributions for top 2 social development needs

Action Name	Action Item	Contributing Country
Share good practices from the health sector, and work with existing intergovernmental mechanisms, international and regional organizations and relevant implementing agencies that could benefit from the use of geo-information science.	Consultation on decision making	Pakistan
	Cooperation on data sharing	Tajikistan
		Pakistan
		China
		Philippines
		Tajikistan
	Promote institutional cooperation at regional, national and international levels	China
	Promote IT and space applications for sustainable development	Pakistan
		Tajikistan
		Philippines
Develop capacity to map health risk hotspots using geospatial information and big data.	Provide good practices on satellite mapping products/ geospatial data	China
	Geospatial training (GIS, RS, GNSS)	China
	Sharing tools and data repository	Tajikistan
		Philippines
		Pakistan
		China
	Technical support	China
	Training and capacity building	Tajikistan



# Top 5 for energy

Rank	Action Name	Action Area
1	<b>Research</b> and map the <b>renewable energy potential</b> using space applications.	AA1
2	<b>Research</b> the use of space applications for <b>energy infrastructure site selection</b> including wind, wave and solar infrastructure.	AA1
3	<b>Share good practices</b> and facilitate cooperation on how space applications can support the development of <b>standards and methodologies</b> for the identification of renewable energy potential.	AA1
4	<b>Research</b> the integration and use of space applications with other sources of data to determine <b>energy demand and consumption</b> .	AA1
5	Develop <b>capacity</b> to use space applications for identification and mapping of <b>renewable energy potential</b> , such as hydropower and geothermal and solar energy.	AA2



Thailand requested greater institutional cooperation at regional, national and international levels



# Contributions for top 2 energy needs

Action Name	Action Item	Contributing Country
Research and map the renewable energy potential using space applications.	Develop data repository	Thailand
	Develop guidelines/ manuals/ handbooks	Tajikistan
		India
		Thailand
	Develop tools and systems	Tajikistan
	Expand existing knowledge	Hong Kong, China
		China
		Tajikistan
	Identify and list good practices	India
	Identify areas of training and capacity building	China
		Thailand
Research at institution level (collaborative and individual)	Philippines	
	Hong Kong, China	
	China	
Share good practices and facilitate cooperation on how space applications can support the development of standards and methodologies for the identification of renewable energy potential.	Cooperation on data sharing	Tajikistan
		China
	Promote institutional cooperation at regional, national and international levels	Tajikistan
		China
		Philippines
	Promote IT and space applications for sustainable development	Philippines
	Provide good practices on satellite mapping products/ geospatial data	Tajikistan
		China



# Top 5 for climate change

Rank	Action Name	Action Area
1	Develop <b>capacity</b> for using space applications for <b>climate modelling and scenario development</b> , including impact and vulnerability mapping, through existing programmes.	AA2
2	Provide <b>technical support</b> on monitoring and measuring <b>greenhouse gas emissions and absorption</b> .	AA2
3	<b>Research</b> on measuring <b>greenhouse gas concentration</b> from meteorological and Earth observation, using greenhouse gas observation satellites.	AA1
4	Promote the use of <b>evidence-based information to support decision-making</b> on the effects of climate change.	AA3
5	Support existing <b>intergovernmental mechanisms</b> , and international and regional organizations, and their relevant programmes on the use of space applications for adaptation and mitigation of climate change through the <b>sharing of good practices</b> .	AA3



Sri Lanka requested the development of tools and systems



# Contributions for top 2 climate change needs

Action Name	Action Item	Contributing Country
Develop capacity for using space applications for climate modelling and scenario development, including impact and vulnerability mapping, through existing programmes.	Adapted RCP 2.6 using RegCM4 to project climate change up to 2030.	Pakistan
	Assessment / management	Thailand
		Tajikistan
		Philippines
		Pakistan
		China
		Armenia
	Awareness workshops towards available geospatial data and information	Thailand
		Tajikistan
	Data collection/Data repository	Pakistan
	Geospatial training (GIS, RS, GNSS)	Philippines
		China
Provide technical support on monitoring and measuring greenhouse gas emissions and absorption.	Sharing tools and data repository	Tajikistan
		China
		China
	Technical support	China
		Armenia
	Assessment / management	Thailand
	Awareness workshops towards available geospatial data and information	Thailand
		Tajikistan
		India
	Geospatial training (GIS, RS, GNSS)	Philippines
		China
	Sharing tools and data repository	Tajikistan
		China
		Armenia
	Technical support	China
	Training and capacity building	Sri Lanka



# Matters for consideration

- The continued provision of good practices for future publications on space applications in Asia-Pacific;
- The completion of the needs and contributions survey for member States, associate members and other organizations that have not yet submitted one;
- The continued collection of information on the use of space applications and geospatial information for the health sector, and for other issues of urgent need as they arise;



# Matters for consideration

- Develop or facilitate the participation of member States in various capacity building programmes for specific thematic priority areas;
- The continuation of the activities relating to resilient agriculture such as drought and crop monitoring;
- Engaging other agencies, partners or member States to contribute to the implementation of specific activities under the Plan of Action and reporting back to the ICC or through other mechanisms; and
- Are the top 20 priority actions identified in the document the most appropriate focus for Phase I of the Plan of Action?



# THANK YOU

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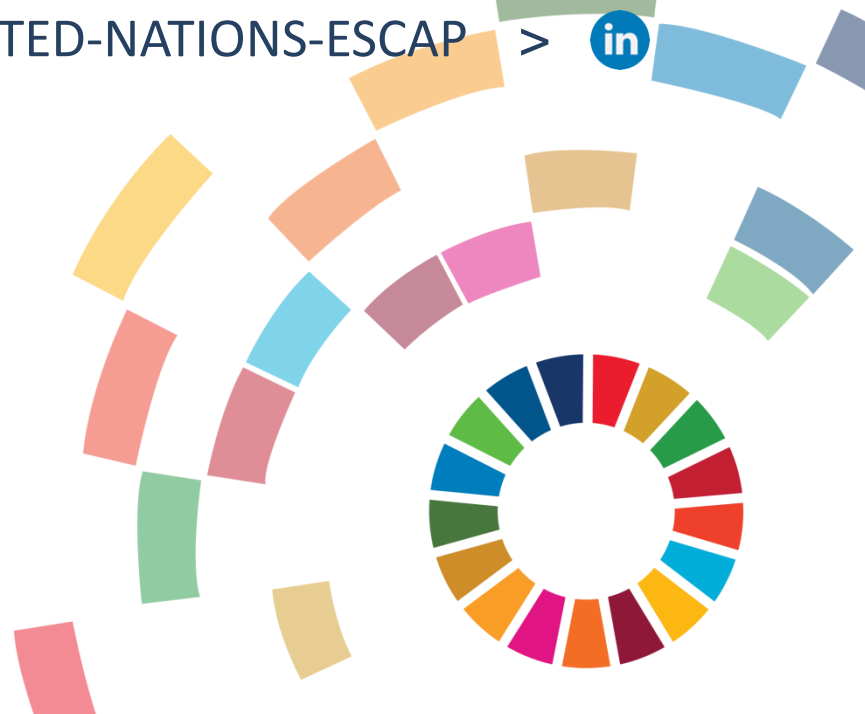
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5	Research opportunities for including Global Satellite Navigation System for infrastructure and utilities mapping, relevant to disaster damage assessment and early warning systems.	Disaster Risk Reduction	AA1
6	Provide technical support on how to integrate, enhance and strengthen multi-hazard monitoring and early warning systems and real-time situational analysis for rapid-onset disasters, including flash floods from high-altitude lake and glacial outbursts, as well as slow-onset disasters, including drought and sand and dust storms.	Disaster Risk Reduction	AA2
7	Promote the use of geospatial information management systems, global navigation satellite systems and communications satellite systems towards disaster risk reduction and management at the policy level.	Disaster Risk Reduction	AA3
8	Identify interfaces between, and integration of, traditional space-based information and frontier technologies to address disaster risk management and build resilience.	Disaster Risk Reduction	AA1
9	Develop community-based hazard maps to raise awareness on preparedness and mitigation.	Social Development	AA2
10	Carry out risk mapping of highly vulnerable areas and communities by identifying hazards, vulnerabilities and exposure to risks.	Disaster Risk Reduction	AA2



**Top  
20  
needs**

Priorities are  
health, urban  
development  
and disaster  
risk reduction

# Top 20 needs

Other priority needs include forestry, land degradation, and climate change

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11	Provide support to mitigate the effects of disasters occurring in Asia and the Pacific through the International Charter on Space and Major Disasters.	Disaster Risk Reduction	AA3
12	Integrate ground-based and satellite systems for effective monitoring of hazards, disasters and critical infrastructure using global navigation satellite systems.	Disaster Risk Reduction	AA2
13	Develop capacity in terms of seasonal forecasting and its impact on agriculture.	Disaster Risk Reduction	AA2
14	Strengthen the capacity of countries to use satellite data for agroecosystem resilience, including analysing geospatial data for multi-hazard early warning and damage assessment, such as for flood, drought and cyclone/typhoon/hurricane.	Disaster Risk Reduction	AA2
15	Provide technical support, including satellite data, tools and knowledge, to monitor forest dynamics and to aid in forest management.	Management of Natural Resources	AA2
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18	Provide support and access to pre-, during-and post-disaster satellite data to vulnerable and affected countries for damage assessment.	Disaster Risk Reduction	AA2
19	Discuss and promote the potential concept of a common regional information technology system to support activities related to space applications for sustainable development.	Disaster Risk Reduction	AA3
20	Develop capacity for using space applications for climate modelling and scenario development, including impact and vulnerability mapping, through existing programmes.	Climate Change	AA2