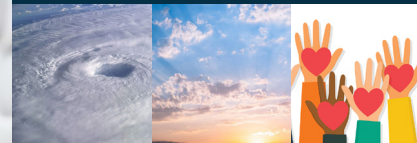


Typhoon Committee

Strategic Plan | 2022-2026



ESCAP/ WMO
Typhoon Committee



**An integrated, regional approach to improve
the quality of life for Members' population
through mitigating typhoon-related impacts**





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ESCAP/WMO Typhoon Committee Secretariat
Avenida 5 de Outubro, Coloane
Macao, China
Tel.: (+853) 88010531 • Fax: (+853) 88010530
E-mail: info@typhooncommittee.org

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Executive Summary



- Millions of people around the Asia-Pacific region remain exposed to a higher frequency and intensity of natural hazards. Because of this, there is an urgent need to continue developing effective, end-to-end early warning systems that lead to an effective response by emergency managers and people at risk. It is clear that the Sustainable Development Goals (SDGs) cannot be attained in the region if the development gains already achieved are not protected from the risks and impacts of disasters. For less developed countries, in addition to the tragic personal loss of life and property, natural disasters, especially tropical cyclones, severely threaten and impact their sustainability, capacity building, debt repayments, poverty reduction and even the basic necessities of life, such as clean drinking water, food, shelter, and proper sanitation.
- Founded in 1968 under the original auspices of the United Nations Economic Commission for Asia and Far East in cooperation with the World Meteorological Organization (WMO), the Typhoon Committee (TC) has evolved into a collaboration of 14 Members involving both the Economic and Social Commission for Asia and the Pacific (ESCAP) and WMO. Since then, the ESCAP/WMO Typhoon Committee has been repeatedly recognized as an outstanding regional body who has integrated the actions and plans of the meteorological, hydrological, and disaster risk reduction (DRR) components to produce meaningful results. The Committee currently has 14 Members: Cambodia; China; Democratic People's Republic of Korea; Hong Kong, China; Japan; Lao People's Democratic Republic; Macao, China; Malaysia; Philippines (the); Republic of Korea; Singapore; Thailand; Viet Nam and United States of America (USA).
- The development of the Strategic Plan has been based on various international and regional frameworks, protocols, and action and strategic plans pertaining to tropical cyclone activities within the region. The purpose of this Strategic Plan is for the Typhoon Committee to identify regional Targets, Key Results Areas (KRAs) and Priorities which the Committee wants to achieve in 2022-2026 to save



lives and property, mitigate damage, and minimize social and economic effects from tropical cyclone related events. Furthermore, the impact of climate change is thought to influence all of the KRAs, Targets and Priorities and thus an important consideration for this Strategic Plan.

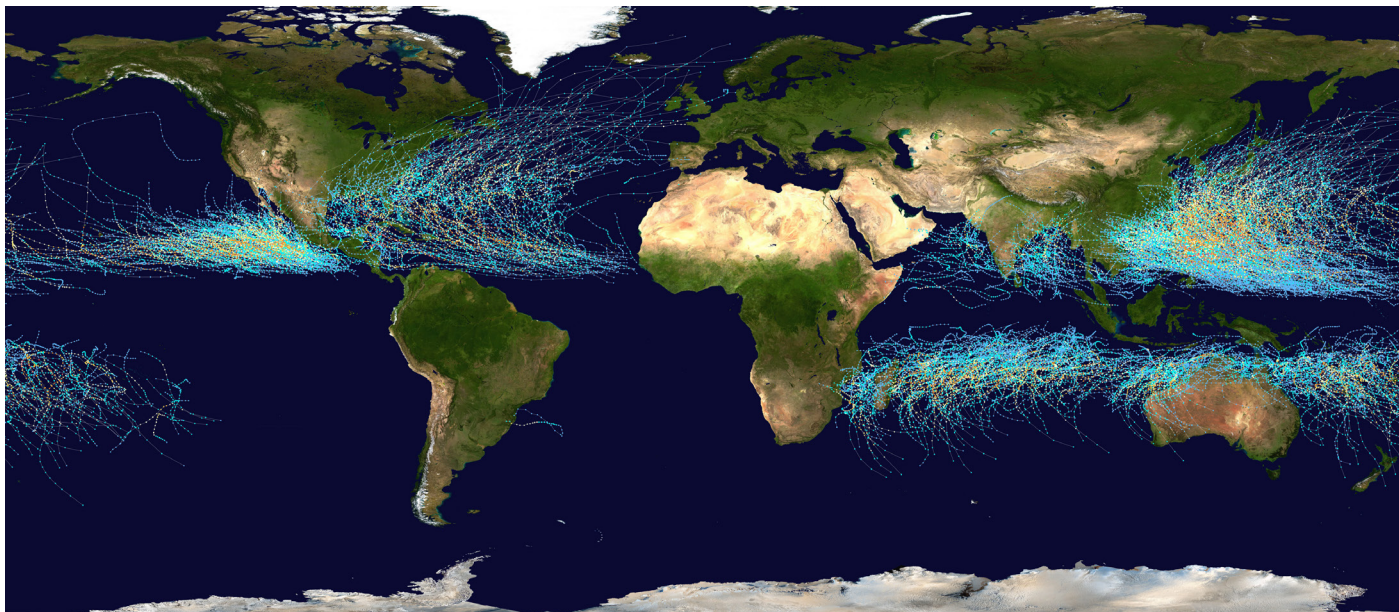
- **Typhoon Committee's Vision:** The Typhoon Committee is the world's preeminent intergovernmental, regional organization for improving the quality of life of the Members' populations through integrated cooperation to mitigate impacts and risks of tropical cyclone related disasters and to enhance beneficial tropical cyclone related effects.
- **Typhoon Committee's Mission:** To integrate and enhance regional (meteorological, hydrological, disaster risk reduction, and overall capacity development) activities of Members within international frameworks to reduce the loss of lives, increase resiliency, and minimize social, economic, and environmental impacts by tropical cyclone related disasters.

The Typhoon Committee has identified two Targets and seven KRAs for special emphasis in the next five years (2022-2026). These KRAs are defined as the critical, overarching, priority areas of special interest for the Typhoon Committee. In addition, the Typhoon Committee believes the impacts of climate change will influence all of the KRAs. Climate change is therefore considered a crosscutting theme for this Strategic Plan. The Committee must complete these KRAs to achieve its vision and mission through Priorities. The two Targets and seven KRAs are:

- **Target 1:** Substantially reduce total mortality caused by tropical cyclone related disasters of the Members in the decade 2021-2030 compared to the period 2005-2015.
- **Target 2:** Reduce direct economic loss caused by tropical cyclone related disasters in relation to the total gross domestic product (GDP) of the Members in the decade 2021-2030 compared to the period 2005-2015.
- **KRA 1:** Enhance capacity to monitor the impacts of tropical cyclone related disasters and strengthen tropical cyclone related disaster risk reduction (DRR) activities in various sectors.

- **KRA 2:** Enhance capacity in tropical cyclone forecast and disaster risk prediction using multi-hazard impact-based forecasts, risk-based warnings, understandable information designed in collaboration with users, and cutting-edge information technology, leveraged from the latest advances in big data analytics, artificial intelligence, machine learning, and social science to support early warning systems, decision making and disaster response.
- **KRA 3:** Improve flood mitigation measures and integrated water resource management to reduce the impacts of flooding caused by tropical cyclones.
- **KRA 4:** Strengthen capacity development activities in meteorology, hydrology, DRR and civil protection sectors, to enhance nationally to locally coordinated mechanisms for tropical cyclone early warning information to reach the last mile; and combine public awareness with the appropriate response to protect life and property from tropical cyclones.
- **KRA 5:** Promote visibility and enhance Typhoon Committee's Regional and International collaboration mechanisms to build partnerships, enhance capacity development, share best practices, and encourage active participation of international organizations in the disaster risk reduction programmes.
- **KRA 6:** Advance collaborative scientific research amongst operational tropical cyclone centers and research communities, particularly in relation to climate change, and include support for translating research outcomes to services by developing relevant experiments, research projects, conducting field surveys, and publishing and promoting research findings.
- **KRA 7:** Enhance the resilience of vulnerable communities to tropical cyclone impacts, especially communities along the coast and inland areas with high risk of floods and flash floods, such as hillside or mountainous regions and low lying floodplains along rivers.

It should be noted that the Typhoon Committee along with its working groups are making major contributions in accomplishing these Targets and KRAs, but there are many other factors and influences which are not under the direct control of the Typhoon Committee, such as the development of the COVID-19 pandemic. Therefore, the Committee will need the assistance and support of other regional, national, and international organizations and funding sources.



The most important functions and responsibilities of Members' governments are to protect the lives of their citizens and to improve their quality of life. Through this Strategic Plan, the Typhoon Committee's 14 Members are meeting these important government functions and responsibilities through regional cooperation and collaboration. Since 1968, the Typhoon Committee has shown how successful it has been in the area of

tropical cyclone-related matters by improving the protection of life and property, minimizing loss and damage, and enhancing the quality of people's lives. Building on this success of the past, the Strategic Plan provides the roadmap into the future to realize a tropical cyclone resilient society.

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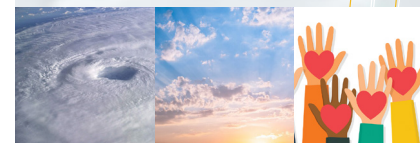
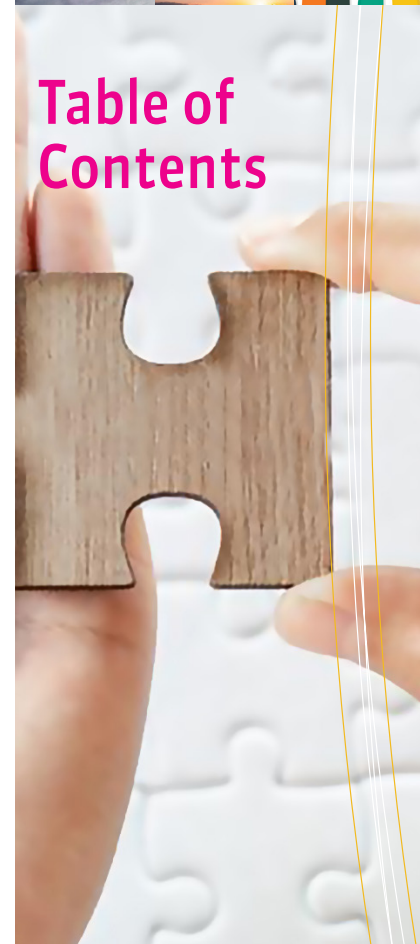


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1.Introduction

Millions of people around the Asia-Pacific region remain exposed to a higher frequency and intensity of natural hazards. People in the region are four times more likely to be affected by natural hazards than those in Africa and 25 times more vulnerable than Europeans or North Americans. The two most common types of disasters caused by natural hazards in the Asia-Pacific region are floods and storms - many associated with tropical cyclone related impacts.

With climate change, it is generally accepted that more frequent or intense occurrences of high-impact extreme weather events are likely as the atmosphere attempts to counteract or adjust to the resulting effects. It is commonly accepted in the operational tropical cyclone community that rising sea levels will exacerbate storm surge impacts for coastal communities. As such, sustainable disaster mitigation efforts against tropical cyclone related impacts, including too much or lack of tropical cyclone-induced rainfall, will be needed to address issues across the whole spectrum of climate and weather systems.

For more developed countries, tropical cyclone related impacts cause major social and economic disruptions through loss of

lives and property. For less developed countries, in addition to the tragic loss of life and property, natural disasters like tropical cyclones, severely threaten and impact their sustainability, capacity building, debt repayments, and even the basic necessities of life – clean drinking water, food, and shelter. By fulfilling the role of the National Meteorological and Hydrological Services as the front line in meteorological disaster prevention and mitigation against the tropical cyclone related disasters, the Typhoon Committee, through its regional cooperation and collaboration, has been working to help the people of the region through accomplishments and actions to reduce the loss of life and property due to tropical cyclone-related impacts through the effective use of the Sendai Framework for Disaster Risk Reduction 2015 to 2030, The Paris Agreement on Climate Change and Sustainable Development Goals (SDGs) under the United Nations Framework Convention on Climate Change.

In addition to the physical sciences, there is an increased awareness of the need to strengthen and better incorporate social science in disaster risk reduction principles. By understanding risk perception, human behavior, and societal impacts, multi-hazard early warning systems become much more effective.

This awareness was shared and adopted as the “10-year Vision to Protect Life and Property from Tropical Cyclones” at the High-level Dialogues on Tropical Cyclones (Tokyo, 2019). The principles outlined in this 10-year Vision are important parts of strategic goals and objectives of WMO’s Tropical Cyclone Programme and the ESCAP/WMO Typhoon Committee, for the benefit of all WMO Members impacted by tropical cyclones.

To mitigate the impacts of unforeseen crises which may affect the operations of tropical cyclone forecasting, monitoring, and disaster risk reduction, the Typhoon Committee will strive to enhance its capability to maintain the preparedness and build the resilience of Members. Through cooperation with all walks of society, Members are capable of effectively responding to emergencies by improving service delivery and disaster risk management. With the involvement in WMO Disaster Risk Reduction Programme, the Typhoon Committee continuously strives to provide timely and effective warnings via various approaches to reduce the losses and damages brought by tropical cyclones.

2. Vision and Mission

Typhoon Committee’s Vision:

To be the World’s preeminent intergovernmental, regional organization for improving the quality of life of the Members’ populations through integrated cooperation to mitigate impacts and risks of tropical cyclone related disasters and to enhance beneficial tropical cyclone-related effects.



Typhoon Committee's Mission:

To integrate and enhance regional (meteorological, hydrological, and disaster risk reduction) activities of Members within international framework to reduce the loss of lives and minimize social, economic, and environmental impacts by tropical cyclone related disasters.



3. Impacts of Climate Change

To achieve its mission, the ESCAP/WMO Typhoon Committee believes climate change should be viewed as one of the major challenges of our time. In August 2021, the United Nations Intergovernmental Panel on Climate Change (IPCC), in “Climate Change 2021: The Physical Science Basis” of the Sixth Assessment Report (AR6), described the current state of the climate:

- It is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred.
- The scale of recent changes across the climate system as a whole and the present state of many aspects of the climate system are unprecedented over many centuries to many thousands of years.
- Human-induced climate change is already affecting many weather and climate extremes in every region across the globe. Evidence of observed changes in extremes such as heatwaves, heavy precipitation, droughts, and tropical

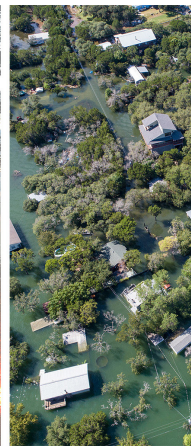
cyclones, and, in particular, their attribution to human influence, has strengthened since the Fifth Assessment Report (released in 2013).

The western North Pacific is the most active tropical cyclone basin in the world with an annual average of about 25.1 tropical cyclones (climatological average from 1991 to 2020). Against the background of climate change and a continuous increase in economic damage and disruption by tropical cyclones, the Typhoon Committee has a growing concern on the possible impacts of climate change on tropical cyclone activities and related effects in the region. With a goal to better prepare for and minimize the impacts of climate change, the Committee considers it a high priority to understand the possible effects of climate change on tropical cyclone activity and the related impacts. Sustainable disaster mitigation efforts against tropical cyclone related impacts will be needed to address issues across the whole spectrum of climate and weather systems.

Starting in 2008, the Typhoon Committee has been coordinating expert teams to assess the effects of climate change on tropical cyclone activities in the region. The third assessment report published in 2019 highlighted the plausible increases in the tropical cyclone intensity, precipitation rate, and storm surge/coastal inundation risk as well as changes in prevailing tropical cyclone tracks in the western North Pacific in the foreseeable

future. Relevant findings of the third assessment report were also incorporated in the IPCC AR6 as appropriate.

Starting in 2008, the Typhoon Committee has been coordinating expert teams to assess the effects of climate change on tropical cyclone activities in the region. The first assessment report was published in 2010, followed by the second report in 2012. The third assessment report, published in 2019, highlighted the plausible increases in the tropical cyclone intensity, precipitation rate, and storm surge/coastal inundation risk as well as changes in prevailing tropical cyclone tracks in the western North Pacific in the foreseeable future. Relevant findings of the third assessment report were also incorporated in the IPCC AR6 as appropriate. All three assessment reports are available on the Typhoon Committee website.



4. Development of the Strategic Plan

The Typhoon Committee at its 37th Session held in Shanghai, China and at its 38th Session held in Hanoi, Viet Nam decided to restructure the Committee's Regional Cooperation Programme Implementation Plan (RCPIP) to better reflect KRAs and the required Strategic Goals and Activities needed to achieve these KRAs.

In September 2006, a historical "International Workshop on Integrating Activities of Meteorology, Hydrology, and Disaster Risk Reduction Components of the Typhoon Committee into the related International Framework for Disaster Risk Management for Better Impacts and Visibility" was held in Macao, China.

For the first time, the Typhoon Committee's Working Groups on Meteorology, Hydrology, Disaster Risk Reduction, Training and Research Coordination, along with the Advisory Working Group (AWG) met jointly to define high priority regional actions required to reduce the loss of life and social and economic impacts from tropical cyclones. An initial Strategic Plan was drafted based on the inputs from the Working Groups. After incorporating comments from Members, the Typhoon Committee at its 39th Session held in Manila, the Philippines in December 2006 approved the "Typhoon Committee Strategic Plan, 2007 – 2011,

an Integrated, Regional approach to Improve the Quality of Life for Members' Population through Mitigating Typhoon-Related Impacts".

The Typhoon Committee at its 48th Session in Honolulu, USA and 49th Session in Yokohama, Japan updated the Strategic Plan for better alignment with Sendai Framework. The former KRA structure was reorganized into two Targets and five KRAs. Working Groups for Meteorology, Hydrology, and Disaster Risk Reduction then created Priority Activities in support of the KRAs. The effort to enhance actions following the Strategic Plan has been further expanded and for the first time, a session for crosscutting themes was added to the 13th Integrated Workshop in Chiang Mai, Thailand. This session led to the launch of crosscutting AOPs/PPs at the 51st Session in Guangzhou, China. The Typhoon Committee at its 52nd Session, held virtually and hosted by Hong Kong, China, requested the AWG and the working groups to review and update the Strategic Plan 2017-2021 to become the Strategic Plan 2022-2026 and present the working draft for review at the 53rd Session hosted virtually by Japan.

The High-level Dialogues of Tropical Cyclones was held in Tokyo, Japan in October 2019 commemorating the 30th anniversary of RSMC Tokyo – Typhoon Center. In the Dialogue, the "10-year Vision to Protect Life and Property from Tropical Cyclones" was adopted. One of the key expectations is to support strategic



5. Scope of the Typhoon Committee's Strategic Plan

goals and objectives of the ESCAP/WMO Typhoon Committee. In the process of updating the Strategic Plan 2017-2021, essential items that were shared at the Dialogues to proceed for the next 10 years were added, and the finalized version of the Strategic Plan 2022-2026 was approved in the 54th Session on February 25, 2022.

The purpose of this Strategic Plan is for the Typhoon Committee to identify Targets, KRAs and Priorities the Committee wants to achieve in 2022-2026 and to continue to produce meaningful results for saving lives and mitigation of damage from tropical cyclone related events. The Typhoon Committee believes climate change will influence all of the Targets, KRAs, and Priorities. Climate change is therefore considered a crosscutting theme for this Strategic Plan. The importance of incorporating social science in addition to the physical sciences and cooperation emergency response and civil protection agencies will strengthen and diversity crosscutting activities.

The Typhoon Committee will continue to champion the goals of the Sendai Framework concerning tropical cyclone related disasters, by setting its Targets in line with the Framework and tracing action areas of the “10-year Vision to Protect Life and Property from Tropical Cyclones” to create a concrete path forward.

- The results will be achieved through the Members' regional, collaborated, and integrated activities with support and monitoring of the Typhoon Committee Secretariat (TCS), WMO, and UNESCAP.
- The critical part of this plan is the required regional cooperation and collaboration among Members and the integration of the Meteorological, Hydrological, and Disaster Risk Reduction components.
- This Strategic Plan directly supports the functions of the Committee as described in the Statute of the Typhoon Committee:
 1. Review regularly the progress made in the various fields of tropical cyclone damage prevention;
 2. Recommend to the participating Governments, concerned plans and measures for the improvement of meteorological and hydrological facilities needed for tropical cyclone damage prevention;
 3. Recommend to the participating Governments, concerned plans and measures for the improvement of community preparedness and disaster prevention;
 4. Promote the establishment of programs and facilities for

5. Promote, prepare and submit to participating Governments and other interested organizations plans for coordination of research programmes and activities concerning tropical cyclones;
6. Consider, upon request, possible sources of financial and technical support for such plans and programmes; and
7. Prepare and submit, at the request and on behalf of the participating Governments, requests for technical, financial, and other assistance offered under the United Nations Development

6. Targets and Key Result Areas (KRAs)

It should be noted that the Typhoon Committee along with its Working Groups through the Priority Activities can make major contributions in support of the KRAs, but there are many other

factors and influences which are not under the direct control of the Typhoon Committee. Therefore, the Committee will need the assistance and support of other international organizations and funding sources. The followings are the Targets and KRAs to be pursued among the working groups (Priorities are given in the Appendix):

Targets

- **Target 1:** Substantially reduce total mortality caused by tropical cyclone related disasters of the Members in the decade 2021-2030 compared to the period 2005-2015.
- **Target 2:** Reduce direct economic loss caused by tropical cyclone related disasters in relation to the total gross domestic product (GDP) of the Members in the decade 2021-2030 compared to the period 2005-2015.



KRAs

- **KRA 1:** Enhance capacity to monitor the impacts of tropical cyclone related disasters and strengthen tropical cyclone related disaster risk reduction (DRR) activities in various sectors.
- **KRA 2:** Enhance capacity in tropical cyclone forecast and disaster risk prediction using multi-hazard impact-based forecasts, risk-based warnings, understandable information designed in collaboration with users, and cutting-edge information technology, leveraged from the latest advances in big data analytics, artificial intelligence, machine learning, and social science to support early warning systems, decision making

and disaster response.

- **KRA 3:** Improve flood mitigation measures and integrated water resource management to reduce the impacts of flooding caused by tropical cyclones.
- **KRA 4:** Strengthen capacity development activities in meteorology, hydrology, DRR and civil protection sectors, to enhance nationally to locally coordinated mechanisms for tropical cyclone early warning information to reach the last mile; and combine public awareness with the appropriate response to protect life and



property from tropical cyclones.

- **KRA 5:** Promote visibility and enhance Typhoon Committee's Regional and International collaboration mechanisms to build partnerships, enhance capacity development, share best practices, and encourage active participation of international organizations in the disaster risk reduction programmes.
- **KRA 6:** Advance collaborative scientific research amongst operational tropical cyclone centers and research communities, particularly in relation to climate change, and include support for translating research outcomes

to services by developing relevant experiments, research projects, conducting field surveys, and publishing and promoting research findings.



7. Annual Operating Plan and Budget

Each year during the 5-year period of this Strategic Plan, the AWG with input from the Working Groups and TCS will prepare proposed draft Annual Operating Plans (AOPs) to be approved at the next Typhoon Committee Session. The AOPs will be developed in line with Priorities and contain detailed actions and success indicators to be conducted in that year. Through the completion of the AOPs, the Committee and its Members should accomplish all of the KRAs and Crosscutting Theme, and thus, the Targets contained in this plan. The AWG will prepare a proposed draft budget (TC Trust Fund) for each year. AOPs should be evaluated in terms of effectiveness, contribution to the Targets and relevant KRAs when preparing the budget.

- **KRA 7:** Enhance the resilience of vulnerable communities to tropical cyclone impacts, especially communities along the coast and inland areas with high risk of floods and flash floods, such as hillside or mountainous regions and low lying floodplains along rivers.



8. Enhance Effectiveness, Efficiency and International Cooperation

To achieve its stated mission, the Typhoon Committee should pursue effectiveness and efficiency of its activities by monitoring and evaluating activities, including AOPs. Resource mobilizations for the Committee activities should be facilitated with assistance from other international organizations and funding agencies. Typhoon Committee will keep in view of potential areas and suitable opportunity to further enhance collaborative activities with WMO/UNESCAP Panel on Tropical Cyclones.



9. Conclusion

Amongst the most important functions and responsibilities of Members' Governments are to protect their people's lives and to improve their people's quality of life. The Asia-Pacific region is the most heavily impacted by natural disasters such as tropical cyclones. Regional coordination and collaboration are essential to reduce these tragic losses and resulting socio-economic impacts. Therefore, through this Strategic Plan, the Typhoon Committee's 14 Members are building on the great success of the past and laying a path to meet the challenges of the future. With a focus on Priorities supporting the seven KRAs, Members have a plan to improve their capabilities during tropical cyclone events to protect their people's lives and to improve their quality of life through regional coordination and cooperation.



WG	Priorities	KRA						
		1	2	3	4	5	6	7
Integrated	Strengthen the cooperation between TRCG, WGM, WGH, and WGD RR to develop impact-based forecasts, decision-support and risk-based warning.		X	X				X
	Strengthen cross-cutting activities among working groups in the Committee.	X	X	X	X	X		
	Enhance collaborative activities with other regional/international frameworks/organizations, including technical cooperation between TC/ AP-TCRC and TC/PTC cooperation mechanism.					X	X	
Meteorology	Enhance the capacity to monitor and forecast typhoon activities particularly in genesis, intensity and structure change.		X	X		X		
	Develop and enhance typhoon analysis and forecast techniques from nowcast to medium-range, and seasonal to long-range prediction.		X	X		X		
	Enhance and provide typhoon forecast guidance based on NWP including ensembles, weather radar and satellite related products, such as QPE/QPF.		X	X				
	Promote communication among typhoon operational forecast and research communities in Typhoon Committee region.		X	X				
	Enhance training activities with TRCG, WGH, and WGD RR in accordance with Typhoon Committee forecast competency, knowledge sharing, and exchange of latest development and new techniques.		X		X		X	
	Enhance RSMC capacity to provide regional guidance including storm surge, in response to Member's needs.		X	X				X

WG	Priorities	KRA						
		1	2	3	4	5	6	7
Hydrology	Improve typhoon-related flood (including riverine flood, flash flood, urban flood, and coastal flood) monitoring, data collection and archiving, quality control, transmission, processing, and sharing framework.	X	X		X	X	X	
	Enhance capacity in typhoon-related flood risk management (including land-use management, dam operation, etc.) and integrated water resources management and flood-water utilization.			X			X	X
	Strengthen capacity in effective flood forecasting and impact-based early warning, including hazard mapping and anticipated risk based on methodological and hydrological modelling, and operation system development.		X		X		X	X
	Develop capacity in projecting the impacts of climate change, urbanization and other human activities on typhoon-related flood disaster vulnerability and water resource availability.			X	X	X	X	X
	Increase capacity in utilization of advanced science and technology for typhoon-related flood forecasting, early warning, and management					X	X	X
DRR	Provide reliable statistics of mortality and direct disaster economic loss caused by typhoon-related disasters for monitoring the targets of the Typhoon Committee.	X					X	
	Enhance Members' disaster risk reduction techniques and management strategies.			X	X	X		X

WG	Priorities	KRA						
		1	2	3	4	5	6	7
DRR	Evaluate socio-economic benefits of disaster risk reduction for typhoon-related disasters.		X	X	X	X		
	Promote international cooperation of DRR implementation project.		X	X	X	X		X
	Share experience/knowhow of DRR activities including legal and policy framework, community-based DRR activities, methodology to collect disaster-related information.	X			X	X		X





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Strategic Plan | 2022-2026



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published in English by
the Typhoon Committee
Secretariat
Avenida de 5 de Outubro,
Coloane, Macao - China.*

Phone: +853 88010531

Fax: +853 88010530

email:
info@typhooncommittee.org •
www.typhooncommittee.org

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