

Pragmatic Response for Maritime-Air Security, a Way Forward: A Conceptual Framework from a Strategic Aerial Perspective

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Abstract– The underlying concept of airpower is an ability of a nation to achieve its objectives and secure its interests through the means of air and associated capabilities. The COVID-19 pandemic has resulted in a weak economy thus making Sri Lanka vulnerable to different security and sustainable development challenges. This situation will continue until the world is completely recovered from the COVID-19 pandemic. Sri Lanka has a greater blue economic potential considering its huge oceanic resources compared to the land area which is yet to be exploited. In new normal conditions, the exploitation of natural treasure inherited in our seas would be a great benefit for the developing economy of the Island nation. Already the geostrategic advantage and marine resources of Sri Lanka are being utilized by various state and non-state actors in the region and extra-region. Hence the development of maritime security structure through an integrated system comprising all aerial and maritime stakeholders would be of utmost importance in future exploitation of these sea frontiers whilst ensuring national security. Hence as a remedy smart, stretched re-fleeting of assets, formulation of the conceptual maritime-air command structure, and conduct of joint training was recommended to address maritime security challenges Sri Lanka is facing at present in order to conduct effective and efficient maritime-air operations in the future.

Key words— Airpower, Maritime-air operations, National security

I. INTRODUCTION

The underlying concept of airpower is an ability of a nation to achieve its objectives and secure its interests through the means of air and associated capabilities. Based on this philosophy use of airpower has expanded across many disciplines apart from the primary war waging capability.

“Whoever controls the Indian Ocean dominates Asia. This Ocean is the key to the seven seas in twenty first century, the destiny of the world will be decided in these waters.”

-Admiral Alfred Thyer Mahan-

Maritime territory of Sri Lanka, the Exclusive Economic Zone (EEZ) expands up to 200 Nautical Miles (nm) from the base line as of now. Proposals are made to claim further under the special provision in United Nations Convention on the Law of Sea (UNCLOS, 1982) which will result approximately 1,713,426 km² which is equal to approximately 26 times of the land mass of the Island.

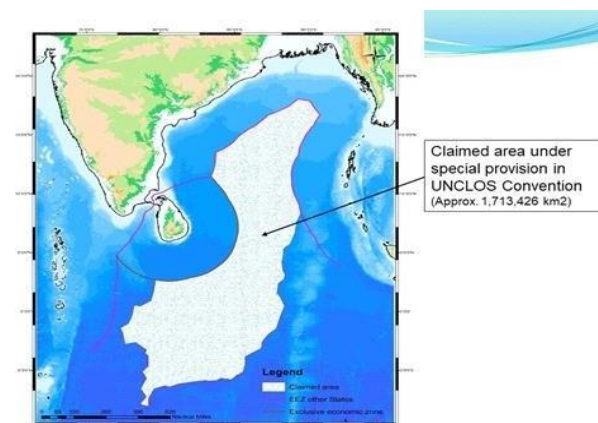


Figure 1. Extent of present EEZ and proposed claim
Source: Blue Economy: Prospects and Challenges for Sri Lanka BCIS Signature Seminar-2017

Sri Lanka is an Island nation located in a geo-strategically vital place plentifully surrounded by variety of natural marine resources. We are yet to unleash our true maritime potentials in order to draw the benefits out of it. The geo-strategic advantage to become a maritime hub has been exploited by non-state actors for criminal purposes and state actors to play their political ballgame.

An Inductive approach was followed to find means to the observed gap. During the exploratory qualitative study researchers have followed interpretivism as the philosophy whilst encompassing grounded theory strategy as the strategy. Cross sectional time horizon was employed as the time horizon and collection of primary data was conducted mainly through interviewing professional respondents from maritime and aerial operators from Sri Lanka Air Force (SLAF), Sri Lanka Navy (SLN), Sri Lanka Coast Guards (SLCG) and Sri Lanka Ports Authority (SLPA). Secondary data was collected through publications by SLAF and SLN regional / global counterparts. Data collection and analysis has been the technique.

II. AIM

Aim of this paper is to discuss a pragmatic response for establishing maritime-air security through amalgamation of responsive elements and to propose recommendations to formulate a conceptual framework for an integrated maritime-air command structure.

III. MARITIME-AIR OPERATIONS

Scope of this paper is limited for the maritime-air operations categorically Intelligence, Surveillance and Reconnaissance (ISR), Search and Rescue (SAR). Security of the maritime region is assured by being vigilant through effective ISR while safety of the region could be assured by better preparedness for SAR.

A. Intelligence, Surveillance and Reconnaissance (ISR)

Intelligence: Intelligence is information along with applied judgement for a desired elucidation in order to produce a possible proposition and for initiating an appropriate response. Intelligence is an important component of national power and a fundamental element in decision making.

Surveillance: Surveillance is systematic, repetitive gathering of information by photographic, radar, infra red, electronic, acoustic or visual means. Information gained from surveillance would normally be used for strategic decision making.

Reconnaissance (Recce): Recce is observation of specific targets, interests and areas by visual/photo observation or other detection methods to gain information about specific activities or resources.

ISR play a vital role both in conflict situation and peacetime. Sri Lanka has a land area approximately 65,600km². Further, has a territorial sea of 12 nm

from the shore, a Contiguous Zone of 24 nm from the shore and EEZ of 200 nm from the base line. National interest includes to ensure that these areas are not exploited by external parties and that the treasures that are held within are preserved for the benefit of the nation. This requires constant vigilance, periodic and routine surveillance as well as recce deliberately planned in achieving defined objectives.

Strategic and tactical aerospace surveillance and recce operations over Sri Lankan territory is one of SLAF core competencies. This is a task that the SLAF is geared to meet and fulfil with pride and commitment (SLAF, 2021). SLAF has a dedicated maritime squadron for this particular task which was established way back in 1971 and had to be discontinued in 1993 due to various operational constraints. After eradication of Liberation Tigers of Tamil Elam (LTTE) terrorism the requirement of maritime surveillance and recce operations has transformed to monitor and counter criminal maritime activities.

These activities have direct and indirect as well as short-term and long-term consequences on security, safety, economy and image of the country. Sri Lanka is becoming a maritime nation with the exploitation of its maritime frontiers gradually. Blue economic potential of the country has been highlighted in many academic and economic forums in recent past. Different terms such as blue economy, blue growth, and the ocean economy defines the overall concept of conservation and sustainable management of oceans through sustainable ocean and ocean resource use (Kumara, 2017).



Figure 2. Areas of use under Blue Economy

Source: Blue Economy: Prospects and Challenges for Sri Lanka BCIS Signature Seminar-2017

For such a journey, illegal maritime activities can exert negative impact which would slow down or cripple down the development process. The non-state actors engaged in these illegal ventures becomes powerful where they can influence the governing mechanisms in their favor. Columbia, Mexico, Somalia are examples where illegal non-state actors have a greater influence upon the governing mechanisms. Hence these illegal activities must be contained and mitigate as much as possible to avert the negative consequences upon the state.

Most prominent illegal activities occurring in Sri Lankan seas are as follows which this paper intend to discuss.

- Illegal, Unreported and Unregulated (IUU) fishing
- Illegal trafficking
- Piracy armed robbery and maritime terrorism on commercial shipping
- Maritime pollution

1) *Illegal, Unreported and Unregulated fishing:* IUU fishing brings both short term and long-term consequences for a state concerned. IUU fishing undermines state efforts of conservating and managing fish stocks hindering the progress towards meeting long-term sustainability and responsibility. IUU fishing targets vulnerable stocks, threatens marine biodiversity, food security of the relevant communities and livelihoods of those involved in the sector. Fishermen from neighboring countries approaches at night specially towards Manner basin of Sri Lanka. IUU fishing remains one of the greatest threats to marine ecosystems due to its ability to undermine national and regional efforts to manage fisheries sustainably as well as endeavors to conserve marine management regimes, inparticular those of developing countries lacking the capacity and resources for effective monitoring, control and surveillance (MCS) (UN, 2021).

Sufficient resources are not employed to enforce an effective and efficient mechanism by the authorities to control IUU fishing across International Maritime Boundary Line (IMBL). SLAF and SLN have key roles to play resolving this issue.

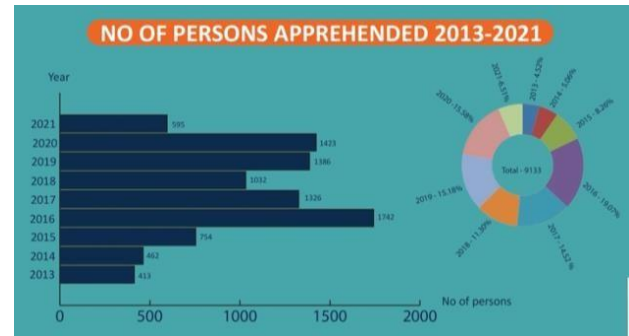


Figure 3: Statistics of IUU fishing apprehensions
Source: <<https://www.navy.lk/sea-ops.html>>



Figure 4. Illegal Indian fishermen/poachers crossing IMBL at night at Mannar basin

Source: Classified

2) *Illegal trafficking:* Geo-strategic advantage of Sri Lanka is optimized by the traffickers in the region and across the globe. Sri Lanka has become a transit hub mainly for drugs, weapon and human traffickers.

“Sri Lanka is a transit point for mass scale drug dealers”

-Sagala Rathnayake (Minister Law and order 2017)-

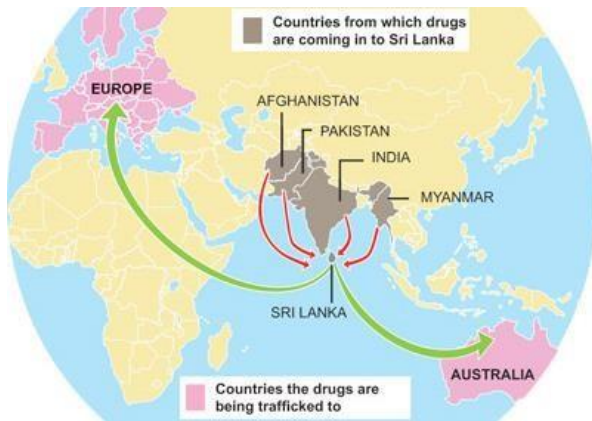


Figure 5. Use of Sri Lanka as a Drug transit hub
Source: National Dangerous Drugs and Devices Board

Sri Lanka can no longer be considered a soft transit point for narcotics given the recorded number of drug detections in the past few years.

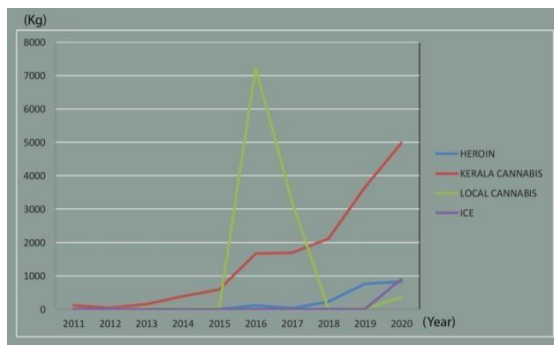


Figure 6. Seizure of drugs from 2011-2020 by SLN
Source: <<https://www.navy.lk/sea-ops.html>>

Statistics related to seizure of illicit drugs showcases that effort made by all law enforcement agencies is not sufficient to have a meaningful impact since almost all drug seizures are trending to increase.

Apart from the drugs, trafficking of weapons and humans also takes place in the region. Greater mobility both within and outside national borders has historically become the norm rather than the exception, so the development of people-smuggling networks in places such as Bangladesh, India and Sri Lanka is hardly a new phenomenon (Hugo & Dissanayake, 2014); (Triandafyllidou & Maroukis, 2012); (UNDOC, 2015).

Today, smuggling of migrants and trafficking of human beings, together with other acts such as drug trafficking, trafficking of firearms and money laundering, are regarded as “transnational organized crimes”. The threat to human society from such organized crime is considered to be so serious that it led to the adoption of the United Nations Convention against Transnational Organized Crime,

on 15th November 2000, in Palermo, Italy (Hamza, n.d.).

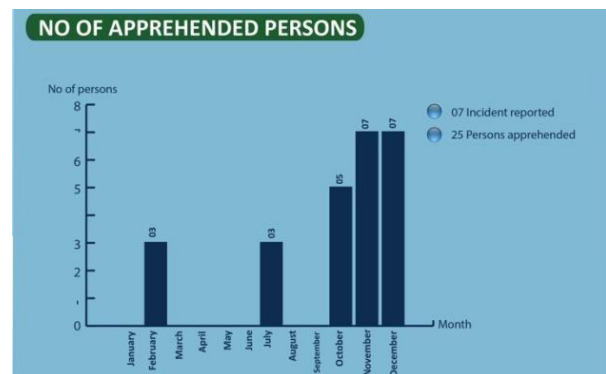


Figure 7. Reported Human smuggling and Illegal immigration 2020

Source: <<https://www.navy.lk/sea-ops.html>>

Lack of resources employed and insufficient capacity of law enforcement agencies indicates the process needs more sophisticated, rapid and effective response to mitigate the issue. A holistic approach with an integrated system is needed to effectively capitalize the available resources for the requirement.

3) *Piracy, armed robbery and maritime terrorism on commercial shipping:* Piracy and armed robbery in Gulf of Eden and towards Bay of Bengal has been a serious issue on commercial shipping through Sea Lines of Communications (SLOC) across the Indian ocean in past decade. However, the combined efforts made by the maritime law enforcement entities in collaboration with Naval forces in the region and extra region were able to effectively control the threat posed by the pirates on commercial shipping. Nevertheless, this threat could rise again if the grip is loosened. The United Nations Convention on the High Seas was one of the four Laws of the Sea Conventions concluded at Geneva in 1958. It identifies what constitutes piracy and measures to address which, requires positive contribution of the states of capacity. Maritime terrorism has a similar fate on free shipping, have different objectives though.

Nevertheless, unlawful acts against the safety and freedom of maritime navigation jeopardize the security of seafarers and property, seriously affect the operation of maritime services, and undermine the confidence of the people of the world in the safety of maritime navigation. It has been seriously discussed during convention for the suppression of unlawful acts of violence against the safety of maritime navigation (sua convention) 1988. It further recognizes the need for all states, in

combating unlawful acts against the safety of maritime navigation, strictly to comply with rules and principles of general international law in order to ensure freedom of navigation of the commercial shipping. As a maritime nation Sri Lanka has enacted a special act called “*Suppression of unlawful acts against the safety of maritime navigation act, no. 42 of 2000*” displaying its commitment towards ensuring safety of marine operations in its seas.

SLN is doing a commendable job in this regard with its limited capacity and capabilities available. However, as a potential aerial force the contribution by the SLAF to this course is yet to develop. The laws cannot be enforced effectively if sufficient manpower and resources are not employed to the job.

4) *Maritime pollution*: Maritime pollution is another threat experienced by the developing maritime nations. Unlike other challenges, this imposes serious long-term damages to the affected area. The pollution of marine environment can occur due to deliberate, negligent or accidental release of oil and other harmful substances from ships. Harmful substance means any substance which, if introduced into the sea, is liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea (MARPOL, 1973).

International Convention for the Prevention of Pollution from Ships in 1973 deeply describes how a pollution can occur and law abiding to deal with such instances comprehensively. The damage is unpredictable and does not depend on the size of the spill, rather depends on the closeness to the shoreline and vulnerability of the area (Wanasinghe, 2016).



Figure 8. Incidents reported with marine pollution in last two decades

Source: Author

New diamond-2020 and X-press pearl-2021 crises have created a reasonable debate on the matter specially across the mass and social media platforms. Unlike earlier the social media platforms rapidly disseminate the footages of such incidents among the public creating a greater pressure upon the authorities.

The main question is that whether can we notice that such incidents are taking place specially in case of deliberate dumping. Naval vessels alone cannot practically monitor the entire EEZ throughout. The best mode of surveillance in this regard is the air surveillance. Single aircraft can cover a larger area within a short span of time. Once identified further monitoring can be done until surface crafts arrive. With the deployment of aerial assets in to surveillance, it amply increases the possibilities of early detection of such cases. Early detection of pollution could leave the authorities with more options on the table to contain the situation with reduced damages.

All of these criminal activities have multidimensional effects as follows.

- Create unsafe environment for merchant shipping and marine societies.
- Directly involve in transnational crimes.
- Inflict short-term and long-term damages to the nature.
- Incur economic and financial losses to the state concerned.
- Create space for other state and non-state actors to interfere with state affairs.

B. Search and Rescue (SAR)

Under long standing traditions of the sea and various provisions of international law, ship masters are obligated to assist others in distress at sea whenever they can safely do so. The responsibilities to render assistance to a distressed vessel or aircraft are based on humanitarian considerations and established international practices. Specific obligations can be found in several conventions, including the following:

- Annex 12 to the Convention on International Civil Aviation
- International Convention on Maritime Search and Rescue

- Regulation V/33 of the international Convention for the safety of life at sea.1974 (SOLAS 1974 Appendix A).

Many states have accepted the obligation to provide aeronautical and maritime SAR co-ordination and services on a 24-hour basis for their territories, territorial seas, and where appropriate, the high seas (IAMSAR, 2013). Hence, there is an added responsibility to the SLAF and SLN responding to distress situations occur in the area of responsibility. Both the entities have their own role to play in SAR missions. The contribution of these elements could be decided by following factors.

- Location of the incident
- Weather over area
- Nature of the distress

Effective and synergistic combination of capacities and capabilities of the respondents could alter the final outcome even against the odds. Therefore, the state has a responsibility to ensure that the SAR respondents are provided with appropriate assets and technologies which needs financial backup for acquisition, operation and maintenance. The maritime-air respondents have a responsibility to forecast the future requirement and project it to the relevant authorities for perusal. Further to develop concepts, tactics and techniques to effectively employ available resources for an efficient output.



Figure 9. Reported incidents needed maritime SAR service-2020.

Source: <<https://www.navy.lk/sea-ops.html>>

IV. CHALLENGES IN MAINTAINING AND EXPLOITING MARITIME DOMAIN AWARENESS(MDA)

As a potential maritime nation, we need to understand that we have not put our maximum effort to exploit our maritime domain. SLAF is yet to

contribute for the full spectrum of MDA efforts. For maritime operations SLAF requires specialized aircraft, specialized equipment and specially trained professional airmen. In modern day context heavy use of electromagnetic spectrum is required for effective and efficient conduct of maritime operations. SLAF has following challenges as at now to meet the emerging MDA demand.

A. Insufficient Air Assets

Up to 2009 SLAF focused on supporting surface troops in order to eradicate the LTTE terrorism. Afterwards also SLAF continue to lend its support for the efforts of the surface troops denying the re-emergence of terrorism and nation building efforts of the government. However, with the increased threats to the maritime security aspect SLAF re-established long suspended maritime squadron. At present the squadron is equipped with basic maritime surveillance and recce platforms. Modern day maritime aircraft needs some additional characteristics for safer and efficient operation such as long range and endurance, multiengine, auto piloting (at least auto recovery modes), capability to utilize electromagnetic spectrum for monitoring, detection and tracking of targets.... etc. All of these characteristics entails higher capital and recurrent cost. SLAF currently plans to enhance the existing capacity and capability under the concept of smart, stretched re- fleetings.

B. Absence of dedicated maritime command and control structure

At present SLN and SLAF coordinates to a certain level for conducting maritime operations. SLAF deploys its maritime platforms on request as well as independently for designated operations. SLAF is gradually establishing routine surveillance and recce operations. However, a dedicated maritime command and control structure is not available. Absence of a proper structure creates numerous practical issues when it comes to operations. Proper coordination is required among the air and naval elements. There are no effective establishments dedicated for maritime operations which can command and coordinate all aerial and naval elements.

C. Inadequate collaboration between aerial and naval elements

SLAF and SLN shares two distinctive cultures and ways of operation. During the humanitarian operations these two elements worked closely to achieve common objectives. Unfortunately, after 2009 there were very limited occasions where SLA and SLAF worked together. Gradual shift of operational focus and change of intention of the government paved way for day by day reduced opportunities for joint exercises and collaboration. Hence, after a decade or so SLN and SLAF are facing difficulties in integrating its systems, techniques, tactics, capacities and capabilities to attain common objectives. Understanding on the core values and functions of each other can improve the relationship and cohesion between these two entities forestalling the competition for dominance being on cross roads.

SLCG is predominantly manned by SLN as a secondment due to absence of direct recruiting as at now. SLCG is equipped only with limited vessels and no aircraft. Nevertheless, specialized equipment for certain operations such as oil spillage controls are with SLCG. Hence, SLCG also needs to re-form with people and resources in order to function as an active law enforcement agency.

V. PRAGMATIC RESPONSES TO OVERCOME PRESENT CHALLENGES

In a post pandemic scenario focusing more on recovering from the downfall and further development as a nation it is a commonplace the military expenditures are been truncated to accommodate economic, health, social and educational priorities. Since Sri Lanka has greater maritime resources spread through the EEZ, which is mostly unexploited need more attention. SLN and SLAF are the two organizations at present which have the potential of engaging this undertaking. Already these organizations have taken steps to exploit these unexploited maritime resources in different scales. Under heavy impediments on national economy due to the COVID-19 pandemic, investing on the costly maritime assets would be a task beyond reality as at now. Nevertheless, formulating a framework bridging the gap between present and intended future would not be a waste since, there are activities and changes which could be done with minor financial expenses.

We need a strategy that points the way forward and does not limit us to an intractable scope in future. It should be actionable with clear goals and vectors.

Possible key steps towards better MDA and stronger maritime capabilities for SLAF are as follows.

A. *Smart and stretched re-fleeting*

Smart and stretched re-fleeting is a relatively new concept which is used to augment fleets without adding surges financially where the government could afford without hindering its other commitments. Every strategy requires adequate Mass, appropriate Mix and reasonable Mobility for making the concept to action. It says that “*few silver bullets could not win a war*”. It requires sufficient aerial platforms with effective reach at least up our EEZ. Due to scarcity of aircraft, SLAF happen to utilize the same platforms deployed for maritime operations for overland surveillance and recce too. Since we are an Island nation, we have different challenges dominating different sea areas. For example, IUU fishing is mostly occurs in basin of Mannar, almost all commercial shipping follows SLOC circumventing southern half of the Island, smuggling cases are mainly reported from western and southern seas...etc. Therefore, it requires to cover entire EEZ due to various priorities. Hence, following strategic steps could be taken for building up an effective maritime-air fleet in future.

- Upgrade existing platforms with better avionics packages specialized for maritime operations.
- Augment the existing fleet with advanced maritime platforms.

Once sufficient air assets are acquired, they can split into separate flights and re-position them in most appropriate air bases to respond rapidly and efficiently with task specialization.

B. *Formulation of maritime-air command structure*

SLAF needs effective integration with responsible maritime entities to form up a maritime-air partnership. This partnership could act as a capacity builder for all the forces. For maritime operations such as ISR and SAR a joint maritime air command could be established. The maritime-air command can function through a Maritime- Air Command and Control Center (MAC&CC). Maritime operations fall under ISR and SAR can be performed under the direct command and control of this establishment. Following entities can be linked with the MAC&CC for communication and coordination. The aerial and maritime platforms coming under these entities are indicated against them.

Table 1. Agencies responsible for maritime ISR and SAR operations and their maritime assets

S/N	Organization	Assets
01	SLAF Central Air Ops Room	Maritime and SAR aircraft
02	SLN Head Quarters (HQ) Ops Room	Different types of Naval vessels
03	SLCG Central Ops Room	Different types of Naval vessels and equipment
04	Directorate of Military Intelligence (DMI)	Intelligence network
05	Maritime Rescue Coordinating Centers (MRCC)	Link with merchant shipping and SLN
06	Director General Merchant Shipping (DGMS)	Link with merchant shipping

Source: Author

At present all maritime entities works together up to a certain extent. Nevertheless, MRCC and SLCG duties are carried out by SLN for the time being due to inadequate manpower and relevant resources. Hence a strategic framework is proposed as follows to integrate the elements operating to perform ISR and SAR missions in to a centralized structure for better output.

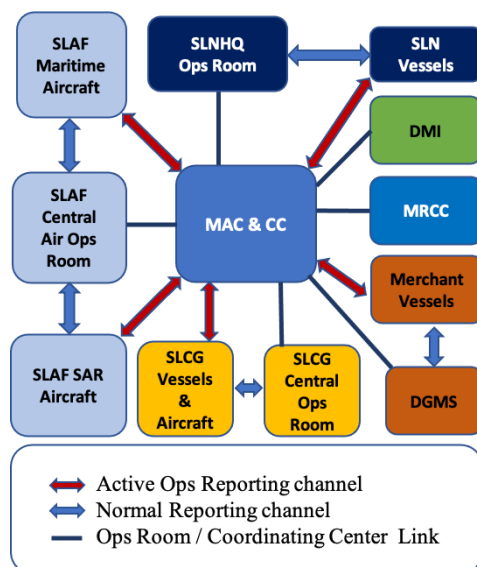


Figure 10. Proposed conceptual structure for Maritime-air command

Source: Author

Under this structure it is proposed to formulate a dedicated MAC&CC under a Maritime-Air Commander to make centralized decision making and decentralized execution under a unified command and control. The information with regard to maritime security threats and SAR requirements can be feed to the MAC&CC through the organizations listed above.

Then the situation analysis and mission planning can be done at MAC&CC considering the assets availability, capacity and capability of executing entities such as SLAF, SLN and SLCG. Assistance of DGMS could be seek if the situation demands in case of SAR operation. For the execution of the mission aerial and maritime platforms, professionals and relevant equipment are to be assigned to MAC&CC by the above respondents. Then throughout the mission the assets should be under the command and control of MAC&CC.

This strategy would minimize practical problems arising in control and reporting under multiple commands. Utilization of available assets in hand effectively would be the pragmatic approach to the future operational mission requirements. Integration of assets from different entities in to single force whenever the situation demands could produce synergistic effect rather than operating independently.

C. Joint maritime-air training

In support of joint operational effort, carrying out of joint training with the participation of above stake holders are of extreme importance for seamless function of the maritime-air organization. The best option available to avert the differences in concept of operations, culture, terminology, techniques and tactics is the conduct of joint training. Understanding of naval concepts by airmen and aerial perspective by seamen would provide the essential intangible touch in order to drive this integrated concept. Existing training establishments can be utilized for conducting of maritime operations training with the participation of both airmen and seamen. The fundamentals of joint operations need to be slot in to the basic, advanced and continuation trainings. Afterwards the art of joint operations would be mastered through continuous joint operational training in different scenarios (Wanasinghe, 2017).

VI. RECOMMENDATIONS

After the study, following conceptual recommendations were made. However, under the present financial situation of the country due to the impact of the COVID-19 pandemic until such time the economy gets strong enough to augment the inventories of the maritime-air operators, the framework for maritime-air command structure could be established. Furthermore, maritime security has an indirect impact on the economy of the country since it is of great concern for the merchant shipping. The more the safe and secure SLOC Sri Lanka can produce more the beneficial would be the shipping through these waters.

A. *Augmenting of maritime-air assets and capabilities*

The acquiring of new platforms, new technologies is a costly affair. However, attaining the professional maritime-air capabilities consumes a considerably longer time even the assets are procured. Hence, smart and stretched re-fleeting and gradual acquisition of new technologies step by step would result a better geared maritime-air entity with proper mass, mix and mobility to counter future maritime-air challenges in long run without adding financial pressure surges.

B. *Formulation of integrated maritime-air command structure*

Formulation of such a structure is within the capacity of the relevant elements as at now. At present certain integration is available among the maritime entities. Incorporating the aerial entity in to the mix and configuring them to form up a structure as discussed above need a thorough and unpretentious discussion among these forces. Aim of the structure and the command should focus on attaining the maritime-air objectives effectively and efficiently in line with national objectives.

C. *Conduct of joint maritime-air training*

Pooling of tangible assets would not do much unless otherwise the men behind machines performs accordingly at the maritime-air interface. Joint effort could result synergistic outcome theoretically and chaos in reality if proper integration does not occur. Carefully designed joint training can translate the theory in to an effective reality. Across the globe such joint training and exercises are a common place to achieve, maintain and master the cohesion and understanding among conceptually different elements to achieve common objectives. Hence,

continuous joint training and exercises involving all levels of professionals who will engage in future maritime-air operations would be an underling component of developing the integrated maritime-air structure.

VII. CONCLUSION

Maritime-air operations are not a novel notion to Sri Lanka. By the end of the humanitarian operations in 2009 there was a better opportunity and environment to form-up a maritime-air structure which would supplement the national potential to exploit the vast maritime resources we possess. Unfortunately, the maritime potential was not given with due significance so far making the national maritime resources idling and letting other state and non-state actors to exploit. Failure to optimize the geostrategic advantage for the betterment of the nation by responsible authorities, the oceanic region around the Island has become a loitering ground for state counterparts and transshipping hub for criminal actors. Increasing the maritime-air capacity and capability with a clear intent to exploit the vast maritime zone around us would make the region safe and secure for legitimate operations, thus limiting opportunity for illicit activities. By the time the authorities are ready to explore the marine heirloom it would be safe and secure to do so in future.

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