Colombo Conclave 2020

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Published in December, 2020

ISBN 978-624-5534-00-5

Edited by Udesika Jayasekara, Ruwanthi Jayasekara

Published by

Institute of National Security Studies Sri Lanka
8th Floor, 'SUHURUPAYA', Battarmulla,
Sri Lanka.
TEL: +94112879087, EMAIL: inss.srilanka@gmail.com
WEB: www.insssl.lk

Printed by

BANDARA TRADINGINT (PVT) LTD
No. 106, Main Road, Battaramulla,
Sri Lanka
TEL: +9411 22883867 / +94760341703, EMAIL: chayaaimaging@gmail.com

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SESSION 3 - ECO-RESPONSIBILITY TOWARDS A GREENER TOMORROW

CONCEPT PAPER

Colombo Conclave 2020 is the Inaugural National Conference, organized by the Institute of National Security Studies Sri Lanka, (INSSSL), the premier think tank on National Security functioning under the aegis of Ministry of Defence. The theme of the conference is "A Comprehensive Security Paradigm for Sri Lanka." It brings 12 local scholars together to discuss thematic issues which play a dominant role in maintaining national security.

The webinar kicks off with its first sub theme as 'Redefining Threats to National Security' by a team of security experts and narcotics soon after the inaugural session which is followed by a panel of Doctors and an eminent officer from the Ministry of Agriculture who would discuss 'Recognizing sustainability for healthy medical discourse'. The final sub theme that is discussed by an expert panel of environmentalist would be, 'Eco-Responsibility Towards a Greener Tomorrow' The topics of discussion are of timely significance; health and medical security gained widespread attention due to the current pandemic crisis which in turn adversely affected world food security. Under Environmental security, which is a relatively new and still somewhat contentious concept, it examines state of human-environment dynamics that could lead to social disorder and conflict. Its relevancy is heightened as environmental insecurity has become a prominent national threat. Maritime security and violent extremism trends are important aspects of national security that needs to be discussed, updated continuously and engage in analysis for future trends in order to take necessary precautions. Thus traditional as well as non-traditional threats on National Security are both covered through this dialogue.

This virtual conference is organized with the expectation of establishing space for researchers, academia, former officials, and senior experts from around the country to engage in policy relevant, problem solving dialogues, carrying significance with respect to aspects of national security. The discussion follows emerging health security, environmental security and maritime security trends together with violent extremism and proliferation of narcotic trends that are prevalent in the country. Thus it helps participants to gain keener understanding of each other's perspectives on common issues. It provides a progressive platform for formulating options and solving problems. By organizing this inaugural national conference comprising topics of timely significance to Sri Lanka, it facilitates knowledge sharing and multi-party discussions. It aids in early detection of security issues, prevention of possible conflicts as well as managing and mitigating existing conflicts among different parties.

INAUGURAL SESSION

BIOGRAPHY

Admiral (Prof.) Jayanath Colombage RSP, VSV, USP, rcds, psc MSc (DS), MA (IS), Dip in IR, Dip in CR, FNI (Lond)

Director General, Institute of National Security Studies Sri Lanka and Secretary to the Ministry of Foreign Affairs

Admiral (Prof.) Jayanath Colombage is the Secretary to the Foreign Ministry, Secretary to the State Ministry of Regional Cooperation and the Director General of the Institute of National Security Studies Sri Lanka. He is the former Additional Secretary to the President (Foreign Relations). He is a former chief of Sri Lanka navy who retired after an active service of 37 years as a four-star Admiral. He is a highly decorated officer for gallantry and for distinguished service. He is a graduate of Defence Services Staff College in India and Royal College of Defence Studies, UK. He holds a PhD from General Sir John Kotelawala Defence University (Sri Lanka). He was the former Chairman of Sri Lanka Shipping Corporation and an adviser to the President of Sri Lanka on maritime affairs. He is a Fellow of Nautical Institute, London UK. He is a Guest Professor at Sichuan University and Leshan Normal University in China and a visiting lecturer at Colombo University, Defence Services Command and Staff College. He is also an adjunct professor at National Institute of South China Sea Studies, Haikou, China.

WELCOME REMARKS

Admiral (Prof.) Jayanath Colombage RSP, VSV, USP, rcds, psc MSc (DS), MA (IS), Dip in IR, Dip in CR, FNI (Lond)

Director General, Institute of National Security Studies Sri Lanka and Secretary to the Ministry of Foreign Affairs

Good Morning and Welcome to the Inaugural National conference of Institute of National Security Studies, Sri Lanka. We are indeed privileged to have the Secretary Defence Major General Kamal Gunaratne with us today to deliver the keynote address. We have witnessed a short video clip describing the INSSSL and events leading to the creation of the same. As you could witness, we are a country, which has been ravaged by a protracted conflict which lasted for nearly three decades. We had to fight with the most ruthless terrorist organization in the world, proclaimed by Federal Bureau of Investigation in 2008. The moment we got our national security strategy correct, we started winning the war. If the government is not winning in terrorism, it means that the terrorists are winning.

On 26th November 2006 on LTTE's 'Mahaveer day', the Leader of LTTE declared and threatened "if you attacked me, I will make Colombo a blood bath". The LTTE was indeed ready. At that time, they had planted agents, recruited insiders, stored arms caches, gathered intelligence, drew maps, made sand models and they were ready to attack everywhere in the country. They meant it. They had infiltrated to every nook and corner of our country by then. However, fortunately, the threatened blood bath never happened as we got our national security measures in place and we were able to carry out counter operations. We infiltrated them. We discovered hidden arms caches. We were able to take war back to the LTTE. Our great military was able to continue to conduct the "Humanitarian Operation" to liberate the country from scourge of terrorism.

The Humanitarian Operation could be carried on. Then the 'mightier than thou' and 'undefeatable' LTTE started crumbling. Western countries had insisted that LTTE cannot be militarily defeated and the political solution is the only way. But our national security strategy under the able guidance and direction of the then President HE Mahinda Rajapakse and then Secretary of Defence, our current president, HE Gotabaya Rajapakse started delivering positive results very quickly. There was a whole of "country approach". There was coordination at all levels. The war which was dragging on for nearly 25 years was finished in two and half years. We were never caught up in 'conflict trap' and we had national security as a top priority. Unfortunately, after a certain period, there came a time, where national security was given least priority in Sri Lanka, which led to the infamous "Easter Bombing". Having received more than 92 credible intelligence information, we failed to 'act' or 'react'. Rest is history and we all know what happened on that fateful day.

Now is the time to talk about ‘Comprehensive National Security’. This involves many aspects of security such as maritime security, countering violent extremism, Trinity of maritime crime, narcotic, weapons and human smuggling. Especially during the time of Covid-19 pandemic, health security has come to the lime light. Best practices, preventive medical care, curative medicine are all part of health security. Having sufficient stocks of rice when Covid broke out falls under food security. There is a dangerous prediction that the earth is going to be warmer by four degrees by 2030. Can you imagine what will happen to the health of ocean and sea level rising? It will force large scale migration. Sri Lanka is high-vulnerable to climate change, and extreme weather events. We needed to plant more trees and start using green renewable energy, prevent pollution and prevent adding toxic substances to the environment. This topic of environmental security will be deeply discussed in the conference.

Ladies and Gentlemen this ‘Colombo Conclave 2020’ is dedicated to discuss above threats to ‘Comprehensive National Security’. I am sure that this is going to be a very valuable contribution to national security. I thank all eminent session chairs, speakers, and all participants for being a part of this memorable event. I wish Colombo Conclave 2020 a great success.

BIOGRAPHY

Maj Gen (Retd) Kamal Gunaratne WWV RWP RSP USP ndc psc MPhil

Secretary, Ministry of Defence

Major General (Retd) G.D.H. Kamal Gunaratne, (WWV RWP RSP USP ndc psc MPhil) having a distinguished military career of over 35 years and holding many key appointments in all areas of Defence and Civil - Military Coordination, assumed duties as the Secretary of Defence Ministry on November 20, 2019.Being a decorated soldier, he was the Master General Ordinance at Army Headquarters from 2015 to 2016. Major General (Retd) Gunaratne, who was the General Officer Commanding of the 53 Division from April 2008 to July 2009, commanded his troops during the Humanitarian Operation of the final phase of the Eelam War IV, which completely annihilated the 30-years of terrorism by the Liberation Tigers of Tamil Eelam (LTTE) on May 19. He also served as the Commander; Security Forces Headquarters (SF HQ) Wanni. Major General (Retd) Gunaratne had served as the Deputy Ambassador in Brazil from 2012 to 2015. After retiring from active military service in 2016, he held top posts in the private sector and has authored many books based on his 35-year experience in the military. He has authored many books based on his military experience.

KEYNOTE ADDRESS

Maj Gen (Retd) Kamal Gunaratne WWV RWP RSP USP ndc psc MPhil

Secretary, Ministry of Defence

At the outset, let me extend my heartfelt gratitude to the Secretary Foreign Ministry and Director General of Institute of National Security Studies Sri Lanka for designating me with this opportunity to deliver the keynote speech of the Inaugural National Conference, "Colombo Conclave".

I consider this as a pride and a privilege to address such a distinguished gathering. Owing to the unfortunate circumstances associated with the COVID 19 pandemic, though we are compelled to conduct this conference on a virtual platform, I firmly believe that the virtual audience will be able to grasp and share a vast amount of valuable inputs and experiences with their participation. In this context, having been assigned to take the helm of this institution designated to explore modern trends in the global security arena, I am delighted to appear in front of you to deliver the keynote speech of "Colombo Conclave" today.

As the premier National Security Think Tank of Sri Lanka, the comprehensive and thought-provoking security studies conducted by the Institute of National Security Studies (INSS) have been the cornerstones for identifying the modern security developments of concern and providing the vital information required for the National Security policy formulation. It provides a stable platform for the Government and other entities of the society to cooperate through discussions and debate to establish sound assessment of National Security based on its mission, "To enhance National Security of Sri Lanka through excellence in research, education and networking".

Furthermore, I am extremely pleased that the theme selected by the Institute of National Security Studies (INSS) for this inaugural national conference, "Comprehensive Security Paradigm for Sri Lanka" is a timely theme capable of augmenting the significance and emphasis of the sessions which are systematically focused on three sub themes namely, Redefining Threats to National Security, Recognizing Sustainability for Healthy Medical Discourse and Eco-Responsibility Towards a Greener Tomorrow.

Ladies and Gentlemen, as we are all aware, the National Security is a foremost demand to ensure the sovereignty and the territorial integrity of a country. This encompasses its citizens, economy and all its institutions and regarded as the prime duty of a Government. Therefore, the Governments rely on a range of measures, including political, economic and military power as well as diplomacy, to safeguard the security of a nation-state. Sri Lanka, as a nation has given a novel significance to National Security by designating it as the top priority amongst its key policies being in line with H.E. the President's vision; Vistas of Prosperity and Splendour.

In this context, the focus of "Colombo Conclave" to address the said key thematic areas of National Security including health, food, environmental and maritime security sets out an ideal opportunity to probe further into the core of the issue with special reference to Non Traditional Threats; a major concern in the current context. Further, I am well certain that this inaugural Conclave will also pave an insight to the Government's determined battle to conquer the religious extremism, radicalisation, de-radicalisation and proliferation of narcotics along with an identification of probable ways and means in countering the same. Accordingly, the Conclave is seen rightly geared towards finding possible solutions towards current threats that could be perceived in the context of National Security and the sub themes that have been designed are also seen precisely aligned towards achieving the objectives set for the event.

Ladies and Gentlemen, as known, the Indian Ocean that harnesses vital Sea Lines of Communication (SLOCs) linking the East and the West thus considered as the gateway for the seven seas. Famous saying of US Naval Officer and Historian Alfred Thayer Mahan highlights the importance of the Indian Ocean security. Alfred Thayer Mahan said and I quote: "Whoever controls the Indian Ocean dominates Asia. This ocean is the key to seven seas. In the twenty-first century, the destiny of the world will be decided on its waters".

Accordingly, being part of this strategic ocean mass, Sri Lanka obviously has a major role to play in the Indian Ocean like never before. Therefore, in order to redefine the threats against maritime security of Sri Lanka, its strategic importance is to be contrasted with emerging threats and challenges in the Indian Ocean. Latest incident with regard to MT New Diamond ship is seen as a great eye opener for us to redefine our responsibility over ensuring the security in our ocean space. Further, matters that emanate through fisheries, marine pollution, Search and Rescue (SAR), responding to oil and chemical spills, poaching, Illegal Unreported and Unregulated (IUU) fishing and protection of marine species etc., have become significant issues that we have to keep our eyes and ears open.

On a more time pertinent note, the global pandemic of COVID-19 in the perspective of health security has unleashed its rage in a global magnitude threatening the stability of the strongest nations worldwide. COVID-19 in fact harshly reminded us, how bitter would be the repercussions of negligence in health security. It has clearly pointed out the lapses of national level readiness to confront unpredictable health outbreaks and the risks of solely depending on the solutions from global organisations. Sri Lanka being one of the countries successfully suppressed the surge of COVID-19 pandemic from its initial stages, proved the exemplary ability of reacting towards unpredicted threats, utilising the professionals in the most essential method proving His Excellency the President's promise to endorse meritocracy.

However, the extreme end of the pandemic will not merely affect the lives of the citizens but also damage the country multidimensionally, urging for a strong collaboration among professionals in every field. There comes the pivotal role intended to be played by national research institutions such as INSS to facilitate decision makers with precise solutions based on analytical, accurate assumptions.

Ladies and Gentlemen, at the contemporary situation, the environmental dimensions of global security were initially considered within the frameworks of vast phenomena such as global warming and possible nuclear fallout and their consequences. Most recently, environmental security has focused on increasingly severe climate change, the limited effectiveness of emission mitigation measures and the necessity to work on adapting to environmental change. Given the severity of anticipated climate disruptions, global security may soon become a matter of nothing less than geoengineering the climate to keep it within the range that has made civilization possible.

Initially, the combination between the environmental conditions and national security was ambiguous due to the absence of a standardized mechanism to analyse and research. The environmental security has been neglected over the economical desires for centuries and the bitterness of repercussions will be upon our future generations. Therefore, it is my earnest hope that the sessions conducted in this conference would pave the way for researchers all over the world to discover different avenues in redefining the aspects of environmental security.

With that being said, I am obliged to state to this gathering that organising an event of his magnitude requires an immense effort by all the stakeholders and I am proud to be the Chairman of this distinguished institution which sets the nation in its safest course to steer amidst unpredictable storms. Under the steadfast guidance of His Excellency the President Gotabaya Rajapaksa as the president of INSS, I firmly believe that the sessions of this inaugural National Conference will transform the traditional National Security dialogue into a broader and collaborative platform with domestic and global expertise.

Therefore, my heartiest gratitude goes to the Director General of INSS, Admiral (Retd) Professor Jayanath Colombage for being at the helm of organising this intellectual gathering in an impressive manner. I am indeed surprised to see how he has managed his hectic daily routine whilst holding the appointment as the Secretary, Foreign Ministry to steer this grand event that needs a bundle of extra power to reach a well-orchestrated end state. The untiring efforts endured by the Director General and his staff are commendable to formulate this professional gathering with equal excellence on a virtual platform in order to harness views on evolving a comprehensive National Security Paradigm for Sri Lanka.

Finally, I would like to extend my heartiest well wishes for the participants of the “Colombo Conclave“ consisting of the said three sessions where they will be imparted with fruitful and thought provoking orations by the best resource personnel in their respective spheres. I hope all participants will be adequately benefitted from these expert sessions, sharing experiences and exchanging knowledge and insights, and I wholeheartedly wish all of you the success for all your future endeavours.

Thank you.

SESSION -1

REDEFINING THREATS TO NATIONAL SECURITY

BIOGRAPHY

Amb. HMGS Palihakkara - Moderator

Former Foreign Secretary and Former Governor of Northern Province

Palihakkara retired as Foreign Secretary of Sri Lanka on 31 Dec. 2006 after 37 years of civil and diplomatic service. His last diplomatic assignment abroad was as Sri Lanka's Ambassador and Permanent Representative to United Nations in New York 2008- 2009. He served as a Commissioner on the Presidential Commission on Reconciliation and Lessons Learnt (LLRC). He was the Chairman of UN Secretary General's Advisory Board on Disarmament Matters, United Nations HQ, and New York. (2012). President of Sri Lanka appointed him the Governor of the Northern Province in February, 2015. He does visiting lectures on international relations, foreign policy, and peace and security studies at several Sri Lankan academic/training institutions.

A Bachelor of Education (Honours) graduate (B.Ed-1968) from University of Ceylon, Peradeniya, he received a PSC appointment to the Sri Lanka public service (1969); entered Sri Lanka Foreign Service in 1979; underwent diplomatic training in Australia (1980), was a UN Disarmament Fellow (1980s).

Palihakkara previously served as Sri Lanka Ambassador and Permanent Representative to United Nations in Geneva and the Leader of Sri Lanka Delegation to the UN Human Rights Commission and the Conference on Disarmament, the UN multilateral negotiating body on international arms control and security matters, (1997-2000). .

He was Sri Lankan Ambassador to Thailand, Cambodia, Laos, Vietnam and Permanent Representative to Economic and Social Commission for Asia and the Pacific (ESCAP), Bangkok, 2000-2004.

During the period 2002-2003 he functioned as Actg. Director General/ Deputy Director General of the Sri Lanka Govt. Peace Secretariat (SCOPP). He was Director General, Multilateral Affairs at the Foreign Ministry, and Sri Lanka from 1995-1997 covering inter alia, work relating to Human Rights, preventive diplomacy, peace building, arms control, non-proliferation matters etc.

BIOGRAPHY

Rear Admiral PDS Dias, RWP, RSP & Bar, USP, NWC, psc
Commander North Central Naval Area, Sri Lanka Navy

Rear Admiral Dhammika Sanjeewa Dias born on 09th March 1967 is a proud product of Bandaranayake Central College, Gampaha and Nalanda College, Colombo. He joined the Sri Lanka Navy on 15th June 1987 as an officer cadet and successfully completed the basic training at the Naval & Maritime Academy, Sri Lanka and was commissioned as an Acting Sub Lieutenant in 1989. He has followed the Sub Lieutenant Technical Course at the prestigious Naval & Maritime Academy in Sri Lanka. Rear Admiral Dias is a Gunnery Specialist trained at Gunnery School, INS "Dronacharya" in India. He followed Naval Weapon Maintenance course in China and the Staff Course at the Naval Command College also in China. He is a distinguished graduate of the prestigious Naval War College in Rhode Island, USA. Apart from those studies, he has also followed the basic International Maritime Intelligence Course in USA and the Comprehensive Security Response to Terrorism (CSRT) course in Hawaii.

Rear Admiral Dias has held number of key appointments both afloat and ashore. Director Naval Operations and Director Naval Foreign Cooperation, Deputy Area Commander (Eastern Naval Command), Deputy Area Commander (Southern Naval Command), Deputy Director Naval Operations, and Naval Armament Officer (NAO) are few of them. Most of his sea period was onboard Fast Attack Craft (FAC) and he has commanded the Fast Attack Flotilla in 2010. He has also commanded Offshore Patrol Vessels (OPV) SLNS Sayura and SLNS Samudura. He had also been an instructor at the Naval & Maritime Academy, Kothalawala Defence University (KDU) and a visiting lecturer at the Defence Services Command & Staff College (DSCSC) in Sri Lanka. Presently he is at the helm of North Central Naval Area as the Area Commander. Rear Admiral Dias has been decorated for distinguished service and awarded with Gallantry medal, "Rana Wickrama Padakkama" (RWP) and "Rana Sura Padakkama" (RSP) three times for his bravery in the face of enemy. He has been awarded with "Uththama Sewa Padakkama" (USP) as recognition for his unblemished and distinguished service. He is a keen sportsman and has been awarded with Navy Colors for exceptional performance in cricket and is the current Chairman of Sri Lanka Navy Cricket.

CHANGING MARITIME SECURITY OF THE INDIAN OCEAN

Rear Admiral PDS Dias, RWP, RSP & Bar, USP, NWC, psc
Commander North Central Naval Area, Sri Lanka Navy

The 21st century is the century of the oceans. And we live in a VUCA world- a world driven by Volatility, Uncertainty, Complexity and Ambiguity. And indeed, the traditional way of how the IOR was perceived is being challenged with the rise of great power competition in the Indian Ocean that is in the making. First let me iron out any ambiguity that might have risen from the above statement. So far, given the evidences, cooperation still dominates this region over competition, and that has been the hallmark of the IOR in contrast to the South China Sea and other maritime hotspots.

Meanwhile, the geopolitical world we live in today and the emerging maritime landscape, despite globalization can be viewed as fragmented with the rise of regional assertiveness. Each region is dealing with inherent security, political, social and economic concerns. North America and United States in particular is seen losing its primacy in world affairs under the present administration and juggling to fix political and social cleavages that had widened over centuries. The situation to an extent was exacerbated by Washington's meek and inconsistent response to the COVID-19 outbreak. Europe is currently dealing with structural issues, the Euro and BREXIT being the key highlights. Africa is still to a large extent under-developed and poor. Amidst this global turbulence, Asia is booming with China and India as dominant emerging powers and ASEAN -, ensuring wider benefits for the region.

The Indian Ocean is the third largest water body in the world. However, the significance drawn over the years is not second to any of the Oceans. The strategic shift of major powers towards the Indian Ocean signifies the importance of the Indian Ocean in the present century. It is host to over 35 littoral states with a collective population of 2.6 billion people or 39 percent of the global population. In contrast to the Pacific, Atlantic and even the South China Sea, the IOR is more vital in the transportation of global commons – particularly for energy. The sea lanes in the Indian Ocean are considered among the most strategically important in the world with more than 80 percent of the world's seaborne trade in oil transits through the Indian Ocean and its vita choke points Strait of Hormuz, Malacca Strait and Bab-al-Mandeb.

55 percent of the world's oil reserves and 40 percent of gas reserves are in the IOR. Half of the word's container traffic transit through the Indian Ocean and its ports handle around 38 percent of global trade annually. 80 percent of China's oil demand is transported through sea lanes in the IOR. In addition, 40 percent of the total trade through IO is to China. As India is also driving its industrial might, 70 percent of its oil demand is imported. Further, 70 percent of Japan's energy demands also traverse through the IO.

A fallback to the past seven decades and to more recently the era since the end of Cold-War, the IOR has been relatively peaceful. For that security to be sustained there needs to be an equilibrium. The resultant equilibrium in the IOR could be attributed mainly to ASEAN nations and geo-economic aspirations of China and India. Though the Belt-and-Road-Initiative (BRI) is received as an ambitious strategic envelopment by China, this has not yet affected the status-quo in the region as a whole.

Yet, it would be naïve in presuming this state to continue, mainly due to three reasons. One, though the U.S is the predominant global superpower, its primacy is fading primarily due to redistribution of wealth and technology globally. This phenomenon is occurring at a rapid phase in Asia and in the IOR. Two, with the new emerging powers ASEAN, China and India there is a regional polycentric order in the making.

This new order is expected to drive each nation exerting and increasing influence in regional affairs. Accordingly, the phenomena could be drawn parallel to the 19th century 'Concert of Powers'. Thirdly, growing assertiveness of nations, which has become a hallmark of the 21st century world affairs, is creating axial points in geo-political areas of interest. Thus, security is becoming more fragmented than the post-cold-war norm of 'collective-security'.

Now many would wonder, who are familiar with maritime affairs, security and defence, why I did not highlight concerns and challenges presented by traditional and non-traditional security threats in the region. To begin with the so-called traditional and non-traditional security threats, except for the possibility of nuclear--fissile material being smuggled and radical- extremist based terrorism, the security concerns in the IOR has been persistent since 1950s.

Further, the distinction between traditional and non-traditional security threats is beginning to blur. In addition, most of the security concerns in the region could be addressed pragmatically by local policy arrangements through efficient law enforcement, implementation and collaboration among multiplicity of stakeholders involved and is less complex than the security complications that would arise from a strategic competition between regional powers. Concerning above, the declared foreign policy of neutrality by the present administration provides Sri Lanka with a pragmatic resolution in stabilizing the strategic security implications as a small state in the IOR.

With this preview of the changing maritime security landscape in the region, I hope this sets the tone to dive into the second part of the presentation with more emphasis on our national interests and the navy's perspective. Sri Lanka's main vulnerability concerning the maritime space would be its proximity to the Indian mainland. The prevailing socio-economic and political conditions in South India especially, create 'jumping-off spots' for illegal access to Sri Lanka.

Thus, this very fact has been the main challenge regarding maritime security as far as the Sri Lanka Navy is concerned. So far since January this year (2020), the Navy along with the assistance of other agencies have apprehended and confiscated over 717 kg of heroin, 793kg of ICE, 581kg of Ketamine and 3,837 kg of Kerala Cannabis and a total of over 32 foreign suspects also have been arrested. Among these, except for the apprehended Kerala cannabis, the rest were smuggled via the Arabian Sea believed to have originated from the coasts of Iran and Pakistan. Given the narcotic

apprehensions made during the past few months in 2020, the figures so far represent 34% increase in the total narcotic apprehensions in comparison to apprehensions made in 2019 by the Sri Lanka Navy. This is despite the COVID-19 pandemic situation.

While Illegal Unreported and Unregulated (IUU) fishing especially bottom trawling by Indian poachers is a persistent challenge in policing our waters. Despite its complex socio-political dimension, the poachers continue to show disregard for law enforcement by the Navy. Over the last few years we have witnessed a trend in increased aggressive maneuvers by the poachers, at times resulting in damage to our ships and craft as they deliberately ram into our vessels with their steel hulls. On top of poaching, navy is more concerned of drug trafficking happening along with the poaching which causes serious damage to the society. Further, it is no secret now, that the Easter-Sunday suicide bombers had some sort of affiliation or nexus with religious extremists in South India.

As per the prediction, India could face a third wave of COVID -19 in the future which raises concerns. We all are aware the effect of the current surge of positive cases in the country. Hence, given our inherent limitations and economic vulnerability, a possible another wave of COVID-19 would be detrimental in the pursuit of our national interests.

Human trafficking at sea poses yet another maritime security threat. Sri Lanka has also demonstrated very effective capacity in preventing illegal migration to Australia through maritime routes via or from Sri Lanka. The Australia-Sri Lanka cooperation on human smuggling is a success story. Graph on the screen signifies Sri Lanka's effort in countering human smuggling in the ocean space around it.

Piracy at sea is an old problem that persists to modern times in several hot spots across the world and has been a menace to the maritime world for centuries. This crime infringes on sea lanes of communication, blocks freedom of navigation and international trade, and can promote regional instability. In the Indian Ocean Region, the Gulf of Aden, and Southeast Asia (including Malacca Strait) can be identified as vulnerable areas for piracy and arms robberies due to heavy congestion of merchant traffic. During the last decade, piracy emanating from Somalia has seen a surge, to become the most serious threat to global shipping, and subsequently decline largely due to combined multinational naval efforts of Combined Task Force (CTF) 151, NATO Operation 'Ocean Shield' and the presence of security teams onboard (OBST).

Piracy in Southeast Asia, meanwhile, has decreased significantly since 2015 due to increased patrolling and regional coordination. Sri Lanka is currently part of several key regional initiatives to combat piracy, including the Regional Cooperation Agreement on Combatting Piracy and Armed Robbery against Ships in Asia (ReCAAP) and IORA. We are fortunate not to have any pirate incidents in our surrounding seas in the recent past.

The enormity of our maritime jurisdiction (Search and Rescue region), which is almost 25 times of Sri Lanka's landmass, adds on constant pressure in policing the waters and in conducting maritime security operations. The navy is already enhancing its offshore patrolling and surveillance capacities with the induction of advanced OPVs into our fleet. So far, the SLN has 8 big ships that are capable

of patrolling our waters. Understanding our resource limitations, the navy has increased its cooperation and collaboration with a multitude of agencies and stakeholders that has resulted in the effective utilization of our platforms. The results speak for themselves with over 4,000 kg of narcotics alone been apprehended through these offshore deployments during the first 9 months alone this year. On 5th March this year, the Sri Lanka Navy was able to confiscate the largest narcotic smuggling via sea, amounting to 500kgs of narcotics (400kg heroin; 100kg ICE) with a street value of USD 33 million, onboard two Iranian trawlers in the high seas.

The navy has enhanced its maritime surveillance capability as a result of interoperability with the Sri Lanka Air Force. Specially trained maritime-air-reconnaissance officers do frequent maritime surveillance missions onboard SLAF aircraft. In addition, the Sri Lanka Navy conducts constant training and collaboration with the Indian Navy and the Indian Coast Guard.

The present COVID-19 situation poses an additional pressure in conducting our routine patrols and special tasks. A total of 908 naval personnel were infected with the virus in March and recovered completely and back in performing classic role. Nevertheless, this was a learning curve for us, to reflect on our traditional scheme of operations in unforeseen situations such as pandemics and bio-hazardous environments. Further, the possibility of such events recurring frequently in future cannot be ruled out.

The recent 'MT New Diamond' incident in our EEZ was also a wake-up call highlighting the possibility of negative implications towards our national interests due to accidents in our adjacent waters. Sri Lanka Navy was at the forefront responding to the fire that broke-out onboard 'MSC Daniela' on 04th April 2017. Similarly, any sort of sabotage activity onboard such liners will definitely result in grave economic and security implications affecting our economic interests, safety and security. India imports 2.7 million metric tons of its refineries to its Eastern coast, while Bangladesh imports 1.4 million tons of crude oil from the Middle East annually. The Very-Large-Crude-Carriers (VLCC) destined to these ports traverse through the southern tip of Sri Lanka. Thus, any accident between vessels in the Traffic Separation Scheme (TSS) that lies just 10-12km from southern-coast of Sri Lanka could have grave and lasting environmental and economic implications, especially during the south-west monsoon which can pollute all our beautiful beaches by badly affecting tourism industry. Thus, it is no exaggeration that the Navy aspires to build its credibility as a first responder in its EEZ.

With this in a concluding note let me state that in response to the changing maritime security dimensions in the IOR, SL should have a pragmatic approach that is two pronged. One is giving due reverence to the strategic regional dimensions, which I perceive as manageable but not controllable and secondly, the controllable variable, use of our resources with the Navy as the main stay in concert at eradicating and addressing all types of smuggling to our shores and terrorism driven by ethnic and religious extremism. Thus, the Sri Lanka Navy is to pursue building credibility as the first responder in its maritime area of interest to threats which may be accidental, natural or illicit in nature.

BIOGRAPHY

Major General Darshana Hettiarachchi RSP VSV USP ndu psc

Commissioner General of Rehabilitation and Head of the Office of National Action Plan for Countering and Preventing Radicalization, Violent Extremism, and Terrorism

Major General Dharshana Hettiarrachchi joined the Sri Lanka Army in 1984 and retired in 2019 having completed more than 35 years of continues service to the Motherland. After retirement, he was recalled for active service and appointed as the Head of National Action Plan on Preventing and Countering Radicalization, Violent Extremism and Terrorism in Sri Lanka under the Ministry of Defence. On 14th February 2020, he was appointed as the Commissioner General of Rehabilitation under the Ministry of Justice in addition to the above mentioned appointment as the Head of National Action Plan.

Prior to retirement form the Army he served as the Security Forces Commander - Eastern Province in 2016/2017 and thereafter as the Security Forces Commander - Jaffna from March 2017 to July 2019.

Major General Hettiarrachchi is a Graduate of the Defence Services Command and Staff College in Bangladesh (1997/1998). He successfully completed the training programme titled the "Mastering Education of Strategic and Resilience Studies at the National Resilience Institute (equivalent to a National Defence University) in Indonesia from 2 July 2013 to 9 October 2014. He holds a Master's Degree in Conflict Resolution from the University of Colombo.

His greatest pride in his 35 years of military career is to have maintained a clean and an unblemished record of conduct. He is married to Ajantha Kumari Liyanarachchi and blessed with two daughters and a son.

RELIGIOUS EXTREMISM, RADICALISATION AND DERADICALISATION:

Major General Darshana Hettiarachchi RSP VSV USP ndu psc
Commissioner General of Rehabilitation and Head of the Office of National Action Plan for Countering and Preventing Radicalization, Violent Extremism, and Terrorism

Introduction

Violent Extremism and Terrorism in Sri Lanka has been a highly destructive phenomenon during the periods of the Sri Lankan Civil War from 1983 to 2009 and the first and second JVP insurrections in 1971 and 1987 to 1989. Sri Lanka is a country that has experienced some of the worst known acts of modern terrorism, such as suicide bombings, massacres of civilians and assassination of political and social leaders that posed a significant threat to the society, economy and development of the country. Preventing and Countering of Violent Extremism (PCVE) has become a contested but much-needed framework of analysis in the backdrop of increasing radicalization, extremism, home-grown terrorism and most serious attacks that are targeting free and open societies in the world. Sri Lanka experienced a decade of peace and openness since the end of the war on LTTE terrorism in 2009 until the recent Easter Sunday attacks. Free and open societies, especially democracies, going through political failures of both leadership and institutions are prime targets of extremist ideologies and infiltration. These infiltrations are facilitated through migrant workers, religious leaders and even foreign fighters who circulate globally. The last five years had witnessed the emergence of terror movements ideologically driven with global reach and adaptability.

While Countering Violent Extremism remains in part in discussion and in part a subfield in counter-terrorism, its exponents see the importance of the approach as more holistic as its core strength is the societal focus that encompasses traditional iterations of de-radicalization and violence de-escalation such as community policing and even forms of reconciliation.

This is an attempt to explore multiple dimensions of countering violent extremism approaches in Sri Lanka and local conditions which shape and generate such tendencies and how best to mitigate them. Essentially the Office of National Acton Plan for Countering and Preventing Radicalization, Violent Extremism and Terrorism is committed to addressing the issues discussed herein and a sizeable portion of counter measures those can be practiced/facilitated through the said office are hereby explained.

National Security – From Sri Lanka's Perspective

National security in a broader sense is safeguarding national core values and interests of a Nation-State against any prevailing or perceived threat. National security is the ultimate and inalienable duty of a legitimate government of a Sovereign State. In the present context, national security is no

longer limited to traditional aspects of protection against military attacks or revolutionary action by external/internal actors. The modern-day concept of national security encompasses all forms of deliberate threats across a broad spectrum of adversaries to security threats and hazards emanating from a full spectrum of non-traditional elements.

When considering Sri Lanka's current context in the backdrop of this evolved national security concept, it is evident that the validity of both Sri Lanka's national security policy as well as its overall approach needs to be revisited and tested in terms of its capabilities to safeguard the country's core national values and interests.

Identified Reasons for Sri Lanka's Lack of Coherence and Co-Existence

One of the primary factors resulting in Sri Lanka's inability to ensure coherence and coexistence amongst its diverse populace is the fundamental failure to build a single 'Sri Lankan' identity wherein all citizens could be recognized as a single nationality devoid of ethnic / racial, religious, cultural and linguistic segregation. The importance of such a single national identity can be invoked from countries such as Singapore, South Korea, Malaysia and even Cambodia who have succeeded to a great extent in suppressing unwarranted ethnic and religious differences through such mechanism thereby ensuring that its state emerges as a single national brand.

The country's unduly exaggerated and undue emphasize shed on cultural, ethnic, religious and linguistic uniqueness by each respective ethnicity and the subsequent usage of same as a tool to build walls instead of bridges amongst each other, can be seen as yet another fundamental factor.

Another factor can be seen as the lack of interaction amongst people of different faiths resulting from the failure of each ethnic group in familiarizing themselves with the language and culture of the other and in integrating themselves with each other's faith. Foreign influences stemming from geo-political interests can be construed as another factor leading to ethnic disharmony. Failure to properly establish Rule of Law in the country can be seen as another factor.

National Failures resulting from Poor Rule of Law in the Country

In the past; imperialists and invaders, with the British in particular used their well-known tactic of 'divide and rule' policy to gain their own whims and fancies by capitalizing on cultural, religious and ethnic diversities within local communities thereby polarizing such communities.
Seventy years later, Sri Lankans to date have still failed to rise above such man-made differences and achieve a common Sri Lankan identity. Sri Lanka still appears to consider diversity as a liability rather than an asset and continue to struggle with mutual trust and acceptance.

United Nations' Guidelines on Prevention of Violent Extremism

Having understood through various extensive researches United Nations has identified some key areas to be concentrated to prevent and counter VE. Also, the UN has declared the possible areas of assistance to the member states on the subject.

We can capitalize UN provisions to obtain UN's support to fight and Prevent VE including development assistance on our own agendas and narratives. When looking at possible drivers of VE in Sri Lanka, this could be debatable and these drivers may be subjected to change time to time. We need to conduct extensive research to understand further on drivers; since, in my opinion, Sri Lanka has not conducted enough research on this much important subject area where we need to base on drivers to formulate solutions for Radicalization and VE.

Proposed Strategy of the Approach

The counter narrative strategies proposed through this paper are intended to be implemented via two main strategic approaches: **Through an effective intelligence mechanism and through a National Action Plan ('NAP');**
The issue of VE cannot be addressed only by countering the VE by military means; prevention is the key to achieve sustainable peace. Therefore, a whole of government approach to address the grievances of the people and aim for sustainable development is utmost important; harnessing, the support of all internal and external actors and stake holders of the development, opening, equal opportunities to all.

a. Presidential Secretariat

(1) Establishment of a Task Force to monitor and evaluate the progress of recommendations forwarded to respective ministries and review the progress.
(2) Establishment of a Harmony Council.
(3) Initiate national programs to engage youth/ civil societies / organizations to build social cohesion.
(4) Prevent ethnic-based settlements and to develop multi ethnic settlements.
(5) Direct all public and main private work places to maintain harmony rooms.
(6) Introduce a concept to resettle all major ethnic groups to live together in every part of the country without allowing to emerge ethnic enclaves.

b. Ministry of Defence.

(1) Make appropriate arrangements to prevent the use of cyber domain to spread messages detrimental to religious and ethnic harmony.
(2) Establish a Counter Terrorism Strategic Communication Centre.
(3) Initiate appropriate programmes for perception management, through strategic communication.
(4) Detect and neutralize elements propagating extremist ideologies using cyber domain.
(5) Create Harmony committees locally to resolve dispute among communities.

c. Ministry of Buddhasasana, Religious & Cultural Affairs.

(1) Formulate regulations to prevent the establishment of the places of worship without prior approval.

(2) Initiate appropriate actions to stop the Arabisation in Muslim populated areas.

(3) Initiate appropriate actions to issue Halal Certificate by the Department of the Muslim Affairs under the Ministry (Only for meet oriented productions for local consumption and any item for export oriented productions).

(4) Educate the Muslim Community to revert back to traditional ways of living according to Sri Lankan culture.

(5) Identify true Islamic scholars by evaluating their qualifications and promoting them to educate Muslim youth against extremism.

(6) Establish Harmony Libraries at every religious institution to provide an opportunity for all to learn about each other's religions.

(7) Initiate Harmony Projects at suitable areas to engage all communities towards development work and establish Harmony Centres at all Mosques, Madrasas and other related institutions to develop programmes for inter-ethnic and inter religious understanding.

d. Ministry of Justice / State Ministry of Prison Reforms and Prisoners Rehabilitation. Implement an effective prison management to segregate radicalised individuals and groups inside the prison and formulate / implement effective and sustainable de-radicalisation, rehabilitation and reintegration programmes for radicalised individuals and groups. Consolidate national narratives and counter narratives through a well-coordinated mechanism using diplomatic missions, media platforms.

e. State Ministry of Women and Child Affairs/State Ministry of Social Security: Initiate an appropriate programme to counsel families of victims as well as families of suspects involved in terrorist attacks and provide social welfare support for families of apprehended suspects and families of victims.

f. State Ministry of Information and Communication Technology.

(1) Direct Media institutions to conduct programmes / publish articles to promote religious harmony and peaceful co-existence and monitor and censor programmes on TV channels that cause a negative impact on religious harmony and peaceful co-existence.

(2) Identify and eliminate sources of social marginalisation / prejudice and discrimination through a wide media platform.

(3) Effectively use all media platforms and e-diplomacy for perception management.

g. Ministry of Education.

(1) Identify education curriculums detrimental to co-existence.

(2) Review policies on ethnic / religious oriented education institutes / schools to ensure ethnic / religious co-existence (promote cross culture participation / national school concept).

(3) Establish a mechanism to monitor and supervise teachers and their conduct.

(4) Bring all educational institutes that promote religious and ethnic alienation under government educational framework.

(5) Make appropriate arrangements to review the curriculum of Arabic Colleges, Ladies Madrasa System and Quran Madrasa System.

(6) Make appropriate arrangements to include the most important aspects of the constitution to the School Syllabus.

(7) Establish Harmony Clubs in Schools and Universities in order to celebrate the festivals of different ethnic and religious communities.

(8) Prevent establishment of schools based on religion.

h. Ministry of Youth & Sports. Make appropriate arrangements to provide sufficient recreational facilities for youth in Muslim populated areas.

i. State Ministry of Community Development.

(1) Make a suitable arrangement to provide livelihood assistance to families of suspects.

(2) Initiate appropriate community engagement programmes for families of suspects.

(3) Make appropriate arrangements to provide relief measures to victims of Terrorist attacks and introduce certain welfare measures for their livelihood.

j. Ministry of Foreign Affairs.

(1) Initiate appropriate actions to control the issue of Visa to harmful immigrants.

(2) Establish strategic communication/ partnership with regional and global partners with common objectives in countering extremism / terrorism.

(3) Use national diplomatic missions effectively for perception management.

k. Attorney General's Department/Legal Draftsman.

(1) Formulate necessary legal framework to rehabilitate religiously radicalised people.

(2) Initiate appropriate actions to formulate strict laws to prevent Hate Speech.

(3) Formulate laws to prevent the wearing of Burkha and Nikab by Muslim ladies and Thobe by gents.

(4) Review, strengthen and create laws to ensure education activities are conducted in accordance with existing education policies and regulations.

(5) Create laws to ensure punitive measures for violating the existing education policies and regulations.

(6) Review existing laws to proscribe extremist organisations.

(7) Review existing laws for lawful pretrial detention and lawful detention of extremist elements.

(8) Revising of existing laws and enact and reinforcing new laws with provisions to detect, identify, prevent and neutralize radicalisation, violent extremism and terrorism; to detect unusual money transactions.

l. Intelligence Agencies.

(1) Monitor/screen potential radicalized individuals / preachers trying to enter into the country and initiate appropriate actions to prevent them coming in.

(2) Monitor the activities of suspected religious leaders who try to motivate the youth to be radicalised.

(3) Monitor the activities/teachings of the instructors of Arabic Colleges, Ladies Madrasa System, Quran Madrasa System.

(4) Expand intelligence network into educational institutes to ascertain the compliance of national education policies and regulations.

(5) Monitor vulnerable groups and design programmes to prevent assimilating to radicalisation / violence.

Conclusion

The instability in Iraq, Syria, Pakistan and Afghanistan might have a spillover effect to Sri Lanka unless we manage the situation systematically. A wave of creeping radicalisation and reciprocal radicalisation is taking place all over the world at a rate. The religious, cultural and political radicalisation had already penetrated in to the western, central and eastern provinces of Sri Lanka. A lot of hard work over the coming years is necessary to reform our religious, educational and media institutions to control the situation.

Today, there is deep suspicion, prejudice, resentment, and anger between communities. Unless addressed, the hatred and incitement can turn to terror and violence anytime. Building moderation, toleration and coexistence is a monumental task. Therefore, it is high time to think that there should be some mechanism to work out a very methodical plan in consultation with all relevant parties and initiate required actions efficiently and effectively to stop reoccurrence of such violent activities in Sri Lanka.

BIOGRAPHY

Dr. Laknath Welagedara
Consultant Physician
Chairman, National Dangerous Drugs Control Board

Dr.Laknath Welagedara is a Consultant Physician at the Colombo South Teaching Hospital and the Chairman of the National Dangerous Drugs Control Board (NDDCB). Dr.Welagedara has completed MBBS degree from the University of Peradeniya, MD (Medicine) from the University of Colombo and MSc in Health care Administration degree from International University of Fundamental Studies, Russia.

He is currently serving as the Chairperson of the expert committee on prisoner rehabilitation programme appointed by the State Ministry of prison reforms and prisoner's rehabilitation and member of the Board of the National Authority on Alcohol and Tobacco (NATA). Dr.Welagedara is representing the steering committee on Management of Drug Addicts under the Ministry of Health and other National level Expert Committees, Forums and Boards in the field of Health care management, drug prevention, treatment and rehabilitation. Also Dr.Welagedara is the Commissioner of Colombo Plan Global Centre for Credentialing and Certification (GCCC).

ILLEGAL NARCOTICS TRAFFICKING IN INDIAN OCEAN: CASE STUDY OF SRI LANKA

Dr. Laknath Welagedara
Consultant Physician
Chairman, National Dangerous Drugs Control Board

As we all know, the extent of the drug problem and emerging threats with their devastating adverse consequences, affect severely on health and welfare of people, socio-economic development and the stability & security of the countries around the globe including Indian Ocean Region and Sri Lanka.

Under the topic of "Illegal Narcotics Trafficking in Indian Ocean: Case study of Sri Lanka", this paper will look at drug trafficking in the Indian Ocean, the Southern Route; major drug trafficking route, Sri Lanka as a transit point, Sri Lanka as a consumer market, legal framework – International and National, darcotic drug trafficking in Sri Lanka, major challenges and recommendations to way forward.

The Indian Ocean, accounts for the one third of the World's Ocean area and cover 70,560,000 square kilometers and borders for 24 territories. The Indian Ocean is bounded by Asia to the North, Africa to the West, Australia to the East, Antarctica to the South.

Due to the strategic location, formerly known as " The Pearl of the Indian Ocean", Sri Lanka has been played a pivotal role in the Indian Ocean as a naval, commercial, aviation, energy and knowledge Hub since in the beginning of the history serving as a key link between East and West and has been attracted as economic centre of the World.

On the other hand, being one of the most strategically prominent states and situated in a strategic location in the Indian Ocean Regions, Sri Lanka has been attracted by the Drug Trafficking Organizations for their illicit activities.

It has been identified and reported drug trafficking activities in the Indian Ocean in international waters, territorial waters, coastal border (Onshore), seaports and the most prominent transportation modes are private and commercial vessels, container shipments, "Go-fast" vessels, semi-submersible vessels, boats, human couriers and as emerging trends it has been identified fully submersible narco-submarines purposefully built for drug smuggling which can transport tons of loads of illicit drugs in Atlantic Ocean.

Sri Lanka has been identified not only as a transit point for trafficking of Opiates, Amphetamine type stimulants and for cannabis, but also as a source country for Cannabis. Even though Sri Lanka has been identified as a transit country, current seizures and emerging drug trafficking trends reveal Sri Lanka has much larger consumer market than is commonly acknowledged where they get the supply leakage from the transit trade.

On consideration of the Legal framework with respect to International Conventions, Sri Lanka is signatory to 1988 United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances and have made necessary legislative provisions to the prevailing Acts. However, further measures are necessary in order to fulfill the requirements of this convention in certain aspects and to make amendments further considering the extent of the problem and the emerging threats. As at present, necessary actions have been taken by the NDDCB to make amendments in this regard.

In 1988 Convection Article 3 highlights importation, exportation, dispatch in transit and transports of any narcotic drug, psychotropic substances or a precursor chemical should be a criminal offence under domestic law. Article 4 gives provisions on jurisdiction over the offences when committed on board a vessel flying its flag and related. Article 17 provides provisions to give effect to corporative mechanisms to suppress illicit traffic by sea (including request and responses on confirmation of registry from flag state) and Article 18 provides provisions for measures to suppress illicit traffic of narcotic drugs and psychotropic substances at seaports.

On consideration of the legal framework of prevailing Acts, Poisons, Opium and Dangerous Drugs Ordinance (as amended) and by Section 69, 70, 71, 72, 77 and 79, address restrictions to carry through Sri Lanka or the territorial waters or any port of Sri Lanka, whether with or without transshipment or unshipment, or to bring into the territorial waters or any port of Sri Lanka any dangerous drug, conduct search and investigations, seizure and forfeiture.

Conventions against Illicit Traffic of Narcotic Drugs and Psychotropic Substances Act No. 01 of 2008 by its Section 2, 23 - 28 addresses the offences and punishments for importation, exportation, dispatch in transit and transport and provide legal framework and punishment for offences for those who arranges finances, possess any property, equipment any material related such offences, forfeiture, extradition arrangements and corporative measures on investigation and prosecution.

The proximity of Sri Lanka to three major drug producing and drug-trafficking countries (Afghanistan, the Lao People's Democratic Republic and Myanmar), expansion of illicit drug trafficking routes through maritime routes and increase of maritime drug trafficking activities across the India Ocean and utilization of highly sophisticated, scientific and technological advancements for drug trafficking activities and use of advance communication methods are major challenges faced by drug law enforcement agencies in combatting maritime drug trafficking.

Other challenges they encounter are lack of at-sea surveillance systems for monitoring of vessel movement and monitoring of suspicious activities and lack of transparency of identity of the beneficial ownership of fishing vessels and a records of fishing vessels' identity, ownerships, operators and history.

Drug trafficking in the fisheries industry is another major problem we face today in combatting drug trafficking. Fishers and fishing communities being deprived of their livelihoods, food source and socio-economic conditions, are vulnerable to recruitment into drug trafficking related criminal activities and this is another area which we need accelerated actions for collaborative measures with line ministries to defence, fisheries, public administration and local Governments.

Considering the significant increase and the complexity of the maritime drug trafficking, we emphasize the need for data collection mechanisms, intelligence analysis, threat and situation assessments and more importantly identification of more effective measurable indicators to assess the extent of the drug problem as clearly as possible.

Information on maritime drug trafficking patterns such as types of narcotic smuggling vessels, seasonal nature of trafficking, seizure locations (International waters, territorial waters, onshore, seaports) highlights the locations of importance for interdictions, shift in drop-off points such as landing points used by traffickers to evade law enforcement. For example, heroin traffickers moving drugs via dhows use traditional trading patterns, travelling during the calmer conditions experienced during the northeasterly monsoon, which covers November to April during which it is emphasized the need for accelerated interdictions by law enforcement agencies. Further, stamps on drug consignments have the potential to contain considerable amounts of information, providing detail on the manufacturer, location of production, quality indications, differentiation of criminal groups etc.

Moreover, use of scientific methodologies and equipment with advance technology such as drug detection test kits, narcotic trace detectors, use of trained drug detection dogs and establishment of canine detection units within law enforcement agencies and sea ports is of great importance in overcoming challenges.

Create increasing opportunities to interdict drugs and deterring smugglers, to assist officers in conducting examinations and examine passengers, luggage and commercial shipments, support to maritime drug seizure investigations with strengthening capacity of drug law enforcement officers on the subjects of identification of suspicious vessels, search techniques, maritime patrolling interdiction operations, drug identification, enforcement and prosecution, securing evidence, arresting and detaining suspected offenders, intelligence collections, analysis, collate and dissemination, threat assessments, protecting victims and human rights and review of training curricula of specialized training programmes is highly significant in effectively combating the threat of maritime drug trafficking.

As traffickers being far advanced in utilizing scientific advancements, it is inevitable collaborative mechanisms with scientific professionals in finding technology based innovative solutions and utilization of scientific evidence based practices to combat maritime drug trafficking for identification of narcotic drugs and psychotropic substances (Field test kits and trace detectors, laboratory investigations), identification of source of drugs, method of manufacture, distribution patterns, connection between drug trafficking organizations using chemical profiling and signature testing. This slide shows examples of how the scientific analytical methods have been used in identification of drug sources internationally and in Sri Lanka by the National Narcotics Laboratory of the NDDCB.

Lack of inter- and intra- agency coordination and collaboration among law enforcement agencies and officers are another major drawback we face in combatting drug trafficking in the country and in the Indian Ocean Region. As no country or agency in isolation, cannot tackle the drug problem, we propose accelerated actions for strengthening coordination of law enforcement officers and other related agencies and with Indian Ocean countries with respect to conduct intelligence-led joint investigations, implement joint coastal border control measures, promote and strengthen exchange of

information and drug-related intelligence in timely manner among drug law enforcement agencies, strengthen coordination and cooperation with SAARC and Indian ocean countries for joint investigations, sharing of information and best practices.

With the objective of achieving “a secure country free from drug abuse” in accordance to the policy frame work of the Government “Vistas of Prosperity and Splendour”, We would like to reiterate that, we are committed with the active engagement of all related agencies to tackle the problem of drug trafficking and abuse in the country effectively, including maritime drug trafficking with increased National and International coordination and cooperation.

SESSION -2

RECOGNIZING SUSTAINABILITY FOR HEALTHY MEDICAL DISCOURSE

BIOGRAPHY

Amb. Bernard Goonetilleke - Moderator

Chairman, Pathfinder Foundation and Former Secretary to Ministry of Foreign Affairs

A graduate in History and post graduate in International Relations (The Hague), Bernard Goonetilleke spent nearly four decades as an officer of the Sri Lanka Foreign Service. Following his retirement, he was appointed chairman of Sri Lanka Institute of Tourism and Hotel Management (SLITHM) and later Chairman of Sri Lanka Tourism Development Authority (SLTDA) and Sri Lanka Tourism Promotion Bureau (SLTPB), which positions he held concurrently from 2008 to 2010.

His career as a Foreign Service officer began in 1970 and included postings to Sri Lanka diplomatic missions in Kuala Lumpur, New York, Bangkok, Washington D.C., Geneva and Beijing. He held several positions in the Ministry of Foreign Affairs including the post of Director General (Multilateral Affairs) from 1997-2000, and ending as Secretary, Ministry of Foreign Affairs (2003-2004). During his career, he served as Permanent Representative of Sri Lanka to the UN in Geneva (1992-1997), during which period he was concurrently accredited to the Holy See and as Permanent Representative of Sri Lanka to the United Nations in Vienna. Later he served as Sri Lanka's Ambassador to the People's Republic of China (2000-2003), during which assignment he was concurrently accredited as Ambassador to the People's Republic of Mongolia and the Democratic People's Republic of Korea. He also served as Acting Permanent Representative of Sri Lanka to the UN in New York (2004-2005) and ended his diplomatic career as Ambassador to the United States of America (2005-2008).

Following the signing of the Ceasefire Agreement between the Government and the Liberation Tigers of the Tamil Eelam (LTTE) in 2002, he headed the Secretariat for Coordinating the Peace Process (SCOPP) and functioned as one of the four members of the government negotiating team with the LTTE. Since May 2010, he functions as Chairman, Pathfinder Foundation, which has forged relationship with a large number of think tanks and educational institutions in Australia, China, India, Iran, Singapore, Russian Federation & the USA etc. He also functions as Director of several companies associated with the MMBL-pathfinder Group of Companies.

BIOGRAPHY

Major General Sumedha Perera WWV RWP RSP USP ndu
Secretary, Ministry of Agriculture

Major General Sumedha Perera WWV RWP RSP USP ndu is a distinguished officer of the prestigious Gajaba Regiment of the Sri Lanka Army. Having completed the basic officer cadet training at Officer Training School Madras, India and Sri Lanka Military Academy, he was first posted to the Rajarata Rifles Regiment in the year 1981 and subsequently posted to the Gajaba Regiment in 1983 as one of the pioneers and founding members of the Gajaba Regiment.

Major General Sumedha Perera actively participated in almost all the military operations conducted against LTTE since Operation Vadamarachchi and was an active commander who led the men in the battlefront. He is one amongst few in all three services who has been decorated with highest number of gallantry awards.

He was awarded Weera Wickrama Vibhushanaya (WWV) one clap, Rana Wickrama Padakkama (RWP) with two claps, Rana Sura Padakkama (RSP) with three claps, rewarded for individual acts of gallantry and conspicuous bravery of a high order in the face of the enemy. He was injured in the battlefield in 1984 and honoured with Desha Puthra Medal too.

Major General Sumedha Perera was one of the pioneers of the Air Mobile Brigade of the Sri Lanka Army and Commanded the 1st battalion of the Gajaba Regiment. He has commanded the 533 Infantry Brigade during the highly intensive battles fought against LTTE. He was the Commandant of Army Training School and Infantry Training School and has also held the appointments of Military Spokesman of Ministry of Defense and the Director Media at Army Headquarters.

Major General Sumedha Perera had the opportunity of broadening the horizon of military knowledge having followed number of military courses and seminars. Junior Command Course, Senior Command Course, Parachute Course in India, Mid-Career Course in Pakistan and Disaster Management Seminar - Pacific Command in 2000 were few amongst them.

During his illustrated career, he has held many staff appointments at different levels at many military formations in the Army. Adjutant - Kothalawala Defence University, Colonel General Staff of Overall Operational Command - Colombo, Officer Commanding 22 Division, Centre Commandant Gajaba Regiment, Security Force Commander Wanni, Regimental Commander of the prestigious Gajaba Regiment and Special Forces Regiment were few in his carrier ladder.

Upon the successful completion of the Defense and Strategic Studies Course at the National Defense University in Beijing, China he was appointed as Security Force Commander West, Director General Staff Army Head Quarters and Security Force Commander Central Province before finally being appointed as the Deputy Chief of Staff of the Sri Lanka Army which is the third highest most appointment in Sri Lanka Army.

Post retirement he was also appointed as the Co-Chairman of the Presidential Task Force for Poverty Eradication and Livelihood Development and served as a member of Presidential Task Force for Prevention of COVID-19 virus among Tri-Services.

With his vast knowledge in agriculture since 1990, after his retirement from Sri Lanka Army he was appointed as the Secretary to the Ministry of Mahaweli, Agriculture, Irrigation and Rural Development in May 2020.

Major General Sumedha Perera is currently serving as the Secretary to the Ministry of Agriculture.

SUSTAINABLE AGRO-BASED PRODUCTION ORIENTED ECONOMY

Major General Sumedha Perera WWV RWP RSP USP ndu
Secretary, Ministry of Agriculture

Food security is of paramount importance to a nation and the post-COVID 19 era will prove this more than any other time in the history of Sri Lanka. *"Our agricultural policy would be to promote an agricultural sector in which small producers using small extents of land producing high quality outputs using modern technological methods"*[1] Preceding statement from the manifesto of His Excellency Gotabaya Rajapaksa, *"Vistas of Prosperity and Splendor",* written well before the COVID-19 pandemic struck the world, epitomizes the emphasis given to introduce modern technologies to develop agriculture in the country with special emphasis on small producers that comprise of the vast majority of the farming community in the country. Post-COVID 19 era challenges to build up an agro-based, domestic economy that encompasses the least dependency on food imports and this itself triggers the need to introduce methodologies to enhance productivity in agriculture sector. Over the years, contribution of agriculture sector to the Gross Domestic Product has been on a decline and it recorded a mere 7% in 2019[2] compared to 35% in 1969[3], 50 years ago. Productivity increment in the sector has been stagnant or recorded a meagre improvement in the past several decades, leaving a major challenge to all stakeholders in the sphere of agricultural development in the country to take meaningful efforts to increase it in the short term to make a significant contribution to the Gross Domestic Product.

Introduction

Sri Lanka as a small island with a landmass of 65,610 square kilometers does not have the luxury of establishing large-scale farming or livestock operations in the country. According to the agricultural land survey conducted by the Department of Census and Statistics, 45% of landholdings are less than ¼ acre (0.1 Ha) and the 55% that own lands above ¼ acre (0.1 Ha) have less than 2-acre (0.8 Ha) plots at an average[4]. Therefore, Sri Lanka, as a developing nation, facing concerns about food security amidst growing population, substantial postharvest losses and regular adverse weather shocks, has to adopt efficient and smart agricultural practices to enhance productivity per unit area of land. Countries such as Israel and the Netherlands with small landmasses have proved that the application and adoption of modern technological advancements in the sphere of agriculture could increase agricultural productivity in the short term.

Vision – A vibrant and dynamic Agricultural sector for food security and National Prosperity

[1] Rajapaksa, H. E. Gotabaya, "Vistas of Prosperity and Splendor"-2019, 38
[2] Central Bank of Sri Lanka, "Annual Report" – 2019, 56
[3] Central Bank of Ceylon, "Annual Report" – 1969, 21
[4] Department of Census and Statistics, Census of Agriculture 2002

Mission - To achieve globally competitive production processing and marketing enterprises with socially acceptable innovative and commercially oriented agriculture through sustainable management of natural resources of the country

Initiatives taken by the Ministry

The Ministry of Agriculture, being the prime stakeholder and the driving force behind agricultural development has taken the lead in the drive to create a sustainable, agro-based production-oriented economy in the country and towards this end, the Ministry has taken several initiatives in the past few months.

- **Establishing better coordination between the farming community and the field level agricultural officers –** A major restructuring program is underway in the Ministry to this effect and a direct link will be established between the farming community and the decision-making bodies of the institutions under the Ministry of Agriculture.

- **Empowering Agrarian Service Centers (ASCs) –** 562 ASCs in the country will be developed as key focal points in village level agricultural activities and operations. While the officials attached to these centers will disseminate modern technologies to the farming community, the centers themselves will be converted to one-stop-shops and as knowledge hubs from which farmers can obtain all necessary inputs and services.

  ASCs will be provided with agricultural equipment and implements including what is needed for precision agriculture that could be hired by the farmers. This will reduce the cost of production of crops as farmers would be able to use modern technologies at a very low cost.

- **Staff Training –** With the view of upgrading the skills of Agricultural Instructors, Divisional Officers and Agricultural Research and Productivity Assistants, the Ministry has arranged several training programs and already one hundred Agricultural Instructors have been trained in modern agricultural technologies. This is a completely new program to upgrade the skills of agricultural officers in advance technologies including Artificial Intelligence (AI), Internet of Things (IoT) and precision Agriculture.

  All staff promotions in the future will be based on performance of individual officers and upgrading their skills would be the first step of this performance-based promotion mechanism.

- **Projects assisted by International Agencies** – The Ministry is currently implementing a number of special projects with the assistance of international agencies such as the World Bank, European Union, International Fund for Agricultural Development (IFAD) etc.

  - Under the World Bank assisted Component II of the Agriculture Sector Modernization Project, a sum of Rupees 10.8 Billion has been allocated for special projects in twelve districts and 48 farmer clusters have already been established under this project.

- A further sum of Rupees 461 million has been allocated under a grant from the European Union for projects to be implemented in five more districts.
- Climate Smart Irrigated Agriculture Project funded by the World Bank is expected to implement projects worth of Rupees 23.5 Billion in the next five years.
- IFAD funded Smallholder Agricultural Partnership Program is working with a budget of Rs. 17 billion on a unique program where farmer clusters, private organizations and the project jointly establish agricultural programs for the development of the sector.

- **Agricultural Information Management System (AIMS) –** Ministry is currently developing a cloud-based AIMS with many progressive objectives.[5] Following are some of the salient objectives *inter alia.*

  - Identification of farm lands and cultivators according to the geographical location
  - Selection of crops according to suitability of agro-ecological zones and pattern of land use
  - Predicting the expected yield
  - Identify negative and surplus products at the national level
  - Setting the stage for national level decisions related to imports and exports
  - Regularization of agricultural production distribution mechanism (Trading Hub)
  - Providing background for the officers involved in the field of agriculture to work through digital technologies.
  - Facilitate access to all services required by farmers quickly and easily
  - Establishment of a Unified Data Exchange Platform for all Public and Private Institutions in the field of Agriculture (Single Data Transfering Platform)

  Given the limited resources available for agriculture production and the rising demand for agriculture products, precision or smart agriculture techniques are of paramount importance for application of precise amount of agriculture inputs to crops by observing, gauging and responding to inter-field and intra-field variability in field conditions through the usage of a range of modern information and telecommunication technologies. Therefore, AIMS will integrate modern technologies and current farming practices to increase the output and the quality of agricultural produce.

- **Introduction of a Sound Policy for Fertilizer Import, Production, Distribution and Usage –** Using the facilities of AIMS, it will be possible to introduce site and crop specific fertilizer recommendation to the farmers and the aim of the Ministry is to encourage farmers to use modern 2nd and 3rd generation fertilizers instead of outdated 1st generation fertilizers. These will include slow release, controlled release and compound fertilizers. Ministry will promote manufacturing of organic fertilizers and all efforts will be made to popularize the same, especially among organic farming operations while high emphasis will be given to promote organic farming activities.

[5] Ministry of Agriculture - Cloud-based Agricultural Information Management System Project Document

- **Revising Legislative Acts under the purview of the Ministry -** The Ministry expects to revise a number of Acts under the purview of the Ministry, viz ; Seed Act, Soil conservation Act, Plant Protection Act, Agrarian Services Act and Pesticide Control Act to suit the modern agricultural requirements and to make them more conducive to introduction of new farming technologies to the country.

- **Promotion of Judicious Use of Agrochemicals –** Sri Lanka ranks high amongst the countries overusing agrochemicals and this situation has become a major health hazard while limiting the export potential of our agricultural produce due to high residue levels. Ministry has taken the initiative to educate the farmers through the staff attached to ASCs and also in the process of introducing precision agricultural techniques to reduce the usage of agrochemicals.

- **Introduction of Modern Irrigation Technologies –** Micro irrigation technologies such as drip irrigation and sprinkler irrigation along with fertigation will be introduced to enhance productivity and also to preserve scarce water resources by reducing water usage per unit area of land.

- **Post-harvest Technologies –** Sri Lanka has one of the highest post-harvest losses in the fruit and vegetable sector in the region running up to 35-40%. Appropriate preservation, processing and transport systems are being introduced to reduce post-harvest losses in the short term. Cold storage facilities along with a cold chain that would cover the entire island with 100 Cold Storage Units will be introduced for safe storage of produce to meet the demand during lean periods of supply.

  Technical knowledge and appropriate services will be provided through ASCs for processing of excess produce during gluts created by over-production.

- **Local Production of Field Crops –** Priority is already given to promote local production of all field crops that can be grown in the country either by regulating or banning imports of such crops. Sixteen (16) crops have been identified to be grown in the country to replace imports and these include chili, cowpea, green-gram, black gram, peanuts, maize, turmeric and potato among others.

- **Establishment of Commercial Agricultural Projects –** Ministry is in the process of identifying suitable lands from the state sector, especially the plantation sector for medium and large scale commercial agricultural ventures that would be established by the private sector. Once suitable lands are identified a Land Bank will be created for the benefit of the agri-entrepreneurs who can get their land requirements fulfilled. Technical support for such ventures will be made available through the Department of Agriculture and other institutions under the Ministry.

Conclusion

The vision of the Government of His Excellency the President clearly identifies agriculture sector as the priority area for development as food security is given the utmost importance in his manifesto "Vistas of Prosperity and Splendor". Achieving self-sufficiency in as many food items as possible within a short time span is the prime objective of the Ministry of Agriculture and introducing appropriate technologies and mechanisms to achieve this objective is the responsibility of the Ministry and its affiliated institutions. I as the Secretary of the Ministry of Agriculture along with my team of officials and blessings of the Hon Minister and State Ministers will ensure the objectives of the Government are achieved in the shortest period of time.

BIOGRAPHY

Dr. Dilhani Samarasekara
Consultant Community Physician, Quarantine Unit, Ministry of Health

Dr. Dilhani Samarasekera is a board-certified Consultant in Community Medicine since 2010 and currently affiliated to Quarantine Unit of Ministry of Health. Completing her basic medical degree from Faculty of Medicine, University of Colombo in 1998, she has started her carrier in Public Health with the enrollment to do MSc in Community Medicine in 2002 at Post Graduate Institute of Medicine (PGIM), University of Colombo. She has obtained MSc in Community Medicine in 2003 and MD in Community Medicine in 2009 from PGIM, University of Colombo.

IMPACT OF PREVENTIVE MEDICINE ON HEALTH AND NATIONAL SECURITY

Dr. Dilhani Samarasekara
Consultant Community Physician, Quarantine Unit, Ministry of Health

Health is a state of complete physical, Mental and social and spiritual wellbeing and not merely the absence of disease or infirmity (World Health Organizations).

Preventive Medicine aims to prevent the occurrence of a diseases and averting resulting complications after its onset. The objective of preventive medicine is to intercept or oppose the cause and thereby the disease process. There are several levels of prevention. In the modern day, the concept of prevention has become broad based. It has become customary to define prevention in terms of four levels: Primodial Prevention, Primary Prevention, Secondary Prevention and Tertiary Prevention.

Primordial Prevention

Primordial Prevention is the prevention of the emergence or development of risk factors in countries or population groups in which they have not yet appeared. If the country is in a risk of getting cardiovascular diseases more, the lifestyles should be changed from the beginning before the emergence or development of risk factors. Obesity leads to cardiovascular diseases. From the childhood, children can do their exercises and eating patterns can be changed. In primordial prevention, efforts are directed towards discouraging children from adopting harmful lifestyles. The main intervention in primordial prevention is through individual and mass education.

Primary prevention requires modifying existing risk factors to prevent the development of diseases. Action taken prior to the onset of diseases, removes the possibility that a disease will occur. This could be a population strategy or a high-risk strategy. As an example, a small reduction in the average blood pressure or serum cholesterol of the population would produce a large reduction in the incidence of cardiovascular disease. High risk strategy aims to bring preventive care to the individuals at special risk.

Secondary prevention

Secondary prevention is actions which halts the progress of a diseases at its incipient stage and prevents complications. The specific interventions are early diagnosis e.g. screening tests, case finding programs and adequate treatment. By early diagnosis and adequate treatment, secondary prevention attempts to arrest the disease process; restore health by seeking out unrecognized disease and treating it before irreversible pathological changes have taken place; and reverse communicability of infectious diseases.

The secondary prevention may also protect others in the community form acquiring the infection and thus provide at once secondary prevention for the infected individuals and primary prevention for their potentials contacts.

Secondary prevention is largely the domain of clinical medicine. Secondary prevention is an imperfect tool in the control of transmission of disease. It is often more expensive and less effective than primary prevention. In the long run, human health, happiness and useful longevity will be achieved at far less expense with less suffering through primary prevention than through secondary prevention.

Tertiary Prevention

Tertiary prevention can be defined as all measures available to reduce or limit impairments and disabilities, minimize suffering caused by existing departure from good health and to promote the patient's adjustments to irremediable conditions. In summery the ideology behind the preventive medicine focuses on protecting, promoting and maintaining health and wellbeing.

It also aims to avert disease, Disability and death on an individual basis as well as on a larger scale in communities and populations.

National Security

National security has been described as the ability of a state to cater for the protection and the defence of its citizenry. In the past, health has occupied the lower levels of national priorities. Over the past decade however national policy-makers have increasingly recognized the deleterious impacts that health crises have on national interests. Particular health issues have been elevated with in national agendas especially if they have implications for foreign policy and or they are perceived as threats to national security.

Occurrence of pathogenic, biological foodborne illnesses, chemical or radiological hazards are threats to national and human security. Border health security aims to limit and respond to the international spread of disease and other public health threats including the health and wellbeing of the international travelers, aircraft and ship crew and the general public. Health risks do not recognize country borders. According to the international health regulations 2005 of World Health Organization and quarantine and disease prevention ordinance of Sri Lanka (No.03 of 1897), it is important to prevent incoming health threats to Sri Lanka and to prevent spread of disease internationally. We must follow the aims of International Health Regulations (2005) which is to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic. Prevention is better than cure.

International Health Regulations (IHR) 2005 consist of 66 articles. IHR are formal code of conduct which helps countries working together to save lives and livelihoods caused by the international spread of diseases and other health risks. IHR aims to ensure maximum public health while maintaining interference with international transport and trade.

Co National Focal points of IHR (2005) in Sri Lanka are Quarantine Unit and Epidemiology Unit of Ministry of Health. As per the IHR-2005, country should implement 19 capacity areas and they are as follows.

1. National legislation. Policy and financing,
2. IHR coordination, communication and advocacy
3. Antimicrobial resistance
4. Zoonotic Disease
5. Food safety
6. Biosafety and biosecurity
7. Immunization
8. National laboratory system
9. Real-time surveillance
10. Reporting
11. Workforces development
12. Preparedness
13. Emergency response operations;
14. Linking public health security authorities
15. Medical countermeasures and personnel development
16. Risk communication
17. Points of entry
18. Chemical events
19. Radiation emergence

In 2017 via the joint external evaluation, we assessed our basline evaluation as a measure of prevention any problem in the future. Gaps were identified and the National Action Plan was prepared from 2019-2023.

Many stake holders are involved in implementing of IHR-2005 in addition to ministry of health including Ministry of Defence. Tri forces have joined hands with health sectors during the calamitous situations of the country such as during floods, earth slips, collapse of Meethotamulla garbage dump, Easter bombing in 2019 and combat against COVID 19 in Sri Lanka. CBRN training was conducted in 2019 before COVID-19.

During the mission to evacuate students from Wuhan the Airforce, army staff of quarantine unit and Mattala Rajapaksa international (MRIA) airport health office Sri Lanka airlines, AASL, other stakeholders prepared guideline including protective measures to be taken by crew passengers and flight cleaning and given to Sri Lankan airline and SLAF. Emergency drills were conducted in the ports. Tri forces were involved in Contact tracing and Quarantine, maintaining law and order during and beyond lockdown and assisting communities during lockdown.

PoE operations such as thermal monitoring, thermal imaging cameras, IR thermometers, disinfection, passenger handling, seafarer crew exchange were some of the preventive measure taken. On the 21st April special repatriation programs of Sri Lanka returnees was initiated.

Health is wealth and preventive medicine goes in line with health security and national security. If preventive measures are not adopted, health of the community will get affected including security personnel and this will be a threat to national security of a country. Healthy nation leads to national security. Thus, A mask is better than a ventilator, Home is better than ICU. Prevention is better than cure.

BIOGRAPHY

Dr. Lal Panapitiya

Deputy Director General Medical Services, Ministry of Health

Panapitiyage Wijayalal Chandrasiri Panapitiya is the Deputy Director General (Medical Service) Ministry of Health. He is a Consultant in Medical Administration. He was the former Acting Deputy Director General (Medical Supplies), Director (Medical Supplies), Director (Medical Services) and Director (Non communicable Disease Prevention). He obtained his MBBS from University of Colombo. He holds a MSc in Medical Administration from Post Graduate Institute of Medicine, University of Colombo, MD in Medical Administration from the Post Graduate Institute of Medicine, Colombo. He was appointed as the Consultant in Medical Administration in July 2011. Dr.Lal panapitiya has a Twenty eight year experience in broad range of fields in health service in health management , Medicine, Medical Administration and Health/ Medicine Procurement in Sri Lanka including prevention and control of communicable and non-communicable diseases, health education and promotion, health planning and management, project management and program management, human resource management as well as health care management in all level of care; primary, secondary and tertiary including hospital administration. He pioneered in many new innovative areas in Ministry of Health with achievements. He also holds membership in various professional bodies**.**

IMPACT OF CURATIVE MEDICINE ON HEALTH AND NATIONAL SECURITY

Dr. Lal Panapitiya
Deputy Director General Medical Services, Ministry of Health

Every nation strives to protect its core values aimed at enabling people to lead their lives in free and secured environment according to their culture with common belief by preserving their national identity and sovereignty.

National security or national defense is the security and defense of a nation and state, including its citizens, economy and institutions. This is regarded as a duty of the government. National security is an umbrella under which core values of people are well protected through application of well-planned national security strategy.

National security was previously considered as protection against military attack from outside or inside by terrorism. Now there is a non-military dimension, which includes Physical and border security, Personal security, Social Security, Economic Security, Energy and natural resources security, Environment security, Food security, Cyber and information security, Political security and Health security. Most importantly, good political direction is needed for safeguarding all these dimensions of national security.

When considering Human Security All dimensions of national security affect human security and vise versa. Human security is directly influenced by health and health security and vise versa. There are many components such as man-made or natural disasters, Diseases and drugs that pose threats to human security.

Contributions of health services for maintenance of national security

- Food and environmental security- Different explicit acts and policies as well as procedures implemented through preventive network (MOH, PHI, Food and Drug Inspectors) fall under measures taken. Availability of adequate natural resources is important for a nation to develop its industry and economic power. Also, disaster (natural or manmade) is another major area to be highly considered.

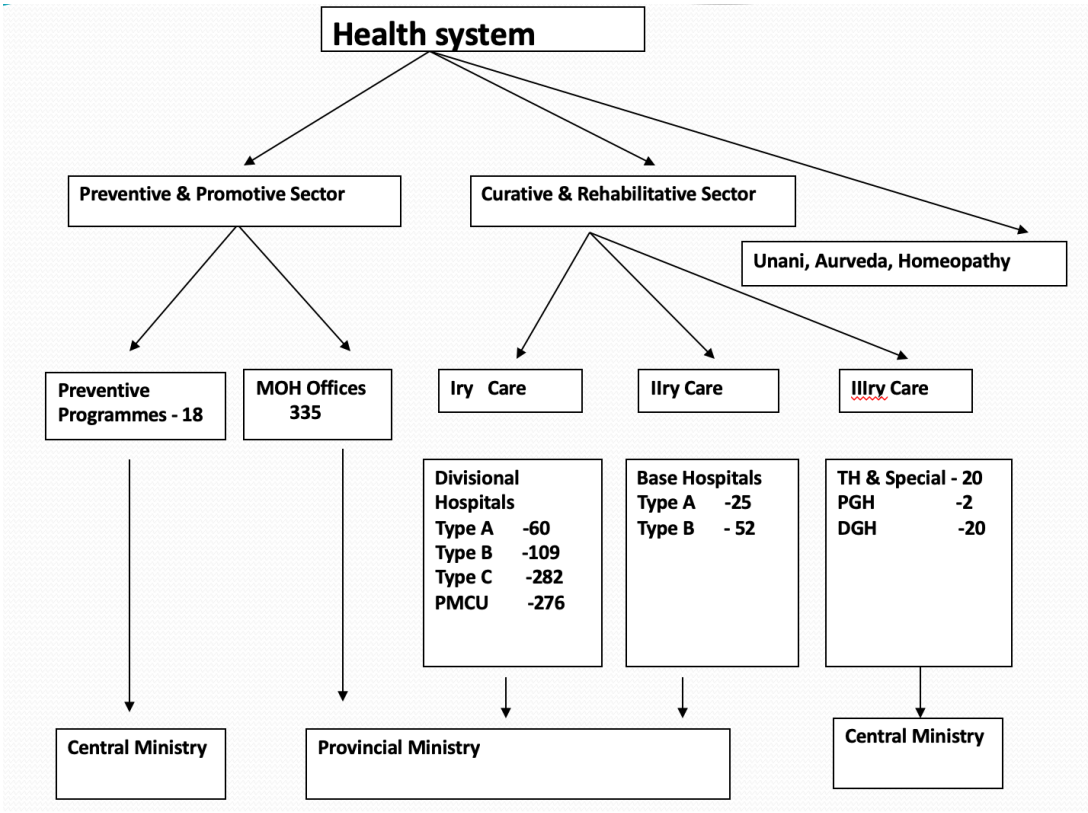
- Social Security- Maintaining good public health through public health programs and preventive network: Quarantine measures, Migration and visitors screening, Combating communicable & Non-communicable diseases, Public awareness, capacity building of staff and infrastructure improvement for preparedness for future health threats are important.

- Economic security- the ability of a state to maintain and develop the national economy, without which other dimensions of national security cannot be managed. A healthy, productive workforce in a safe environment contribute for national development. Minimizing cost of health care and medicine will create a long-lasting impact. Manufacture of medicine locally should be incentivized.

Poverty, Illiteracy, Unemployment, Violence, Pandemics, Environmental degradation, Lack of access to drink water, Natural or and man-made disasters, deterioration of Maternal and child health and Lack of road safety pose challenges to health security.

All the dimensions of national security are interconnected all affect health/ human security and vice versa. Health is defined as physical, mental, social and spiritual wellbeing of person/citizens. Delivery of health services in all aspects of health; promotive, preventive, curative and rehabilitative depends on provision of infrastructure and equipment, man power, medicine as per the directions of health policies, procedures, systems and structure. Improving, maintaining and monitoring the health of public is the prime responsibility of health services.

Providing healthy productive workforce and healthy armed force contributing to the development of the country, continuous surveillance on public health concerns & detection, strengthening laboratory capacity for Rapid lab diagnosis, Epidemiological investigations, implementation of control measures to combat Communicable & Non Communicable Diseases, capacity building of staff, public awareness measures, Intersectoral coordination and preparedness of health service and infrastructure improvement for disasters and issues fall under contribution from health services.



Health system aims for Promotion, Prevention and early detection of disease (communicable or non-communicable), prompt, clinically sound standard actions for cure, Improving health quality of the people hence the productivity. Preventing complications minimize opportunities cost and long term follow up mostly with expensive long-term treatment is needed.

The 4 arms of the health system include Promotive arm (health education and awareness etc.), Preventive arm through preventive health network (immunization, screening , early detection etc) and Curative and rehabilitative arm through curative care hospital network.

Health Services delivery has achieved the following.

- **Availability, Accessibility and Coverage t**hrough a plexus of institutions (curative institution network and preventive institution network) connected by good transport road network in which there is a hospital within every 5 km radius of any household. All are opened 24 hours x 365 days. There are 81580 total hospital beds and hospital beds per 1000 population ratios is at 3.8.
- **Affordability** via policies of free health and free medicine, price controlling to be implemented specially for the benefit of private sector patients
- **Quality** by implementing protocols, checklists and standard treatment guidelines, essential drug list as well as strict medicine registration procedures etc.

Health security is ensured through a holistic and life course approach From MCH (Maternal & Child Health) care to Geriatric care, Prevention of communicable disease in childhood by immunization, Monitoring of nutrition by child growth Monitoring as well as food supplementation, Screening and early detection through preventive programs and Standard Emergency care and providing curative care.

Ensuring health security includes Managing Quality and safety assured, technologically effective, patient centered, equitable and efficient health care service, achieving coverage, availability, accessibility, affordability and quality through coordination of many categories of staff, many specialties and number of trade unions.

Provision of health services is a team work of the Health sector, Political sector, Armed forces, Business sector, Education sector, Social Service, Environment, Agriculture and Media. COVID 19 pandemic can be considered as a good example for the results of a team work.

In order to ensure health security, assistance is needed from National Security. Border island protection from illegal migrants and migrant workers, prevention of drug trafficking and bringing of substandard & falsified medicine, contribution for environmental protection, disaster and control activities, protection for health staff, information exchange on health threats, disasters and control activities through intelligence bureau, assistance for environmental and eco protection, guidance for safe technologies and advocacy are needed from all respective, responsible sectors. Neither health nor security can be alienated.

There are various challenges the health domain undergoes. Some are Intersectoral coordination, preparedness plan and programs in place, decision making on data-Strengthening and updating Surveillance system to monitor, insufficient resources, organizing of existing assets (personnel and material), improving health infrastructure and early identification. These should be paid attention, as these make health security fragile.

SESSION -3

ECO-RESPONSIBILITY TOWARDS A GREENER TOMORROW

BIOGRAPHY

Dr. Maneesha S. Wanasinghe-Pasqual - Moderator

Head, Department of International Relations, Faculty of Arts, University of Colombo

Dr. Maneesha S. Wanasinghe-Pasqual is the Head of the Department of International Relations, University of Colombo, Sri Lanka. She is a Junior Fulbright scholar with a Masters from Joan B. Kroc Institute, the University of Notre Dame, USA and a Doctorate from SCAR, George Mason University, USA.

Specializing in Conflict Analysis and Human Security, she has published numerous books and articles. Her current research focuses on "Ensuring Food Security in Times of War", "Caregivers and the Disabled in Sri Lanka", "The Nation's Role in Child Protection: the NCPA", "Peacekeeping and Sri Lanka", "Child Rights in Sri Lanka" along with "Lakshman Kadirgamar"; thereby highlighting the eclectic and the voracious nature of her interests.

Dr. Wanasinghe-Pasqual is a Deputy Director, Cyber 'Campus' of the University of Colombo. She has worked with national level organizations and has conducted research and evaluations in international organizations.

BIOGRAPHY

Dr. Terney Pradeep

General Manager, Marine Environment Protection Authority

Dr. P.B. Terney Pradeep Kumara holds B.Sc. 2nd Class Hons (Zoology special), from University of Ruhuna, Sri Lanka and Ph.D. in Coral Ecology, University of Kalmar, Sweden.

He was the Head of the Department of Oceanography and Marine Geology, for seven years and actively engaged in marine and coastal ecological knowledge dissemination, management, research, local and international assignments and consultancies for more than 21 yrs.

He has already published 80 international and local abstracts, 20 research publications with the contribution to more than 10 book chapters.

Also he is a UNEP Expert Advisory Group Member for the Marine Litter and Microplastics and also an active member in the preparation of Marine Litter Management Plan for South Asian Seas (SAS) region.

He is a visiting lecturer for University of Kelaniya, Peradeniya, Colombo, Post Graduate Institute of Science (PGIS) Peradeniya, Moratuwa, Ocean University, National Institute of Occupational Safety and Health (NOISH) and University of Nha Trang, Vietnam.

Dr. Terney has taken part in number of environmental assessment studies including BoBLME, WOTRO, CIDA, SIDA, ADB, GEF, APN, CORDIO, Total and IUCN funded projects contributing as the team Leader or marine ecosystem specialist capacity.

He is a PADI certified diver at Dive Master level participated in scientific diving expeditions in India, the Maldives, Kenya, Tanzania, Indonesia, Australia, China, Sweden, Vietnam, Mauritius and Japan and an Underwater Photographer with immense experience in exploring reefs and evaluating and managing coastal and marine ecosystems in most parts of Sri Lanka and Indian Ocean territories.

His major contributions are Impacts of bottom trawling on habitats and biodiversity in the Palk Bay, Diversity and distribution of marine angiosperms in Puttlam lagoon, Biophysical monitoring of Pigeon Island Coral Ecosystem, Capacity development in Marine Science, Tsunami influence and ecosystem restoration, Assessments of the ecological and socio-economic status of the proposed Gulf of Mannar biosphere reserve and 'Re-incorporating the excluded: Providing space for small-scale fishers in the sustainable development of fisheries of South Africa and South Asia. Further, he has undertaken marine ecological surveys in studies such as Assessing cetacean populations and important cetacean habitats in Bay of Bengal large marine ecosystem, Ecological profiling and recommendations for the management of Pigeon Island Marine sanctuary and marine invasive alien species. At present he is instrumental in policy development and onsite action and awareness campaigns on coastal and marine pollution control and Blue Economy growth in Sri Lanka.

Dr Terney Pradeep Kumara is a recipient for 'Science Popularization Award (English medium) 2005' awarded by Sri Lanka Association for the Advancement of Science (SLAAS) at 61st SLASS annual sessions and 'Ruhuna University vice chancellor's award for the most outstanding young scholar of the year 2006' for his outstanding personal achievements and the service rendered to the University of Ruhuna.

Dr. Terney is currently working as the General Manager, Marine Environment Protection Authority, Ministry of Urban Development, Coast Conservation, Waste Disposal and Public Sanitation and a Senior Lecturer to the Department of Oceanography and Marine Geology, University of Ruhuna.

MARITIME ENVIRONMENT PROTECTION AND POLLUTION

Dr. Terney Pradeep Kumar
General Manager, Marine Environment Protection Authority (MEPA)

Maritime environment is defined as '*a union and interaction between oceans, seas, bays, estuaries and other major water bodies, with the atmosphere and the land seaward of the mean high watermark*'. It encompasses the sea, maritime environment, ocean floor and the near the coastal belt. Sri Lanka's maritime area is eight times larger, encompassing its territorial waters and the contiguous zone up to the Exclusive Economic Zone (EEZ) and 300 meters from the landward side as the coastal zone which will in the future be extended in few decades time under the ocean deliberation project. The depth around Sri Lankan waters is around 3000m of which the water column and its resources, fish from the bottom, sub-bottom, gas, minerals and oil deposits belongs to the country and therefore should have a plan on utilizing these resources for the benefits in the future. Sri Lanka's agriculture is governed by the monsoons controlled by the sea, thereby the ocean bears importance to the country.

In the context, Sri Lanka should focus on using the ocean sustainably and efficiently with the concept of blue economy. Defined as "Sustainable use of ocean resources for economic growth, improved livelihoods and jobs, while preserving the health of ocean ecosystems" by the World Bank, which focuses mainly on; ocean for food, ocean for Energy, ocean for Transportation, ocean for Mineral, ocean for Water, ocean for Leisure and ocean for Health.

Population expansion is a severe challenge faced globally with an anticipated growth of up to 9 billion people by 2050, while the population was 7.2 billion in 2014. In order to nourish another 2 billion people in 2050, food production must rise by 60%. The supply of land-based food will be limited, therefore exploring the oceans stringently will be a viable option. Thereby ensuring that a better marine environment for the future of Sri Lanka is crucial.

Ending illegal fishing is a major challenge faced, in which Dynamite fishing takes a prominent place destroying fish, eggs and marine habitat; is banned by section 27(1) (a) of the Fisheries Aquatic Resources Act No. 4 (2004). Dynamiting can be considered as bombing a kindergarten, as the future of marine environment is destroyed. Prohibited fishing gear is also banned from use or carry within territorial waters of Sri Lanka under fishing operation regulations of 1996 and gazette extraordinary no. 948/25 and 1996/11/07 Section 2b; which include push net fishing, harpooning for marine animals, moxy net fishing, gill net or trammel net fishing on coral reefs or rocks and monofilament nets under gazette extraordinary 1454/33 and 2006/07/21.

Charismatic animals can be attraction and major tourism booster which unfortunately are killed in Sri Lanka; an endangered hump-head wrasse killed by a tourist center in Unawatuna has gone viral on social media. Sri Lanka has protected 6 fish species under gazette extraordinary no 948/25 and 1996/11.07 section 29;

- Whales
- Dolphins
- Dugongs
- Turtles
- Sharks
- Tomato grouper

No person shall catch, land, transport, sell, buy, receive or have in his possession such species of prohibit fish or other aquatic resources as may be prescribed. Foresaid animals have been conserved, even Orcas. According to gazette extraordinary no 948/25 and 1996/11.07 section 2a, 'no person shall catch, land, transport, sell, buy, receive or have in possession any marine mammals or turtles.' There are 7 turtle species in the world and Sri Lanka is home to five of them. Illegal fishing causes detriment to these species, specially turtles of whose egg and meat are harvested and sold in the southern parts of Sri Lanka. Species of sharks such as thresher shark, oceanic white tip shark and whale shark also conserved even though have been beached through fishing nets and harvested as food. Species of groupers have also been banned form fishing, but are considered a delicacy and an expensive catch in the country. Certain prescribed fishing operations are allowed upon permit which are otherwise considered illegal.

Flora and fauna protection ordinance (FFPO) stands to conserve wildlife resources in Sri Lanka inclusive of marine resources and to prevent commercial exploitation and misuse of wildlife resources. Legal provisions in the FFPO include establishment and management of Wildlife Protected Area Network, Special protection for elephants, protection for wildlife resources outside Protected Area and regulation of import and export of wildlife species. This act empowers wildlife officers to take actions against violators of the ordinance in National reserves and Sanctuaries which comprises of State lands.

Acts prohibited within Wildlife Reserves include hunting, shooting, killing or taking wild animals, destroying eggs of birds and reptiles or nests, firing any gun, disturbing wild animals, destroying any plant, clearing jungle, mining and kindling any fire. Wildlife Reserves of Sri Lanka consist of sanctuaries and national reserves. Sanctuaries can be imposed of private lands, as well as state lands and entry not restricted and national reserves are composed only of state lands and entry is only on permit. Under national reserves, there are strict nature reserves, nature reserves, national parks, jungle corridors and marine national parks.

There are six marine national parks, nine marine sanctuaries and a marine nature reserves with eleven marine associated protected areas in Sri Lanka. Four coral reef marine protected areas were also declared under the FFPO and several other fisheries management areas have also been established under the fisheries act to protect pelagic species, corals and ornamental fish.

Marine pollution turns out a major threat to marine ecosystems in Sri Lanka, with Dead zones discovered in the ocean worldwide; latest around seas in the Bay of Bengal, north east of Sri Lanka spanning around 64000 Square kilometers now dying due to pollution. Only around 10% of these pollutants originates from the sea whilst the remainder comes from land based pollutants, which human activity is mainly held accountable. About 8 million metric tons of plastic waste reaches the ocean annually and Sri Lanka is accountable for disposing 33 million kilos of trash per year into the

ocean. The Marine Pollution Prevention Act No. 35 of 2008, under which MEPA is empowered and made responsible of safeguarding and protecting marine ecosystems, prevention of marine pollution up to EEZ, absorbing international conventions and incorporation through local acts. The whole ocean under the Sri Lankan EEZ falls under MEPA's purview,300 meters from the high watermark and 100 meters inwards the waterline in estuaries and lagoons; in case of marine environment protection and pollution control.

Ship based pollution based on Grey water, ballast water, oily water, antifouling and sewage are slowly reducing with the shipping industry moving towards greener practices and leaner concepts; the cases of 'MS Daniela' off the coast of Colombo contributing to large scale pollution was taken stern actions against and MT New Diamond causing major impacts on air pollution and marine oil pollution, gave valuable lessons in mitigating and compensating the damage caused. Marine sound pollution and light pollution cause grave damage alongside other forms; '9 Short finned pilot whales dying in Panadura, Sri Lanka' believed to be caused by it though its unconfirmed.

Climate change bears detrimental impact on marine life extensively, with effects such as coral bleaching, Sea erosion and coastal degradation. Finally conservation of marine environment is pivotal to the future and readiness can help protecting the oceans. The damage that can be seen is measurable and is the 'tip of the iceberg'; what happens underneath is immeasurable and vast. Therefore the need remains to protect the ocean for the forthcoming generations which will in turn help to prosper Sri Lanka.

BIOGRAPHY

Prof. Hemanthi Ranasinghe

Senior professor, Forestry and environmental science, university of Sri Jayewardenepura

Hemanthi Ranasinghe is a Chartered Environmental Professional having more than 35 years of experience as a trainer, researcher and a consultant. She is a Senior Professor in Forestry and Environmental Science in the University of Sri Jayewardenepura and a pioneer in the establishment of the Department of Forestry and Environmental Science in the University. She was a former Dean of the Faculty of Graduate Studies in the University of Sri Jayewardenepura. She had served as visiting professor in many countries including York University and University of Toronto, Canada, Yale University, USA, Australian National University, Australia. She is serving actively at national level in environmental and natural resources related organisations in the country. She is a governing board member in the Central Environmental Authority, Chairman of the Forestry Committee of the Council for Agricultural Research Policy, Former President and Council Member of the Institute of Environmental Professionals and Editor of the Sri Lanka Association for the Advancement of Quality and Productivity.

She is a person who has a passion towards sustainable development and in this quest had balanced her academic, research and consulting occupations appropriately to provide impetus to her passion. She has trained numerous university and corporate students, has more than 200 research publications to her credit. She had held the roles of Team Leader of many large scale construction projects in the fields of transportation, water supply, waste management, electricity transmission, renewable energy etc. She is also a monitoring and evaluation specialist and Lead Auditor in ISO 14001 and Forest Stewardship Council Certifications. She was the Cluster Leader in Environment in the preparation of the national document – 'Sustainable Vision 2030' for the Country. In recognition of her contribution to national development, she was awarded 'Professional Woman of the Year 2000' by the Women's Chamber of Commerce in 2000.

She received the Bachelors Degree from University of Kelaniya and Masters Degree in Forestry from University of Sri Jayewardenepura. Sri Lanka. She obtained her PhD in Forestry from University of Wales, United Kingdom.

LOSING OUR FOREST AND WILDLIFE AREAS: IMPACT ON THE NATIONAL SECURITY

Prof. Hemanthi Ranasinghe
Senior professor, Forestry and environmental science, university of Sri Jayewardenepura

The general definition of national security is the ability of a state to cater for the protection and defense of its citizens". However national security consists of various type of securities such as health, environment, defence and more.

Threats posed to a state can be internal as well as external. The common threats countries face which are external in nature are war, invasions, pandemic, political, economic. Internal threats are, loss of the buffer or the services provided by the ecosystems for our socio-economic activities and welfare of all beings. Environmental security is a sensitive timely matter. It is important to maintain eco system and prevent hazards.

All the nations focus on development, even though there is an ability to reach development if it is at the expense of the security which is provided by nature it is a strenuous task to restore the quality of nature as it was in the original state.

In the ancient time humans witnessed a balance in environmental security as the expectations are minimal and there were plenty of natural resources. Aftermath of industrial revolution the condition changed drastically resulting a threat to environmental security. In the modern context after witnessing the adverse effects of insensitive development, people are now moving to green revolution. Food security is a crucial factor; agriculture sector needs to be sufficient to satisfy the food needs of the population. It is about what nations produce within the capacity of natural system and how it furnishes food security. The tragedy is, mankind believes that they can accomplish everything. The best example is the current pandemic situation where the world is in a fatal position. COVID 19 has proved that even the affluent countries are incompetent to safeguard health security. Even though world has found a cure for COVID 19; by way of vaccine the availability of the vaccine becomes a hurdle.

Five major environmental problems in the world are, air pollution and climate pollution, deforestation, biodiversity loss (extinction of species 100 times faster), over population and soil degradation. Key environmental issues in Sri Lanka are land degradation, waste disposal, climate change, bio diversity loss, depletion of coastal resources and water pollution.

Trees and forests which are the services of the eco system are abundant and free of charge. Therefore, it is important to use the resources and maintain them rather than spending lavishly on building security walls.

Social, economic and environmental benefits of ecosystems which are nature based is the solution for all the disasters. Benefits that can be entertained by maintaining a healthy eco system are, hazard mitigation, livelihood, poverty reduction, disaster recovery, carbon sequestration, climate change adoption and bio diversity.

A classic example which showcases the importance of eco system maintenance is Tsunami. A disaster such as Tsunami could have been minimized or prevented if resources such as mangroves areas are kept intact. Yala safari hotel showcases the repercussions of harming the eco system, when they destroyed the sand dunes to provide a better view to its tourists, the hotel ended up only as a foundation after Tsunami. Floods, droughts are common threats which are a result of harm done to eco system. It is imperative to keep forests intact as forest or the trees are able to absorb water from the rain and supply water accordingly.

Ecosystem Resilience leads to Sustainable Livelihood

Another example which showcases the importance of maintaining a healthy eco system to ensure food security is the condition of farmers in Nuwaraeliya. Farmers in the current Sri Lankan context is unable to have a good harvest unless cow dung are brought from outside as an organic material. The reason is continued farming which has resulted in soil erosion.

Development projects in urban areas can also be taken as an example. Wet lands maintain water level by absorbing rain water. Building projects fails and floods occur due to short sighted projects built in wet land areas. This imposes extra cost to the government to remedy the situation.

Only forests and trees can absorb emissions of GHSs (a mature tree of 10 years will absorb 22 kg of carbon, 13 tons' carbon per year). Transport sector emits the highest GHG. 29.2% of the country is of forest areas. This includes 21.88% of dense forest, 6.01% of open forest, 0.30% of mangroves and 0.01% of riverine. 14% of the entire area is under protected areas, 2% under Forest Department and 12% under Department of Wild Life Conservation. There are 02 World/national heritage wilderness areas, 35 conservation forests, 360 forest reserves, 4 international biosphere reserves (mab) and 3 national biosphere reserves under the Forest Department. There are strict nature reserves, national parks, jungle corridors, marine reserves, buffer zones and sanctuaries under the Department of Wild Life Conservation.

Challenges in the conservation are, population pressure and increasing demand for land by people and industrialists, habitat loss and unplanned regularization of land encroachments, lack of awareness on ecosystem services by policy makers and lack of financial assistance for protected area management. Recent examples which showcases challenges to the environment in the Sri Lankan context are, forest cutting in Sinharaja, Wilpathu and construction in mangrove areas. Cancelling 5/2001 and 02/2006 circulars and taking back More than 550,000 ha of land under 'other state Forests' from the forest department.

It is important to understand that development needs to be done without harming the nature in order to preserve resources to future generation. The solution is known as sustainable development. In order to accomplish sustainable development, there needs to be a consensus between 3p's which are, Planet, People and Profit. In order to ensure sustainable development, the base is a healthy planet. Therefore, it is imperative to take the below measures,

- Stop deforestation and increase the forest cover.
- Restore deteriorated forests: improve the quality of natural forests and plantations.
- Increase sustainable management of forests.
- Increase the forest cover in the river catchments.
- Promote urban forestry

There are various measures taken by the government to ensure sustainability such as, sustainable Sri Lanka 2030 vision and strategic path and the current government's "Vistas of prosperity and splendor". In Vistas of prosperity and splendor, chapter 8 is dedicated to sustainable environmental policy.

Chapter 8 consists of increasing national forest cover up to 30% (32% in the ndc submitted to the unfccc in 2016), re-establishing & enhancing the green cover, identifying barren and abandoned lands and utilizing them for agriculture and forestry, establishing a single authority / centralized system with the mandate of protection, conservation and rehabilitation of biodiversity to reduce complexities of the present environmental regulatory framework, identifying and reforestation of suitable lands, establishing parks in urban and semi-urban areas, developing urban vegetation by establishing tree lines along express ways. implementing tree planting programs in industrial premises, restoration and rehabilitation degraded ecosystems, integrating biodiversity based tourism, education and cultural events, promoting eco-tourism, encouraging biodiversity education and culture events and pursuing eco entrepreneurship opportunities based on environmental protection and conservation.

In order to accomplish sustainable development and to ensure environmental security, it is mandatory to ensure the presence of all the parties which are; government sector, non-governmental organizations, communities which consist of school children and private sector. This task can be accomplished mutually by the government, business and the empowered civil society. To conclude, "Great things are done by a series of small things brought together" as said by Vincent Van Gough.

BIOGRAPHY

Charith D. R. Pathirana
Scientific officer, Sri Lanka Atomic Energy Board

Mr. Charith Pathirana graduated from Institute of Chemistry Ceylon and completed his Master of Science in Nuclear Science at University of Colombo. Also, he is an Associate Member of Institute of Chemistry Ceylon. At present, he serves as a Scientific Officer at Industrial Applications Division of Sri Lanka Atomic Energy Board and engaged in number of projects under International Atomic Energy Agency, focused on development of radiation techniques for agricultural, environmental, cultural heritage applications.

INDUSTRIAL POLLUTION AND TOXIC WASTE IMPACT ON ENVIRONMENTAL SECURITY

Charith D. R. Pathirana

Scientific officer, Sri Lanka Atomic Energy Board

Environmental Security and its Importance

Environmental Security defines as the relative public safety from environmental changes, i.e. the possibility to avoid or adapt to those changes without adverse effects. The concept was presented by the report "Our Common Future" (1987) of Brundtland Commission (then the World Commission on Environment and Development), alongside the concept of Sustainable Development. Importance of this concept could be expressed by several aspects such as,

- Environmental issues including natural resources (especially water), soil degradation and pollution could be a cause of violent conflicts, commonly within countries and occasionally between countries. For example, rural-urban migration induced social conflicts in Pakistan caused by water pollution, soil degradation and resource scarcity, conflict between Mauritania and Senegal over soil degradation and competition for resources of Senegal River[1]
- Resultant environmental changes (e.g. climate change) leading to loss of lives, properties and access to basic needs and hence, posing a threat to human well-being and the quality of life
- Negative impact on economy

Statistics of National Disaster Relief Services Centre showed the causalities of recent natural disasters as an example for above statement. In addition, Sri Lanka has been ranked high in Global Climate Risk Index due to increasing magnitude and frequency of natural disasters during past few years, which is evidence of country's vulnerability towards environmental change. The above index further indicated that the significant losses were caused by such incidents, to the country's economy and expressed in terms of percentage per unit GDP.

Concern about the impact of human (anthropogenic) activities on environment is considered as a major aspect of environmental security and it is deeply discussed in this presentation along with example scenarios, especially considering the industrial pollution. Industries utilize numerous hazardous materials such as chemicals of explosive, flammable, corrosive and carcinogenic nature, radioactive materials, biohazardous materials, etc. and generate hazardous waste, both of which could be considered as a threat to the environment and human health. In Sri Lankan context, chemicals predominate these materials and human exposure is possible through raw materials, manufactured products, waste, combustion products or occupational exposure.

[1]UNEP, Daniel Schwartz, and Ashbindu Singh, "Environmental Conditions, Resources, and Conflicts: An Introductory Overview and Data Collection," (1999).

Out of number of hazardous industrial chemicals, Ethylene Oxide is most common member that referred to the national policy making body (seeking importation approval) during past few years, due to the interest of local industries as inexpensive sterilizing agent for disposable medical devices such as injection syringes. Majority of global ethylene oxide production is utilized as an intermediate in production of various other chemicals, while a small percentage as sterilizing agent/fumigant. It is a flammable and explosive gas with high acute toxicity and classified as Group I carcinogen (carcinogenic to humans) by International Agency for Research on Cancer (IARC) of World Health Organization. Also, injuries and burns could be caused by the residual Ethylene Oxide in implants and considering the hazardousness, the sterilization process consists of stringent steps such as aeration treatment (lasts for 48 hours) after sterilization (to remove the Ethylene Oxide residues). Further, it is responsible for at least ten explosions at industrial sterilization facilities/repackaging plants, between 1994 and 1998. One fatality and 59 injuries were reported in one incident. Most recent event occurred in January 2020, Spanish Ethylene Oxide production plant exploded killing two of its employees on site, while another person became a victim of flying debris at 3km away from the site. Thus, special infrastructure (Damage limiting construction for explosion hazards) is required to handle the chemical.

Furthermore, Ethylene Oxide has been included in Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, in which Sri Lanka is a signatory. Import Response of Sri Lanka is the interim decision to allow the use of ethylene Oxide only for the health ministry for surgical instrument sterilization under restricted manner and to ban it when an alternative is being found. The most common alternative for sterilization of medical devices is radiation sterilization using gamma radiation or electron beam (EB), which possesses advantages of no chemical residues, possibility of sterilization after packaging (high penetration power of radiation), fastest processing time (for EB). But conventional materials such as Polypropylene tend to change (e.g.: discolour) by radiation and hence modified raw materials required and the irradiation process is comparatively expensive. Also, other alternative sterilization techniques such as ozone, hydrogen peroxide gas plasma (limited FDA clearance for medical devices) exist along with number of other that doesn’t possess the industrial capacity at present.

Persistent Organic Pollutants (POPs) refer to a class of toxic organic compounds that contain chlorine, which includes pesticides, industrial chemicals (PCBs in transformer oil) and unintentional byproducts such as dioxins and furans. They persist in environment, travel long distances (through water, air or in animal bodies) and tends to bioaccumulation and biomagnification. They are known for inducing toxic effects in humans (including cancers), fish and wildlife and controlled under the Stockholm Convention on Persistent Organic Pollutants. Although, Sri Lanka has banned POPs pesticides since 1996, their presence in the environment (even after number of years), had been reported in several publications. For example, DDT and relative forms at sediments in Colombo port, Hambantota Coastal Zone, Beira Lake, Negambo Lagoon, Chilaw Lagoon, Udappuwa and Mundal Lake and in rabbit fish from Colombo Dockyard, while Chlordane in Kelani River. Also, the presence of PCB residues had been reported in sediments of Colombo harbour, while incineration of medical waste, uncontrolled burning of biomass (eg: agricultural), waste (eg: domestic) could be identified as the sources of Dioxins and Furans.

Polycyclic Aromatic Hydrocarbons (PAHs) are mainly of anthropogenic origin and could be used as an indicator of human activities on aquatic environments. Contamination of sediments and water (with PAHs) had been reported in Beira and Bolgoda Lakes, with relatively high concentrations at industrialized locations and discharge sites. It is clear evidence that industrial pollution and several PAHs could be mutagenic and carcinogenic. Heavy Metal contamination (Pb, Cd, Cr, etc.) is one of the most common environmental issue in Sri Lanka and detected in environmental samples such as surface soil, aquatic environments, with significantly high concentrations at industrial surroundings and effluent discharge locations. Also, their occurrence had been observed in food products including green leafy vegetables, shrimp and fish, exceeding maximum permissible limits of FAO/WHO in some occasions. Possibility of chronic toxicity through bioaccumulation and biomagnification (like Minamata disease and Itai-Itai disease) should be considered as a potential health hazard.

Although, relatively low dominance in Sri Lankan context, other hazardous materials include radioactive materials, biohazardous materials, electronic waste, etc. Potential sources of radioactive materials are used sources of industrial irradiators, byproducts of mineral processing industry. When out of regulatory control, they could pose a threat to security and result in radiological accidents. As a license condition implemented by Sri Lanka Atomic Energy Regulatory Council, all suppliers should agree to return the used high level sources to their country of origin at the end of the life. Biohazardous Materials could be resulted from clinical, infectious and pathological waste and their disposal (by incineration) is recommended according to circulars/guidelines of respective authorities (Ministry of Health, Sri Lanka College of Microbiologists, etc.).

Oil contamination and oil spill incidents are commonly reported in Sri Lanka and one such incident associated with the Chunnakam Power Station, Jaffna resulted in the oil and grease contamination in surrounding wells due to the discharge of waste oil and wastewater, with 73% of the analyzed wells exceeded the Sri Lankan standard of oil 1.0 mg/l. In one oil spill incident occurred in August 2015, more than 1900 liters of diesel was released to Kelani River from an underground pipeline leakage of a beverage factory in Biyagama, disrupting the water supply for metropolitan Colombo. Another such incident, leakage from fuel storage tank located in a fuel depot at Akuressa, Matara in January 2016, resulted in discharge of 12,000 liters of diesel to Nilwala River, disrupting the water supply in the area.

Considering the water pollution in Sri Lanka, Kelani River could be considered as one of the most polluted aquatic environments in the country. It flows through the highly populated areas of the country, with two industrial processing zones (Biyagama and Seethawaka) and numerous other industries located in close vicinity. Also, it serves as a major drinking water source with Ambatale and Biyagama purification plants extract water from it. According to Central Environmental Authority's Water Quality Monitoring Programme, analysis parameters of COD, BOD, DO and heavy metals (Pb, Cr) exceeded their corresponding standards at Seethawaka ferry and Raggahawatte sampling locations, where industrial waste water of Seethawaka and Biyagama Industrial zones flows to the Kelani River. Also, vehicle service station discharges, textile dye wastes and other industrial effluents were observed to be released to the river, by the National Audit Office and reported in their 2019 Environmental Audit Report on Kelani River. Possibility of producing carcinogenic compounds from the textile dye waste, during the chlorination process of

water purification plants had been predicted. Further, gradual deterioration of river water quality was indicated annually in the above monitoring programme of CEA.

According to several studies on air pollution in Sri Lanka, NO_2 levels in several locations of Colombo city had exhibited an increasing trend, along with the annual averages at Maradana and Fort nearing the WHO guideline value 40 – 50 µg/m^3. Although, annual averages of SO_2 hadn't exceeded its corresponding safety limits, hourly averages had exceeded the standard limits in numerous occasions. Air pollution levels were observed to follow an increasing trend in the Colombo city as well as in industrialized area of Sapugaskanda. Number of studies had reported high particulate matter concentrations in Colombo city, exceeding the international safety limits and posing a high risk to human health.

Regarding the health impact of the pollution, WHO report stated that the hazardous chemicals including pesticides, asbestos, ambient air pollutants, lead, arsenic, etc. account for a significant proportion of global mortality and disability caused by ischemic heart disease, stroke, unintentional poisoning, cancer and many other diseases. In Sri Lankan context, number of studies had reported high occurrence of respiratory symptoms among population groups in industrialized areas compared to their non-industrialized counterparts. But deficiency of adequate data sources poses a barrier to identification of the magnitude of the problem in the country.

Emerging Contaminants referred to the contaminants possess the potential of detection in the environment and cause ecological and/or health hazards and this includes pharmaceuticals, pesticides, surfactants, industrial chemicals, personal care products, etc. Taking pharmaceutical contaminants as an example, potential sources are human and animal excreta, wastewater effluents, industrial and medical waste, landfill leachate, veterinary facilities, etc. According to literature, several pharmaceutical contaminants, such as Amoxicillin, Ampicillin, Tetracycline, Oxytetracycline, Erythromycin, etc. had been detected in water and sediment samples from wastewater discharge points in Colombo, aquatic environments including Beira Lake and Walawe River. Although the potential health hazards of these contaminants to humans are yet to be comprehensively known, development of antimicrobial resistance could be considered as the ultimate concern on human health. It results in numerous lethal drug-resistant diseases, while decreasing the effectiveness of some drugs and hence, costly and sometimes more toxic alternatives are required for therapeutic purposes. Researches conducted in the country, had identified the presence of antimicrobial resistance bacteria in environmental samples, while microbes isolated from blood and urinary samples exhibited resistance against numerous common pharmaceuticals.

Interference with the supplies of basic human needs such as disruption of water supply (e.g.: Oil contamination) and contamination of food products, etc., induction of health effects and enhancement of disease burden, reduction of effectiveness of economically important products such as pharmaceuticals, pesticides, etc., negative economic impact through environmentally sensitive sectors like agriculture and tourism, resultant environmental changes leading to loss of lives and properties, cause violent conflicts, could be emphasized as the impact of industrial pollution and hazardous waste. In order to mitigate these impact, implementation of the following mitigation strategies are proposed.

- Strengthening of legal framework and regulations along with the regular monitoring/inspections: Sri Lanka is signatory of most of Multilateral Environmental Conventions namely Rotterdam, Stockholm, Basel, etc. and many other international treaties and protocols and possesses a good legal framework. But the gaps and weaknesses should be assessed and resolved. In addition, the regular monitoring/inspections are required to ensure that the regulations are in force.

- Capacity building (technical infrastructure, human resources, etc.) to compliance with the legal framework: As stated above, one of the gaps in the legal framework is the deficiency resources to be compliance with it. Therefore, capacity building is required.
  e.g.: Testing laboratories and instrumentation, adequate human resources for monitoring and inspections.

- Establishment/adaption of required facilities, conditions, standards and practices for hazardous materials: Adequate facilities (for handling, storage, disposal, etc.), appropriate conditions (storage, transportation, etc.) and adaption of standards and practices are essential components required to minimize the environmental release throughout the life-cycle of hazardous material and to ensure their disposal in an environmentally sound manner.
  e.g.: Incineration facilities, hazardous waste processing and disposal facility (only selective wastes are processed by the cement plant of Insee Eco Cycle)

- Utilization of eco-friendly alternatives: Industries should be encouraged towards environment friendly and less hazardous alternatives, by regulatory control or introduction/promotion of alternatives.
  e.g.: Radiation sterilization instead of Ethylene Oxide

- Utilization of advanced techniques and novel technologies: Adaption of cutting-edge technology should be promoted for environmental applications in order to overcome the limitations of conventional techniques as well as to enhance the efficiency and effectiveness.
  e.g.: Advanced oxidation processes for water treatment (with higher efficiency in removal of emerging contaminants), application of nanotechnology, biotechnology, radiation technology

- Promotion of research and innovations in the field of environment: Deficiency of adequate information could lead to misinterpretations and pose a barrier in decision making, so research and innovations should be encouraged.
  e.g.: Analytical research to assess the magnitude of pollution, impact on ecology and health, innovations for remediation and prevention

Finally, some of the environmental applications of Nuclear & Radiation Technologies are as follows,

- Ionizing radiation for material development (e.g.: development of oil/chemical/heavy metal absorbents for environmental remediation, recycling/value addition to polymeric waste, eco-friendly alternatives to support sustainable agriculture)

- Radiation sterilization as an alternative for hazardous sterilizing agents

- Radiation induced waste treatment[2]
  Sludge treatment and conversion to fertilizer (India, South Korea)
  Waste water treatment for pharmaceuticals, dyes, petrochemical pollutants (South Korea, Brazil, USA)
  Elimination of PCBs in waste transformer oil (South Korea)
  Flue gas treatment for SO_X & NO_X (Japan, USA, Germany)

  Radiation techniques in industrial processes to minimize usage of hazardous chemicals and hence, their residues in final products (e.g.: elimination of halogenated flame retardants in curing of wire and cable, rubber vulcanization)[3]

- Detection and storage of radioactive materials
  Detection of radioactive contamination (e.g.: in imported milk powder by regulation)
  Low level radioactive waste storage

- Stable isotope studies for contamination monitoring (e.g.: Isotopes such as ^{15}N, ^{34}S, ^{13}C, ^{3}H etc. for pollution sources)[4] , assessment of environmental changes (e.g.: weather patterns)

- Radioactive isotope studies for environmental monitoring (e.g.: ^{137}Cs for soil erosion studies)[5]

- Air quality monitoring by nuclear analytical techniques (e.g.: X-Ray Fluorescence spectrometry for particulate matter)

[2]S. M. Hanna, "Examples of Radiation Wastewater Treatment Implemented in Various Countries," in *Twelfth International Water Technology Conference (IWTC12)*, (2008).

[3]Andrzej G. Chmielewski, Mohammad Haji-Saeid, and Shamshad Ahmed, "Progress in Radiation Processing of Polymers," *Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms* 236, no. 1-4 (2005): pp. 44-54, https://doi.org/10.1016/j.nimb.2005.03.247.

[4]IAEA and UNESCO, "Pollution Susceptibility of Aquifers and Pollution Assessment," in *Environmental Isotopes in the Hydrological Cycle: Principles and Applications*, vol. 5, (2000), pp. 441-442.

[5]FAO and IAEA, "Principles of ^{137}Cs Method," in *Use of ^{137}Cs for Soil Erosion Assessment*, (2017), pp. 9-16.