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AIMS AND SCOPE OF THE JOURNAL OF INDIAN OCEAN RIM STUDIES

The Journal of Indian Ocean Rim Studies (JIORS) is aimed at strengthening research and academic findings within the Indian Ocean Region (IOR). The overall aim is to enhance the understanding of the issues involved related with the six priority areas as well as Women Economic Empowerment and the Blue Economy of the Association. The JIORS aims at providing a platform for researchers, academics, scholars, resource persons and practitioners to share their research findings which would enrich and enhance stock of knowledge within IORA.

The JIORS is currently seeking research articles, discussion papers or policy papers on the following six priority areas of IORA:

- Maritime Safety & Security;
- Trade & Investment Facilitation;
- Fisheries Management;
- Disaster & Risk Management;
- Academic, Science & Technology Cooperation;
- Tourism & Cultural Exchanges; and;

The Association focuses on two special cross-cutting areas namely:

- Women's Economic Empowerment;
- The Blue Economy

In keeping with the Charter of IORA, the JIORS would be established to promote research in:

- Ensuring Capacity Building in the six IORA priority areas of the Association;
- Capacity building to create common ground for regional economic cooperation;
- South-South Cooperation and issues related to the global economy; and
- Matters related to the IORA focus areas of Women's Empowerment and the Blue Economy.

Understanding of sustained growth and balanced development of the region and of the Member States;
JOURNAL OF INDIAN OCEAN RIM STUDIES
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FOREWORD

I take pride and I am happy to learn that the Chair in Indian Ocean Studies (CIOS), Prof. V. N. Attri, in collaboration with the Indian Ocean Rim Association (IORA) Secretariat is publishing the second issue of the Volume 1 of the Journal of Indian Ocean Rim Studies (JIORS) in October 2018.

The great strides IORA has taken in terms of Member States with an increasing visibility in the global platform has pitched IORA as a dynamic regional organisation contributing to regional cooperation and development in the Indian Ocean Region.

We also seize this opportunity to pay tribute to Former President Nelson Mandela, a great visionary, positive thinker and a global symbol of resistance to racial inequality and injustice, behind the establishment of the IORA as testified by his own words in 1995: “the natural urge of the facts of history and geography should broaden itself to include the concept of an Indian Ocean Rim for socio-economic co-operation.”

The year 2018 marks the centenary of the birth of Nelson Mandela and the theme set is “Be the legacy”. During an informal General Assembly Meeting in New York on 18 July 2018, the UN Secretary General, António Guterres, said “Nelson Mandela was a towering global advocate for justice and equality. He continues to inspire the world through his example of courage and compassion.”

This issue contains articles on Maritime Safety and Security; Fisheries Management and Trade and Investment Facilitation. The main objective of JIORS is to contribute to the academic debate on issues related with IORA’s six priority areas and two cross-cutting focus areas.

I hope that the second issue of the JIORS will be useful and productive to the readers in IORA and the wider audience, and will motivate the policy makers, researchers and scholars in the Member States to contribute more enthusiastically and regularly in the forthcoming issues of the Journal. I understand that in the establishment of a new Journal, there are many problems such as getting adequate number of articles as the contributors do wait for the credibility of the Journal to be well established.

The next edition of the JIORS will be a Special Edition focussing on Maritime Safety and Security (MSS), Renewable Energy and the Ocean Energy, in the context of Blue Economy. We invite the contributions in these areas from academicians and scholars.

I congratulate the Chair, Prof V.N. Attri, the editorial team and contributors for their efforts in bringing the second issue of the Journal and wish them the very best in this endeavour.

H.E. Ambassador Dr. Nomvuyo N. Nokwe
Secretary-General,
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I am delighted that the second issue of volume 1 of the Journal of Indian Ocean Rim Studies (JIORS) has been uploaded on the IORA website. It has been a long journey to put the second issue on the Journal online. My sincere apologies for the delay in uploading this issue of the JIORS. This has happened due to scant receipt of articles related with the six priority areas and two cross cutting focus areas. The Office of the CIOS has to consistently request the perspective contributors for the articles for the Journal through making Call for papers three times during the period.

As a consequence of our consistent efforts, the Office of the CIOS received adequate number of papers, out of which these papers have been accepted for the publication. This Issue of the Journal covers the period from June 2017 September 2018. Henceforth, the JIORS will be published (online) in the months of October and March of each year till we get consistent and adequate flow of papers for bringing the quarterly issues of the Journal. This is a temporary arrangement and we are confident of publishing this online Journal in time. There may be a special issue of the JIORS if the need arises and we have sufficient grounds to bring out the special issue.

Theory elaboration on the priority/focus areas of Maritime Safety and Security (MSS), Trade and Investment Facilitation, Blue Economy, Women Economic Empowerment and others has an inter-disciplinary nature and tradition. The JIORS, therefore, encourages contributions that make rigorous use of variety of theoretical perspectives and methodological approaches. The Journal welcomes critical debate between different and opposing perspectives to lead to a realistic policy frame inputs (based on theoretical and empirical research). The JIORS welcomes and encourages the policy briefs, countries’ case studies, experiences, best practices in all the priority and focus areas of IORA and beyond that establishing their inter-relatedness with the similar issues being faced globally. The Journal specifically focusses on designing of Marine Spatial Planning; enablers of the Blue Economy; perspective on Women Empowerment and its linkage to Blue Economy as well as the initiatives undertaken by the Member States for achieving Sustainable Development Goals (SDGs) by 2030.

We are also introducing a special feature in the JIORS, known as “Ambassador’s Column”, in which we expect to have the contributions from the eminent policy makers in all the Member States in IORA to share their perspectives on the contemporary issues being faced by Indian Ocean Region (IOR) and how these are linked with the global issues. This will greatly enhance the value of the Journal in terms of evolving an experience-based/best practices-based policy perspective much needed for the solutions of the problems in Indian Ocean Region (IOR).

The JIORS strives to attract and engage an international readership that is primarily academic, and research oriented in universities/research institutions and individual academics/policy makers are the primary target group for the Journal. The objective is to create a pool of theoretical and empirical knowledge.
based on sharing of best practices – critical for promoting evidence-based policy frame beneficial for uplifting the socio-economic conditions of the inhabitants of the Indian Ocean Region (IOR).

This issue coincides with the centenary celebrations of Late President Nelson Mandela of the Republic of South Africa- a great visionary and an architect of IORA which was established in March 1997.

In his message on the establishment of IORA in March 1997, President Nelson Mandela said “For centuries countries littoral to the Indian Ocean have been linked through trade and movement of people. The Indian Ocean Rim framework provides opportunities for the countries of the region to engage in mutually beneficial relations in the promotion of trade and investment, cooperation in the field of technology transfer and tourism, as well as serving to reinforce bilateral relations.”

The CIOS expresses gratitude to the members of the Editorial Board of the JIORS who reviewed the papers in this issue, as well as the authors who contributed to the journal. The kind support and guidance provided by the Secretary General of IORA is deeply appreciated. It is due to her positive encouragement that this issue has been brought out in a timely manner. The support and assistance provided by the Research Assistant to the CIOS, Ms Jane, is highly appreciated.

We plan to bring out a Special Issue of the JIORS in 2019 focussing on Maritime Safety and Security (MSS), renewable Energy and Renewable Energy, in the context of the Blue Economy and its various facets as well as promotion of Trade and Investment Cooperation in the field of Technology Transfer and Tourism to pay a tribute to our great leader as reflected in his message above.

Best wishes and thank you in advance for your contribution to the Journal of Indian Ocean Rim Studies (JIORS).

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MARITIME SECURITY IN THE INDIAN OCEAN: FROM TENTATIVE COLLABORATION TO EFFECTIVE ARCHITECTURE

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Abstract

The inclusion of maritime safety and security in the agenda of the Indian Ocean Rim Association (IORA) is indeed encouraging. It will not only usher a conducive maritime environment to enable the Indian Ocean Region (IOR) countries to pursue their developmental objectives but will also help to create the long-felt need for a regional identity. As the IOR countries reinforce their tentative cooperation at bilateral, trilateral and sub-regional level to formulate a region-wide pan-IOR maritime security architecture, they would encounter both opportunities and challenges. The IORA could gain much by emulating other regional models and best practices. Besides, the existing local maritime security arrangements and the Indian Ocean Naval Symposium (IONS) could provide valuable support to the nascent regional architecture. However, the path is also strewn with many challenges and pitfalls. For instance, the uncertainties of national intent and geopolitical rivalries could impede or even derail the process and would thus need to be factored in the collective approach.

Keywords: Indian Ocean Region (IOR), Maritime Safety and Security, Indian Ocean Naval Symposia (IONS)

1. Introduction

With the exception of military alliances based on ‘collective security’, the concept of ‘collaborative security’ is actually an oxymoron, at least in the eastern hemisphere of our globe. In the Indo-Pacific region, the concept of national security continues to be driven – in a significant measure, if not predominantly – by state-on-state insecurities. Often described as the concept of ‘security dilemma’, it refers to the respective quest of individual states for security, which, ironically, generates uncertainties of intent and rivalries amongst them. Such insecurities are not only due to traditional military threats, but also due to the geopolitical tussle among major powers in the Indo-Pacific, wherein the balance of power remains fluid.

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*Facts and opinions published in the Journal of Indian Ocean Rim Studies (JIORS) express solely the opinions of the respective authors. This in no way represents the views of IORA. The Authors are responsible for their citing of sources and the accuracy of their references and bibliographies. The editors cannot be held responsible for any lacks or possible violations of third parties’ right.*
And yet, the predominantly-maritime region remains fragile due to a host of insecurities posed by a combination of sea-borne threats posed by malevolent non-state actors, and the issues concerning the safety of people at sea, and human-induced degradation of the marine environment.

Perhaps, the best answer to resolve this rather intractable dilemma has been a collaborative effort based on common understanding of what may be in best interest of all countries in the Indo-Pacific region, and serving common national developmental goals, as best exemplified by the vision of SAGAR — meaning ‘Ocean’ in Hindi language, and an acronym for ‘Security and Growth for All in the Region’ — enunciated by the Indian Prime Minister Shri Narendra Modi in 2015 in Mauritius during the commissioning of the Indian-built patrol ship MCGS Barracuda in the Mauritius Coast Guard. The example of more rules-based European Union (EU)-type regionalism may be difficult yet to emulate in the Indo-Pacific, but its spirit is nonetheless instructive. It emanates from the centuries of rivalry and conflict in Europe, which led the regional countries to evolve to the current state wherein each one was prepared even to cede an element of its ‘Westphalian’ sovereignty in order to integrate themselves for win-win results.

The ‘nautical slant’ of the Indian PM’s vision (SAGAR) was not without good reason. The Indo-Pacific region is a predominantly a maritime-configured region. The epithet of the ‘fastest growing region in the world’, which was originally assigned (inaccurately) to the larger ‘Asia’ (in the years preceding the prevalence of ‘Indo-Pacific’ concept), actually refers to this ‘maritime underbelly of Asia’.

Therefore, the vision is relevant to the entire geographical swath of ‘Indo-Pacific’ stretching to India’s extended maritime neighborhood to the east, as evidenced by the PM’s revitalized ‘Act East’ policy announced in November 2014. The focus of the vision, nonetheless, lies in the Indian Ocean Region (IOR) as India’s immediate maritime neighborhood. A few years before SAGAR was enunciated, in 2011, enlightened self-interest had ushered the IOR countries to seek collaborative security, initially by forging bilateral and trilateral arrangements; and later, by seeking an arrangement for maritime security under the existing open multilateral regionalism of the IORA, alike what was being practiced in Pacific-Asia, the eastern half of the Indo-Pacific region.

This paper attempts to examine the evolution of IORA towards its collective vision of instituting a regional maritime security (including human safety) architecture, in the context of the ‘realistic’ security
and geopolitical perceptions of the IOR countries. Based on this, it intends to make some policy-relevant recommendations towards making the IORA effective enough to cater for the combined vision of the IOR countries.

2. **Overcoming the ‘DNA’**

In historic times, the IOR countries did develop a seafaring culture. The Indian subcontinent was among the key nodes of the region’s rich maritime heritage. But the environment in this part of the world was such that the concept of ‘naval power; or even ‘maritime-security’ was alien, which led to the colonial subjugation of the regional countries beginning the first voyage of the Portuguese explorer to Calicut (India) in AD 1498. In the 20th Century, however, as the IOR countries shook-off their binds of the colonial era and began developing their economies towards fulfilling their overarching national objectives of wellbeing and prosperity of their citizens, they began to realize the imperative of a conducive and benign environment. In March 1997, the IOR countries established the Indian Ocean Rim Association of Regional Countries (IOR-ARC), which was later renamed as Indian Ocean Rim Association (IORA). 

Even if a maritime-security ‘culture’ was never in the ‘DNA’ of the regional countries, it is becoming exigent due to the economic rise of Asia, concurrently with the regional countries developing stakes in and across the seas, which required protection against malevolent actors. Since the inception of the IORA, for understandable reasons, the IORA never had the security aspect incorporated into its agenda. Even its primary socio-economic agenda remained dormant for many years. In recent years, however, the IOR countries collectively have sought to establish an effective ‘security architecture’.

The concept of “security architecture” seems to be derived from the domain of Information Technology (IT), wherein it refers to a ‘unified’ security design. (In the regional context, the term “unified” means one having consensual acceptance). In context of IT, the design is meant to assess the potential risks involved and addresses the necessities in a certain scenario or environment. It also specifies when and where to apply ‘security controls’. The aspect of “security control” is one that cannot be replicated in the regional security context in toto due to the overriding factor of state ‘sovereignty’. Nonetheless, the provisions of international law and expected norms of conduct do provide such “control”, albeit a limited one, and subject to geopolitical considerations. Hence, the concept of ‘security architecture’ does find
relevance in the conventional context pertaining to regional maritime security and seems to be a worthy of consideration.

The desire amongst the regional countries to have a safe and secure Indian Ocean as an essential prerequisite for their socio-economic development led to the expansion of the IORA’s agenda beginning 2011 to incorporate a region-wide multilateral Maritime Safety and Security architecture. At the 11th Council of Ministers Meeting (COMM) in Bengaluru in November 2011, this was identified as one of the six priority areas for cooperation amongst IORA member states. In 2012, the IORA assigned Maritime Safety and Security as the top priority area of focus. In March 2017, Indonesia, as the chair of IORA, convened the first meeting of the Heads of Government of IORA countries, during which the Jakarta Concord was adopted and the IORA Action Plan for 2017-21 was agreed upon. The Jakarta Concord, under para. 16 (a.) says that we commit to (a.) promote Maritime Safety and Security in the region by

- enhancing cooperation in preventing and managing accidents and incidents at sea and promoting effective coordination between IORA member states’ aeronautical and maritime search and rescue services;
- encouraging the sharing of expertise and resources to reduce substandard shipping and manage risks to the safety of vessels and the marine environments of the Indian Ocean region;
- strengthening regional cooperation to address transboundary challenges, including piracy, armed robberies at sea, terrorism, trafficking in persons, people smuggling, irregular movement of persons, illicit drugs trafficking, illicit trafficking in wildlife, crimes in the fisheries sector, and environmental crimes; and
- ensuring that countries in the region can exercise freedom of navigation and overflight in accordance with international law, including UNCLOS, as constitution for the Oceans.”

3. The Pan-IOR Imperative

The IOR littorals, though geographically bound by a common oceanic space, are known to differ substantially in terms of levels of development, ethnicity, culture, religions, and so on. Given this fact, the IOR is often said to be essentially an ocean-based geographical construct with immense diversities, and therefore, leading to minimal economic interfaces amongst the IOR countries. Furthermore, the maritime security issues in the various sub-regions adjoining the Indian Ocean – East Africa, West Asia, South
Asia, Southeast Asia and Australia – are more localized and distinctively sub-regional, for instance, in comparison to the western Pacific. It may, therefore, seem that in the IOR, sub-regional maritime security arrangements optimized for local problems may be better suited. This argument, however, seems to be fundamentally flawed. The IOR countries do need a ‘pan-IOR’ cooperative security architecture due to at least three good reasons.

First, with the IOR being an important part of the fastest growing region of the world (Indo-Pacific, as mentioned earlier), its countries need a collective approach to develop economic and other stakes in their maritime region. Over the decade 2005-14, intra-IOR trade grew from 20 to 30 per cent, indicating the rapid pace and immense untapped potential to grow. The attendant imperative for the countries is to collectively cater for the security of their expanding maritime interests. The spirit of the imperative is best embodied in the Indian Prime Minister’s SAGAR vision (also mentioned earlier).

Second, the IOR countries need to ensure that in future, the region does not create for itself the kind of insecurities that plague the rim countries of western Pacific today. The Bay of Bengal stands in stark contrast to the South China Sea, for instance, as is evident from the peaceful and lawful resolution of the maritime disputes among India, Bangladesh and Myanmar. The on-going economic development in the IOR will not only usher prosperity among the regional countries, but also the financial resources to develop military capabilities, and the ensuing tendency to use force to assert their maritime sovereignty claims. It is important to note that there still remain numerous dormant maritime disputes in the IOR and its contiguous seas.

Third, the IOR countries need a pan-region security architecture to manage the rivalry among extra-regional stakeholders in the IOR. With many such non-resident powers having major economic and other interests in the IOR, and the increasing likelihood of these interests clashing amongst themselves and even with the resident countries, the geopolitical rivalry in the region is on the rise. Notably, this had led to the proposal by some IOR countries like Sri Lanka for a Code of Conduct (CoC) specific to the Indian Ocean, similar to what the Southeast Asian have been seeking in the South China Sea.
4. Must We ‘Reinvent the Wheel’?

Among the various regions of the world, the IOR may be a ‘latecomer’ in terms of instituting a regional maritime security architecture. However, this translates into an advantage for the IOR in being able to learn from other preceding regional models, whether or not these have already succeeded in achieving their visionary objectives. In this direction, the endeavors of the rim countries of Pacific-Asia are noteworthy, notwithstanding the fact that comprehensive maritime security remains elusive in the region, primarily due to the predominance of state-on-state security dilemmas. Based upon the vision of the Security Community of Association of South East Asian Nations (ASEAN), the region has made notable progress in establishing a regional security architecture centered upon the ASEAN Regional Forum (ARF), ASEAN Defense Ministers Meeting Plus (ADMM+), and the Western Pacific Naval Symposium (WPNS). Notably, a few IOR countries like India, Indonesia and Australia are also part of these mechanisms, which should facilitate such emulation.

Although instituting a common regional forum in Pacific-Asia was initially necessary for confidence building, the ARF, for instance, has transgressed the line dividing ‘symbolism’ and ‘substance’, which needs to be noted by the IOR countries. The ARF has achieved some notable milestones by instituting dedicated working groups dealing with specific aspects of maritime safety and security cooperation. The ARF efforts are complemented by the track-two mechanism, viz. the Council for Security Cooperation in the Asia-Pacific (CSCAP), which has also formed similar dedicated study groups, which leads to the issue of CSCAP Memoranda to feed into the Track-1 policy-formulation process. The CSCAP Study Group on Harmonization of Aeronautical and Maritime Search and Rescue (SG-HAMSAR) instituted in 2015 in the wake of the Malaysian MH-370 airline disaster is case in point, which led to the CSCAP Memorandum No. 29 (July 2017).¹³

This is a worthy model to be emulated by the IORA. Even though the IORA has already begun conducting its ‘flag-ship’ event in the form of a series of Track-1.5 Indian Ocean Dialogues (IOD) since 2014,¹⁴ these discussions are yet too broad-based to offer any substantive takeaways. The IORA has also conducted two ‘Meetings of Experts on Maritime Security and Safety’ in 2015 and 2017 (both in India), even these have hardly been useful in terms of policy-relevance since the subject of maritime safety and security is vast with its myriad aspects. Therefore, while the IORA Action Plan 2017-21 (mentioned earlier) does call for the establishment of an IORA Working Group on Maritime Safety and
Security, which may be necessary as an initial step, this working group should soon identify specific issues so that more focused studies could be undertaken. Furthermore, the Working Group would need to develop interfaces with the existing mechanisms in the Indo-Pacific, such as the ASEAN and ARF.

Another valuable element of the Pacific-Asia model is ‘inclusiveness’, which essentially refers to incorporating the views of non-resident stakeholders at multilateral policy formulation. The IORA, too, has incorporated the non-resident stakeholders as Dialogue Partners, whose views are indeed indispensable for furthering its maritime safety and security agenda that plays out in the global maritime common. The rationale conforms not only to the erstwhile fundamental axiom of ‘freedom of the seas’, but also to the more recent derivative trends of globalization. However, in contrast to the multilateral fora in Pacific-Asia, as many as 13 littoral countries of IOR itself are not involved in the IORA processes. This is a major flaw that could impede progress in the IORA’s maritime safety and security agenda.

5. Prioritizing the Exigent

The foremost challenge for IOR will be to get all its diverse sub-regions together, and in a manner to douse mutual suspicions of the countries, not necessarily related only to military insecurities, but also to address geopolitical intent and related uncertainties. Hence, confidence-building through exchange of perspectives is the essential start-point. Encouragingly, this process has already begun with the IODs beginning with the first one held in 2014 at Kochi, followed by Perth (2015), Pedang (2016) and Abu Dhabi (2017).

At the next level, it would be more prudent to identify specific maritime security issues that that enjoy a most widespread acceptability and thus, upon which, the IORA members would be more inclined to cooperate. These issues could be more benign issues or those that pose a greater region-wide risk. This approach is commonly referred to as the ‘lowest common denominator’ (LCD) approach to security cooperation. Based on such an approach, the following issues are suggested to be prioritized, not necessarily arranged in the order of priority.

Human Safety at Sea

Human safety at sea is fast becoming an issue of concern in the IOR, especially due to the palpable surge in sea-borne economic activity in the region, including trade, travel and tourism. The disappearance
of the Malaysian airliner MH-370 over the sea in 2014, leading to the herculean but futile collaborative efforts going into locating the aircraft in the Indian Ocean indicates the complexity of the issue. The IOR also continues to have restive areas bearing a high potential for humanitarian crises. The heightened crisis in 2017 following the exodus of Rohingya ‘boat people’ from Myanmar on overloaded and unseaworthy vessels is case in point.

On occasions, human safety at sea is overlaid with maritime security, such as in the case of fishermen who tend to be unmindful of crossing maritime boundaries to earn a livelihood, leading to serious security ramifications, such as one that led to the Mumbai terrorist attacks in November 2008. Furthermore, human safety at sea could sometimes override economic considerations. For instance, when the Indian Navy launched it counter-piracy operations in the Gulf of Aden in October 2008, the key consideration was not its sea-borne trade (or geopolitics, as in case of some other navies), but the plight of Indian seafarers. The hijacking of MT Stolt Valor with its Indian Captain and 22-member crew (including 18 Indians) led to the media according wide coverage to the plight of the Captain’s wife, which galvanized the Indian government to taking proactive measures against piracy.

As the IORA makes its tentative endeavors to develop a robust maritime security architecture, human safety at sea – being a ‘low-hanging fruit’ – would be invaluable, since it is really most doable benign ‘common denominator’, to which no member would object. However, even such approach would not be devoid of challenges. Notwithstanding its benign objectives, some countries would continue to be wary of the latent geopolitical intent of other countries. This is exemplified by the cases of some IOR countries that have not even ratified the International Convention on Maritime Search and Rescue, 1979 (SAR Convention). Notwithstanding this, if adequate trust could be achieved within IORA, its members could enter into bilateral or trilateral agreements, thereby redressing the downside of their non-ratification of such conventions.

Preservation of the Marine Environment

It is encouraging that through IORA, the regional countries have lately intensified their collaborative efforts towards sustainable development of the ocean-based economies and related infrastructure under the concept of ‘Blue Economy’. This is another area that offers incentives for regional cooperation. However, the effort needs to be linked-up with maritime security for its comprehensive effectiveness. For instance,
the issue depletion of fish stocks is a result of Illegal, Unreported and Unregulated (IUU) fishing, which, in turn, is a consequence of the lack of maritime law-enforcement capacity of the IOR countries. In the extreme cases, such as the well-known case of Somalia, illegal fishing by foreign fishermen led to the loss of livelihood of Somali fishermen, compelling them to resort to piracy. At present, the rampant piracy off Somalia over the past decade is merely suppressed, and its underlying causes are not addressed. The Somali fishing industry would need to be developed in a sustainable manner through collaborative efforts within IORA, and the effort linked up with maritime security.

Maritime Capacity Building

As in the aforesaid case of piracy off Somalia, many other smaller countries in the IOR are beset by capacity voids for maritime policing, due to which, the countries are unable to effectively regulate activities even in their own maritime zones, much less having the ability to contribute to good order in the global maritime common. This needs to be addressed in a collaborative manner. The non-resident stakeholders could potentially make a valuable contribution in such capacity-building. In this context, two salient major aspects merit particular attention.

First, hardware-related capacity-building would be meaningless unless it is complemented by a more comprehensive capability-enhancement, particularly in terms of doctrine development at various levels, technical support and training. (Notably, India’s approach has taken note of this exigency; for instance, it has not only been providing patrol ships to IOR countries, but also providing them functional and technical training).

Second, although the more endowed regional navies could play a major role towards capacity-building and capability-enhancement of the smaller maritime forces of IOR on a bilateral basis, such efforts would be more effective if these are coordinated multilaterally, such as through the IONS. Furthermore, this would need to go beyond the navies, to a ‘whole of government approach’. For instance, in the Indian context, the Indian Navy’s Foreign Cooperation endeavors have lately expanded to the concept of Comprehensive Maritime Engagement (CME) that synergizes the efforts of all related organs of the Indian government.
Maritime capacity-building would also entail legal capacity-building, such as in terms of enabling legislations for criminal prosecution, legal empowerment of maritime forces and developing Rules of Engagement (RoE) for a low-intensity conflict environment.

**Maritime Domain Awareness**

It is important to note that for an effective ‘response’ against the prevailing trans-national non-traditional maritime security threats, we would first need to achieve situational ‘awareness’, or what the navies call, ‘Maritime Domain Awareness’ (MDA). It denotes the comprehensive awareness of the global maritime common that impacts security, safety, economy, or environment, and needs to be enabled by increased transparency, information-sharing, not just between maritime forces but also between the industry and governments. An enhanced awareness leading to a more effective regulation of maritime activities will not only curb the prevalence of maritime crimes like piracy, trafficking of narcotics and weapons and IUU fishing, but will also create a safe and sustainable environment for maritime activities.

The Information Sharing Centre (ISC) at Singapore under the ReCAAP, and the Information Fusion Centre (IFC) at Singapore being operated by the Royal Singapore Navy (RSN) are some recent ventures making notable contributions to MDA in the IOR. Some such centers even involve non-resident stakeholders like the three centers under Djibouti Code of Conduct (DCoC) - Sana’a (Yemen), Mombasa (Kenya) and Dar es Salaam (Tanzania). Conversely, the regional navies are also plugged into seminal initiatives of the non-resident powers like the EU’s project on ‘Critical Maritime Routes in the Indian Ocean’ (CRIMARIO).

India could also play an important role towards MDA. Towards this end, at the First IORA Leaders’ Summit and the 20th anniversary of the Association held Jakarta at in March 2017, which led to the signing of the IORA Concord, the Vice-President of India, Mr. Hamid Ansari had proposed India’s contribution. He said,

‘maritime safety and security could be reinforced by institutionalizing cooperative mechanisms such as White Shipping Agreements and by setting up an Information Fusion Centre for strengthening Maritime Domain Awareness (MDA)...My Government would be happy to host such a center in India, with our in-house expertise supplemented by support from IORA member countries....’

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The Indian Navy has already established the Information Management and Analysis Centre (IMAC) at Gurgaon, which is essentially aimed to bolster India’s coastal security to prevent a repeat of the Mumbai terrorist attacks of November 2008. The Indian Navy is well on its way to establish a pan-region Information Fusion Centre for the IOR (IFC-IOR), which could be eventually linked to the existing MDA nodes like the IFC at Singapore, and those in East Africa under the DCoC.

The sharing of ‘white shipping’ information is another valuable means to achieve MDA. In 2014, the Indian Government approved its Navy’s proposal to conclude such agreements with maritime security forces of 26 countries. India has since concluded the agreements with 12 countries, six of which are IORA members.

Cyber Security in Maritime Domain

Given that the activities at sea are closely related with economics, including commercial logistics transactions, the growing insecurities in the cyber-space have major ramifications for the maritime domain. The cyber threat represents a relatively new kind of threat – an unknown dimension - and thereby a source of ‘asymmetry’ that likely to be exploited by malevolent non-state actors. Furthermore, the cyber threat is developing faster than their preventive and mitigating responses, and this heightens the insecurity.

The implications of proliferating cyber threats are little known today, but these are likely to affect all IOR countries that are increasing looking seawards to satiate their national objectives of economic development including raising the standard of living of their citizens. It is an ‘unexplored ‘terrain’ – Hence, need for think-tanks (Track-2) to understand the threat and explore potential for cooperation, including through intelligence-sharing. In this context, it may be pertinent to recall the statement of the Vice-President of India, Mr. Hamid Ansari, at the first IORA Leaders' Summit at Jakarta (March 2017).

He said,

‘IORA members have to help each other by sharing intelligence, securing our cyber space and minimizing the use of internet and social media for terrorist activities, (and) pooling the resources… I would like to propose a network of think-tanks to enable the collation of available resources with member countries… I am happy to announce the intention of my government to
establish IORA Centre of Excellence (ICE) in one of the coastal cities of India. The objective would be to provide academics and researchers access to a collective source of data and resource material. We will shortly be circulating a concept note on the proposed Centre through the IORA Secretariat.\textsuperscript{22}

6. ‘Shoring-Up’ IORA

With Maritime Safety and Security having been incorporated in IORA’s agenda as recently as in 2011, the IORA is still at its nascent phase in this domain, and, therefore, needs supplements. This makes it necessary for the IORA to make its concept of ‘inclusiveness’ more comprehensive. IORA’s inclusive approach has hitherto stood merely for the involvement of extra-regional stakeholders/ non-resident powers in its processes. Undeniably, this is critical for the IORA to succeed. However, the IORA would also need to look within IOR for supplements, which surprisingly, have been overlooked thus far.

The comprehensive participation of IOR countries in IORA processes (as mentioned earlier) is one element of such internal inclusiveness. Another element is the inclusion of the sub-regional (including bilateral and trilateral) arrangements that could contribute to the IORA maritime security processes, and thereby, serve to strengthen IORA, rather than weaken it. After the resolution of Bangladesh-Myanmar and Bangladesh-India maritime boundary disputes in 2012 and 2014 respectively, the Bay of Bengal Initiative for Multi-Sectoral and Technical Cooperation (BIMSTEC) is a sea-based sub-regional grouping that is on its way to formulate an agenda for maritime security cooperation, which could potentially contribute to plug into the IORA process. The IORA maritime safety and security mechanism could likewise benefit from the other sub-regional arrangements like the Gulf Cooperation Council (GCC) and the South African Development Cooperation (SADC).

Another valuable – and rather indispensable - element that is available to supplement the IORA’s maritime safety and security agenda is the Indian Ocean Naval Symposium (IONS). The void in IORA that existed before 2011 was sought to be filled in a limited manner by the Indian Ocean Naval Symposium (IONS), which is a collective endeavor of regional navies initiated by the Indian Navy in 2008. However, it was always known that the IONS could not have completely stood-in for a political-level regional architecture. Since the 2011 inclusion of maritime safety and security in the IORA’s mandate,
the IORA and IONS both need each other. Whereas the IONS need to be guided by the political concord achieved in IORA, the IORA is impotent without IONS as its executive functionary. For instance, maritime situational awareness cannot possibly be achieved without cooperation under the ambit of IONS.

In this direction, the IONS has already achieved much in terms of developing the capacity and capability, such as by forging information-sharing agreements that could potentially link-up data-fusion centers like Singapore’s Information Fusion Centre (IFC), India’s IMAC, and those established by the efforts of non-resident navies under the Djibouti Code of Conduct (DCoC).

The IONS has also achieved much headway in humanitarian assistance and disaster relief (HADR), and Search and Rescue (SAR). In October 2010, the Bangladesh Navy conducted a HADR workshop for IONS. In January 2016, the Indian Navy presented a guideline document on HADR. The IONS’ maiden International Maritime SAR Exercise (IMMSAREX) was held in the Bay of Bengal in November 2017 under chairmanship of Bangladesh. The efforts of IORA and IONS would, therefore, need to be synergized to the extent feasible.

It is also important to recall that the establishment of the IONS in 2008 was inspired by the WPNS. The growing linkage between IONS and WPNS will be valuable to further the IORA’s maritime safety and security agenda.

7. Participation in IORA and IONS

The fundamental issue remains the comprehensive participation of individual countries in the maritime security architecture of the IORA-IONS combine. Of the 38 resident countries of IOR, as mentioned earlier, as many as 13 countries are not IORA members (See Fig. 1 below).
Figure 1 - Participant Countries in IORA and IONS

The non-members include many key countries in West Asia. In Southern Asia, Pakistan and Maldives are notable omissions. While it may be desirable to enhance the membership of IORA, the process would need to carefully consider geopolitical factors in a manner that the inclusion of a particular country does not disrupt the regional maritime security architecture. In Southeast Asia, the incorporation of Myanmar in the IORA process may oblige its government to resolve the Rohingya issue more constructively. The incorporation of Russia as a dialogue partner at IORA may be helpful to provide a geopolitical balance among the major non-resident powers.

Furthermore, nine resident countries of the IOR participate only in one of the two groupings, either IORA or IONS. This implies that in these countries, either the political direction lacks the executive (implementing) structure, or vice versa. Hence, in order to achieve synergy among the IOR countries to address maritime security issues, it is necessary to minimize this differential in IORA-IONS participation to the extent feasible.
8. Conclusion

The inclusion of maritime safety and security in the IORA would go a long way towards the IOR inculcating a maritime-security culture in the coming years. This will enable the resident regional countries to focus on economic development, and eventually become worthy partners to their counterparts of Pacific-Asia, the eastern half of the larger Indo-Pacific region. In the process, however, the IORA as an organization, and individual resident IOR countries would need to be cognizant of the more exigent issues that also enjoy consensus, while also catering for the geopolitical dynamics in the Indo-Pacific region.

If the IOR countries could evolve an effective and ‘comprehensively inclusive’ regional maritime security architecture, it will address the long-standing void in terms of an Indian Ocean ‘identity’. This probably may be helpful *inter alia* to mitigate the geopolitical rivalries and ambiguities of intent in the region.

While some smaller regional countries have sought to address major power rivalry in the IOR through a Code of Conduct for the Indian Ocean, this may be premature, and even counter-productive in the IOR context since it may accentuate the geopolitical rivalries. Hence, it may be prudent for IORA member states to focus on evolving an effective architecture to foster an intra-regional cohesion.

To begin with, the IORA would need to emulate their best practices and modes tailored for maritime security, as may be applicable to the IOR. Towards this end, the IORA members like Australia, India, and some ASEAN countries, which are also participants in the maritime security processes of Pacific-Asia, have a key role to play. India’s proactive role will help New Delhi in fleshing out its vision of SAGAR as also being a ‘net security provider’ with the support of its immediate and extended maritime neighborhood.

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References

1 Since 2011, the term ‘Indo-Pacific’ is being used increasingly in the global strategic/geo-political discourse. So, in its way, the term "Indo-Pacific" can be thought of in the same way as using terms like "Post-Rock" or "World Fusion." From 2010 onwards, the term Indo-Pacific acquired salience within the Indian government and has since been used often by India's apex political leadership.[7] From about 2011 onwards, the term has been used frequently by strategic analysts and high-level government/military leadership in Australia, Japan and the US to denote said region. However, a formal/official documented articulation of the term first appeared in Australia's Defence White Paper, 2013. It has been argued that the concept of the Indo-Pacific may lead to a change in popular "mental maps" of how the world is understood in strategic terms. Lately, US officials have begun using the term "Indo-Asia Pacific". This will enable America to maintain its geographic inclusiveness in the new coinage of 'Indo-Pacific'.


6 IORA website, at http://www.iora.net/en/about/about-iora (Accessed 23 Dec 17)


13 CSCAP Memorandum No. 29 - Harmonisation of Aeronautical and Maritime Search and Rescue (SAR), Jul 17, at http://www.cscap.org/uploads/docs/Memorandums/CSCAP%20Memorandum%20No.29-2012-
The author co-chaired the CSCAP Study Group for CSCAP-India along with CSCAP-Malaysia.


19 Established in 2015, CRIMARIO aims to support maritime safety and security in the IOR (with a particular focus on East African littorals) through enhanced MDA, enabled by information sharing and data fusion. See CRIMARIO website, at https://criticalmaritimeroutes.eu/projects/crimario/(Accessed 24 Dec 17)


NON-TARIFF BARRIERS (NTBs) AND SMALL AND MEDIUM ENTERPRISES (SMES) EXPORT POTENTIAL: THE ROLE OF BEING “GREEN” FROM A SMALL ISLAND PERSPECTIVE

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Abstract

Though both the literature on enhancing the economic resilience of Small Islands Developing States (SIDS) and that on Small and Medium Enterprises’ (SMEs) export is substantial, till date no study has focused on the impacts of NTBs on export of SMEs operating in SIDS and the contribution of these firms in propelling the small vulnerable economies on a sustainable and inclusive green growth trajectory. This study attempts at closing the literature gap by using Mauritius as a case study. The main findings emanating from this research reveal that the most common NTBs hindering SMEs in entering, establishing or moving up value chains are cumbersome administrative procedure followed by technical and conformity assessment requirements as well as marketing barriers. Another interesting result is that small businesses that emerge entrepreneurially are more likely to survive, expand and even export in the long run. This research takes a step further by disclosing the NTBs experienced exclusively by “green” SMEs and use the findings to propose a trade action plan with pragmatic objectives and measures/actions to promote the export potential of “green” SMEs in SIDS.

Key Words: Exports, Green Small and Medium Enterprises (SMEs), Non-Tariff Barriers (NTBs)
Introduction

The hypercompetitive world coupled with rapidly changing technology has propelled many enterprises including SMEs to enter the global market and internationalise themselves. According to Hambrick and Mason (1984) there are six different options for an organization while trying to enter into foreign markets: exporting, licensing, franchising, turnkey projects, joint ventures, and wholly owned subsidiary. Among these six existing modes of internationalization, the most commonly chosen option is to engage in export activities as they do not necessitate huge capital investments and are associated with lower financial and commercial risk than direct investment forms of internationalization. Though, the benefits derived from exports such as increased sales and profits, lower risks, sharing of experience and knowledge among others, are well known. According to some studies, many small and medium enterprises (SMEs) particularly those located in developing countries do not engage in exports.

The paper has been divided into Five Sections. Section I presents the literature review on NTBs and SMEs’ export; Section II presents the methodology of the paper. Section III discusses concepts and contextual analysis while Section IV examines the research findings of Mauritian experience of SMEs as well as the Trade Action Plan of Mauritius; and the main conclusions of the study are presented in Section V.

Section I

Literature Review of Non-Tariff Barriers (NTBs) and SMEs exports

There is an extensive amount of literature on SMEs’ export barriers and most of them point to poor understanding of technical regulations and standards, uncertainty in trade procedures, lack of transparency and access to information, lack of access to finance, internal organizational weakness, strategic business flaws, inadequately educated workforce, tax rates, home country problems, corruption and customs and trade regulation, as the main culprits (Miesenböck, 1988; Leonidou & Katsikeas, 1996; Leonidou, 2004; Gain, 2014; Joosep, 2014 and Goh, 2015). These concerns have been reiterated in the recent World Trade Report (2016), according to which the key hindrances to SMEs’ exports can be categorised in terms of: “(i) limited information about the working of the foreign markets, and in particular difficulties in accessing export distribution channels and in contacting overseas customers; (ii) costly product standards and certification procedures, and, in particular, a lack of information about requirements in the foreign country; (iii) unfamiliar and burdensome customs and bureaucratic procedures; and (iv) poor access to finance and slow payment mechanisms” (p. 78). The report further highlights that in developing countries, customs paper work together
with inadequate transparency in the regulatory environment, restrictions on movement of people and distribution outlets, certification costs and delays prevent SMEs from entering and moving up the value chains. In brief all the authors and reports mentioned above identified non-tariff barriers (NTBs) as the major export constraints. This can be partly explained by the fact that due to the periodic multilateral negotiations carried out under the General Agreement on Tariffs and Trade (GATT) since the late 1940s, there have been progressive reductions in tariff rates around the globe and thus tariffs are no more regarded as key export barriers.

The ability and willingness of SMEs to engage in exports, is further inhibited by NTBs if they operate in Small Island Developing States (SIDS). This is due to the fact that SME’s typical average enterprise size is even smaller in SIDS than elsewhere (Granovetter, 1984) which in turn restrain their aptitude to tackle complicated administrative and regulatory procedures associated with moving and selling goods across borders. Cordina (2004b) further notes that SMEs in small states tend to face a double disadvantage given that size limitations are often magnified in a small country context, where the inherent economic fundamentals are such that they amplify the problems faced by small firms.

One solution that has recently emerged for partially trimming down the above-mentioned export hurdles of SMEs (in particular NTBs) is for SMEs to go “green”. For instance, according to Christmann and Taylor (2001) a firm’s conduct pattern and vision that exhibits concern for the environment can ease access to international markets and increase their international activities. Furthermore, adopting green processes or producing green products/services imply adopting innovative approaches and venturing into risky projects which are both critical ingredients in order to compete successfully in foreign markets (Ibeh and Wheeler, 2005; Yang et al., 2010; Beise and Rennings, 2005). Additionally, the ‘firm heterogeneity’ theory (Bernard and Jensen, 1999, 2004; Melitz, 2003; Helpman et al., 2004; Bernard et al., 2007; Melitz and Ottaviano, 2008) predicts that firms which differentiate themselves through high levels of total factor productivity tend to better engage in international activities. Green processes, methods, infrastructure and products through for instance, energy efficient upgrades and sustainable building practices, can enhance significantly boost employee productivity and contribute towards total factor productivity. Alongside through the introduction of sustainable methods and products, firms may be able to do away with trade barriers inflicted upon non-

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1 According to the business dictionary, a “green” business is a firm functioning in a capacity where no negative impact is made on the local or global environment, the community, or the economy. A green business will also engage in forward-thinking policies for environmental concerns and policies affecting human rights. (http://www.businessdictionary.com/definition/green-business.html).
sustainable enterprises (Rugman et al., 1998; Cainelli et al., 2012) (Lages & Montgomery, 2004; Agndal & Chetty, 2007; Al-Hyari et al., 2012).

Against such a backdrop, this paper examines the NTBs which prohibit SMEs in Mauritius from exporting both in terms of their ability as well as willingness. The choice of the island as a case study can be justified on several grounds: i) Mauritius is a small island economy located far away from its main export markets (for example U.S., U.K and France); ii) nearly 60% of all businesses in Mauritius are SMEs and the latter accounts for around 40% of GDP and 54% of job creation (Ministry of Business, Enterprise and Cooperatives, 10 Year Master Plan for the SME Sector in Mauritius); iii) one of the objectives of the government's programme 2015-19 consists of making SMEs the backbone of the economy; iv) despite the fact that Mauritius is known for its trade-led development, export from EPZ SMEs is low and consists mainly of a single low skill export (clothing), while export from non-EPZ SMEs is almost insignificant. In addition, the study takes a stride further to shed light on whether being green enhance the ability and or willingness of SMEs to export.

In order to classify SMEs as green, the approach of International Labour Organisation (ILO) for assessing green jobs has been applied and detail of same is provided in the methodology section. Such an exercise is important as although many SMEs play a major role in emerging green industries by being dynamically active in sectors like renewable energy production, wind and solar installations and building refurbishment, the task played by them in tackling climate change and contributing towards sustainable growth is frequently not well understood or undervalued, either by government or by SMEs themselves.

Moreover, it is only quite recently that the literature has started examining the linkage between pursuing an environmental strategy and undertaking export activities (see for instance, Christmann, 2004; Dowell, Hart, & Yeung, 2000) but nevertheless most if not all studies till date have concentrated only on large multinationals (Martin-Tapia, J. Aragon-Correa and Rueda-Manzanares, 2010) and those which have focused on SMEs have been performed in the context of developed economies, which in turn raises serious implications with respect to generalisability (Tesfom & Lutz, 2006; Leonidou, 2004; Katsikeas & Morgan, 1994). Furthermore, despite the fact that there is evidence that SMEs are raising their exports (Crick, 1995; Gumede, 2004; Lim, Sharkey, & Kim 1991; Moon & Lee, 1990; Yang, Chen, & Chuang, 2004), the existing literature does not offer robust evidence to assist SMEs in tackling environmental strategies for trade. Alongside it has been argued that SMEs in general do not tend to be environmentally committed (see for instance, Rutherford, Blackburn, & Spence, 2000; Schaper, 2002; Williamson & Lynch-Wood, 2001) and
may also not benefit from their environmental efforts (Greening & Gray, 1994; Russo & Fouts, 1997; Sharma & Vredenburg, 1998). Hence it is imperative to test whether these statements hold in the context of a small island economy and contextual research can assist in this endeavour with the eventual aim of formulating appropriate and sustainable solutions to export barriers facing SMEs.

Finally, the World Trade Organisation (WTO) 2016 report on levelling the trading field for Small and Medium Enterprises (SMEs), itself stresses that till now SMEs have been practically ignored in the WTO context and even on a regional basis there is only a limited number of Regional Trade Agreements which incorporate specific provisions in dedicated articles or chapters on SMEs. Hence based on the research findings, at the end of the paper a trade action plan is also proposed to help SMEs balance between environmental and international advances.

Section II

Methodology

Given that perceptions, behaviour, knowledge and attitudes are vital in relation to public policy issues (Mairesse & Mohnen, 2010), to capture those of SMEs and other concerned stakeholders and to meet the objectives of this study, a survey questionnaire was administered to SMEs as well as a focus group discussion with other stakeholders was conducted. The collection of primary data can be justified on the grounds of absence of secondary or existing data. For the questionnaire the targeted population consisted of all the 6422 registered SMEs as per the Small and Medium Enterprise Development Authority (SMEDA) latest directory. The sample size was determined using probability sampling given that this technique provides each component in the fame an equal probability of being chosen. With a confidence interval of 90% and assuming a standard deviation of 0.5 with the n-adjustment to the sample size, we ended up with a minimum sample size of 95 firms. As such from the 244 categories of

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2 The directory does not provide information regarding whether the SEMs are exporting or non-exporting ones. This information was collected through the survey.
3 Sample Size = (Z-score)^2 x [standard deviation (1-standard deviation)]/(margin of error).
   n-adjusted sample size = sample size/{1+[(sample size-1)/population size]}.
4 Automobile services; farming and breeding; beauty and care; community services; educational services; electronics; events and entertainment, fashion services; financial services; floral/landscaping services; food and drinks; gardening, pats and flowers; garments and accessories; health and fitness; home services; jewellery; logistic services and moving companies; manufacturing services; real estate; security services; sports and leisure; stationery and printing service; taxi services; technological services.
firms, 10 firms from each category were randomly chosen to be part of the survey so that the sample consisted of 240 firms.

The most convenient approach of administering the questionnaire to the 240 firms was used. This implies that in some cases face to face interviews were conducted (mainly in the case of micro firms) using the questionnaires whilst in other cases telephone interviews were preferred or online version of the questionnaires were sent by email. The questions designed were guided by literature review as well as the Mauritian context. The questionnaire was made up of a mixed of closed ended questions (such as two-point questions, multiple choice questions and scaled questions that comprise rating scales like the Likert scale) and open-ended questions. The targeted respondents were the founder, owner or chief executive officer of the surveyed firms since the latter are likely to be the most knowledgeable with respect to the overall situation, activities, and orientations of the firm.

To distinguish between conventional and green SMES, we followed the methodology applied by the International Labour Organisation (ILO) for assessing green jobs, that is, SMEs are considered as green if they were energy and water efficient and/or producing a good or service having a beneficial environmental purpose and/or involved in natural resource conservation. However, given no data was available on the whether their product/service have a positive impact on the environment and/or lead to preservation of natural resources, we had to rely only on the water/energy efficiency data. The latter data was retrieved from three Censuses of Economic Activities (CEA): 2002, 2007 and 2013.\(^5\) We then calculated electricity, water, waste water and fuel cost (EWWW) as a % of total intermediate consumption (TIC) for the 2002, 2007 and 2013. SMEs whose share of EWWW in TIC has been falling over the three year are considered as green while the rest as conventional.

To obtain the views and insights from other stakeholders, a focus group discussion was conducted involving stakeholders from the public sector (Ministry of Business, Enterprise and Cooperatives, Enterprise Mauritius, SMEDA, State Bank of Mauritius, Maubank, National Productivity and Competitiveness Council, National Women Entrepreneur Council, National Co-operative College, Mauritius Research Council), private sector (Empretec Mauritius, Mauritius Commercial Bank, Board of Investment) and the civil society (NGOs in the field of entrepreneurship). The focus group discussion also served the purpose of validating the results from the survey administered to the SMEs as well as provided inputs in drafting the trade action plan.

\(^5\) Given the previous ones did not have detailed data on energy and water usage and the latest available CEA is 2013.
Section III

Concepts and Contextual Analysis

Concepts and various Types of NTBs

NTBs, SMEs and Export

As pointed out earlier following the trade liberalization momentum there has been progressive decline in tariff rates such that tariffs are no longer considered as the central obstacle to export. Indeed, the main culprits that prevail now are the NTBs. This section thus focuses only on NTBs as impediments to exports.

Types of NTBs

NTBs are difficult to examine given they are much more hidden than tariff barriers and vary across products and countries as well as can change rapidly. Many countries use NTBs in the form of regulations, procedures and/or standards to protect health or the environment.

Several definitions have been used to classify NTBs (see for instance, Baldwin, 1970; Hillman, 1991; Mahe, 1997). UNCTAD, categorizes NTBs into the following seven broad categories:

1. Para-tariff measures (customs surcharges, additional charges, internal taxes levied on imports)
2. Price control measures (administrative pricing, Voluntary Export Restraints, anti-dumping, countervailing measures)
3. Finance measures (advance payment requirements, multiple exchange rates, transfer delays)
4. Automatic licensing measures (automatic license, prior surveillance)
5. Quantity control measures (non-automatic licensing including prior authorizations, quotas, prohibitions, export restraint arrangements, enterprise specific restrictions)
6. Monopolistic measures (single channel for imports, compulsory national services)
7. Technical measures (technical regulations, pre-shipment inspection, special custom formalities, obligation to return used products, obligation of recycling)

There is a paucity of literature undertaken on the impact of each of the seven categories of NTBs mentioned above on SMEs' exports. However, in the following paragraphs, an attempt has been made to summarize the existing literature on the effect of NTBs in general on SMEs' exports and not by the seven categories as mentioned by UNCTAD.
NTBs and SMEs’ Exports

There is a consensus that the impact of complying with regulations, rigorous requirements, certification procedures and standards on export differs across firms, in particular by their sizes, since it is beyond the reach of many SMEs as well as micro-enterprises to with the fixed and variable costs of trade. In many cases only exporters operating in remote or restrictive markets are able to bear these costs. OECD (2012) affirms that diverging rules and regulations and control on exporting product related to national or international interest put in place by the home government slow down the export performance of SMEs. This is reiterated by authors like Strydom & Tustin (2003), Rwigema (2004) and Clover & Darroch (2005), according to whom, legal and regulatory constraints may raise the costs of doing business and even suppress entrepreneurship particularly in the case of SMEs given their low capacity to deal with government requirements. Viviers et al (2001) even found that in South Africa some of the government regulatory laws are regarded as a threat to the SME sector. Moreover, an overly complex tax system and regime further raises the cost of doing business which in turn has a distortionary effect on the development of SMEs (Masa to, 2009). Existing empirical evidence clearly shows that small SMEs are impacted disproportionately by the latter (Weichenrieder, 2007). In addition, unfair trade practices like the European Union agricultural subsidy makes it difficult for small farmers in Nigeria to export to European countries (Opara, 2010).

A series of surveys conducted in 23 developing countries, covering more than 11,500 companies by the International Trade Centre in 2015 (ITC) disclosed that another major barrier to SMEs’ exports is non-tariff measures (NTMs) such as sanitary and phytosanitary regulations, particularly certification or quality control, conformity assessment measures (in the agriculture sector) and rules of origin, paperwork and local procedures (in the manufacturing sector). The findings demonstrate that smaller firms were less able to conform with NTMs compared to larger firms and this is more pronounced in developing countries where there is limited support for exporters to deal with these obstacles due to resource constraint. Alongside the findings of Fitzgerald and Haller (2014) using firm-level information for Ireland demonstrate that though a fall in tariffs from 10% to 0 raises participation of medium-sized firms (firms with 100-249 employees) from 11.5% to 14.2%, this reduction in tariffs does not have major impacts on firms of smaller size while a reduction in NTBs significantly affect the latter firms. This can be partly explained by the fact that NTBs in the form of fixed costs are comparatively more taxing for SMEs because they embody a higher share of their volume of business.
Using data on Senegal, Maertens and Swinnen (2009) reveal that the tightening of food regulation has resulted in a shift from small farmers to large-scale integrated estate production. Fontagné et al. (2016) employing individual export data on French firms note that restrictive SPS measures (as measured by specific trade concerns) has a negative impact on both small firms’ participation in trade and their volume of trade while bigger firms lose less from the introduction of restrictive SPS measures since they can suck up part of the higher costs.

**SMEs Exports in SIDS**

In the context of SIDS, the above-mentioned hindrances to exports are even more prominent for SMEs for the following reasons. First, SMEs in SIDS operate in locations which are isolated from the rest of the world which in turn substantially increase initial contact and relationship building costs as well as inflate the cost of obtaining information about the foreign market, legal, financial and tax related matters (Kneller et al., 2011) as not all information is readily available online. Second, as stated by Baldacchino (1999 and 2002), small scale manufacturing enterprises from SIDS usually engage in wholesale and retail trade with low local productive value added or in services which are not affected by scale economies and hence are poorly prepared to be competitive. Third, it has been argued (see for instance, Fairbairn, 1988; Saffu, 2003) that findings on island entrepreneurs is frequently associated with pessimistic results, given that as “world heads inexorably towards becoming a network of prosperous city-regions” (Ohmae, 2001: 33), it becomes increasingly difficult for firms to try and carry on as ‘islands’ of productive industrial activity. In addition, because of fewer certification bodies in small island economies, domestic procedural hindrances may be higher. Though, some of these procedural obstacles are controllable in the sense with time and experience they become routine tasks which can be handled by managerial expertise, many of them are still uncontrollable and require support which unfortunately is missing in many SIDS (Ramaswami & Yang, 1990). Moreover, most SIDS’ exports tend to target the European market, US market and/or the Organisation for Economic Co-operation and Development (OECD) market, where higher standard of living and high concern for food and other products safety result in harsher regulations or controls. Finally, SMEs in SIDS have weak lobbying powers and are less likely to influence trade policies and succeed in reducing tariffs (Plouffe, 2012).

However, this does not imply that SIDS do not provide any competitive advantages for SMEs. Greenwood & McCarthy (2000) cite “lower occupancy costs, a more stable labour force and reduced labour costs” (p.179); whilst Easterly & Kraay (2000) argue that the issues associated with SIDS can be
tackled through appropriate policy measures as well as good governance and an example of a successful island in this aspect is Singapore. (see the “Singapore Paradox” of Briguglio, 2003).

“Green” SMEs: Obstacles and Opportunities

Though, the legal definition of SMEs differs from country to country and even across industries, there is fairly a general accord that “green” SMEs are those which embrace green processes and/or produce green products/services using green production inputs. To be more precise conventional SMEs are those which follow the “business as usual” approach by focusing mainly on economic desires while “green” SMEs carefully integrates social and environmental requirement with economic desires. Green SMEs embrace green processes and/or those creating green goods using green production inputs. Many SMEs have become green by wisely exploiting techno-commercial opportunities and redeveloping business models. Common areas where green SMEs have proved to be successful include smart metering, solar energy production, waste recycling, hybrid cars and building retrofitting. Apart from market pressures from customers and Transnational Corporations (TNCs), other factors urging SMEs to become “green” enterprises include soaring prices of products and main raw inputs and possibility of reducing costs and developing competitive advantage, implementation of innovative solutions and creation of new market niches.

However, despite their willingness to adopt sustainable practices and capture green business prospects SMEs by and large experience many hurdles which inhibit their capability to do so. One of the most obvious obstacles is lack of resources which consequently turn SMEs into being risk-averse and less enthusiastic about investing in new technologies, to some extent due to uncertainty regarding payback period. Other difficulties they face range from lack of access to finance due to reluctance from financial institutions to finance risky “green” projects and or the scarcity (even absence) of expert staff to assess such projects; unawareness regarding available opportunities in the field of “green” ventures due to information asymmetry; deficiency of appropriate skills and expertise to act upon available “green” opportunities, lack of reliable partners to share risks and dearth of decent regulatory framework and conducive environment to support SMEs in their “green” initiatives. For instance, product market regulations which restrain competition create a huge impediment to SMEs operating in renewable energy, environment and sustainability sectors. Regardless of the above-mentioned hurdles, being “green” to some extent can reduce some of the export barriers for SMEs.
Contextual Analysis: A Case Study of Mauritius

Here, we try to capture the importance of SMEs to the Mauritian economy, institutions and policies aimed by boosting the ability and willingness of SMEs to export, the main NTBs inhibiting Mauritian exports and SMEs exports in particular.

SMEs in Mauritius

In Mauritius, a SME is defined as per the Small and Medium Enterprises Development Authority (SMEDA) Act\(^6\). Yet, the definition outlined by the SMEDA Act is not applied by all public institutions. For instance, the Central Statistics Office (CSO) of Mauritius makes its own distinction between small establishments (less than 10 employees) and large establishments (more than 10 employees). This criterion poses critical issues for evaluation, monitoring and policy-formulation purposes. Given the absence of explicit data about SMEs, information available from the CSO on small establishments and household farmer holdings, has been used to partially comprehend the SME sector.

Contribution of SMEs in Mauritius to GDP, Employment and Exports

According to 10-Year Master Plan, the SMEs are likely to play an important role in GDP of Mauritius and in the generation of gainful employment as well as in the exports and value-added production. Figure 1 below indicates the contribution of SMEs to the Mauritian economy in terms of GDP, employment, exports and value added. The contribution of SMEs to exports sector is less than 3%.

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\(^6\) Small Firm is defined as an enterprise with an annual turnover of $< 10$ Million Rupees ($300,000$ USD) and Medium firm with an annual turnover of $<50$ Million Rupees ($1.5$ Million USD)
Figure 1: SMEs’ Contribution to GDP, Employment, Exports and Value Added
Source: 10-Year Master Plan for The SME Sector in Mauritius | 2016 figures

The Figure 2 below indicates the sector-wise employment generation in Mauritius. SMEs are under-represented if not totally absent in sectors which exhibit high growth potential like financial services (with 0.1% of establishment and 0.2% of employment) and ICT (0.4% of establishment and 0.6% of employment). Figures from the Ministry of Business Enterprise and Cooperatives further reveal that 47% of SMEs are operating at almost subsistence level and are mostly managed by own account workers. Their annual turnovers are less than MUR 2 million and they have five or less employees (ibid).
With regards to enhancing the export willingness and ability of SMEs, it must be noted that in Mauritius, the main institution that operates as a Trade Promotion Organization is Enterprise Mauritius. The latter supports local businesses to expand into regional and international markets and meet the challenges of international competition, including advice on Technical Barriers to Trade (TBT) and Sanitary/Phyto-Sanitary (SPS) requirements. One of its core objectives is to assist SMEs internationalize their products and services through export marketing. Its Strategic Plan 2015-2018 takes a holistic approach to both export development and promotion, addressing issues of competitiveness, inter-institutional collaboration and SME empowerment. However, in practice
Enterprise Mauritius, has regrettably geared its efforts mainly towards large and export-ready enterprises, leaving SMEs with export potential but weak capabilities on the side track (10-Year Master Plan for The SME Sector in Mauritius, 2016). Alongside various government initiatives such as the SME Premarket Test & Certification Scheme, Market Development Support, Freight Refund Scheme, Go Export Training Course, Export Credit Insurance Scheme and National Institute for Cooperative Entrepreneurship (NICE) awareness programme have not done much to improve the export potential of SMEs. This may be partly because in addition to tariff and non-tariff barriers there are procedural obstacles (POs) such as delays, institutional costs, excessive paperwork and lack of testing facilities and inefficiencies in the trade-related business environment which may hamper trade. The same conditions unfortunately prevail in many SIDS.

In addition, as noted above, although the financial services and ICT sectors have great growth potential, there is currently no lead trade support institution for the services sector in Mauritius, apart from few sector-specific institutions (Mauritius Tourism Promotion Authority-MTPA and Financial Services Promotion Agency-FSPA), while Enterprise Mauritius focusses on the manufacturing sector. The Board of Investment does provide some sort of assistance to service-based SMEs in the form of “Participation in International Fairs SME Refund Scheme” but its mandate is principally geared towards attracting foreign investment. As regards to exploiting the opportunities that the ICT sector offers, it must be noted that there is a significant lack of IT culture and expertise among the staff of public institutions. For instance, there is no online platform to facilitate the communication between public support institutions and SMEs, whilst the “Live Chat Feature” has become the norm for service-based enterprises.

Recognizing the fact that SMEs account for around 99% of all establishments operating in different sectors of the economy and contribute nearly half of total employment and about 35% of Gross Value Added (GVA), the Government recently came up with the 10 - Year Master Plan for SMEs to give substance, purpose and direction to the following ambitious targets:
raising SMEs’ contribution to GDP, currently from 40%, to 52% by 2026;

➢ raising SMEs’ share of total national employment from 55% to 64%;

➢ increasing current exports from less than 3% to about 18%; and

➢ increasing value addition from MUR 175 billion to 388 billion.

Non-Tariff Barriers (NTBs) inhibiting Mauritian Exports

Mauritius is a member of the WTO as well as of two regional Free Trade Agreements (FTAs): The Common Market for Eastern and Southern Africa (COMESA) and the Southern African Development Community (SADC). Under the Generalized System of Preferences (GSP) scheme, Mauritius enjoys tariff preferences from a number of developed countries. With a trade-to-GDP ratio of 98% (2016), the country targets to convert the island into an open and globally competitive economy and to entirely incorporate it into the world trade system through its trade policies. According to the World Bank’s Ease of Doing Business 2017 ranking, Mauritius ranks 1st in Africa in and this high ranking of the country signals the efforts of the State in facilitating trade and investment.

Mauritius currently has approximately 920 export-ready enterprises, of which most SMEs export to Africa and the Indian Ocean Islands. With its exports augmenting in the latter regions from Rs7.3 billion in 2010 to Rs 10.6 billion in 2016, Mauritius is foreseeing great potential to further exploit these markets. However, this Mauritian aspiration is faced by challenges. The problems are mostly in the form of Non-Tariff Barriers (NTBs) (since tariff barriers are already surmounted under SADC and COMESA FTAs) which dispirit Mauritian manufacturers to export to these destinations.

Below are some of the key NTBs which prohibit Mauritian exports towards Africa:

➢ The lengthy administrative procedures for obtaining Pre-Verification of Conformity (PVOC) and Certificates of Conformity (COC) certifications when exporting to markets such as Tanzania and Kenya; and limited market access to Ethiopia

➢ Stringent laboratory tests. Frequently, Mauritian laboratories do not have the aptitude to undertake such tests and have to subcontract the tests to overseas laboratories. This is time consuming and raises the costs. For instance, exports to countries like Kenya and Tanzania have to undergo tests only via pre-selected specific laboratories.
➢ High transportation costs which inhibit competitiveness, particularly when it concerns exporting to Northern and Western African countries as well as landlocked territories.

➢ Strict labeling requirements and pre-shipment inspections impede market access.

➢ The double transformation rule enforced under the SADC Rules of Origin, which restricts use of raw materials from a non-SADC member states, obstruct Mauritian exports of textiles and apparels.

The ITC survey conducted in 2011 reveals that 27% of Mauritian exporters were affected by NTMs and other trade-related issues. The findings further disclose that 16% of NTMs were enforced by the home country, whilst 84% were applied by partner countries. Among the arduous regulations experienced by the exporters, 87% were imposed by partner countries (mainly European Union member states and COMESA) and only 13% were applied by Mauritius. Exporting firms stated that the majority of NTMs as applied by partner countries, were conformity assessment measures accounting for 65% (47 out of 72), like product certifications and testing measures. 21% of the companies pointed out that technical requirements, for instance labelling requirements and storage conditions, had burdensome impacts. In the textiles and clothing sector, rules of origin and related certificate of origin measures applied by partner countries were considered to be the most significant NTBs.

Section IV

Mauritian Experience of SMEs

The participating firms varied in size, scope and product/service. The gender split between respondents was 35 percent women and 65 percent men. As shown in figures 3 and 4, only 10% of the sampled SMEs were exporting their goods/services and in terms of export intensity, for only 2 firms (9%) exports accounted for at least 70% of total revenue.

Figure 3: Exporting SMEs and Non-Exporting SMES

Figure 4: Export Intensity of Exporting SMEs
The responses to the questionnaire also allowed us to categorize the firms as i) exporting firms (EF); ii) non-exporting but willing-to-export firms (NEWF); iii) non-exporting, not-willing to export firms (NENWF); iv) non-exporting, not-willing and able to export firms (NENWAF) and v) non-exporting, not-willing and not-able to export firms (NENWNAF)as demonstrated in figure 5.

Such a categorization of non-exporting SMEs provides useful information regarding SMEs readiness to export and can assist in guiding discussions surrounding the significance of the pre-export phase. Out of the 90% (216 firms) non-exporting firms, 59% (127 firms) belong to the group of NEWF since they reported that they had plans to export in the future. An interesting result from the survey is 74% (94 firms) of respondents who belong to the group NEWF, are ready to export in terms of willingness but not in terms of capability to export. The section on barriers to export may shed some light on the reasons of their inability and/or unwillingness to export.

From a sector perspective, the survey results disclose that the majority (71% as illustrated in figure 3) of the exporting SMEs operate in the sector of garments and accessories which in turn implies that exports from these small and medium enterprises tend to be concentrated in one product line. This can be explained by the fact that Enterprise Mauritius focuses only on the manufacturing sector and as pointed out in the contextual section, there is lead trade support institution for sectors which have high growth potential like services and ICT. In terms of export market, 58% of the exporting surveyed firms...
reveal that their main export market is the European Union (mainly France) which signals the high vulnerability of these firms to economic shocks and currency volatility in that market. Figure 6 further shows that only 17% have penetrated the African market though it is nearer compared to other markets while 9% and 6% are active in the U.S. and India respectively.

The majority of the firms surveyed declared that their existence has been mainly driven by the ideas, effort and funds provided by the founder-owner and in some cases family member(s) and/or close friends have helped with complementary skills and assistance. Given that the initial required outlay of capital to start their businesses was a reasonable amount, only a few firms (mainly those owned by women) have used microfinance facilities as seed money, though such facilities have been widely used for expansion of their operations. Another noteworthy point is that the initiative of setting up a business (mainly for those firms in the following categories: beauty and care; electronics; food and drinks; garments and accessories; jewelry and technological services) was a strategy of weaning away from being an employee and putting the acquired skills and resources earned from previous employment to the use of one’s eventual own business. This is in line with the findings of Hellmann (2002) who states that self-employment may not be the reason behind the origins of entrepreneurship and in many cases incumbent firms without their own will, act as incubators of other firms. Moreover, small businesses that emerged entrepreneurially were more likely to survive, expand and even export in the long run (as shown in figure 6, 71% of exporting firms operate in the garment and accessories sector), provided they are supported with technical and marketing assistance. The respondents who actually started a business from scratch were mostly under graduates with limited entrepreneurial know-how. Consequently, they embrace
subsistence business model with restricted value addition and wealth creation opportunities. This can partially explain why the SME sector is predominated by subsistence entrepreneurs, comprising small establishments and own account workers.

To have more insights into the obstacles hindering SMEs, a cross-tabulation was performed on category of SMEs and the category of NTBs considered being most important (score of 5 on a 5-point Likert scale) by the respondents. Some firms mentioned more than NTB as being most important. The results are reported in table 1.

<table>
<thead>
<tr>
<th>Type of SMEs to Export</th>
<th>EF</th>
<th>NEF</th>
<th>NEWF</th>
<th>NEWAF</th>
<th>NEWNAF</th>
<th>NENWF</th>
<th>NENWAF</th>
<th>NENWNAF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informational</td>
<td>1</td>
<td>42</td>
<td>18</td>
<td>10</td>
<td>8</td>
<td>24</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td>Marketing-</td>
<td>4</td>
<td>23</td>
<td>13</td>
<td>6</td>
<td>7</td>
<td>10</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Marketing-Logistics</td>
<td>3</td>
<td>36</td>
<td>17</td>
<td>3</td>
<td>14</td>
<td>19</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Marketing-Promotion</td>
<td>5</td>
<td>38</td>
<td>15</td>
<td>4</td>
<td>11</td>
<td>23</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>Marketing-Price</td>
<td>3</td>
<td>15</td>
<td>9</td>
<td>1</td>
<td>8</td>
<td>6</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Procedural</td>
<td>7</td>
<td>56</td>
<td>21</td>
<td>4</td>
<td>17</td>
<td>35</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td>Governmental</td>
<td>2</td>
<td>33</td>
<td>26</td>
<td>7</td>
<td>19</td>
<td>7</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Environmental-</td>
<td>2</td>
<td>21</td>
<td>12</td>
<td>2</td>
<td>10</td>
<td>9</td>
<td>2</td>
<td>7</td>
</tr>
</tbody>
</table>

Table 1: Cross Tabulation between Type of SME and Most Important NTBs to Export

The highest number of firms (63) inclusive of both exporting and non-exporting SMEs blamed procedural barriers as being the most important hindrance to exports. These procedural barriers mainly in the form of custom clearance and documentary requirements, verification and classification of goods, inspection and testing by the different bureaus of standards, non-acceptance of certificate of origin, arbitrary product classification, lengthy classification and valuation of the export processes and sometimes corrupt practices tend to increase transaction costs and challenge competitiveness. This is in line with what has been stated in the existing literature (Strydom & Tustin, 2003, Rwigema & Venter, 2004; Clover & Darroch, 2005 and Finmark, 2006). Inputs from the focus group discussion further uncover the fact that in spite of the preferential access in the EU market, the technical and conformity assessments requirements of that market are very cumbersome for SMEs. The need for labelling in various languages was quoted as an example. Some stakeholders went further to state that in the
agriculture sector, a national food control strategy and accreditation of official laboratories can assist in easing technical and conformity assessments requirements.

More than 50% of the surveyed firms (127 out of 240) mentioned that they face major hurdles in all aspects of marketing including distribution, logistics or promotion (price to a lesser extent). Both male and female respondents affirmed that they mostly use the internet given the associated costs are relatively low, a finding which also manifests itself in other studies (see for instance, Haynes et al., 1998; Waiker et al., 2002). Those firms which manage to export their products further revealed that the internet was also their key tool for communication. However, very few firms confirmed of having a web page and among them only a handful updates their websites. Such a result is in harmony with that of O’Toole (2003) who declares that SMEs are unable to dig out competitive value from the use of the internet. One solution brought up at the focus group discussion to deal with the marketing barrier was collaboration with multinational firms as the latter enhances one’s ability to become “glocal” and globally competitive.

The majority of SMEs which were not ready to export either in terms unwillingness or inability to export, again found procedural, marketing and informational barriers are the key obstacles preventing them from exporting. It must further be noted that most of the unwilling to export forms were engaged in services like health and fitness, logistics, security and beauty and care while those which did not have the ability to export were mainly involved in the production of technological, financial, automobile and manufacturing services.

Some more specific barriers, in addition to the ones mentioned in the questionnaire, evoked during the focus group discussion include unstructured planning and lack of knowledge and strategic planning for decision-making under the prevailing dynamic and complex business environment; lack of resources, communication barriers and difficulties in meeting quality and ISO requirements. Some of the proposed solutions emanating both from the survey and the focus group discussion include: the need for technical and marketing support; training particularly in areas where SMEs lack competence to reach the foreign market; branding of product closely to its island provenance to add a scent of exoticism; tackling lack of resources by forming entrepreneurial networks and partnerships with key agencies and fully exploiting their ability of being flexible compared to larger firms. One stakeholder even mentioned that a fact sheet elaborating the market opportunities emerging from the recently signed Free Trade Agreements (FTAs) between Mauritius and its partners can partly address the informational barrier.
When our above-mentioned methodology was used to classify the surveyed SMEs as “conventional” and “green”, it was found that 62% of the exporting SMEs and 48% of the non-exporting were green respectively. The majority of the green SMEs were “green” in terms of being resource-efficient and some pointed out that it was not out of choice but rather necessity as cutting down costs is crucial for retaining competitiveness. 84% of the SMEs selling green products declared that their main market is Mauritius itself. Most of the green non-exporting SMEs were located in the NEWNAF implying there were willing to export but did not have the ability to do so mainly due to marketing and procedural barriers.

Section IV

The Trade Action Plan for Mauritius

This section proposes the trade action plan based on the literature review, our desk research and the responses from the survey and focus group discussion. The main objective of this action plan is to boost the export aptitude of SMEs in SIDS which produce green products/services and/or uses green production processes and methods and ultimately contribute towards promoting inclusive green growth.

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7 Green implies having a lesser or reduced effect on the environment when compared with competing products/services/processes/systems that serve the same purpose. In terms of processes and methods this may imply reduced waste, bio based content, recyclable or reusable components, recycled-content, energy efficient, low embodied energy, use of renewable energy, water reuse and recycling, responsible rain water/stormwater management, enhanced indoor environmental quality, reduced environmental impact over the lifecycle, reduced or eliminated toxic substance, sustainable development and smart growth.
### Table 2: Trade Action Plan

<table>
<thead>
<tr>
<th>Objective</th>
<th>Short Run &amp; Medium-Term Actions</th>
<th>Long Run Actions</th>
<th>Expected Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stimulate SME’s interest in green production and processes, methods and technology to cater for both local and foreign customers’ emerging needs and requisites.</td>
<td><strong>Awareness raising campaigns/programmes to inform SMEs on the positive benefits and opportunities offered by resource efficiency and those associated with producing green products/services and/or using green production processes/methods and technology.</strong></td>
<td><strong>Tax benefits to encourage take-up of green technologies</strong></td>
<td><strong>Creation of a network of practitioners to enhance knowledge sharing, produce feedback loops and develop synergies.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Tax benefits</strong></td>
<td><strong>Showcase green initiatives undertaken by successful green SMEs.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>A guide to provide information on the specificities of the circular economy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Feed-in tariff without a local content requirement.</strong></td>
<td></td>
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</tr>
<tr>
<td>Redress skill mismatch and upgrade human capital of SMEs to respond to new market demands.</td>
<td>Provide training in areas where SMEs owners and staff lack expertise and experience to enter the foreign market or to expand access to the foreign market.</td>
<td>Foster collaboration by for instance, requiring capacity building providers and SMEs to apply together for funding.</td>
<td>Sustainable competitive advantage to compete in foreign markets. The stock of competencies, knowledge, skills, expertise, and connections gained through investment in human capital cannot be easily transferred to, or productively deployed by rival firms. Better placed to meet product quality/standards/specifications of foreign markets.</td>
</tr>
<tr>
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</tr>
<tr>
<td>Redress informational and contact barriers to SMEs’ internationalization.</td>
<td>Creation of a website that provides information on tools, examples and glossaries to assist stakeholders better understand engage in the market. It must be user-friendly, accessible and updated regularly. Connect first-timers with well-established firms in the field. Create a subscription “regulatory watch” service to send out regular e-</td>
<td>Organising workshops, seminars and conferences, online forums to build on exchange ideas.</td>
<td>Enhanced knowledge regarding the ecosystem of overseas market. Improved ability for locating/obtaining adequate representation in target export markets.</td>
</tr>
</tbody>
</table>

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<p>| Reduce financial constraints which inhibit SMEs’ potential to engage in exports. | On a pilot basis, launch projects to test the applicability of innovative financial instruments like participating loans, convertible debt, crowdfunding, business angel co-investment and incorporate cleaner production and resource efficiency considerations into the conditions of these financial instruments targeting SMEs. Awareness raising campaigns regarding the benefits of such instruments. | Create long-term support for community lenders, for instance the development of an affordable Lending Portal. | Increased probability of exporting. Reduced financial constraints will overcome the fixed costs of exporting, thus increasing SMEs (new entrants) participation in foreign markets. Higher export intensity as SMEs (already exporting ones) may expand and exploit economies of scale. Promote financial inclusion |</p>
<table>
<thead>
<tr>
<th>Increase market access and exports for green SMEs.</th>
<th><strong>Increase market access and exports for green SMEs.</strong></th>
<th><strong>Increase market access and exports for green SMEs.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Green Public Procurement.</strong> Train public sector procurement and finance teams within central and local government and other public institutions in designing procurement processes which incorporate clauses which make at least 20% of government purchases from green SMEs mandatory. <strong>Develop sectoral certification brands and eco-labels for SMEs.</strong> Organize fairs and provide marketing support (particularly for those in agro-industry)</td>
<td><strong>Develop a national policy on promoting eco-labeling.</strong></td>
<td><strong>Develop a national policy on promoting eco-labeling.</strong></td>
</tr>
<tr>
<td><strong>Build partnership on removal of NTBs for market access with African Partners (easier with RTAs like SADC, COMESA of which Mauritius is a member)</strong></td>
<td><strong>Negotiate rules that facilitate regulatory convergence, mutual recognition and transparency in RTAs negotiations and in the</strong></td>
<td><strong>Negotiate rules that facilitate regulatory convergence, mutual recognition and transparency in RTAs negotiations and in the</strong></td>
</tr>
<tr>
<td>*</td>
<td><strong>Reduce NTBs and procedural obstacles and inefficiencies in trade-related</strong></td>
<td><strong>Reduce NTBs and procedural obstacles and inefficiencies in trade-related</strong></td>
</tr>
<tr>
<td>*</td>
<td><strong>Emergence of new growth engine.</strong> <strong>Creation of green, inclusive and decent jobs.</strong></td>
<td><strong>Emergence of new growth engine.</strong> <strong>Creation of green, inclusive and decent jobs.</strong></td>
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<tr>
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</tbody>
</table>
business environment.

Support value addition, innovation and brand identity.

Public funding in the form of R&D grants, Corporate income tax allowances for research and development costs, Innovation voucher

Revise and enforce patent policy, antitrust policy, anticorruption policies to encourage investment in R&D and product differentiation.

Niche markets (mainly in Africa)

Section V

Conclusion

In many SIDS, SMEs are perceived as powerful propellers that can sustain economic activity on a rising sustainable and inclusive green growth trajectory. Moreover, given their strong ties with the local environment and community SMEs are well placed to disseminate knowledge and innovative practices whilst creating green inclusive jobs and delivering environmental and economic resilience. However, given the small domestic market of SIDS, one possible route for SMEs to fully deliver their potential is through trade. Unfortunately, SMES participation in trade has been negligible and the conducted survey and focus group discussion have revealed many NTBs which inhibit SMES from exporting their products/services. The most prominent NTBs disclosed by this study relate to cumbersome and complex procedures, technical and conformity assessment requirements, followed by marketing barriers. This issue could have been solved if instead of giving high importance to trade promotion which targets mainly already firmly established firms, more resources were diverted towards trade support which focuses on proactive capacity-building programmes meant specifically for SMEs to assist them in tackling these procedural barriers. It must be highlighted that the existing SMEs incubators provide just physical infrastructure which does not nurture the SMEs into mature firms which are ready to face foreign market competition. These incubators in addition to the physical infrastructure, should provide other business development supports (like coaching, networking, mentoring, product development and marketing, visibility) as an integrated strategy.
There is also a need to put in place an evaluation mechanism to assess the impact of the services and schemes provided by the multitude of public support institutions that have been created to assist the SME sector. Alongside there is a call for regulatory reform aiming at the following: i) reducing command-and-control approaches to enhance the cost-effectiveness of compliance measures; ii) increasing the flexibility for meeting standards, and iii) applying market-based incentives. The research findings further reveal that SMEs in Mauritius (a country which aspires to become a cyber-island and where ICT is solidly anchored as the third pillar of the economy) do not dig out the competitive value that technology may offer as very few of them have a website or even a web page. Given the increasing relevance of e-commerce in international trade, this definitely put SMEs at a disadvantage. Hence the national SME development strategy must take account of the prevailing dynamics of the global business environment, the exigencies of the country’s new economic ambitions.

Coming to “green’ SMEs, in order to have a vibrant domestic SME ecosystem, Mauritius must promote these innovative entrepreneurs and prevent them from dying out in face of fierce competition in foreign markets. One strategy that might be helpful, is to entice (by marketing its economic, social and political stability as well as its high score on ease of doing business) foreign entrepreneurs engaged in high product end and sustainable/green activities to (re)locate their start-ups or SMEs in Mauritius. The latter can then act as strong drivers in uplifting the innovativeness, competitiveness and “greenness” of Mauritian SMEs through collaboration and the desire to excel.

Last but not least, the proposed trade action plan in this study divulges actions and measures which need to be taken both in the short, medium and long run by SIDS to overcome these barriers as well as highlights the expected outcomes of the proposed actions and measures, unlike the 10-Year Master Plan for SMEs which is mute on the outcomes of its proposed measures on top of focusing on conventional SMEs rather than green innovative ones. The trade action plan also recognizes that a trade-focused response to the challenges faced by SIDS is but one ingredient in a policy mix needed to endorse and nurture green and inclusive growth.

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INDIAN OCEAN RIM ASSOCIATION (IORA) PERSPECTIVES ON MARITIME SAFETY AND SECURITYa

Ruchika Rishi\textsuperscript{b}

Director for Maritime Safety and Security, Indian Ocean Rim Association (IORA)

Abstract

The aim of this paper is to collate and catalogue the challenges and developmental needs in the area of maritime safety and security, from the perspective of the Indian Ocean Rim Association (IORA). The article begins with an interpretation of the concept of maritime safety and security as per existing theories in this field. Thereafter, the main body of the paper focuses on a codification of outcomes from various reports from IORA events that have been related to this area. The methodology used is descriptive-analytic, with an intention to provide a plethora of recommendations that interested stakeholders may choose from and prioritize for maximum effectiveness of combating challenges in maritime safety and security. It is hoped that this collation of “acknowledged issues and challenges” on one hand may help readers gain a broad view of concerns and their causal factors; while the listing of “possible solutions” on the other hand, may simultaneously provide an array of pragmatic solutions that may be chosen from and/or prioritized in a hierarchy of usefulness so as to suggest a future direction. The article concludes that the time has arrived for countries to move beyond discussions and concentrate joint efforts on the actual implementation of recommendations, with the multilateral approach to transnational safety and security matters emerging as perhaps the most viable implementation tool.

Keywords: Maritime Safety and Security, Issues, Challenges, Recommendations, Possible solutions

Introduction and Organisation of the Paper

This paper seeks to present IORA perspective on Maritime Safety and Security (MSS). This paper has been divided into five sections. The introductory Section One is presented as a survey of existing literature on maritime safety and security to serve as primer for the topic. Section Two focuses on requirements and actionable points for building a comprehensive approach for a regional strategy on maritime safety and security. Section Three similarly provides the outcomes from maritime safety and security related events organized by IORA on the three sub-topics of Humanitarian Assistance & Disaster

\textsuperscript{a}The paper is partly based on a precursor document prepared by the same author in 2016, entitled “Compilation of Outcomes, Vol. 1 - Priority Area: Maritime Safety and Security”. This document had been presented and endorsed at the IORA Council of Ministers Meeting in October 2016

\textsuperscript{b}Facts and opinions published in the Journal of Indian Ocean Rim Studies (JIORS) express solely the opinions of the respective authors. This in no way represents the views of IORA. The Authors are responsible for their citing of sources and the accuracy of their references and bibliographies. The editors cannot be held responsible for any lacks or possible violations of third parties’ right.
Relief (HADR) and Search and Rescue matters; environmental security; and Illegal, Unreported and Unregulated (IUU) Fishing concerns. Section Four looks at IORA Member States’ thinking on legal aspects of Maritime Safety and Security. The main conclusions of the study are presented in Section V. Each topic in the Sections II, III and IV is divided into two broad parts namely: (a) Key Outcomes and Discussions, which provides an overview of the importance of the topic, and areas of concern in the particular topic, under the heading of ‘Issues acknowledged by Member States’; these are accompanied by ‘Identifiable Challenges’, which point to major reasons that underlie the given issues; and (b) Recommendations and Requirements, panning from wide ranging suggestions ‘at a regional level’ to pinpointed proposals that take the shape of ‘specific recommendations’. All efforts have been made correctly representing the language of the event reports to the extent possible. Each entry is annotated with a reference to the particular event it has been noted from, the key to which is given in the box below:

Key:
[A] Economic and Business Conference (EBC), Mauritius, 4 - 5 July 2013
[E] 1st Indian Ocean Dialogue: Kochi Consensus, India, 7 September 2014
[H] 2nd Indian Ocean Dialogue: Perth Consensus, Australia, 5-7 September 2015
[I] 1st IORA Meeting of Experts on Maritime Safety and Security, New Delhi, India, 13-14 October 2015
[L] 4th Indian Ocean Dialogue: Abu Dhabi Consensus, UAE, 9-10 October 2017
[M] 2nd IORA Meeting of Experts on Maritime Safety and Security, New Delhi, India, 7-8 November 2017
Literature Review


In the above-mentioned papers, the authors have touched all the aspects of hazards as well as the issues related with Safety, Security and Safety and Security including traditional and non-traditional security. The literature review has been fruitful in developing a better understanding of the issues involved in Maritime Safety and Security (MSS). The focus of the paper as mentioned above is to develop a matrix and catalogue of challenges and development needs in the area of Maritime Safety and Security (MSS) from the perspective of the Indian Ocean Rim Association (IORA).

Section I
What is Maritime Safety and Security: An Overview

The Indian Ocean’s many islands and peninsulas border major arteries of communication and commerce. Throughout history, oceans have been of vital economic importance, while also being the scene of various threats. The commercial value of the oceans has additionally been re-evaluated upwards due to the economic potential of offshore resources, which include fossil energy, seabed mining, as well as the economic promises of coastal tourism.

The development of the blue economy is linked to maritime safety and security since sustainable growth and management strategies require the enforcement and monitoring of laws and regulations, which is made available through the provision of a secure maritime environment for managing marine resources. (Bueger 2014, p.161) However, the sea is also the source of a variety of dangers which not
only jeopardize the prosperity of populations proximal to the sea but even the security of states by means of territorial disputes, non-state political violence, transnational crime, and environmental degradation. (Bradford 2005, p.62)

Maritime safety and security, therefore, is at the forefront of the region’s socio-economic and political concerns.

Maritime concerns compete for attention with traditional military threats, insurgencies, crime, various developmental and political issues, etc.; being away from the gaze of the majority of the world population that lives on land, these maritime matters have historically held rather low positions in the interest hierarchies of most states, even those with large maritime territories. However, their priority has been steadily increasing of late. “This shift has been due to a combination of the disappearance of Cold War menaces and the increasing recognition of maritime dangers.” (Bradford 2005, p.79)

What is Maritime Safety and Security?

Definitions:

“Maritime Safety and Security” is a buzzword in international relations but is as yet loosely defined. A few commonly accepted, yet divergent, approaches at defining this concept can be seen below:

Firstly, it is seen to cover a large theatre, involving entities from international, public and private sectors aiming at preserving the freedom of the seas, enabling and protecting trade and commerce, and maintaining good governance at sea. This definition requires a further definition of each of its constituent elements. To elucidate, if it is defined as maintenance of “good governance/order at sea” then what exactly good or governance or order are needing to be defined.

Next, it is also frequently defined in terms of ‘threats’ that prevail in the maritime domain. Usually, studies focus on “traditional” threats like state-to-state naval conflict; but increasingly, attention is also being paid to “non-traditional” threats that cover a diverse range of broader maritime concerns, such as ocean resource management, changes in patterns of commercial shipping, transnational crime, environmental pollution, terrorism, piracy, drug human and arms trafficking,
illegal unreported and unregulated (IUU) fishing, environmental crimes, or maritime accidents and disasters. The view is then that Maritime Safety and Security should be defined as the absence of these threats.

Thirdly, it could be defined in positive terms by linking it to ‘economic’ or ‘blue growth’. “In this economic attempt to define maritime security, similar questions arise: whose economy is it concerned about, and who will be the primary beneficiaries of such growth?” (Bueger 2014, p.160)

It is evident that while each approach has its advantages, individually, they leave lacunae that bring only partial success to fully understanding the concept. There is no universally acceptable definition due to the fact that this is a broad topic, covering many policy sectors. What, then, is the way forward?

**Mapping the Concept of Maritime Safety and Security:**

In an attempt to delineate the concept of Maritime Safety and Security, Dr C Bueger in his article ‘What is maritime security?’ (Bueger 2014, pp 159-161) proposed three frameworks (outlined briefly as below) by which one can identify commonalities and divergences to arrive at some kind of consensus. When considered simultaneously, this approach allows for a “mapping” of the maritime safety and security concept, as has been elaborated below:

i) Relations between concepts: In the first framework, it is proposed that Maritime Security can first be understood in a matrix of its relation to other concepts, such as marine safety, sea power, blue economy and resilience. The interrelationships amongst these concepts are recognized, based on the postulation from semiotics that concepts gain their meaning in relation to other concepts. By studying these relations, one comes to understand divergent perspectives of maritime security for different stakeholders; this provides the outline for the matrix.

Security actors can differ considerably over how they draw these relations and situate threats within those. Therefore, the matrix is a useful instrument to comprehend the differences and commonalities of understandings that form the basis of perspectives of various stakeholders.
ii) Issues that compose the whole: The second framework proposes that Maritime Safety and Security may be understood by studying how maritime threats are made and on what political claims these are based; the attempt is to uncover political interests and divergent ideologies. When it comes to what decides the content and priorities within safety and security policies, an analysis of the political process by which those threats are constructed, and issues chosen is required. A stellar example of such an exercise is the ‘Securitization Framework’ as originally proposed by Waever and Buzan (1998). It suggests that threats are constructed by a series of claims made by actors with sufficient authority, so that an issue is presented as an existential threat to a certain referent object like sovereignty or trade. Therefore, as there is a logic to threat construction, hence such processes can be analyzed through a generic framework.

Importantly, this exercise can be extrapolated to the maritime domain as well: firstly, by showing how contemporary understanding of oceans has come to portray them as a zone of insecurity and threats; next, by analyzing how different issues are chosen and by whom, and
then securitized to form the maritime threats agenda. Through this exercise, we can get to understand what different actors deem as worth protecting and how. This also helps understand how the perspectives of different actors differ.

It must be noted that while this approach raises the priority of maritime domain concerns, it does not necessarily lead to optimal or sustained solutions.

iii) Acting in its name: The third framework suggests that it is most useful to gain understanding by studying what stakeholders actually do when they claim to enhance maritime security instead of studying interrelationships of concepts. Here, the central unit of analysis is the implementation practice, which is understood as an organized pattern of action and terminology. Such practices may include surveillance activities, law enforcement, coordination, patrolling and search and rescue exercises and naval diplomacy or warfare. The tools and technologies actually used form the core interest.

This approach throws up interesting insights. Studies of routine activities illustrate how the meaning of maritime safety and security becomes defined and institutionalized in a distinct set of practices. Studies of non-routine and contentious activities like naval warfare show how stakeholders delimit the meaning of the same concept.

This approach also highlights that the provision of maritime safety and security is a major inter-agency challenge at both the national and international levels. It demonstrates how stakeholders cooperate and what potential effects this cooperation can have.

A combination of these three frameworks is useful in the absence of a universal legal or acceptable definition of Maritime Safety and Security. They can help provide information on stakeholders’ perspectives and interpretations, cope with coordination problems, and assist in clarifying intra and inter disciplinary contours.

**Maritime Safety vs. Maritime Security:**

It is heartening to note that the distinction between ‘Maritime Security’ and ‘Maritime Safety’ is rather better defined. While these two terms are often used interchangeably at various fora, the difference between them is of critical importance because each term connotes protection against different categories of threats to life and property at sea.
For ease of clarity, the two may be compared in the following table (Feldt et al. 2013, p.2; Mukherjee and Brownrigg 2013, p.250). The crucial distinction is between man-made and unintentional risks and dangers:

<table>
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<tr>
<th>Elements</th>
<th>Maritime Security</th>
<th>Maritime Safety</th>
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<tbody>
<tr>
<td><strong>Structure</strong></td>
<td>Combination of preventive and responsive measures</td>
<td>Combination of preventive and responsive measures</td>
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<td><strong>Aim</strong></td>
<td>To protect the maritime domain against threats and intentional unlawful acts</td>
<td>To protect the maritime domain against, and limit the effect of, accidental or natural danger, harm, and damage to environment, risks or loss</td>
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<td><strong>Involves</strong></td>
<td>Crimes perpetrated by humans against ships’ crew, passengers, cargo or the ship itself</td>
<td>Accidents caused by unsafe ships, unsafe ship operations, natural calamities</td>
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<tr>
<td><strong>Entails</strong></td>
<td>Operational requirements: law enforcement as a civilian and military requirement and defense operations as a military</td>
<td>Protection through regulations and techniques</td>
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<td><strong>Authority</strong></td>
<td>The authority to act on behalf of a state is a sovereign decision with different options</td>
<td>Its achievements are based on common efforts between governmental and non-governmental actors</td>
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<td><strong>Whose responsibility</strong></td>
<td>Governmental</td>
<td>Civilian</td>
</tr>
<tr>
<td><strong>Examples</strong></td>
<td>Piracy, armed robbery, terrorism, illicit trafficking</td>
<td>Operator errors, human (crew) incompetence, natural disasters</td>
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</table>
For the purpose of this paper, the components of “Maritime Security” may be considered to be international peace and security, sovereignty/territorial integrity/political independence, security from crimes at sea, security of resources and environmental security. “Maritime Safety” may likewise be considered to cover various elements like training (both technical and personnel), transport, construction and equipment related issues, assistance in distress situations, etc.

Significance of Maritime Safety and Security in the Indian Ocean Rim Association (IORA):

“Maritime Safety and Security” is one of the six priority areas of the Indian Ocean Rim Association (IORA). In fact, the IORA places MSS at the top in its list of priority areas, because of its close interlinkages with trade flows, which ultimately pave the way for the socio-economic development of the region: export and import flows depend on facilitation of international maritime traffic, on which a number of additional economic outcomes further depend.

A wide-ranging approach to maritime safety and security is indispensable to safeguarding common prosperity and security interests as it not only protects and supports legitimate activities, but also counters threats of current and emerging terrorist, hostile, illegal or dangerous acts within the maritime domain. “By ensuring freedom of navigation and commerce, it also has the capacity to promote regional, and contribute to global, economic stability and protect maritime trade as the heart of regional and global economies.” (Feldt 2013, p. 21)

IORA’s agenda is development oriented. As its official website states, “The importance of the Indian Ocean as a major transit area for international trade that carries half of the world's container ships, one third of the world's bulk cargo traffic and two thirds of the world's oil shipments requires attention and strategies…The IORA has been addressing MSS in the Indian Ocean through a broad range of activities to enhance international cooperation in security and governance to successfully tackle the challenges faced by the region in Maritime Safety and Security. The IORA Leaders’ Summit held in March 2017, in Jakarta, Indonesia, highlighted the prioritization of these concerns through its theme, Strengthening Maritime Cooperation for a Peaceful, Stable, and Prosperous Indian Ocean.”

For the IORA, MSS covers non-traditional security challenges including maritime transnational and organized crime, piracy, armed robberies at sea, human trafficking, irregular movement of persons, terrorism, trafficking in arms/drugs/illegal substances and other illegal activities at sea. Crimes in the
fisheries sector, like Illegal, Unreported and Unregulated (IUU) fishing, degradation of ocean health, unlawful exploitation of marine resources and climate change with its related repercussions on environmental security are also covered. With changing times, Member States have started taking interest in upcoming areas of interest like Maritime Domain awareness (MDA) and cybersecurity.

IORA member states have acknowledged that maritime safety and security hazards are dangerous and result in physical injury upon individual seafarers, as well as significant losses to trade and commerce, harm to the environment and adverse effects on the national security of states that are dependent on foreign imports. A substantial change in trading patterns or increase in the price of imported goods could have severe economic ramifications for the entire region. While individual attacks may not threaten to destabilize any country’s economy, the cumulative threat to trade, local economies, and human life is serious and deserves attention from the international community. “The issue’s potential to bring devastating financial loss and a sense of lawlessness and insecurity to the region should provide an impetus for governments to take action and seek a solution.” (Bulkeley 2003, pp. 4-6)

Ever-increasing economic interdependence in the region and the evolution of multilateral institutions have provided multiple prospects and motivations for cooperation to overcome these problems. It is expected that as national interests evolve and increasingly align more closely, and threats are recognized to be of a shared nature, states within the region will pursue even greater collaboration. The theme of the first IORA Leaders’ Summit, as mentioned earlier, reflected this very well: Strengthening Maritime Cooperation for a Peaceful, Stable, and Prosperous Indian Ocean. The Summit adopted strategic outcome documents entitled the Jakarta Concord and the IORA Action Plan as well as the IORA Declaration on Preventing and Countering Terrorism and Violent Extremism. The IORA Action Plan 2017-2021 is a roadmap that enumerates concrete actions to be undertaken on a short, medium and long-term basis to charter the future development of the IORA and for promoting cooperation in each priority sector and focus area of IORA.

Through the Jakarta Concord, cooperation among Member States is expected to be further strengthened, thus contributing to balanced and sustainable economic development in the Indian Ocean region. The establishment of an IORA Working Group on Maritime Safety and Security is on the anvil as a pragmatic step to protect and manage the challenges that the region faces.
Section II:
Comprehensive Approach to a Regional Strategy for Maritime Safety and Security

Overview: Challenges to Maritime Safety and Security have many faces, as mentioned in Section One. These challenges are not constant: they keep evolving and may be hybrid in nature. For example: organized crime has been seen to have complicated interlinkages with terrorism, other kinds of crime, and even traditional and irregular warfare. (Feldt 2013, p.1) “Transnational maritime crime has substantial security ramifications (…) It has a synergetic effect that exacerbates interstate conflict and nonstate political violence.” (Bradford 2005, p.71)

The seas and oceans themselves are not a homogenous open space where freedom is the rule; instead they are now seen to be a shared, common domain, which needs protection and careful resource management. Keeping in mind the interconnected, and at times unpredictable mix of challenges in the maritime domain, it is obvious that a sectoral approach would attain only limited success.

Therefore, a cross-cutting, comprehensive approach is required to tackle these challenges. Having described the term “Maritime Safety and Security” in the preceding section, and concluded that it has no universal definition, it is time to consider the term “Comprehensive Approach”.

The term “Comprehensive Approach” may be understood to mean that more than one authority is engaged to contribute to handling maritime domain concerns. Collaboration between different national and international authorities is equally important and is necessary for both technical and operational reasons. The former is self-explanatory, while the latter places focus on enabling maritime skills developed through a combination of long experience, common exercise, common operations and a common set of rules. (Feldt 2013, p.3)

This topic includes IORA member states’ views on the widening horizons of non-traditional security challenges, and a list of desired responses from stakeholders, including capacity building and collaborative efforts in multiple sectors.
## Key Outcomes and Discussions

<table>
<thead>
<tr>
<th>Issues acknowledged by Member States:</th>
<th>Security cooperation is a stepping stone towards strategic stability [B]…That effective maritime security governance, including the provision of good order at sea, is a key prerequisite of developing the blue economy. [H]</th>
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<td>There is a need to develop a coordinated regional maritime security strategy among Indian Ocean states to facilitate trade and long-term regional economic growth [C]…It is essential to maintain MSS for peace, stability and sustainable economic growth and development in the region [IORA Concord 2017]</td>
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<td>Although traditional military threats do exist, the predominant insecurities at sea emanate from non-traditional threats [I]…The adverse impact of maritime transnational crime on the region and its economic development, including drug smuggling, piracy, terrorism, illegal fishing, human trafficking [H]…Geostrategic competition in the IOR is growing, with increasing vulnerability of chokepoints [M]</td>
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<td>The interconnected nature of transnational crime, (which is) to be addressed in a holistic manner [H]</td>
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<td>Strategic uncertainties arise from rivalries amongst Indian Ocean littoral states and extra regional powers [B]…Critical importance of regional cooperation for the management of the new geopolitical challenges and the creation of a conducive environment for peace, stability and prosperity in the Indian Ocean. [E]</td>
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<td>The success of efforts to combat piracy in the Indian Ocean region, and the utility of extending this platform to address other regional security challenges. [H]</td>
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<td>Identifiable Challenges/Reasons for the issues:</td>
<td>Importance of not only navies but also coastguards and other agencies in the Indian region to explore every possible cooperation…based on shared interests and mutual benefit [J]</td>
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<td>Focus should be on maintenance of good order at sea and the concept of maritime security should include “on, over and under” the sea [M]… The goal of MDA cannot be achieved by any one single country [K]. Inclusive MDA is vital for economic growth and ensuring security in the IOR, connectivity is key to it [M]</td>
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<td>It was observed that cyber security today has become the most critical imperative in an increasingly digital world… delegates noted the urgency of building infrastructure to protect electronic data whether on land or at sea (and) importance of regional cooperation to combat and identify cyber-attacks within the region [L]</td>
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<td>Gap in capacity among coastal states in the Indian Ocean region in tacking non-traditional security threats [J]…Existence of current gaps in maritime security capabilities and the potential for cooperation in developing capacities including improved port state control measures… (Requirement for) establishing regional cooperation mechanisms [H]</td>
<td>Only a few MSs from the association have the technical capacity to monitor activities, implement maritime laws and regulations and enforce those laws in their territorial waters… (It is required) to promote intra IORA cooperation to enhance the region’s technical capacity and provide enforcement assistance [A]…Difficulties of implementing initiatives due to lack of funds, manpower and resources [B]</td>
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<td>Lack of coherence in regional cooperation, lack of capacity and difficulties in reconciling diverse and competing national interests among littoral states and external stakeholders [B]</td>
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<td>Region lacks a maritime security culture [M]...Create norms for pan Indian Ocean identity building [B]... mandate... Creation of a multilayered regional maritime security system [C]...(require) establishment of an MSS “culture”, with the ultimate goal being establishment of a coherent security architecture for the region [L]</td>
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<td>Indian Ocean stability requires holistic cooperation on various fronts – diplomatic, economic, environmental, political and security [B]...(Require) Adoption of inclusive approaches and strategies for maritime safety and security in the IOR [I]</td>
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<td>Groupings do not necessarily coordinate or cooperate with one another...leading to potential duplication of and disconnected efforts towards enhancing strategic stability in the region [B]</td>
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<td>(need for) Exploring collaborative ventures with other regional/sub regional organizations in the IOR [I] Harmonize the functioning of existing regional maritime safety and security organizations within IORA [I],[L]...Develop constructive engagements through regional frameworks in management of common maritime spaces in the Indian Ocean [M]</td>
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<td>Greater cooperation between maritime and law enforcement agencies [J]...Enhanced civil maritime security cooperation, including between coastguards and equivalent national agencies of IORA Member States. [H]...Integration of national civil and military partnership for enhancing maritime safety and security [I]</td>
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Urgently addressing the special needs of the island states, whose economies depend entirely on the ocean, but where they lack the capabilities to address these problems including those arising from piracy at sea. [E], [B]…(how to) get (their) relatively small forces with limited resources to effectively multitask across numerous and varied areas of responsibilities [M]

The availability of accurate data and information is the key in developing strategies for handling maritime crimes, including IUU [K]…Successful implementation of Maritime Domain Awareness (MDA) programs rests on the foundations of education and awareness among the maritime community, willingness to share information and data, and fostering awareness through education, training and public outreach [L]

IORA Member States need to identify specific issues to effectively progress further (and) move from focusing on threats to responses [L]…There is a need for centralized and flexible decision making, and decentralized execution, use of diplomacy and revamp of the traditional role of the navy [M]… The role and contribution of academia and universities towards the development of capabilities in maritime safety and security, and for realizing endeavors for strengthening cooperation in the same was noted [L]

### Recommendations and Requirements:

**At a Regional Level**

IORA members to collectively articulate national positions at international fora [I]

At the national level, coordinate maritime security approaches among government agencies, port authorities and various industries like shipping, fishing, and oil and gas [I]…Importance of strengthening existing structure in maritime cooperation domain, through options including data fusion, sharing of white shipping data and expanding existing arrangements like Djibouti Code of Conduct to apply to the entire IOR [M]
Building long term relationships (with neighboring countries) to deliver cooperation, along with information sharing arrangements are essentials to develop interoperability [K]

(There is) requirement for mitigating strategies against non-state actors [M]

Addressing the special needs of the island states through capacity building [E]…Balancing diverse security perceptions of distant states in the IOR [M]

Consider global best practices in maritime safety & security [I]

Protecting sea lines of communication [E], [J], [B]

IORA may aim for a pan-IOR profile as the premier body for a “regime complex”, with IORA playing the role of a “systems integrator, facilitator, interlocutor and even translator” [M]

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<th>Specific Recommendations</th>
<th>INFORMATION SHARING</th>
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<tr>
<td><strong>1. FOCAL POINTS:</strong> Member States are encouraged to identify contact points /relevant representatives in the MSS sector in an effort to develop capacities of MSs in this sector [F]… IORA members to establish national Point of Contact for information-sharing and capacity building [I]… IORA Member States may consider designating specific National Focal Points to focus on the IORA Priority Area of “Maritime Safety and Security”, to coordinate work in this area [L]</td>
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<td>Establishing an IORA National Focal Point to strengthen regional cooperation in early warning systems of cyber-attacks and proactively monitoring regional threats [L]</td>
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<td><strong>2. FRAMEWORKS/NETWORKS:</strong></td>
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<td>The IORA framework could assist with the timely sharing of information on maritime security, regulation and enforcement information through their communication network between IORA Member States [D]</td>
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<td>Creating informal and formal networks for information sharing and trust building between governments, navies and coastguards, and experts to cope with these challenges. [E], [H],[K]…</td>
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<td>Develop an information sharing mechanism with the possibility of integrating with vessel monitoring systems, which can also be utilized for incident reporting by traditional fishermen who have no internet access [K]</td>
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<td>Feedback and inputs from other countries and groups working on maritime security, like those dealing with risk management, blue economy, and academic and scientific groups should be taken into consideration, and information sharing made the norm [M]</td>
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<td>Establish an IORA Fusion Centre or IORA Repository (for accurate data and information provision) [K]</td>
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### ESTABLISHMENT OF VARIOUS GROUPS

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<th>An Eminent Persons Group might be established to foster modalities of initial multilateral security cooperation [B]</th>
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<tr>
<td>An Indian Ocean Study group should be established to explore various areas of security cooperation [B]…establish study groups on specific focus areas [M]</td>
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</table>
A Maritime Security Working Group may be formed through IORA to assist in addressing the issues below: organizing joint policing, monitoring and enforcement in the Indian Ocean to assist regional prevention; coordinating tasks in each MS to strengthen maritime security, safety and other relevant matters [D]...Establish an IORA Maritime Safety and Security Core Group instead of an Indian Ocean Forum for maritime crime [I]

Set up country-wise clusters to deal with specific issues…establish a pan IORA think tank network [M]

MSs are encouraged to consider combining efforts for the establishment of Regional Centers to strengthen cooperation in dealing with MSS issues [F]

**CAPACITY BUILDING THROUGH TRAINING/ACADEMIC INPUTS**

Member States should identify which areas would be suitable for initiating region-wide security cooperation, e.g., disaster management and counter terrorism [B]...Key Focus areas for MSS (identified as): human safety at sea, MDA, cyber security, capacity building for law enforcement at sea, training, hardware development [M]

The IORA secretariat with the assistance of MSs should establish a database on Maritime Safety and Security by compiling existing information through a desktop exercise [F]

Identify areas of overlap to de-conflict activities & optimize resource employment [I], [M]

development of cybersecurity solutions with collaborative research and development within the region [L]
Training in assisting member States when having a maritime security problem
[D]…Sharpen problem solving tools through real life situations (i.e., case studies) [K]

INVolVEMENT OF OTHER STAKEHOLDERS AND AGENCIES

Consider an inter-agency maritime task force based on common Standard Operating Procedures [I]

Importance of reaching out to a variety of security agencies, not limited to the maritime domain [M]

Encourage extra-regional stakeholders to engage IOR countries at sub-regional level for maritime capacity building, including in-port security, disaster management and SAR [I]

Coast Guard Agencies may be considered for handling of maritime safety and security issues in the IOR, in view of their adaptability and flexibility [L], [M]

Greater synergy between IONS and IORA in addressing maritime security challenges in the region. [E]…There is scope to enhance the capability of IORA and IONS in order to deal more effectively with the current maritime security challenges [C][M]

Partnerships between the forthcoming IORA Working group on MSS, and existing forums like ASEAN, South African Maritime safety Authority (SAMSA), Information Fusion Centre (IFC) Singapore, Maritime Trade organizations and Maritime Rescue Coordination Centres (MRCC) [M]
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<th>SUGGESTIONS FOR PARTICULAR SUBJECTS:</th>
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**PORTS:**
- Homogenization of standards across the region’s ports [E]...Cooperation in developing capacities including improved port state control measures [H]... Establishing at port measures, patrolling and interception measures [J]...

- Implementation of an Indian Ocean MOU on Port State Control as instrument for maritime safety programme [I]...Establish MoUs between IORA and countries using port facilities in the region [M]

- Identifying and establishing standard operating procedures at chokepoints, offshore upstream facilities, and export terminals [J]...Effective enforcement of International Ship and Port Facility Security (ISPS) [K]...

- Establishing and strengthening contact points across the region for better coordination to strengthen safety of chokepoints [M]

**MARITIME DOMAIN AWARENESS:**
- Need for an inclusive and multiagency approach towards MDA, it cannot be achieved either by a single agency or individual country...requirement of capacity building assistance for member states lacking capacity, to utilize MDA information at national level; requirement of multidisciplinary and multiagency approach at domestic levels [M]

- Constitution of an empowered committee of experts, in cooperation with IORA National Focal Points (to evolve a blueprint for inclusive MDA). [M]

**CYBERCRIME:**
- consideration of an IORA Regional Capacity Building Centre to address cybercrime [L]
| Requirement for comprehensive risk assessment for cyber security in the IOR [M] |
| recommended regional cooperation between CERTS and sharing of best practices in cyber security innovation and technology [L] |
| ASSORTED TOPICS: |
| Establish an IORA plan of action for piracy [M] |
| Enhance cooperation at all levels against drug trafficking, through experience sharing, capacity building, training and inter agency joint operations. It is essential to break the chain of syndicate makers, dealers and drug users through control and constant supervision of borders, exposure of networks and maximization of asset seizures [K] |
| Enhance cooperation to combat trafficking in persons through cooperation in capacity building, joint projects, information sharing and pooling of common technical resources [K] |
Section III:

A. Regional Cooperation for Humanitarian Assistance & Disaster Relief (HADR) and Search & Rescue (SAR)

Overview: HADR entails provision of material and logistical help to people in need. It is material or logistical assistance provided for humanitarian purposes, typically in response to humanitarian crises including natural disasters and man-made disaster. The primary objective of humanitarian aid is to save lives, alleviate suffering, and maintain human dignity. It may therefore be distinguished from development aid, which seeks to address the underlying socioeconomic factors which may have led to a crisis or emergency. Humanitarian aid aims to bring short term relief to victims until long term relief can be provided by the government and other institutions.

SAR is the search for and provision of aid to people who are in distress or imminent danger. The general field of search and rescue includes many specialty sub-fields, typically determined by the type of terrain the search is conducted over. The IORA focuses on air-sea rescue over water.

This topic includes: HADR and SAR operationalization issues in the IORA, with the implicit intention of investigating regional emergency response frameworks, governance issues, disaster preparedness strategies and the identification and development of response niches for related actors. The aim is to facilitate and enhance cooperation on preparedness and response strategies to fragile and unpredictable situations, especially in case of natural disasters.

Key Outcomes and Discussions

<table>
<thead>
<tr>
<th>Issues acknowledged by Member States</th>
</tr>
</thead>
<tbody>
<tr>
<td>That the Indian Ocean is a region particularly susceptible to natural disasters, including typhoons, tsunamis, coastal flooding and earthquakes. This will make humanitarian assistance and disaster relief an increasingly important issue for the region. [H]</td>
</tr>
<tr>
<td>The urgent lifesaving nature of search and rescue operations. [H]</td>
</tr>
<tr>
<td>The importance of confidence building and the benefits of closer search and rescue cooperation. [J]</td>
</tr>
<tr>
<td>The importance of lessons to be learned from regional cooperation in humanitarian and disaster relief in South-East Asia [H]</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>The importance of capacity-building in disaster risk mitigation and management [E]</td>
</tr>
<tr>
<td>Identifiable Challenges/Reasons for the issues:</td>
</tr>
<tr>
<td>Exploring the potential for entering into regional arrangements to build capacity and cooperative arrangements [H]</td>
</tr>
<tr>
<td>Creation of mechanisms for improving capabilities and cooperation among Indian Ocean Member States [H]</td>
</tr>
<tr>
<td>Importance to build “capacity” in the form of assets of hardware for maritime forces and “capability” in the form of skills and training [M]</td>
</tr>
</tbody>
</table>
# Recommendations and Requirements

## At a Regional Level

- Building regional understanding about capabilities and infrastructure [H]

- A system of early warning for natural calamities such as earthquakes and tsunamis ought to be created [B]

- Formulation of a regional doctrine on HADR [J]

- Bilateral arrangements with neighboring states on search and rescue operations. [H]

- There is scope for integrating national civil and military partnerships for enhancing MSS, especially for Regional Maritime Search and rescue [M]

-Injecting IORA Member State views into international forums, including the International Maritime Organization and the International Civil Aviation Organization. [H]

## Specific Recommendations

- Planning for the effective coordination of large-scale multinational search and rescue responses [H]

- Enhancement of marine and coastal patrol capacities and their interconnection to issues of sea, air-space and land in the context of Humanitarian Assistance and Disaster Relief (HADR) missions. [J]

- Creation of early warning mechanisms to better prepare populations against such disasters [E]

- Sharing of real-time information. [H]

- Maritime education and establishment of information fusion centres should take centre stage… Establishment of an Regional Maritime Information Fusion Centre (RMIFC) to boost MDA and HADR capabilities [M]

- Operationalization of the IORA Memorandum of Understanding on Search and Rescue Cooperation in the Indian Ocean Region, including through capacity building initiatives. [H]

- There is scope for an MoU on Maritime Safety and Cooperation, especially in emergencies [M]
Section III (contd.)

B. Illegal, Unreported and Unregulated (IUU) Fishing

Overview: illegal, unreported and unregulated fishing (IUU) is an international issue around the world. “Up to 26 million tons of fish are illegally caught each year, 53 percent of the world’s fisheries are fully exploited, and 32 percent are overexploited.” (Bergenas and Knight 2016, p. 8)

Illegal fishing takes place when vessels or harvesters operate in violation of the laws of a fishery which could be under the jurisdiction of a coastal state or high seas fisheries regulated by regional fisheries management organisations (RFMOs). According to the Food and Agriculture Organization (FAO), Fisheries and Aquaculture Department, illegal fishing has caused losses estimated at US$23 billion per year.

Unreported fishing is fishing that has been unreported or misreported to the relevant national authority or RFMO, in contravention of applicable laws and regulations.

Unregulated fishing generally refers to fishing by vessels without nationality, vessels flying the flag of a country not party to the RFMO governing that fishing area or species on the high seas or harvesting in unregulated areas.

A direct economic impact of IUU fishing on developing countries is the immediate loss of the value of the catches that could be taken by local fishermen. It also leads to reduced food security in communities heavily dependent on fish as a source of animal protein. Indirect impacts are seen in terms of loss of income and employment in related industries; these further impact consumption expenditures, and so on. Another impact of IUU fishing is on the sustainability of both the targeted species and fragile marine ecosystems and vulnerable species such as coral reefs, turtles and seabirds.

As stated earlier, challenges in the maritime domain have complex interlinkages. It is estimated that there are more than 50 million fishermen in the world and an estimated 880 million people directly or indirectly depend on fishing for their livelihood. As the world’s oceans are emptied of fish, fishermen, particularly in developing parts of the world, need a new source of income. The evolution of piracy in the western region of the Indian Ocean is a case in point. IUU fishing and the conjunction between fishing vessels and transnational organized crime, piracy, armed robbery at sea and terrorism is understood to be evolving as a threat to international peace and security. However, as yet these issues remain largely outside most states’ national security purview.
The environmental community by itself does not have the requisite resources, equipment or skillset to meet the growing threats on our oceans. The security community cannot comprehensively tackle its challenges without addressing this aspect of crime on the seas. Both need to identify common ground in the fight against environmental crimes and commit to working in concert toward mutually beneficial outcomes. (Bergenas and Knight 2016, p.6)

This sub-section provides an indication of observed threats to resource security, with concomitant impact on human security and adverse environmental repercussions; followed by suggestions for managing the same.

### Key Outcomes and Discussions

<table>
<thead>
<tr>
<th>Issues acknowledged by Member States</th>
<th>1. That global fisheries stocks are being depleted; that IUU fishing is a major concern for IORA Member States, especially island and littoral states that rely on fishing; and that these activities clearly undermine efforts of regional states to develop their Blue Economies, and to form part of a broader maritime transnational crime challenge. [H] IUU fishing is not a standalone crime but very much related to other crimes like slavery, forgery, money laundering etc. [K] 2. That IUU fishing has severely undermined regional efforts to conserve and endure food security and has impeded endeavors of Member States to achieve long-term sustainability [J] 3. Overfishing, illegal, unreported and unregulated (IUU) fishing, bycatches and fishing in the high seas remain key challenges to the fisheries and aquaculture in the region [G]</th>
</tr>
</thead>
</table>
### Identifiable Challenges/Reasons for the issues:
- Consolidating cooperation and partnerships in combating IUU fishing [H]
- IUU fishing to form part of a broader maritime transnational crime challenge [H]

### Recommendations and Requirements

#### At a Regional Level
- For effective governance of fisheries, a regional institutional mechanism may be evolved to enforce commonly agreed principles on individual Member countries [G]
- Requirement of an MoU for regulating fishing among member states [M]
- Initiating regional concerted efforts with, among others, the Indian Ocean region Tuna Commission [J]

#### Specific Recommendations
- Initiating more training and capacity building programs for small-scale fisheries and local communities [J]
- Sustainable exploitation of fishery resources can be enhanced with enforcement of precautionary instruments such as catch quota, marine protected areas, constant monitoring, etc. among others. [G]
- Building and strengthening fisheries management systems through mechanisms like:
  - Improved coordination, Information sharing, Joint inspection and surveillance schemes, development of stricter port-state measures among Member States [H]
  - Development of networks of regional cooperation to identify IUU target vessels and prevent them from entering ports (under PSMA), with help of information sharing in a timely manner [K]
  - Information sharing through “email alert” or “mercury net” [K]
- Need to undertake research in species of fishes mostly fished in the IOR [K]
Section III (contd.)

C. Environmental Security

Overview: Environmental security is an important concept in international relations and international development. It examines threats posed by environmental events and trends to individuals, communities or nations. When the human factor enters the environmental equation, such trends are often seen to be self-reinforcing, thus trapping the actors in a vicious cycle partly of their own making. Leading examples of emerging environmental change are: depletion and pollution of fresh water supplies, depletion of fisheries, degradation and disappearance of biodiversity, degradation and loss of agriculture lands, food and health safety, stratospheric ozone depletion, and global warming.

The environment is the most transnational of transnational issues, and its security is an important dimension of peace, national security, and human well-being. Environmental damage not only causes direct harm to land, water, and food availability but can precipitate tension or conflict within or between states. With its self-reinforcing nature and interconnection to various sectors and sub sectors within the economy, its potential for rapid magnification of economic damage is serious.

“While environmental degradation is unlikely to be the direct cause of military conflict in Southeast Asia, it poses a real threat by undermining international relationships, economic development, and social welfare.” (Bradford 2005, p. 73) Therefore, resource depletion and human degradation of the environment have been recognized as directly relevant to the region’s maritime safety and security agenda.

“Our ability (or lack thereof) to make innovative institutional arrangements and/or technological advances for managing the environmental security challenges we face, will increase or decrease global environmental security.”

(Unknown, What is Environmental Security? p.1)

This sub-section acknowledges repercussions from climate change, pollution incidents, illegal dumping, etc. in which the overwhelming causal factor is human interaction with the natural environment. It also touches upon events which are not in direct human control (like natural phenomena) but which may be affected indirectly by human actions.
| Issues acknowledged by Member States | The region is vulnerable to the intensification of the impact of climate change [E] “Sustainable use of oceans and marine resources” has a direct impact on peoples of the region and an IORA perspective would be useful. [E]…. addressing climate change would provide job security and gender empowerment across the region [L] Interrelatedness of MSS threats and economic and ecological hazards was highlighted [L] Recognized that the IOR is highly vulnerable to humanitarian, ecological and economic calamities as a direct consequence of climate change, through fluctuations in temperatures, rising sea levels and increased risks of disasters. Climate change places coastal economies at high risk, threatening food security, livelihood and lives within the IOR. The meeting recognized that climate change is a real and existential threat, and placed it within the wider narrative to ensure peace, stability and prosperity across the region [L] importance of promoting sustainable practices…including by harnessing renewable energy for the benefit of all people in the Indian Ocean region [J] Renewable Energy is a critical driver for future economic growth and sustainable development, as it provides diversity and security of energy supply, reduction of pollutants and global greenhouse gas emissions and employment generation [L] Greater cooperation in properly managing the marine environment and resources in the Indian Ocean as part of an integrated regional framework [C] Taking the necessary measures/steps to help build climate resilience. [E] importance of strengthening the IORA nations with comprehensive disaster risk governance by means of capacity building for coastal communities and |
development of sustainable strategies for food security and disaster risk reduction through institutional cooperation that could reduce vulnerabilities, increase risk resilience, and enhance preparedness [L]

Improved governance and management of Indian Ocean resources, particularly as there is increasingly more intensive use of these resources. [H]

Requirement of substantial investment and capacity building for harnessing renewable energy resources. [G]

A common approach to be formulated to secure and conserve energy resources for future generations; necessity of maintaining peace and security in the region to this end [J]

There is a need to develop off-shore environmental governance system to minimize conflicts and competition between different sectors. [G]

The critical requirement to evolve a holistic view for the comprehensive development of the Renewable Energy sector was emphasized, so that due attention is provided to each stage of the energy process – from generation to transmission, transportation, conversion and distribution [L]

<table>
<thead>
<tr>
<th>Recommendations and Requirements</th>
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<tbody>
<tr>
<td><strong>At a Regional Level</strong></td>
</tr>
<tr>
<td>Creation of a regional approach on both the post 2015 development goals and the post-Kyoto climate treaty. [E]</td>
</tr>
<tr>
<td>Create a cooperative mechanism for sustainable development of marine resources [I]... Need to protect marine environment with collaborative measures and implementation of legal instruments [M]</td>
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adaptation and resilience alone may not be adequate to arrest damage induced by climate change. The meeting called for scaling up of international commitment and delivery on mitigation measures to reduce effects of climate change [L]

Engaging multiple stakeholders to secure future energy resources [J]

The Member States noted that, for the IOR to emerge as a cost competitive market for Renewable Energy, there is urgent need to encourage innovations; develop renewable energy alternatives (such as solar, wind, geothermal, ocean tidal and wave energy) to diversify energy sources; remove discrepancies in standards and norms at various stages of the energy process; build capacity, especially for research and technology; increase energy efficiency in order to neutralize and decrease the ever-increasing demand for energy; make information and data obtained through comprehensive resource mapping publically accessible; and simultaneously evolve the regulatory and policy frameworks to embrace these developments [L]

<table>
<thead>
<tr>
<th>Specific Recommendations</th>
<th>DISASTER MANAGEMENT:</th>
</tr>
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<tr>
<td>Nodal agencies dealing with identified challenges may be created along the Indian Ocean region. For example: a Climate Change Centre in Bangladesh, a Disaster Management Centre in Indonesia and so on. [E]</td>
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<tr>
<td>enhanced regional cooperation in Disaster Risk Management was flagged. It was recommended that think tanks, universities and other stakeholders may enhance sustainable research to mitigate climate change impacts and to ensure food security for the region [L]</td>
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</tbody>
</table>

| CLIMATE CHANGE AND OCEAN RESOURCES: |
| Study of the Indian Ocean Region ecosystem [E] |
| The IORA Secretariat, with the assistance of MSs, should develop a comprehensive Maritime Plan to take into consideration maritime activities in relation to seawater quantity and quality [C] |
Establishment of a programme to prevent and significantly reduce marine pollution by improving policy coherence and institutional capacity for better waste management; applying and utilizing best practice; encouraging research and innovation; establishing a regional cooperative framework; encouraging active community participation [K]

Cooperation with FAO and IOTC could be enhanced to formulate capacity building programmes on ocean debris and its consequences on living resources and aquaculture [K]

RENEWABLE ENERGY:
Joint collaboration between domestic and foreign firms may enhance efforts for technology development, resource assessment and choice of appropriate technologies (for renewable energy). [G]...

that a template of cooperation between IORA and IRENA may be formulated for cooperation in Renewable Energy [L]

Member countries may set up industrial clusters specific to ocean energy to promote inter-industry learning so as to co-evolve the production chain and technology for cost minimization and promoting indigenization. [G]... development of suitable financial mechanisms [L]

Sharing of best practices and experiences among IORA Member States was emphasized [J]

that IORA Member States may examine the option of setting targets for the share of Renewable Energy in total national energy mix to be achieved by the year 2025 [L]
Section IV:
Legal Concerns in the area of Maritime Safety and Security

The days when states followed an agenda of aggressive hegemony, with grand designs on the territory and jurisdiction of other states are long past. However, the temptation to expand authority in smaller steps, such as restricting navigation and access to offshore waters still makes itself felt at times. The Indian Ocean region, with its density of commercial traffic and rich resources has also been witnessing increasing interest and activities of extra-regional players, with subsequent repercussions on the resource availability and security concerns of states within the region itself. Additionally, security threats originate when pirates and armed robbers operate in waters that lie beyond the authority of other states. With the impact of climate change being progressively felt, the retreat of coastlines and submersion of islands raise difficult questions about who controls offshore waters when the baselines from which such zones are measured shift or disappear. Long-term sea level rise also threatens coastal infrastructure throughout the Indian Ocean region. Lastly, changes in food and resource availability due to environmental or deliberate crime related reasons directly impact islands’ and coastal regions’ habitability. This in turn, could trigger problematic large-scale migrations, both within states or across borders, with concomitant human rights questions, illegal smuggling rackets, connections to other organize crime networks, pressure on the target state resources and security and so on. (Antrim 2012, p. 81)

The Indian Ocean region is home to an assortment of diverse states, with equally diverse legal systems. The states of the Indian Ocean region almost universally accept the legal order established by UNCLOS, and the international agreements and organizations within its framework. The UN Sustainable Development Goal 14 seeks to protect coastal and marine resources so that they remain a driver of economic development in the long term. Enhancing capacity for Blue Justice (providing maritime safety and security and countering maritime crime) is an important component of this goal. This framework provides coastal states with essential tools to protect their coasts and manage offshore resources, while also safeguarding the rights of navigation, overflight, and seabed communications that are essential to maritime powers and trading states. It also provides a structure for peaceful resolution of disputes on maritime issues. However, by itself,
UNCLOS does not meet all the needs of regional parties and details may need to be resolved through diplomatic efforts as new issues arise.

The development of a maritime security framework for the Indian Ocean region is critical to the promotion of good order at sea. But it is a daunting task, with states adopting varying attitudes and degrees of importance to requirements with regard to elements like ratifying applicable international legal conventions; international fishing agreements; agreements for exploitation of seabed minerals beyond national jurisdictions; monitoring, regulation and enforcement; freedom of navigation and overflight; and creation of an effective system for prosecution and resolution of disputes among states.

The IORA, of course, is not a law-making body. However, it has the potential to play a significant policy role.

<table>
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<tr>
<th>Key Outcomes and Discussions</th>
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<tbody>
<tr>
<td><strong>Issues acknowledged by Member States</strong></td>
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<tr>
<td>Identifiable Challenges/Reasons for the issues</td>
</tr>
<tr>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>Development of necessary capabilities, and legal frameworks [E], [M]</td>
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<tr>
<td>Conforming to relevant international laws and conventions [J],[K]</td>
</tr>
</tbody>
</table>

### Recommendations and Requirements

<table>
<thead>
<tr>
<th>At a Regional Level</th>
<th>Ratification of appropriate international legal conventions regarding maritime security issues [C]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Joining primary and secondary international treaties, with reservations/statements, as necessary [I]</td>
</tr>
<tr>
<td></td>
<td>Establishment of a regional strategy to improve MSS through: comprehensive understanding of the provisions of relevant international conventions overlaying MSS – UNCLOS, SUA, SOLAS, UN Firearms protocol, UNCTOC, ISPS [K] PALERMO Convention [M]</td>
</tr>
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<td></td>
<td>Undertaking legal capacity building through existing sub-regional arrangements, particularly for criminal jurisdiction. [I]</td>
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<table>
<thead>
<tr>
<th>Specific recommendations</th>
<th>LAWS:</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Encouraging greater use of existing legal frameworks to tackle (these) challenges, including the provision of legal support to Member States. [H]</td>
</tr>
<tr>
<td></td>
<td>Introduction of regional training programmes in international law and law in general [C]…Training in assisting Member States in prosecution [D]</td>
</tr>
</tbody>
</table>
IORA Member States to update their domestic laws on maritime and criminal matters [I]...need for clearer assessment of adequacy of existing laws and need for new ones in MSS [M]

Imperative to develop national legislations that comprehensively regulate issues in drugs, weapons, human trafficking [K]

Evolving consensus on legal frameworks for Private Maritime Security Companies, information sharing and maritime surveillance [I]

**STRUCTURES:**

Creation of an IORA Legal Group of Experts [C]...to review the existing legal framework and conventions [M]

Establishment of an IORA mechanism for dispute resolution [I]

A Maritime Security Working group (MSWG) may be formed through IORA to assist in addressing: Regional and Sub Regional cooperation in the adoption of domestic laws for armed robbery, terrorism, and unlawful activities for national coastal zones, in conformity with International laws (e.g. Law of the Sea) …Resolving maritime boundary disputes through dialogue and mediation [D]

Establishment of a regional Standing Committee to identify commonalities of IORA countries on legal affairs [M]

Forging links with relevant international organizations such as UN, IMO, among others, pertaining to legal issues of maritime safety and security [I], [M]
Section V:  
Conclusions: Inferences and Suggestions

The member states of IORA are very diversified in size, stage of economic development and national priorities. While the larger states have greater resources at their disposal, even they cannot afford to invest great amounts of money into anti-piracy or security measures in the immediate future. Socio-economic development is a multi-faceted effort, and it is but natural that IORA member states have given other issues budgeting priority over improved maritime concerns, although the spotlight is slowly turning in this direction. Effective response to maritime safety and security threats demands international cooperation, because these threats are primarily transnational. The main conclusions emerging out of this study are in line with the studies made by Bradford (2005) and Storgård et al. (2012):

1. Recent trends indicate that structural, normative, and economic changes to the regional system are enabling greater maritime security cooperation. The changes can be summarized by looking at five key factors: relaxing sovereignty sensitivities, alignment of interests among extra-regional powers, increased prevalence and strengthening of cooperation norms, improving state resources, and increasing prioritization of maritime security. These five factors are partly overlapping analytical concepts that may be used to describe interrelated and complementary themes present in the evolving regional orchestra.

2. Ensuring maritime safety and security requires that partnerships between concerned stakeholders are robust and enduring. Partnerships can build on the respective capabilities of relevant agencies and pool the separate initiatives already in place; as well as result in better use of the limited resources. Cooperative approaches to necessary measures can therefore help diffuse the cost among many states, though the economic expense remains high.

3. Cooperation, in its broad sense, occurs when states, in order to meet their own goals, modify policies to take into account and even meet preferences of other states. Bilateral and multilateral efforts both have potential when states can ascertain interests, exploit opportunities, and ameliorate obstructions. Simultaneously, governments can seek to network existing relationships, bearing in mind that while formal networks are most valuable, informal
arrangements are also of benefit. Further, inquiry into how policy makers perceive the stakes would be invaluable for better using available opportunities and creating new opportunities to operationalize security cooperation. Operationalized security cooperation is a specific type and degree of cooperation in which policies addressing common threats can be carried out by midlevel officials of the states involved without immediate or direct supervision from strategic-level authorities. Consultation and information sharing between security ministries are examples of cooperation, whereas data assessment and intelligence analysis by combined teams of experts would involve operationalized cooperation.

4. Several key issues have been identified for the future development of maritime safety and security in the Indian Ocean region. The preceding sections bear out the surmise that vulnerabilities, requirements and competences in Maritime Safety and Security need to be addressed by national/multinational partners, while combining with commercial practices to co-operate effectively to deter, protect against and counter hostile and illegal threats to safety and security in the maritime domain.

In parting, the main issues to be addressed may be viewed as falling into the following categories (broadly drawing upon insights from Storgård et al. 2012):

a) Regulation and administration – entailing commitment of high-level decision makers, cross-border co-operation, division of tasks, cross-sectoral policies, maritime spatial planning, implementation of international maritime safety regulations and standards, harmonisation of control methods through Port State Control (PSC), and sufficient resource allocation.

b) The human factor – entailing reduction in human error and improvement in development of crew competence through maritime education and better training and sharing of best practices; as well as promotion and publicity of safety culture and importance of oceans with the general public. This gives due attention to the potential of improvement through human element actors, instead of fully focusing on traditionally technical factors.

d) The timely fusing of maritime information – encompassing surveillance and control systems and e-Navigation with an emphasis on cybersecurity, maritime domain awareness and disaster risk management; this would play a major role by means of harmonized collection, dynamic
integration, exchange, presentation and analysis of marine information on board and ashore by electronic means.

e) Safety of ships and cargoes – entailing the provision of framework conditions which support profitable and prosperous business to shipping regulators and companies, whether by mean so ensuring maintenance of vessels and equipment or setting goal-based standards. Shipping self-regulation could solve some problems associated with traditional command-and-control policies. “Self-regulation means that private actors voluntarily engage themselves in actions and measures that improve safety of their operations.” (Storgård et al. 2012, p. 19)

b) Security – and related factors, including technical capacity building and the importance of clear communication amongst stakeholders.

When the identified key issues of this paper are compared across the maritime safety and security related IORA events over the last few years, it has to be acknowledged that many of them have been discussed repeatedly. It is the implementation of recommendations that asks for greater attention in the future. Advocated solutions to maritime security also often suggest a mix of policy responses like further coordination, sharing of information, greater definition and implementation of regulations, law enforcement and capacity building. But the parameters of these proposed coordination measures are loosely (if at all) defined, and pinpointed responsibilities are very rarely demarcated in the international milieu.

As mentioned in Storgård et al. 2012, some of the issues are to large extent inter-governmental in nature, in terms of requiring high-profile commitment from decision makers.

As interdependence between the states grows with more and more interlinking of economies, perhaps with a movement towards trans-governmentalism sometime in the future, the states of the Indian Ocean region may eventually discover that a multilateral approach to transnational security threats is the only potential solution.

***
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Stasinopoulos, Dinos (2003), Maritime Security - The Need for a Global Agreement, Maritime Economics & Logistics, September 2003; vol. 5; issue 3; pp. 311-320


Urciuoli, L. (2016)., What are the causes of transport insecurity? Results from a survey with transport operators, Maritime Policy & Management, July 2016; vol. 43; issue 5, pp 580-596
The following reports from the IORA database have been used for the purpose of this research:

| [A] Economic and Business Conference (EBC), Mauritius, 4 - 5 July 2013 |
| [E] 1st Indian Ocean Dialogue: Kochi Consensus, India, 7 September 2014 |
| [H] 2nd Indian Ocean Dialogue: Perth Consensus, Australia, 5-7 September 2015 |
| [I] 1st IORA Meeting of Experts on Maritime Safety and Security, New Delhi, India, 13-14 October 2015 |
| [L] 4th Indian Ocean Dialogue: Abu Dhabi Consensus, UAE, 9-10 October 2017 |
| [M] 2nd IORA Meeting of Experts on Maritime Safety and Security, New Delhi, India, 7-8 November 2017 |
Welcoming H.E. Ambassador Dr Nomvuyo N. Nokwe as the successor of H.E. K.V Bhagirath, IORA Secretary General
Initial Workshop on the establishment of the IORA Maritime Safety and Security Working Group
4 – 5 September 2018, Colombo – Sri Lanka

IORA Indian Ocean Conference on Blue Carbon
19 – 23 March 2018, Indian Ocean Marine Research Centre, Western Australia
IORA Ministerial Conference on
“Women’s Economic Empowerment - A Pre-requisite for Sustainable Development.”

28 – 29 August 2018, Balaclava, Mauritius
The event was held in parallel with the 1st General Assembly of the International Solar Alliance (ISA) and the 2nd Global RE-INVEST Meet & Expo.

The combined inaugural for the 2nd IORA Renewable Energy Ministerial Meeting was also graced by the presence of the Hon’ble Prime Minister of India, Mr. Narendra Modi and the United Nations Secretary General, Mr. António Guterres.
Official Group Photograph of the Eighth Bi-Annual Committee of Senior Officials (CSO) Meeting

30-31 July 2018, Durban, South Africa
H.E Dr. Dr Nomvuyo Nokwe, Secretary General of IORA at the Eighth Bi-Annual CSO Meeting
30-31 July 2018, Durban, South Africa

Signature of the IORA and ISA Memorandum of Understanding on Renewable Energy by H.E Dr. Dr Nomvuyo Nokwe, Secretary General of IORA and H.E. Mr. Upendra Tripathy, Director General of the International Solar Alliance during the 2nd IORA Renewable Energy Ministerial Meeting and First General Assembly of ISA
3 October 2018
ECONOMIC CONTRIBUTION OF THE FISHERIES SECTOR: SHORT AND LONG TERM PERSPECTIVES FOR SRI LANKA

Sebnem Sahin\textsuperscript{a}, William Lane, Tolga Cebeci, Badri Narayanan and Indu Hewawasam

Abstract

This paper presents some of the main characteristics of the fisheries sector as one of the main livelihoods for the coastal populations by applying descriptive-analytic method. The analytical framework developed for Sri Lanka estimated the poverty incidence, changes in the cost of living of Sri Lankan households due to an export ban of Sri Lankan fish to the European Union. Fisheries will stay one of the main income sources for Sri Lanka in the next decades. Moving forward, the following opportunities deserve priority attention to get the most of coastal resources. The paper concludes that some of the provinces face more pro-active management of environmental challenges and climate risks. This will require stronger mechanisms for assessing, monitoring, updating and communication risks to sustainable use of natural resources, collection of climate information, and identification of an effective mix of regulatory and financial instruments that incorporate climate and environmental risks in the development equation. In addition to strengthening inter-agency coordination, it is also useful to promote coordination among development partners and other organizations. Further, the paper recommends to explore innovative financial instruments and incentives to stimulate public and private sector investments into a sustainable coastal economy. There are several examples of innovative financing to bridge the long-term financial gaps for investments in ecosystem-based climate adaptation and protecting the marine environment as in the example from Seychelles’ Blue Economy approach.

Keywords: Sri Lanka, Gross Domestic Product (GDP), employment, fisheries sector, rural livelihoods, investment

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Background

As a major island state, Sri Lanka is dependent on the fisheries, and needs to exploit this coastal natural capital sustainably to maintain the natural habitat of fish while improving its overall economic well-being. The fisheries sector is responsible for producing the largest share (70 %) of animal protein consumption for Sri Lanka’s growing population, vital for food security, employing a half a million citizens in both formal and informal jobs, generating 244 USD million in foreign trade from high value fish exports, and responsible for contributing over 1.2 percent of GDP.

The government of Sri Lanka is seeking to promote fisheries as the engine for rural and coastal development. The government aims to expand the presently small share of fisheries in the country’s Gross Domestic Product (GDP), increase exports, and improve rural livelihoods in coastal and inland communities.

Fisheries is seen as a major player in post conflict growth in the North-Eastern provinces. With the cessation of the three decade long civil war in the Northern and Eastern Provinces, rich fishery resources in those areas have become accessible. While the advent of peace has also increased the investors’ confidence and therefore the potential for private sector investment in fisheries, these two regions are also where the largest share of poverty persists.

Among several activities in the fisheries sector, the Government identified aquaculture as particularly promising. The National Aquaculture Development Authority (NAQDA) is working in Mullaitivu District to improve the inland fishing and has established a Regional Aquaculture Extension office in Kilinochchi in 2013 to boost the inland fishing in the province. There are also two projects on freshwater fish fry rearing programs being implemented by the NAQDA in Kilinochchi District. In addition to commercial shrimp farming, the NAQDA has identified the following non-traditional aquaculture systems has having potential for these post-conflict provinces: (1) Seaweed; (2) Sea cucumber; (3) Oyster; and (4) Crab and lobster fattening.

1 The Northern and Eastern provinces are in the dry zone of Sri Lanka. They include the administrative districts of Jaffna, Kilinochchi, Mullaitivu, Mannar, Vavuniya, Ampara, Trincomalee and Batticaloa, and have a total land area of 18,880 Sq. km. These districts were the focus of civil strife for over a quarter century, only ending in May 2009. Since then, the Government has instituted a multisectoral economic recovery program.
2 The broadly defined fisheries sector usually comprises marine captures, inland captures (in fresh or brackish waters), and aquaculture, both at sea and on-land, e.g. in ponds.
Current status

In February 2015, the country was briefly struck by a ban on exports to the EU, imposed over concerns about Illegal, Unreported, and Unregulated (IUU) fishing. The ban presented a very direct and immediate threat to a hundred million dollars in annual trade and hundreds of thousands of jobs. Perhaps as a result of its dire consequences, the Government immediately initiated a series of steps that allowed for the ban to be lifted within just over six months. It should be noted that EU bans imposed for IUU reasons are relatively easier to overturn, as the measures that can be taken by exporting governments to show their good faith in the fight against illegal fishing are relatively simple and lenient.

The objectives of the current study are two-fold: (i) estimate the socio-economic impact of the EU ban and its ripple effect on the overall economy, (ii) recommend actions that would assist Sri Lanka in increasing fish production while improving sustainable management of fish resources, and increasing jobs and livelihood opportunities, particularly for post-conflict coastal communities; and suggest other steps that the Government should consider taking to reinforce its IUU actions, and thus avoid facing another export ban, to the EU or elsewhere.

Overview of fisheries

Fisheries provide an important source of animal protein for Sri Lanka’s poor. The fisheries sector is a source of formal jobs (around 111,000), mainly in the low-income provinces of Sri Lanka (33,000 people in Northern and 23,000 in Eastern provinces according to statistical surveys). Once one includes informal jobs as well as backward/forward linkages of the fisheries sector, the number of fisheries-related jobs reaches roughly half a million. Fishermen are the best paid among those employed in the primary sectors (including agriculture). In addition, exports of large marine pelagic and prawn are a major source of foreign exchange for Sri Lanka. The sections below provide further details on these points and estimate the potential impact a ban like the one that was threatened by the EU would have on the fisheries sector in Sri Lanka.

Consumption of fish by income levels

Fish produced from Sri Lankan waters that are consumed in the country represent 65% of total animal protein in the diet. Fish thus provides a source of vital food security to the poor, with Sri Lankans on average eating 15 kg of fish per year. Individuals in the lowest income quintiles (quantiles 1 and 2) consume roughly as much fish as those in higher income quintiles (Figure 2)).
The average price of fish consumed by individuals in the higher income quintiles is also higher (Error! Reference source not found.). The lowest quintile consumes fish costing around 100 Rupees/kg while the richest quintile pays around 340 Rupees/kg of fish consumed based on the latest Household Expenditure Surveys.

Figure 3 Average Price of Consumed Fish by Income
Source: Household Income and Expenditure Survey 2012/2013
Share of fish in total food expenditure is significant for individuals in all income deciles: It represents around 12% on average; around 10% for the poorest and 14% for the richest. Fish consumption increases with income, as shown in (Figure 3).

A ban like that which was threatened by the EU import ban would have been likely to affect the poor through different channels. Given the important share of fish in the individual consumption, and the price impact of such a ban would be likely to vary between income categories. The impact of the availability (surplus or excess) of fish in the domestic market as well as the potential price variations resulting from the EU import ban, poor is likely to be affected in different ways: (i) a potential fall in fish prices would bring the overall consumer prices down (positive impact in terms of food expenditures), (ii) employment and wage impact would adversely impact workers in fisheries if this sector were to contracts due to a reduced demand from EU. This analysis aims to: (i) give a comprehensive picture of the income source, food expenses of individuals from different income groups, and (ii) combine this information with the estimations from a macro-economic model to measure the likely poverty impact an EU import ban would have had on Sri Lankan fish in the short term.

Employment and livelihoods from fisheries

Fishing and fish processing are major employment sources in the East and South regions (Figure 4). Although overall importance of fishing is not very large in the country with only 0.6% of all people in
the country directly employed in the sector (around 111,000 people), in four districts of the Northern province, more than 3% of all people are employed in the sector (33,000 people). In Mannar district, this rate is as high as 8%. If the fisheries supply chain is considered the number of people employed in formal and informal jobs related to fisheries reaches approximately 1 million. The importance of the sector thus varies considerably depending on geographic distribution of the populations affected.

Poverty rates as well as the number of people employed in fisheries are the highest in the North and Eastern regions (Figure 5)). Overall, the poverty rate\(^2\) in the country was 6.7% in 2013. There are significant differences across provinces, the poverty rate is higher in the North East: 2 districts (out of 5) in the Northern province, 1 district (out of 2) in Uva province and 1 district (out of 3) in the Eastern region

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\(^2\) Based on the latest statistics: Poverty line is defined as 3,624 rupees consumption per person per month and B40 line as 6,765 rupees consumption per person per month.
have poverty rates 19% or higher. In sharp contrast to these, all 3 districts in the Western province have the lowest poverty rates in the country.

There is a strong overlap between poverty rate and the importance of fishing sector across districts. Figure 6 shows that the higher the poverty rate is in a district, the higher we can expect the share of people employed in fisheries sector to be.\(^3\) Based on the statistics from Figure 4 and Figure 5, this result is not surprising. In other words, fishing has a more important role in the economic life of poorer districts.

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\(^3\) For robustness, the regression is also run by excluding the Mannar district, which represents a ratio of 8% of people working in fisheries. In that case the correlation coefficient between the poverty rate and the share of population working in fishing decreases to 0.47 but still stays significant.
Fisheries provide the highest source of income for a certain category of workers in Sri Lanka: Average Income of (employed) individuals in Sri Lanka shows significant differences by education level, gender, province, sector and work type: Based on statistics, fisheries provide the highest income to middle age men workers (average 39 years) with low education levels from the North and Eastern provinces. The paragraphs below focus on the statistical relationship between individuals’ income/consumption characteristics and the fisheries sector.

Civil conflict in Sri Lanka had a major impact on marine, coastal and inland fish production. The north and northeastern areas of the country shifted from major fish producers to producing almost no fish at all, thus allowing fish stocks to recover to healthy levels. Post-conflict, production is again picking up, but there remain significant opportunities to increase fishing and fish production. Investing in sustainable fisheries (i.e. at a level of effort that would produce no more than the maximum sustainable yield, or MSY) could thus help the Sri Lankan economy in reaching the twin goals by promoting trade as well as boosting fishermen’s income. The section below reviews the main factors that would be critical in boosting income in fisheries, hence alleviating poverty in Sri Lanka.
Education

Based on the statistics, average income of individuals in the country increases consistently by education level. Specifically, average income of individuals with a bachelor’s degree was more than four times as much as that of individuals without a degree. Average income doubles in each increase in the education category starting from primary school, but the difference in average income between those without any education and those having primary school degree or less is only moderate (Table 1).

Table 1: Average Income of Individuals by Education Level – 2013
Source: Household Income and Expenditure Survey 2012/2013

<table>
<thead>
<tr>
<th>Education</th>
<th>Average Income (rupee)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No education</td>
<td>4,726</td>
</tr>
<tr>
<td>Primary school or less</td>
<td>5,434</td>
</tr>
<tr>
<td>Secondary school or less</td>
<td>10,970</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>21,329</td>
</tr>
<tr>
<td>Postgraduate degree</td>
<td>52,297</td>
</tr>
</tbody>
</table>

Gender

Income of men is, on average, almost three times higher as the income of women in the country as shown in Table 2.

Table 2: Average Income of Individuals by Gender - 2013

<table>
<thead>
<tr>
<th>Gender</th>
<th>Average Income (rupee)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>15,732</td>
</tr>
<tr>
<td>Female</td>
<td>5,850</td>
</tr>
</tbody>
</table>
Geographic location

Average income of people living in the Western province is by far the highest in the country. Income in the Western province is followed by that of North Western, Southern and Sabaragamuwa provinces. Eastern and Northern provinces are the poorest, with people living there with an average income of less than half that of those living in the Western province.

<table>
<thead>
<tr>
<th>Province</th>
<th>Average Income (rupee)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western</td>
<td>14,516</td>
</tr>
<tr>
<td>Central</td>
<td>8,945</td>
</tr>
<tr>
<td>Southern</td>
<td>9,909</td>
</tr>
<tr>
<td>Northern</td>
<td>6,894</td>
</tr>
<tr>
<td>Eastern</td>
<td>6,453</td>
</tr>
<tr>
<td>North Western</td>
<td>10,211</td>
</tr>
<tr>
<td>North Central</td>
<td>8,284</td>
</tr>
<tr>
<td>Uva</td>
<td>8,517</td>
</tr>
<tr>
<td>Sabaragamuwa</td>
<td>9,684</td>
</tr>
</tbody>
</table>

Overall, 29% of all employed people in the country reside in the Western province, followed by Central and Southern provinces with each of 13% of the total. On the other hand, Northern and Eastern provinces have the lowest shares in total working population in the country, with a share of 4% and 6%, respectively.

People working in agriculture are less concentrated in the Western province compared to overall distribution of employed people in the whole economy. This is because although 29% of all employed people in the country live in the Western province, only 15% of those employed in the agriculture sector live in the Western region. On the other hand, the agriculture workforce is more concentrated in inland provinces (North Central, Uva, and Sabaragamuva). Within agriculture, fishing is concentrated in the Northern, Eastern and North Western provinces.
Average income of those working in the fisheries sector is slightly higher than in agriculture: Among all broad sectors, average income is the highest in services, followed by manufacturing. In 2013, the average income for individuals working in the services sector was almost twice as high as those working in the agriculture. Within agriculture, individuals working in fisheries earned around 20% more income than others. Within manufacturing, those working in the fish processing industry have a slightly higher average income than others. Within services, those working in the tourism sector have around 10% more income than others in the rest of the sector (Table 4).

<table>
<thead>
<tr>
<th>Sector</th>
<th>Average Income (rupee)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>16,746</td>
</tr>
<tr>
<td>Fishing</td>
<td>19,520</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>22,161</td>
</tr>
<tr>
<td>Fish Processing</td>
<td>23,214</td>
</tr>
<tr>
<td>Services</td>
<td>29,155</td>
</tr>
<tr>
<td>Tourism</td>
<td>32,261</td>
</tr>
</tbody>
</table>

Education level of fishers is slightly lower than others employed in the rest of the primary sectors (including agriculture). Education level of those working in the services sector is the highest among broad sectors. It is followed by those in the manufacturing sector. Education level of individuals working in tourism resembles more that of those working in manufacturing rather than those working in services. Those working in agriculture have on average less education than those working in other sectors. Those with a primary school degree or less represent 30% of the sector, which is twice as high as the share of those with primary school degrees amongst the total employed population. Moreover, the share of those with a college degree is only 7% in the agricultural sector (Figure 7).

5 Overall, 3% of working people in the country have no education, 15% have a primary school degree or less, 56% have secondary school degree, 25% have college degree and 0.8% have post graduate degree.
The share of women employed in fisheries is low (Figure 8): Only 15% of those employed in the fisheries sector are women with 4% involved in fishing, and 11% employed in fish processing. On average, 35% of all working individuals in the country are women, and the share of women in the agriculture and services sectors is aligned with the national average (35% and 34% respectively). The share of women in the workforce is the highest (44%) in the manufacturing.
Around 80% of workers in fish processing live either in the Eastern or Southern province:

In contrast to agriculture, people employed in manufacturing and services (including tourism) are concentrated in the Western province (Figure 9).

Figure 9 Provinces of Employed by Sectors – 20
Source: Household Income and Expenditure Survey 2012/2013
Workers’ age

Those working in fisheries are significantly younger than those working in other agricultural activities. On average, people working in agriculture are oldest, while those working in the manufacturing and services sectors are younger, as shown in Table 5.

Table 5 Average Age of Employed Individuals by Sector – 2013
Source: Household Income and Expenditure Survey 2012/2013

<table>
<thead>
<tr>
<th>Sector</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>46</td>
</tr>
<tr>
<td>Fishing</td>
<td>39</td>
</tr>
<tr>
<td>Fish Processing</td>
<td>42</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>39</td>
</tr>
<tr>
<td>Tourism</td>
<td>40</td>
</tr>
<tr>
<td>Services</td>
<td>41</td>
</tr>
</tbody>
</table>

Main determinants of workers’ income

To clarify the determinants of income of employed people, personal income was run on education, sector and gender categories (Table 6). Categories omitted form the analysis are: “no education”, “agriculture”, and “male”. According to regression results in Figure 8, Female employees earn on average 14,874 Rupees less than male employees working in the same sector and with the same education. Those with the same level of education and of same gender working in the manufacturing sector earn 3,895 rupees, and in the services sector 6,195 rupees, more than those working in agriculture. Finally, employees with higher education have much higher incomes than those with lower education, working in the same sector and of the same gender. The only exception is for those with only a primary school degree, which do not have an income premium over employees without any education.
Table 6 Dependent Variable: Annual personal income in rupees

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Value (Rupees)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary School</td>
<td>-233*</td>
</tr>
<tr>
<td>Secondary School</td>
<td>3,320</td>
</tr>
<tr>
<td>College</td>
<td>18,288</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>35,482</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>3,895</td>
</tr>
<tr>
<td>Services</td>
<td>6,195</td>
</tr>
<tr>
<td>Female</td>
<td>-14,874</td>
</tr>
<tr>
<td>Constant</td>
<td>18,791</td>
</tr>
<tr>
<td>R2</td>
<td>0.026</td>
</tr>
<tr>
<td>N. of Observations</td>
<td>6.36 million</td>
</tr>
</tbody>
</table>

*: Not significant at 10%, all others significant at 0.1% confidence level

Contribution of fisheries to the GDP and trade

The fisheries sector is an important contributor to the national economy, representing 1.8% of GDP at current market prices (2013). The fisheries sector also generated USD 246 million in export earnings in 2013 (approximately 4.5% of total), out of which 83 million (more than a third) was attributable to the EU market.

The contribution of fisheries contribution to employment is important: 35 EU-approved fish processing plants and many fisheries-related service industries (boat building, engine repair, fishing gear manufacture and repair, etc.) bring value chain related employment to a much higher level. Based on the Sri Lankan official publication on fisheries, close to 2.4 Million direct and indirect employments are being generated by this sector (at the supply chain level). Fisheries related jobs are fisherman, breeders, processors, logistics, cold chain, packing and other service suppliers.  

Fisheries in Sri Lanka can be divided into three types, each one of them contributes to economic growth and poverty alleviation in different ways. The fisheries sector comprises three different activities: 1) the Inland/coastal/brackish water capture fishery; 2) Aquaculture; and 3) Single and multiple-day marine fishery. Over 86% of the fishery is from marine waters, with 36% of this catch coming from the

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coastal and territorial waters, and the remaining 50% from the deep-sea fishery, which operates further offshore and within the country’s Exclusive Economic Zone, or EEZ. Marine fish also fetch higher prices in Sri Lankan markets than inland fish do. Marlin prices averaged 1000 SL Rs in 2013, which was more than twice the price of the most popular freshwater fish in the market (Tilapia).

Total catch of fish in Sri Lankan waters in 2013 was estimated to be 512,840 metric tons, with a total value of USD 1,212 million. Growth rate of the value of the catch between 2012 and 2013 was 15.8% at current market prices, although the total catch only increased by 5%, meaning that fish have consistently fetched higher prices, mostly in response to increasing demand. Over the last four years, Sri Lanka’s fish production increased by 50%, based on the Department of Fisheries and Aquatic Resources (DFAR) data presented in Table 7.

Table 7 Historical Fish Production from Sri Lankan Waters

<table>
<thead>
<tr>
<th>3. Annual Fish Production</th>
<th>2009</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Marine Sector</td>
<td>Mt.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal Waters</td>
<td>293,170</td>
<td>385,270</td>
<td>417,220</td>
<td>445,930</td>
</tr>
<tr>
<td>Offshore/Deep Sea Waters</td>
<td>180,410</td>
<td>222,350</td>
<td>257,540</td>
<td>267,980</td>
</tr>
<tr>
<td>3.2 Inland and Aquaculture Sector</td>
<td>Mt.</td>
<td>46,560</td>
<td>59,560</td>
<td>68,950</td>
</tr>
<tr>
<td>Inland Capture Fisheries</td>
<td>39,030</td>
<td>50,050</td>
<td>58,680</td>
<td>55,020</td>
</tr>
<tr>
<td>Aquaculture Fisheries</td>
<td>3,980</td>
<td>5,360</td>
<td>6,960</td>
<td>7,460</td>
</tr>
<tr>
<td>Shrimp Farms</td>
<td>3,550</td>
<td>4,150</td>
<td>3,310</td>
<td>4,430</td>
</tr>
<tr>
<td>3.3 Total Production</td>
<td>Mt.</td>
<td>339,730</td>
<td>444,830</td>
<td>486,170</td>
</tr>
</tbody>
</table>

The inland fisheries sector also grew, but at a slower pace than the sector average between 2009 and 2013. Although inland fisheries represent only about 14% of the total catch (Table 8), it represents an important source of income in the poor provinces of the country, as well as a major source of protein for the local population. Hence, investing in boosting sustainable production of inland fisheries would positively impact the poor and improve Sri Lanka’s pathway towards the twin goals.

7 Under the UN Convention on the Law of the Sea of 1982, Sri Lanka generates a territorial sea that extends 12 nautical miles from its coast, and an EEZ that extends up to 200 Nautical Miles (370 km). The distances are shorter off the north coast of the island, where India generates its own EEZ and the boundary between the EEZs of both countries is approximately at the equidistant.
8 Black bars represent freshwater fish.
Contribution of the poorest provinces has declined in the last 20 years. Northern provinces’ contribution to total fish production decreased from 40% in 1983 to 7% in 2009 as displayed in Table 8.

### Overview of the three sub-sectors in fisheries

#### The Marine Fisheries

The most important fish, economically, in the marine fisheries are tuna, swordfish, marlin and sharks (Figure 10). All of these large pelagic fish are highly migratory and thus move into and out of the 200 nM EEZ of many countries. As such, management must be both local and regional, through so-called Regional Fisheries Management Organizations (RFMOs), since fishing pressure in one nation’s management area affects fish abundance in all others through which the fish migrate. Sri Lanka is a member of one of these regional groups, the Indian Ocean Tuna Commission (IOTC), headquartered in Seychelles. The following information on the most important of these fish species to Sri Lanka comes from the annual report of the Scientific Committee of the IOTC. These species and some near-shore neritic tuna and tuna-like species comprise the bulk of the marine fisheries and are consumed locally and form the basis of fisheries exports.⁹

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⁹Globally, the three economic centers of tuna fisheries are the Atlantic, the Pacific and the Indian Ocean.
The nearshore marine fishery is operated mainly by small non-powered boats that rarely stray beyond a few kilometers from shore. They are mainly operated by small-scale subsistence fishermen who catch fish for themselves (subsistence fishing) or for local markets. Boats generally fishing in territorial waters (up to 12 miles offshore are described as “single-day” vessels (Figure 11). They are between 10-15 meters long, made of wood or fiberglass reinforced plastic, and powered by inboard or outboard engines. The “multi-day” vessels access the 200 nM EEZ and are generally of two types.

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The first and by far the most numerous are vessels between 15-24 meters in length with basic navigation equipment and ability to hold ice. They generally fish in territorial waters and the 200 nM EEZ. The larger vessels in this group, in spite of their modest length, are also capable of steaming long distances and have been found fishing in the 200-mile EEZ of BIOT (British Indian Ocean Territory), Maldives, Seychelles and other neighboring countries. The second group of “multi-day” vessels is foreign owned commercial fishing vessels greater than 24 meters that are owned by companies from distant fishing nations like China and Japan. These large fishing vessels are required by law to be joint ventured with a Sri Lankan company and are generally licensed to fish on the High Seas waters under the Sri Lankan flag. The total number of fishing vessels fishing in Sri Lankan waters for large pelagic species described above totaled more than 30,000 in 2013. Of these vessels, 4,111 were licensed multi-day fishing vessels operating in the 200 nM EEZ of Sri Lanka. This was a 28% increase in vessels from 2009 to present. The breakdown of these vessels between coastal, single and multi-day is presented below.

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Table 9 Sri Lankan Fishing Vessels by Location and Date

<table>
<thead>
<tr>
<th>5. Fishing Fleet (Operating Boats)</th>
<th>2009</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1 Mutly-day Boats (Offshore Vessels) - IMUL</td>
<td>Numbers</td>
<td>2,934</td>
<td>3,872</td>
<td>4,080</td>
</tr>
<tr>
<td>5.2 Inboard Single Day Boats - IDAY</td>
<td>Numbers</td>
<td>958</td>
<td>1,120</td>
<td>890</td>
</tr>
<tr>
<td>5.3 Outboard Motor FRP Boats - OFRP</td>
<td>Numbers</td>
<td>17,193</td>
<td>22,890</td>
<td>23,160</td>
</tr>
<tr>
<td>5.4 Motorized Traditional Boats - MTRB</td>
<td>Numbers</td>
<td>2,126</td>
<td>2,960</td>
<td>2,340</td>
</tr>
<tr>
<td>5.5 Non-motorized Traditional Boats - NTRB</td>
<td>Numbers</td>
<td>18,243</td>
<td>22,630</td>
<td>22,800</td>
</tr>
<tr>
<td><strong>Total Marine Fishing Fleet</strong></td>
<td>Numbers</td>
<td>41,454</td>
<td>53,472</td>
<td>53,270</td>
</tr>
<tr>
<td>5.6 Beach Seines (Madel)</td>
<td>Numbers</td>
<td>975</td>
<td>984</td>
<td>980</td>
</tr>
<tr>
<td>5.7 Inland Fishing Fleet</td>
<td>Numbers</td>
<td>7,560</td>
<td>8,020</td>
<td>8,360</td>
</tr>
</tbody>
</table>

In addition to vessels licensed to fish in Sri Lankan waters, the country issued at least 40 High Seas Fishing Licenses in 2014 (IOTC report). All fishing vessels operating in Sri Lankan waters were designed and manufactured in the country (there were 47 licensed boat manufacturing yards in Sri Lanka in 2013).

There were 20 formal fish harbors as of 2013 accommodating 4,450 single and multi-day fishing vessels. More are under construction or planned (Table 9). They are not, however, generally large enough to accommodate large foreign fishing vessels that are joint ventured with Sri Lankan companies. This is important as transshipment on the high seas is prohibited and all Sri Lankan licensed vessels are required to land their catch in the country so there is a measurable risk that landing capacity may not keep up with an increasing fishing capacity, a very significant issue that strikes many countries when they attempt to develop their fisheries.

Sri Lanka also has 35 EU-approved fish processing plants. These processing plants serve the local and international markets and are supplied by the Sri Lankan fishing fleet and partially by foreign fishing vessels issued transshipment licenses by the DFAR. Little data exist on how many large foreign fishing vessels transship in commercial ports, how frequently transshipment occur, or how much fish and what species are involved. The Government stated the following to the IOTC in 2014 “… Transshipment has not been allowed for the Sri Lankan flagged vessels. One exception that Sri Lanka experienced was a large-scale Tuna logline vessel in year 2014. This vessel had engaged in a single transshipment under
distressed situation. The transshipment details reported to Department of Fisheries Sri Lanka and the relevant statistical documents have been validated by the authorized officers. At sea transshipment obligations in the Resolution 14/06 will be incorporated to the High Seas regulations in its next amendment which is scheduled to be done shortly”. Sri Lanka has (according to press reports) issued High Seas Fishing Licenses to a number of Chinese and Japanese vessels Since these licenses obligate the joint venture vessels to offload in Sri Lankan ports, it is unclear how these data would be reported given the above response.\textsuperscript{12}  

\textsuperscript{12} The prohibition of transhipment at sea is a condition of membership with the IOTC and failure by the Government to enforce this prohibition would undermine the fight against IUU fishing and threaten Sri Lanka’s membership within that RFMO, with potentially devastating economic consequences.
Table 10 Fish Harbors and Vessels Using Each

<table>
<thead>
<tr>
<th>Harbour</th>
<th>District</th>
<th>Registered Boats</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Single-day (BDAY)(f)</td>
<td>OD</td>
<td>W alley</td>
<td>Wallam</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Single</td>
<td>OD</td>
<td>W alley</td>
<td>Wallam</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Multi-day (IMUL)(f)</td>
<td>OD</td>
<td>W alley</td>
<td>Wallam</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>OD</td>
<td>W alley</td>
<td>Wallam</td>
<td>Total</td>
</tr>
<tr>
<td>1. Kalpitiya</td>
<td>Putalum</td>
<td>4</td>
<td></td>
<td>4</td>
<td>110</td>
<td>116</td>
</tr>
<tr>
<td>2. Chilaw</td>
<td>Putalum</td>
<td>2</td>
<td></td>
<td>4</td>
<td>85</td>
<td>85</td>
</tr>
<tr>
<td>3. Negombo</td>
<td>Gampaha</td>
<td>24</td>
<td></td>
<td>24</td>
<td>512</td>
<td>510</td>
</tr>
<tr>
<td>4. Bikarwita</td>
<td>Gampaha</td>
<td>4</td>
<td></td>
<td>12</td>
<td>50</td>
<td>46</td>
</tr>
<tr>
<td>5. Madura</td>
<td>Colombo</td>
<td>17</td>
<td></td>
<td>17</td>
<td>74</td>
<td>108</td>
</tr>
<tr>
<td>6. Paratara</td>
<td>Kahalara</td>
<td>12</td>
<td></td>
<td>12</td>
<td>160</td>
<td>172</td>
</tr>
<tr>
<td>7. Benwellu</td>
<td>Kahalara</td>
<td>24</td>
<td></td>
<td>24</td>
<td>512</td>
<td>510</td>
</tr>
<tr>
<td>8. Ambelangoda</td>
<td>Galle</td>
<td>2</td>
<td></td>
<td>2</td>
<td>40</td>
<td>42</td>
</tr>
<tr>
<td>9. Hikkaduwa</td>
<td>Galle</td>
<td>15</td>
<td></td>
<td>14</td>
<td>12</td>
<td>168</td>
</tr>
<tr>
<td>10. Dodandu</td>
<td>Galle</td>
<td>9</td>
<td></td>
<td>9</td>
<td>18</td>
<td>99</td>
</tr>
<tr>
<td>11. Galle</td>
<td>Galle</td>
<td>2</td>
<td></td>
<td>2</td>
<td>40</td>
<td>42</td>
</tr>
<tr>
<td>12. Mira</td>
<td>Marara</td>
<td>54</td>
<td></td>
<td>54</td>
<td>232</td>
<td>380</td>
</tr>
<tr>
<td>13. Panuwella</td>
<td>Marara</td>
<td>15</td>
<td></td>
<td>15</td>
<td>64</td>
<td>79</td>
</tr>
<tr>
<td>14. Kuduwella</td>
<td>Hambantota</td>
<td>35</td>
<td></td>
<td>35</td>
<td>415</td>
<td>415</td>
</tr>
<tr>
<td>15. Tangalle</td>
<td>Hambantota</td>
<td>44</td>
<td></td>
<td>44</td>
<td>314</td>
<td>402</td>
</tr>
<tr>
<td>16. Hambantota</td>
<td>Hambantota</td>
<td>21</td>
<td></td>
<td>21</td>
<td>32</td>
<td>76</td>
</tr>
<tr>
<td>17. Kariiru</td>
<td>Hambantota</td>
<td>3</td>
<td></td>
<td>3</td>
<td>34</td>
<td>34</td>
</tr>
<tr>
<td>18. Vellachchirai</td>
<td>Batticaloa</td>
<td>32</td>
<td></td>
<td>32</td>
<td>64</td>
<td>64</td>
</tr>
<tr>
<td>19. Cod-bay</td>
<td>Trincomalee</td>
<td>3</td>
<td></td>
<td>3</td>
<td>57</td>
<td>57</td>
</tr>
<tr>
<td>20. Nivekala</td>
<td>Marara</td>
<td>3</td>
<td></td>
<td>3</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>262</td>
<td></td>
<td>214</td>
<td>12</td>
<td>378</td>
</tr>
</tbody>
</table>

Source: Ceylon Fisheries Harbours Corporation (CFHC)

The Inland Fishery

Almost all inland fisheries are artisanal based, and are generally accessed by small, non-powered, boats. The numbers of inland fisheries vessels have remained relatively constant at between 7,000-8,000 vessels between 2009-1013 (DFAR website). The capture fishery is centered on perennial reservoirs, lagoons and estuaries (Table 11). These support almost 90% of the inland capture fishery. Seasonal village tanks are another important source of inland fish production. They are mainly found distributed across the dry zone of Sri Lanka, and approximately 667 ha of these seasonal village tanks are utilized for fish culture. Although indigenous species like Labeo dissoumeari and Puntius sarana are
found in inland fish catches, their commercial importance is quite low. Introduced fish species, such as tilapias (Oreochromis mossambicus and O. niloticus) dominate inland fish landings. Attempts have also been made to introduce Indian and Chinese carp species into reservoirs.

Table 11 Inland Waters: Potential areas of production

<table>
<thead>
<tr>
<th>Category</th>
<th>Hectares</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lagoons &amp; Estuaries</td>
<td>158,000</td>
</tr>
<tr>
<td>Mangrove Zones, Mud Flats &amp; Salt Marshes</td>
<td>71,000</td>
</tr>
<tr>
<td>Total Extent of Fresh Water Bodies</td>
<td>260,000</td>
</tr>
<tr>
<td>Perennial Reservoirs</td>
<td>155,000</td>
</tr>
<tr>
<td>Seasonal Tanks</td>
<td>100,000</td>
</tr>
<tr>
<td>Villus</td>
<td>5,000</td>
</tr>
</tbody>
</table>

Almost all aquaculture in Sri Lanka is either prawn farming or ornamental fish production, although trials are in place for a variety of other aquatic plant and animal species. The current shrimp aquaculture industry in Sri Lanka is concentrated in the north western coastal belt, covering a farm area of more than 4 500 ha with 70 hatcheries; of the total farm area the ponds themselves occupy an area of around 3,000 ha. There is a total of 1,344 farm establishments, of which 47.7 percent are considered to be establishments operating without proper licenses. On the eastern coast in Batticaloa District, where shrimp farming in Sri Lanka first began in the late 1970s but was abandoned due to civil unrest, operations have resumed in recent years. More than 90% of the farmed shrimps are exported and sold directly from the producer to the processor / exporter, and the balance of production is sold at the local market outlets. Aquaculture production more than doubled in volume from 31 Mt to 69 Mt between 1999 and 2013 (Table 12)

---

Simulation results: Potential economic impact of the EU ban

The European Union is the main destination of fish exports of Sri Lanka (Figure 4). About 42% of out of a total of 244 USD million in fish exports from the country were shipped to the EU in 2013. The EU is followed by the United States (18%) and Japan (16%). The share of Sri Lanka in global trade is low: In 2011, its exports represented 195 million USD (0.21% of world total), imports were around 100 million USD (0.17% of world total).

\[14\] Based on information from National Aquaculture Development Authority of Sri Lanka, available from http://www.naqda.gov.lk/
Types of fish exported by Sri Lanka are similar as their unit price (Table 13).

Table 13. Export price by type of fish (per kg) – 2012

<table>
<thead>
<tr>
<th>Type of Fish</th>
<th>Price per kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish, fresh (live or dead) or chill</td>
<td>9.9</td>
</tr>
<tr>
<td>Fish, frozen (excluding fillets and)</td>
<td>11.6</td>
</tr>
<tr>
<td>Fish fillets, frozen</td>
<td>9.9</td>
</tr>
<tr>
<td>Fish fillets, fresh or chilled</td>
<td>12.9</td>
</tr>
<tr>
<td>Fish, dried, salted or in brine</td>
<td>11.8</td>
</tr>
<tr>
<td>Crustaceans, frozen</td>
<td>10.3</td>
</tr>
<tr>
<td>Crustaceans, other than frozen</td>
<td>11.3</td>
</tr>
<tr>
<td>Mollusks and aquatic invertebrates</td>
<td>7.9</td>
</tr>
</tbody>
</table>

Figure 12: Export Destinations of Sri Lanka Fish – 2013
Source: UN Comtrade 2013 through WITS
Computable General Equilibrium analysis

The Sri Lankan economy is modeled as an open economy composed of 11 sectors (Table 17), one representative household, and the government (the baseline year of 2011 was updated to reflect the Sri Lankan economy in 2015). Five factors of production exist in the GTAP model; skilled labor, unskilled labor, capital, land, and natural resources. Sri Lanka’s trade with 130 regions including EU25 is modeled (based on the GTAP data/model).  

All simulation results are presented in terms of the Business as usual (BAU) scenario in which the EU ban on Sri Lankan fish exports is not implemented.

The CGE model simulation suggests that the EU ban could cause a decline in Sri Lanka’s GDP growth rate; in 2015 the GDP growth rate could decline by 0.01% percentage points compared to the BAU scenario.

Production in the fisheries sector could contract by 2.3% (in constant USD, 2013) following declining demand from the EU for Sri Lankan fish and lead to excess supply of fish for the domestic market: Fish prices could decline by -5%. Wages for labor employed in fisheries could fall by 0.39% while 3.4% of the workers in fisheries sector would move towards other sectors.

Poverty analysis

The poverty simulation is developed using the macro-economic impacts described above. This macro-economic “shock” to the Sri Lankan economy is transmitted through different microeconomic channels to households. Specifically, the potential effects of the ban on fish exports are diffused to households through three mechanisms:

i. Contraction (2.3%) in the fishing sector
ii. Decrease in the wages of unskilled workers (0.39%)
iii. Decrease in the poverty line due to 5% decline in the average fish price in the country

Details about the CGE model and descriptive statistics are explained in the Annex.
While mechanisms i and ii contribute to the poverty, mechanism iii works in the opposite direction. Baseline and simulated poverty rates by province are presented in Table 14.

Table 14 Poverty impact of the EU ban by province

<table>
<thead>
<tr>
<th>Province</th>
<th>Baseline poverty rate</th>
<th>Poverty rate under export ban</th>
<th>New/old poverty rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western</td>
<td>2.04</td>
<td>2.05</td>
<td>100.6</td>
</tr>
<tr>
<td>Central</td>
<td>6.60</td>
<td>7.05</td>
<td>106.8</td>
</tr>
<tr>
<td>Southern</td>
<td>7.74</td>
<td>8.02</td>
<td>103.6</td>
</tr>
<tr>
<td>Northern</td>
<td>10.85</td>
<td>11.23</td>
<td>103.5</td>
</tr>
<tr>
<td>Eastern</td>
<td>11.03</td>
<td>11.49</td>
<td>104.2</td>
</tr>
<tr>
<td>North Western</td>
<td>6.02</td>
<td>6.07</td>
<td>100.8</td>
</tr>
<tr>
<td>North Central</td>
<td>7.34</td>
<td>7.61</td>
<td>103.7</td>
</tr>
<tr>
<td>Uva</td>
<td>15.37</td>
<td>15.77</td>
<td>102.6</td>
</tr>
<tr>
<td>Sabaragamuwa</td>
<td>8.81</td>
<td>8.87</td>
<td>100.8</td>
</tr>
<tr>
<td>Overall</td>
<td>6.74</td>
<td>6.94</td>
<td>103.0</td>
</tr>
</tbody>
</table>

As a result of the export ban, the poverty in Sri Lanka would be estimated to increase by 3% from 6.74 percentage point (pp) to 6.94 pp. However, there is strong heterogeneity across provinces, a higher impact in poor provinces. On one hand, the poverty rate in three provinces (Western, North Western and Sabaragamuwa) is expected to increase by less than 1%. On the opposite end, poverty rate in the Central province could increase by 6.8% from 6.60 pp to 7.05 pp. It is followed by the increase in poverty rates in the Eastern, North Central, Southern and Northern provinces (higher poverty rates initially). It should be noted that, although the ban is on the fishing sector, unskilled workers in agriculture (and other sectors) are likely to be the most adversely affected because of increased competition with workers who lose their jobs in fishing.
The below sections focus on actionable recommendations to complement the analytical findings.

Long term issues

Issues in marine fisheries

There are several chronic and acute issues currently limiting sustainable development in the marine fishery in Sri Lanka. These include:

1. “Red Flagging” of all fish exports from the Sri Lankan Marine Fishery to EU markets because of Illegal, Unregistered and Unreported (IUU) issues in the Sri Lankan fishery and with Sri Lankan vessels illegally fishing in the high seas and in the 200nM EEZ of other nations. Whilst the ban has now been lifted, this remains a potential issue of great concern for GoSL.
2. Inadequate capacity to collect catch data, undertake fish stock assessment, and other fish research activities needed to ensure sustainable management of the marine fishery.
3. Need for strengthening fisheries regulations, improve licensing of vessels to fish in the 200nM EEZ, to operate under Sri Lankan flag on the high seas, and to transship fish through Sri Lankan ports so that the relevant fees cover fisheries management and research costs (user pays). Need to review fee schedules for use of fishing ports and for certification of fish exports so that the fees cover the cost of operating and maintaining fishing ports and the export certification process.

Inland Fisheries Issues

Inland reservoirs and brackish water lagoons support the inland capture fishery. These water bodies are already heavily fished and there are few effective legal, economic or management-control barriers to entry into these fisheries by those with few alternatives to establishing a livelihood. Even if these inland water bodies are not overfished, and that is unlikely, it is inevitable that continued influx of new fisherman will result in depletion of the inland fishery resource, excessive post-harvest losses, market price distortions, and social conflicts. The Government and its donors have initiated efforts to share management (co-management) of the inland capture fishery with local stakeholders, with significant success, but these efforts need to be expanded.
Aquaculture is one area where inland and coastal fish and aquatic plant production can increase if done in an environmentally and socially sustainable way. Currently there are only two main aquaculture activities in the Country. These are shrimp farming and ornamental fish exports (not all ornamental fish are cultured and there are sustainability issues associated with uncontrolled catch of these fish from the wild). Many shrimp farms have been impacted by disease and production has generally remained static for some time. Disease issues also caused many shrimp farms to be converted to salt pans (salt production). This has significant environmental impacts on mangroves, marshes and seagrass beds. Fortunately, there are several very promising alternative forms of animal and plant culture systems that are under trial in Sri Lanka.

**Sustainability issues**

There are longer term issues of sustainability of inland and near shore-coastal fisheries. Most of these are subsistence fisheries where low legal and economic barriers to entry by outsiders mean that it is difficult to control fishing pressure. Pressure on terrestrial resources supporting agriculture push people to look for alternative livelihoods and fishing is often the only alternative. Central Government management is socially, politically and economically difficult, which requires that the Government enlist the assistance of local stakeholders in a co-management regime of the fishery. This co-management process is already being piloted, but urgently needs expansion and support if it is to succeed before the fisheries of key inland reservoirs, coastal lagoons and near-shore coastal waters are depleted and unable to support the livelihood of those currently exploiting the resource.

Mangrove areas are important to fish spawning, feeding and rearing. They also buffer against floods and other natural disasters such as tsunamis. Unfortunately, mangrove forests are under threat. In 1994, there were around 11500 hectares of mangroves. Today (2012) this number has dropped to around 6000 to 7000 hectares (Environment Conservation Trust, Sri Lanka). Unfortunately, this area continues to drop by about 1%/year (FAO). The destruction is often associated with construction of shrimp farms and efforts are urgently needed to develop legal policies and economic incentives powerful enough to compete with those wanting to remove mangroves.
CONCLUSION AND RECOMMENDATIONS

“As an island-nation, Sri Lanka wishes to make maximum use of the ocean with new light on ocean research, tourism, fisheries and marine resources.”
President Maithripala Sirisena addressed the United Nations (New York, 2016)

Sri Lanka is well positioned to build on its commitment to and strong record in sustainable development. Sri Lanka’s development policies emphasize “the need for present generations to employ appropriate measures to limit natural resource use for sustainable production and consumption to benefit future generations”. The country made considerable progress on Millennium Development Goals (MDGs). According to the “MDG Country Report 2014 – Sri Lanka”, out of a total of 26 indicators, which had clear targets, only two indicators were not on track to be achieved by 2015. Sri Lanka is one of the few countries with a dedicated ministry for achieving Sustainable Development Goals (SDGs). The challenge of achieving the SDGs\textsuperscript{16} will require an unprecedented effort on the part of the government, civil society, the private sector, as well as the people, in a large part due to crosscutting issues and inter-sectoral linkages embedded in the Goals. Many of those linkages are representative of the coastal management issues discussed in this study and will require involvement of multiple agencies in a coordinated implementation and monitoring.

- Maintain focus on development sectors with large potential for resilient livelihoods and jobs in the coastal areas, particularly in the North and East. Sustainable fisheries, including aquaculture, and community tourism have the potential to transform the livelihood in those areas, which have the country’s highest rates of poverty and unemployment. Other important sectors with under-tapped potential are agriculture and forestry. Promoting small-scale, low-impact tourism, agriculture and fisheries could be a “Blue-Green” alternative to repeating over-exploitation of coastal resources, which has already happened in the West and South, in the North and East. Leveraging the private sector to assume more of the development agenda so that economic growth fuels corresponding revenue growth would be important for the success this approach.

\textsuperscript{16} At the UN Sustainable Development Summit on 25\textsuperscript{th} September 2015, world leaders adopted the “2030 Agenda for Sustainable Development”, which includes a set of 17 SDGs. To monitor the progress of these 17 goals, 169 targets have been identified and they are to be achieved by 2030. The SDGs and associated targets, which came into effect on 1\textsuperscript{st} January 2016, will guide the decisions that will be taken on development over the next 15 years.
• Realize a historic opportunity for integrated coastal zone development in the Northern and Eastern provinces. These provinces are at the development juncture that combine spatial planning for coastal zone development with institutional reforms and sound investment planning in an integrated way. This is because major investments have not yet occurred in these areas. However, new investment is accelerating and the window of opportunity for maximizing the benefit from ICZM approaches is closing fast. Stepped-up capacity building at the local level for robust coastal zone planning and enforcement is essential to allow the authorities and the private sector to better assess the potential economic benefits of competing land uses and investments. Extending climate vulnerability analysis that has been carried out for most Sri Lankan provinces for the North and East would further help robust decision making.

***
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Annex

Statistics

Table 15 Fish consumption by household category

<table>
<thead>
<tr>
<th>Household per capita income quintile</th>
<th>Annual fish consumption (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Poorest</td>
<td>398.1</td>
</tr>
<tr>
<td>3</td>
<td>411.7</td>
</tr>
<tr>
<td>2</td>
<td>415.4</td>
</tr>
<tr>
<td>4</td>
<td>418.4</td>
</tr>
<tr>
<td>5: Richest</td>
<td>418.4</td>
</tr>
<tr>
<td>Average</td>
<td>412.4</td>
</tr>
</tbody>
</table>

Table 16 Budget share of fish (%)

<table>
<thead>
<tr>
<th>Household per capita income decile</th>
<th>Share of fish in total food expenses (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Poorest</td>
<td>10.2</td>
</tr>
<tr>
<td>2</td>
<td>11.6</td>
</tr>
<tr>
<td>3</td>
<td>11.8</td>
</tr>
<tr>
<td>4</td>
<td>12.5</td>
</tr>
<tr>
<td>5</td>
<td>12.7</td>
</tr>
<tr>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>7</td>
<td>13.2</td>
</tr>
<tr>
<td>8</td>
<td>13.6</td>
</tr>
<tr>
<td>9</td>
<td>13.6</td>
</tr>
<tr>
<td>10: Richest</td>
<td>14.1</td>
</tr>
<tr>
<td>Average</td>
<td>12.63</td>
</tr>
</tbody>
</table>

Method used in economic analysis

The analysis includes two sections: (i) Computable General Equilibrium (CGE) on Trade analysis, and (ii) micro-simulations on Poverty.

(i) CGE analysis of EU import ban

The macroeconomic analysis will use a database and a static computable general equilibrium (CGE) model developed for the Sri Lankan economy in 2011 by the Global Trade Analysis Project Center [GTAP] based in Purdue University – Indiana, USA. The documentation on the model and data is publically available from the GTAP website (www.gtap.agecon.purdue.edu).

The GTAP model is widely used in and outside the Bank. Like most of the standard CGE models, the GTAP model comprises non-linear behavioral equations and macro-economic accounting links (linear relations describing the break-even points in different markets). The model is solved under GEMPACK (General Equilibrium Model Package) which uses a Euler algorithm; 3-4-5 step extrapolation method.

The Sri Lankan economy is modeled as an open economy composed of 11 sectors (Table 17), one representative household, and the government (the baseline year of 2011 was updated to reflect the Sri Lankan economy in 2015 in line with the WEO-IMF growth estimates). Five factors of production exist in the model; skilled labor, unskilled labor, capital, land, and natural resources. Sri Lanka’s trade with 130 regions including EU25 is modeled.

Commodities/services, capital and labor are assumed to be mobile across sectors and countries. The model represents the circular flow of goods and services and (i) permits flexibility in economic agents' behaviors, (ii)
captures substitution/complementarity relations across demand for goods and services, and (iii) calculates price changes resulting from changing demand and supply conditions. Figure 13 presents the circular flows in the Sri Lanka economy-wide model.

Figure 13: Circular flows in GTAP-CGE model for Sri Lanka

![Circular flows in GTAP-CGE model for Sri Lanka](image)

Table 17

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<th>Model Sectors</th>
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<td>Grains - Crops</td>
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<td>Utilities – Construction</td>
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<td>Transport – Communication</td>
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<td>Other Services</td>
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(ii) Analysis of inclusiveness
The microsimulations are conducted outside the CGE section following the methodology proposed by Bourguignon and Ferreira (2005) and thoroughly applied on Olivieri et al. (2014). The main purpose of this exercise is to examine the potential distributional effects of EU import ban on Sri Lankan fish. This micro-macro approach allows to link the results obtained from the simulations performed with the CGE model (which are concern of the economy at the macro level) with the information of household members’ employment and income at the micro level. All the simulations will be conducted using the ADePT simulation module. Please refer to Olivieri (2014) for a deeper overview of the method.
THE ARAB-PORTUGUESE CONFRONTATION IN THE WESTERN INDIAN OCEAN DURING SIXTEENTH CENTURY AND ITS IMPACT ON THE CULTURAL DIVERSITY OF LITTORAL SOCIETIES IN THE WESTERN INDIA

Mir Kamruzzaman Chowdharya

Abstract

This paper studies the advent of the Portuguese in the Indian Ocean and how it had impacted the hundred of year’s trade links of the Arabs with India as well as the Arab culture on the littoral societies in the western India. An attempt also made to see how Portuguese has influenced the broader Indian Ocean cultural space. A clash of economic interest between the Arabs and the Portuguese left its imprint on the existing culture of the region. With the coming of the Portuguese the Arabs gradually lost their control over Indian Ocean and so as the cultural dominance of Islam on littoral societies. The Arabs were left behind by the vigorous Portuguese missionaries and make the locals felt their presence by propagating Christianity. Though the Portuguese has done this with much vigor the level of success was limited. This paper argues that it was not only the muscle power that the Portuguese used to spread their religion and culture, but they used various other institutions equally to propagate their religion and culture. Religion is a crucial part of this reflection of cultural and commercial life. Finally, this paper also argues that the system of production determines character of societies. The shift of productivity from the oceanic trade and commerce that had changed hand from the Arab traders to Portuguese merchants in the sixteenth century had an influence on the culture of the coastal societies of western India.

Keywords: History of the Indian Ocean, Portuguese, Arabs, Cultural Diversity, Culture, Religion, trade/commerce

Introduction:

Ocean has always played a formidable role in the life of human beings throughout history in terms of providing resources as well as acting as a significant means of transportation especially in the ‘Age of Sail’. In medieval period among the three natural elements of transportation and communication (land, water, air), it was the waterways that formed the most efficient means of communication and trade.

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Water through its seas and rivers, has been the first to offer humans the opportunity to carve out routes for trade and commerce.¹

During seventeenth and eighteenth centuries Ocean was no longer seen as an isolated place, out of the reach of history. Meghan Vaughn has written that “oceans are not blank spaces on the map, nor are they gaps in the histories of the world consisting of continents.”² The use of Oceans as highways of communication, rather than as impossible barriers, linking scattered communities, was one of the major shifts in the period between seventeenth and eighteenth centuries. There was a large-scale human migration too during this period which shaped the culture of many coastal regions.

The western Indian Ocean region contains a large geographical spread from Africa to Indian and these littoral area holds wide variety of peoples and cultures ranging nomadic tribal peoples to highly technological urban population. This paper is an attempt to see the cultural transformation on the western Indian coast with the coming of the Arabs traders and merchant groups in the “pre-European” era in the Indian Ocean. An endeavor has also been made to look into the hindrance created by the Portuguese in the cultural amalgamation among the local and the Arab culture of that age.

Though there are number of works has been done on Indian Ocean most of these works are mainly concentrated on the trade and commerce and technological aspects of the theme. With the exception of Auguste Toussaint’s History of the Indian Ocean and Kenneth McPherson’s Processes of Cultural Interchange in the Indian Ocean Region: An Historical Perspective scholars have yet to study the region as a cultural unit.

This paper examines the various processes of cultural interchange which have taken place within the Indian Ocean region with Arab trade links during pre-Portuguese presence and how the scenario got changed with post-Portuguese attendance in the region. Though there were other European powers too like Dutch, Danish, English, and French etc. who came later also engaged in a struggle for supremacy in Indian Ocean, but it was the Portuguese who were more jealous and vigorous about their religious venture and spread of their culture. Thus, an examination of their role in the cultural formation of littoral society would be interesting to look into.

Kenneth McPherson has said that at various stages the movement of peoples around and across the Indian Ocean paralleled by the development of maritime trade. These merchant groups did not only travel with their goods, they also had their culture and ideas with them. This was exchanged in the meeting places according to each other’s mutual advantages. Thus, a fusion of culture can be seen on the littoral societies. The matrilineal practice among the Muslims of Lakshadweep can be an appropriate example to quote here. It is noted that the Muslims of India also could not get rid of the caste system even after the acceptance of Islam. In the course of the intermingling both communities, Hindus and Muslims, influenced each other resulting in a cultural assimilation. The influences of Islam were not only had on Hindus it influenced other religious sects too. In Maldives islands the Arab traders converted the entire Buddhist population. The peaceful coexistence of heterogeneous religious groups, in its turn brought in a climate of religious tolerance which again facilitated the harmonious growth of Islam in the region.

The Islamic principles of equality and brotherhood received a warm reception at the hands of the caste-ridden society of Kerala. The lower caste Hindus found an asylum in Islam which provided them with equal treatment and assured them of equal rights. However, most of the new converts followed their traditions, customs, manner and superstitions. Thus, creating a fusion of two cultures it developed new one. The emergence of a new language or better can be called as a new writing style known as Arabi-Malayalam was one such fusion of the two groups.

Some scholars believe that the Advaita philosophy enunciated by Sree Shankaracharya owes a great deal to Islam with its uncompromising monotheism. According to Malik Muhammad "if in the development of Hindu religion in the South, any foreign element is found which makes their appearance after the seventh century and which cannot be accounted for by the natural development of Hinduism itself, they may with much probability be ascribed to the influence of Islam".5

In southern India, on the Malabar Coast and the ports of Tamil Nadu, colonies of Muslims were in evidence by the eighth century A.D. based on the centuries-old activity of Arab and Iranian traders in

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4 Ibid. p. 84
5 Malik Muhammad, The Foundations of the Composite Culture in India, Aakar Books, New Delhi, 2016. p.75
the highly profitable trade in textiles, gemstones and spices between southern India and the Middle East.\textsuperscript{6}

A similar evolution occurred in the ports of Sri Lanka and in the Laccadive and Maldives islands too.

When the Portuguese appeared in the Indian Ocean in the last decade of fifteenth century Western Indian Ocean must have seemed like a Muslim lake. Muslim craft dominated the sea-lanes and ports from Sofala on the Mozambique coast to the fabled Ternate and Tidore in the eastern reaches of the Indonesian Archipelago.\textsuperscript{7} The Arabs were in hegemonic positions both economically and culturally. The rich traders financed the Muslim preachers and scholars to spread Islam as well as the culture of theirs among the infidels. Yet, the Arab culture which was spread in the littorals of Indian Ocean mostly evolved around of major ports such as Sofala and Mombasa Hormuz and Muscat in the Middle East, Diu and Goa in India, Colombo Sri Lanka, and Malacca in the Malay World. In Sri Lanka they gained portion of coastal land but throughout their occupation were unable to influence the inland Buddhist kingdom of Kandy.\textsuperscript{8}

Thus, this hegemonic position of the Muslims in the Indian Ocean attracted the full fury of Portuguese dynamism and bigotry. Where possible Muslim rulers were humbled, their vessels were destroyed, their wealth and power were eliminated. The Portuguese mainly aimed to maintain their maritime trade in the Indian Ocean and to destroy their age-old enemies. The Portuguese has already had to face a tough challenge from the Muslims in the Iberian Peninsula.\textsuperscript{9} So, they took Muslims as their main opponent and started eliminating them drastically from the Oceanic trade.

By the 16th century, Portugal started to colonize parts of the coast line in the Gulf, including parts of modern-day Oman (1508) and Bahrain (1521). Initially Portuguese were able to hold a dominating position on the Gulf and important centers of the Arabian Peninsula, including Jeddah on the Red Sea, but soon other powers quickly started to vie with them for control, including the Ottomans, Safavids, Dutch, French and British during the 16th and 17th centuries. Thus, the control of the Gulf coast shifted between foreign as well as several local powers as they competed to gain increased trade with India.\textsuperscript{10} Although the European powers came to dominate the region, culturally they seem to not have had

\textsuperscript{6} Kenneth McPherson, Op. Cit., p. 84.
\textsuperscript{7} Ibid. p. 89
\textsuperscript{8} Ibid. p. 89
\textsuperscript{9} Ibid. p. 89
a significant influence, but they had successfully hindered the existing cultural exchanges between the Arabs and the littoral societies of western India.

In the attempt to achieve maritime supremacy in the Indian Ocean the old patterns of cultural interchange were disrupted by the Portuguese masters. By reducing the Arab traders, they eliminated some of the major agents of cultural diffusion. Though attempt to monopolies oceanic trade by the Portuguese had failed as they could get limited control. But, already damage had been done. By taking control over the oceanic route they hurt the Arab traders economically. Hence, the financial support getting by the Muslim scholars and preachers in the south Asian regions also got interrupted, which hampered the spread of their culture indeed.

Influence of Islam on Littoral society in Western India:

Even before the advent of Islam, Arabs had contacts with the Indian subcontinent. Poetry, which is an important art form in Arab culture, has played a major role in the development of music in the Gulf which the sailors sing during their journey. Even Nabatean poetry has formed the basis for many of Gulf poetic traditions. This poetic tradition, dating from around the 16th century, is closely associated with Bedouin traditions. Although associated with these traditions, Nabatean forms are the basis of the lyrics for not only desert musical traditions like sâmrî, but also the songs of the figrî and other maritime genres.\(^\text{11}\)

With the advent of Islam there were many well-known Muslim scholars from the period who were well versed in both the languages of Malay and Arabic, and possessed extensive experience in the broader Islamic tradition devoted them to spread Islamic culture in the Indian Ocean world.\(^\text{12}\) In their movements across this seascape, references to geographic and ethnic origins and identities were constantly being made, unmade, and remade in communication with other markers of membership in the highly mobile milieu of Muslim scholarship. Michael Feener has argued that these figures can be considered Hadhrami (more influential foreign Muslim settlers all over the Malabar).\(^\text{13}\) A change in the linguistic orientation among the Muslims of Kerala can be seen with the Hadhrami influence.

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\(^{11}\) Ibid. pp. 43-62


\(^{13}\) Ibid.
The Muslims of Kerala, better known as Mappilas maintained a smart balance between Arab and Malayali descents by upholding a peculiar identity. Though they had firm adherence to Islam, but they did not abandon many elements of social and legal practices of the local society.  

These Muslim scholars were all part of a cosmopolitan community of Islamic learning that traversed the same routes and depended upon the material support of the Muslim merchant populations of the ports lining the Indian Ocean littoral. Both the scholars and the merchants comprised polyglot populations with distant roots ranging from Arabia to China, coming together through complex confluences of commerce, cultural exchange, and intermarriage.

In India also, Islam began to spread by conversion, immigration and settlement of the Arab traders in the Malabar Coast. Thus, it was the western Indian littorals where Islam landed its first footsteps. The Arab traders got the encouragement from the local rulers at all the ports as the revenue from them were the prime source of income for the rulers of the region. So, Islam did not have to face many huddles in its first attempt to enter into the area.

After 13th century, the Arab merchants and the native Muslim community, who mostly acted as the peddlers for the big merchants made headway in the mercantile activities of Malabar as well as the advancement of local population. They had won the good will of the Zamorins of Calicut for the service they rendered to them, in the first place, by broadening privileged circumstances and prosperity of the country by trade and commerce. Subsequently, the Muslim community always ensured a shoulder to the wheel of conquests, which the Zamorins were constantly carrying on with their neighbors, and also against the subordinate principalities. These were the heavenly days of the Muslim society of Malabar, and thus they kept it up in increasing prosperity right up to the dawn of the 16th Century. But, the coming of the Portuguese into the scene had replaced the Arab merchants as favorite of the Zamorins.

The conversion of islanders of Laccadives, who were originally Hindus, into Islam at some time probably in the fourteenth century furnish another example of the way in which the Islam religion which followed trade was accepted almost universally by the islands along the Asiatic coasts. Tradition on the

16 Hamid Ali, The Moplahs in Panikar Gopal T K; Malabar and its Folk Madras, 1929, p. 268
17 R.H. Ellis, A Short Account of the Laccadive Islands and Minicoy. Printed by the Superintendent, Government Press, Madras, 1924, p, 16
Laccadives ascribes the conversion to an Arab Saint named Ubaid-ulla who is commonly known on all the islands by the title of Munbe'Maliyaka, the first Mussaliyar. It is said that Ubaid-ulla came to Amini in A.H. 41, but being unable to convert the inhabitants departed to Andwth (Andrott island) where he was more successful and not only converted the islanders but established the family which held the Khaziship of Androth. The last Khazi in that family professed to be twenty-fourth in direct descent from the Saint. Though this is a tradition, it has its share of importance in the islands till date. From here it can be seen the role played by the Arab merchants to spread Islam.

A similar tradition is known among the Mapilas of Kerala too, which stated that the last Perumal (emperor of Kerala) himself converted to Islam. The exact date of the spread of Islam associated with the conversion of Cheraman Perumal is not known. Yet works like, Keralolpathi in Malayalam about the early history of Kerala, RihlatulMuliik a book in Arabic written by Umar bin Muhammad Suhrawardi and Tulfatul Mujahidfn by Sheikh Zainuddin refer to the Kerala emperor embracing Islam. It also provides information about the Perumal's proceeding to Mecca and sending a Muslim missionary group to the West Coast. There was also Muslim missionary group headed by Malik bin Dinar, who also did a lot of evangelical work among the littoral societies.

Ibn Batuta, the Moroccan traveler of 14th century, has mentioned that the Arab traders didn’t bring their women to the commercial centers on the coastal area of Malabar. Hence, they used to marry local women and it is easy to presume that these women and their children embraced the new religion. It is, therefore, logical to conclude that as soon as Islam spread all over Arabia in the lifetime of the Prophet, the Arab traders to Kerala must have spread the religion here. The new converts to Islam, in the first flush of enthusiasm, must have done everything possible to spread the new religion wherever they lived. Thus, it is possible that Islam spread in Kerala as soon as it spread in Arabia.

Eminent historian, S.M. Mohammed Koya observes that formation of the Muslim community in Malabar is attributed to a system of marriage prevalent among Arabs from time immemorial. The mut'a marriage enabled the Arabs to contract marriages of temporary nature with the native women of Malabar.

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18 R.H. Ellis, Op. Cit., p. 16
20 Ibid. p. 108
and those of other areas of South India. A large number of Tangals\textsuperscript{22} visited Kerala and played a significant role in the propagation of Islam and settled there. It was the work done by these saintly persons that facilitated the rise of towns such as Ponnani and Cannanore as centers of Muslim learning. Mappilas, the Muslims of Calicut and the whole Malabar Coast (the present-day Kerala Coast) were not only given the freedom to convert the people to their faith but, also granted monopoly of export and import trade.

Though the local embraced Islam but they couldn’t rise above the prevalent caste system. Some of the backward or lower-caste Muslim communities include Ansari, Kunjra, Churihara, Dhobi and Halalkhor. The upper and middle caste Muslim communities include Syed, Shaikh, Shaikhzada, Khanzada, Pathan, Mughal, and Malik.\textsuperscript{23} However, it is worth noting that the caste system among the Muslims has never been as rigid as among the Hindus.

Yet there was magnificent change in the society. Quran classes for both boys and girls appear to have been held on all the islands in association with the mosques. All children under a certain age attend these schools most regularly, but the instruction imparted goes no further than to enable the children to read Koran in Arabic characters and to recite large portions of it by heart.\textsuperscript{24}

It does not confine only into the memorizing Quran itself. Many Arabic words used in its distorted form and included into the local language. The term Malabar is an amalgamation of two words, the Malayalam word ‘mala’ (mountain) and the Arabic word ‘barr’ (land). Otherwise, it must have been derived by the Arab writers from the mixture of Persian-Malayalam, ‘bar’ (enormous) and ‘mala’ (mountain) the land of enormous mountains. Arab influence also can be gleaned from words like Sandal (Al sondal), Tamarind (Tamrul Hind) and so on which emerged from pure Arabic.\textsuperscript{25}

It was not only the Arabs traders and their associates that had the sole role to spread Islam. Even Sufis also played formidable role. Amitav Ghosh’s In an Antique Land (1992), a story pieced together from fragments of letters and other papers preserved in a Cairo synagogue\textsuperscript{26} says that among the Sufis, whose influence was also widespread in the south, Shahul Hamid Nagori (1504–1570) also known as Qadir Wali was popular because of his power to protect seafarers and others who sought his aid. His

\textsuperscript{22} Thangals constituted mainly of Saiyids of Hadramaw. The term "tonga" is originated from a Malayalam form of an honorary title with polite address and is mainly applied to the Muslim high priests of Kerala, who hailed from various parts of the Middle East. Their ancestors claimed to be from the Prophet’s family (otherwise called Sayyids).


\textsuperscript{24} R. H. Ellis, Op. Cit., P. 40.


vast shrine on the southern coast of Madras draws not only local pilgrims but others also from Malaysia, Sri Lanka, and beyond, where Tamil Muslims have carried his tradition.27

Portuguese presence and its effect on existing cultural decorum:

The sixteenth century was marked by two dramatic developments in India’s cultural history. The beginnings of European involvement in India’s international trade and the establishment of the Mughal Empire had its impact on the cultural fabrics in the society.28 The movement of the Arabs was regulated by the Portuguese now. This affected the spread of Islam in the Indian Ocean littoral in particular and western coasts in general.

According to Sir William Wilson Hunter29 the Portuguese might have searched India in vain for a spot better suited to their purpose. Their three objectives were conquest, commerce and conversion. For each of these three objectives, the Malabar Coast strip afforded free scope. Its chiefs were too petty to resist even a small European power. They welcomed foreign merchants as the greater part of their revenues consisted of dues on sea-trade. They allowed liberty of religion in their little shore domains and they were accustomed to a local population of Jews and Christians whose political existence in India dated from a period more ancient than their own. Hence, this was a suitable place for many to spread their ideas and religion. Building on the unity forged by Christianity in an earlier period, the spread of Islam was able to expand the frontiers of the trading network.30

According to Dr. Shamsullah Qadiri, at the time of the arrival of Vasco da Gama, the Muslim community was prominently settled in Kodungaloor, Pallippuram, Vaippu, Edavanakkadu in the South Malabar. Chaliyam, Kozhikode, Parapanangadi, Thirurangadi, Thanur, Paravanna, Ponnani, and Velliyankodu in the Central Malabar; and in Mangalapuram, Kasarkodu, Pazhayangadi, Nadapuram, Valapattanam, Kannur, Dharmadam, Chemmalodu, Thiruvankodu, Edakadu, Koyilandy, Thikkody and Kunnukadu in the north Malabar.31 Thus it was the Muslims who were the prominent competitor of the

28 Patrick J. Finn, Fellow, The International Quilt Study Center and Museum, University of Nebraska – Lincoln Vrindavan, India, March 2009, p. 1.
Portuguese as they were the people who were engaged into trade and commerce actively from peddler to the Ocean sailing merchant.

The arrival of the Portuguese in India at the end of 15th century marks the beginning of a significant period of bilateral cultural exchange. It was within this social, political, religious and economic climate that the Portuguese and other colonialists produced a distinctive group of embroidered quilts that have come to be known by various names: Bengalla quilts, Satgaon quilts, and those included under the broader heading of colcha. They have also been termed Indo-Portuguese however, Irwin notes that this term is misleading and thus categorizes them as objects made in Portugal by immigrant oriental craftsmen; works by Portuguese craftsmen resident in the East.  

Earlier the Muslim Arabs were more interested in the spread of Islam and trade itself, but the Portuguese shown interest in various aspects of life including economic and social aspects. The Portuguese, who conquered Goa in 1510 for the purpose of locating their power center permanently in Asia, made frequent modifications and alterations in its existing urban space until there appeared a new type of city that facilitated and accelerated the augmentation of trade and resource mobilization in the way they desired.

Hence the Portuguese unleash a different type of cultural amalgamation into the littoral societies of western India, especially in Goa. While in most of the Indian cities were formed out of the dynamics of trade, Goa was created as a city with royal decrees for the purposes of settling the soldier-turned-Portuguese civil population for the state and for using that social base for the expansion of Portuguese power and commerce in Asia. With the intensification of trade by these Portuguese started to marry local girls. These married people were known as casados, a specialization process meeting the variegated demands of the power groups as well as social elites and corresponding to the nature of wealth that they accumulated by way of trade started appearing in Goa. By grafting European urban institutions onto the existing space of the city of Goa, the Portuguese conveyed new meanings of urbanism to emerge in India.

Architecture of churches constructed by the Portuguese resembles southern Europe, while music contains strains of Portuguese fado. The Portuguese practice of afternoon siestas continues to be followed by some Goans, and an attitude of so-called "susegad" prevails. Derived from the Portuguese

word “sossegado,” meaning quiet, it refers to a state of tranquil contentment, peace and tolerance. The Portuguese introduced potatoes, tomatoes, pineapples and cashews into the cuisine. In this process the western coast was made to evolve as the core center, where the essential properties of their system of social relations were intensely concentrated and spatially articulated. Its city-space became the platform through which the logic of domination of its culture was continuously articulated and re-asserted through architectural and social mechanisms in a way sufficiently communicable to the various commercial and political actors of the Indian Ocean. Thus the Portuguese contributed to the existing culture with the introduction of new music, cousin and so on.

The islands of Laccadives appear to have remained independent of the chiefs and rulers on the mainland until after the arrival of the Portuguese on the West Coast. The Portuguese made a settlement upon Ameni and built a fort, the site of which is still pointed out, but their object in doing so is difficult to discern. They seem to have treated the inhabitants with cruelty and harshness. The islanders were driven to seek the assistance of the Raja of Chirakkal. Tradition relates that the Raja sent over Kaclantavanjiraka (Literally means “Ear-bored”) whose identity is lost under his nick name. A plan to poison the Portuguese was formed and the Portuguese were in this way exterminated. This event is still commemorated in the name (Pambupalli) of one of the mosques on Amini, where, it is said, the poison was prepared. The Portuguese took a bloody revenge. More than 400 of the islanders, including the Khazi of the day, Abu Bakr, were massacred. The date of this occurrence (A.H. 966 A.D. 1549-50) is preserved in an old Moplah song in honor of Abu Bakr, who is now regarded as a martyr.

Thus the Portuguese atrocities also fell upon the Islanders who remain free for centuries.

Though it can be seen that Goa, Daman and Diu remain the main stronghold of the Portuguese, but by eliminating the Arab merchants from oceanic trade they had created the environment where the Islamic tradition faced challenges. Hence, an in-depth study on the topic would bring new lights.

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34 Sir W. Robinson’s report of his visit to the South Kanara Islands in 1845 is throughout referred to as Robinson I, and his report upon the Malabar Islands in 1847 as Robinson II. Here, Personal Report of Robinson II, p. 10.
35 Chirakkal Raja (king of Chirakkal) is the title of the most senior king of the Chirakkal branch of the Palli division of the Kolathiri Dynasty of the erstwhile feudal state of Kolathunadu in North Malabar, which is now a part of Kerala South India.
Conclusion

The Arabs merchants remained as traders and to support their economic interest they preferred to maintain a political interconnection with the local rulers, while, the Portuguese followed a policy of establishing political influence of their own. Hence, the cultural influence left by the Arabs was willingly accepted by the littoral society than the Portuguese who at times used their political establishment to spread their culture.

Unlike the Portuguese, the Arabs helped to shape events rather than to determine them. Portuguese used both the social base and the urban administration and religious institution to spread their culture. They also used these edifices, institutional structures and re-arrangement of urban streets, market to establish their power which was important for their smooth run of economic affairs in the littoral societies. The Goan culture still represents their robustness.

Thus, with the Portuguese presence in the region, the Arab merchant groups lost their economic dominance. This had an impact on the scholarly Islamic clergy as well, who were devoted to spread Islam with the economic help from the traders and merchants. Therefore, the growing Islamic culture in the region faced with a dent by the sixteenth century onwards.

Religion is a crucial part of the reflection of cultural and commercial life of a society. Hindu merchants from India carried their religion and secular culture to Southeast Asia, while the Muslim merchants of Arab origin spread their religion in the coastal societies in India. Islam is a religion where it is difficult to separate one’s personal affairs from religion, because it controls one’s day to day affairs too. Muslim identity is invested not only in religion but also in specific social and commercial behaviors.\(^\text{37}\) Hence, it’s more suitable to say it as the Islamic culture. The Islamic legal code had an enormous impact on maritime commerce. Islam provided a viable framework for trade because it was a portable, legalistic faith, attractive to and suitable for merchants. Thus, it shows how consolidating the faith was an essential part of Arab trade in the Indian Ocean region, which was challenged by the Portuguese in the sixteenth century onwards.

To surmise, I would like to say that with the presence of Europeans on the sea, the Arab traders lost their prominence in the littoral affairs so as their role in the expansion of Islam on the societies. By 16th century, the Arab trader’s role of spreading Islamic culture was taken up seriously by the central Asian rulers, who were at the helm of the affairs in Delhi and who already had left their mark in the growing Islam in the northern parts of India. Till this time the Delhi rulers had little concern about the affairs of sea. Thus, it’s interesting to note that the Islam in the north is more Persianized in its version than the Islam in the littorals, which is more Arabized. Not only traders, but also rulers, scholars, and literati in the south looked more toward their Indian Ocean connections than toward those of Central Asia that dominated the north. They used Arabic over Persian and the Shafi’i jurisprudential tradition rather than the Hanafi law of Central Asia.

Hence, due to the European interference in general and the Portuguese in particular had created an atmosphere where the Arab traders lost their standings and so as the scholarly class who got monitory support from them to spread Islamic culture by the 16th century. If there would not have been any hindrance from the Portuguese, then the Arabized Islam might grow in more areas in India except those blocks in the littoral societies where its presence is visible at present. Thus, the economic affairs of the sixteenth century left its impact on the culture, which changed the cultural demography of Islam in India for forever.
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Patrick J. Finn, Fellow, The International Quilt Study Center and Museum, University of Nebraska – Lincoln Vrindavan, India, March 2009.
INDIA-MIDDLE EAST STRATEGIC CO-OPERATION: FORWARDING INDIA’S SECURITY INTERESTS IN INDIAN OCEAN

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Abstract

Naval diplomacy adds strategic dimension to India-Middle East relations which were long characterized by oil and Indian Diaspora in the Middle East. It serves India’s interests in two ways. Firstly, naval diplomacy is concomitant to India’s economic interests in the Middle East. Secondly it offers an avenue for India to be a part of the security architecture of Indian Ocean. Naval diplomacy with Middle East marks a shift in the nature of India-Middle East relations as well as India’s policy with respect to Indian Ocean. India and Middle East are moving ahead of buyer-seller relationship. Simultaneously India is looking to assert its role in the security domain of Indian Ocean by combination of hard and soft diplomacy. Middle East and Indian Ocean are regions with high strategic stakes for India. Naval diplomacy, although a recent phenomenon in India’s conduct of foreign relations with Middle East, outlines India’s strategic policy and proposed role as a stakeholder in the security of Indian Ocean.

Key words: India-Middle East Relations, naval diplomacy, maritime security, Indian Ocean

1. Introduction

Oil trade and Indian Diaspora working in the Middle East have long formed the basis of India’s relations with Middle East. While these factors continue to be important India-Middle East relations have witnessed growth in about past decade. Maritime co-operation between India and Middle East marks the shift and expansion of scope of the relations. India’s dependency on Middle East for supply of oil and for providing employment to millions of Indians had rendered the relations to the level of buyer and seller. In order to protect these two interests India had always maintained a distance from the geopolitics of Middle East. Geopolitical developments in Middle East in the past decade have made the region to look at India as a strategic partner. For India use of strategy allows an increase in engagement with Middle East.

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India's engagement aims at better protection of its interests without getting involved in the geopolitical turmoil of the Middle East. Strategic dimension to the relations offers both India and Middle East an opportunity to take their relations to a level higher than that of buyer-seller. Naval diplomacy with Middle East also plays an important part in forwarding India’s stake in the security architecture of Indian Ocean.

This paper has several aims. First it provides an overview of India’s relations with Middle East. Second it considers the maritime cooperation which indicates growth in India-Middle East relations as well as complements India’s interests in the Middle Eastern region. Third it discusses India’s maritime security interests in the Indian Ocean and analyses the impact of India-Middle East maritime relations on India’s maritime security interests in the Indian Ocean.

2. An Overview of India-Middle East Relations

India’s relations with Middle East date back several centuries. Commerce and culture were the main areas of interaction between India and Middle East. These centuries old relations have continued till date although the nature of relations has been changing and evolving over a period of time. As mentioned in the introduction oil and Indian Diaspora in the Middle East are the mainstays of India-Middle East relations in contemporary times. Since the oil boom, Middle East has been a major supplier of oil to India. About fifty percent of the oil consumed by India comes from Middle East. India’s oil trade with the Middle East is over $ 135 billion (Singh, 2017). With the growth in the rate and volume of India’s economy, its demand for fuel has only increased and is likely to keep on increasing in future. The other principle dimension of India-Middle East relations is the Indian Diaspora working in the Middle East. From 1970s onwards, skilled, semi-skilled and unskilled labourers have migrated to Middle East in large numbers in search of better work prospects. In recent times, especially since the 1990s, qualified professionals and managers have also been migrating to the Middle East. Over seven million Indians are working in the Middle East and India earns around $ 40 billion through remittances (Singh, 2017). If Middle East offered better employment and wages to Indian migrants then the Indian migrants have also played an important role in the economic growth and prosperity of the Middle Eastern countries (Sikri, 2009).

India’s relations with Middle East, although cordial, have not been without challenges. Two major oil suppliers of India Saudi Arabia and Iran are also rivals of each other in the region. Therefore, India has to perform a balancing act while dealing with both these countries (Johny, 2017). India has successfully avoided taking sides and has maintained equal distance from both. Since both Saudi Arabia
and Iran have economic interests in India, the pressure of balancing act does not rest with India alone (Johny, 2017). Another challenge for India has been maintaining and developing friendly relations with the Middle East despite the region’s proximity to Pakistan. Thirdly, for a long time India resisted having full diplomatic relations with Israel as it would have upset the Muslim Middle Eastern countries. However, over the years Indian diplomacy has been successful again in maintaining a balanced relationship with both Israel and the Muslim countries.

India has a good standing and a positive image in the Middle Eastern region. This region, termed as India’s extended neighbourhood, is as much important to India as India is important to that region. India’s growing economy demands a constant oil supply for which India relies heavily on Middle East. At the same time the remittances sent by the Indian Diaspora in the Middle East are an important factor in India’s economic progress. Overall India’s interests in the Middle East demand that strategic dimension should be an inherent part of India’s policy towards that region.

3. Importance of Strategic Engagement with Middle East

Since India has looked at Middle East mostly as a supplier of oil to India and an employer to millions of Indians, Indian diplomacy too has been somewhat limited to protecting these two interests. However, over a period of time the relations between India and Middle East have shown growth. Importance attached to strategic relations in the past decade has been a sign of growth and maturity. Strategic relations with Middle East would only lead to better protection of India’s interests and further strengthening of India’s relations with Middle East.

There are several factors that could be considered as reasons for India’s strategic engagement with Middle East. These factors are discussed as follows:

Protection of India’s Interests in the Middle East

Energy security is one of the primary reasons for India to prioritize its strategic engagement with Middle East. Two of the most important choke points – Strait of Hormuz and Bab El Mandeb – are located in the Middle East. Arabian Sea is the only viable route that connects India with Middle East. So, it becomes imperative for India that both these sea lanes of communication remain clear of any disturbance for uninterrupted oil supply.
Indian Diaspora in the Middle East is another reason for India’s strategic interest in the Middle East. Well defined strategic policy would ensure appropriate and quick response to any situation that may pose a threat to the Indians working in the Middle East. Absence of strategic engagement had posed difficulties for India at the time of evacuating its citizens from Kuwait in 1990. Although the Indians trapped in Kuwait were brought back safely this crisis did highlight an important gap in India’s policy towards Middle East.

For a long period of time India had abstained from developing strategic relations with Middle East for the fear of disrupting the economic interests. However, India’s economic interests in the Middle East are the very base and a strong reason for having clear strategic policy as well as working closely with Middle East in the area of defence co-operation.

For Countering Terrorism

With the threat of transnational and trans-border terrorism continuously on the rise there is need for greater co-ordination among the concerned countries in order to counter this problem effectively. India has been facing cross border terrorism for a long time. But the terror attacks in Mumbai on November 26, 2008, where terrorists entered India through sea, drew attention towards importance of maritime security. Maritime security has been receiving an increasing amount of importance in recent times in India’s defence policy as well as in India’s defence co-operation with Middle East. India’s strategic engagement with Middle East would address the problem of terrorism which would ensure the safety of Indian Diaspora and also develop a mechanism for preventing attacks in India.

Being Part of Strategic Space in Middle East

Post Arab Spring the geopolitical situation in the Middle East has increasingly become volatile. The region has become a battleground for power play by regional and extra regional actors. There is an increasing multi-polarity being witnessed in the Middle East. The rise of non-state actors like Islamic State in Iraq and Syria (ISIS) has only added to the existing complexities and has increased the security threat. Till now India has maintained a distance from the geopolitics of Middle East and has resisted getting involved in it (Taneja, 2017). But considering the high stakes that India has in Middle East it is in India’s interest to play a constructive role in that region. A stable Middle East serves India’s interests and any instability not only compromises India’s interests but there is direct fallout in the neighbouring region i.e.
South Asia. The multi-polarity in the Middle East also offers a strategic space. It is for India to be a part of that strategic space and to play a role in the stability of the region.

4. India’s Maritime Co-operation with Middle Eastern Countries

Strategic thinking in general and maritime security in particular have gained prominence in India’s foreign and defence policy formulation in the past decade. Two documents published by Indian Navy - Indian Maritime Doctrine in 2009 and Indian Maritime Security Strategy in 2015 – chart out the vision and goals of India with respect to different domains in maritime sector such as defence, security, deterrence, humanitarian assistance etc. These documents also chart out different regions that are strategically important for India’s maritime interests and objectives with respect to same.

With regard to Middle East, despite polarization, vulnerabilities and internal conflicts in the region, India’s relations with individual countries of Middle East have remained unaffected. This has been the base for India’s and Middle East’s willingness to strengthen bilateral ties through defence co-operation. The prominence gained by maritime security in India’s strategic policy has reflected in India’s relations with Middle East.

India’s naval outreach profile in the Middle East has been on the rise since 2008. This is evident from Indian Navy’s increased interaction with the navies of Middle East as well as anti-piracy duties carried by the Indian Navy (Singh, 2017). However, given the challenges in the Middle East and Indian Ocean Region, India is moving towards accepting bigger responsibilities than just constabulary duties.

With an aim of adding strategic dimension to the bilateral ties, India has noteworthy defence engagements with countries like Oman, United Arab Emirates (UAE), Qatar, Saudi Arabia and Iran.

Oman

Of the above mentioned countries, India’s naval diplomacy with Oman has been most significant. Although India and Oman entered into a strategic partnership in 2008, the naval relations between both the countries date back to 1993. The navies of India and Oman have been conducting a biennial exercise Naseem Al Bahr since 1993 (Singh, 2015). Oman provides berthing facilities to Indian warships (Gupta, 2014). The defence ties with Oman have received a boost in the past few years with exchange of high-profile visits from both the sides. Geographically Oman is nearest to India than any other Middle East country. It also lies in close proximity to Pakistan’s Gwadar port that is being developed by China. Chinese
presence in Gwadar is a security concern for India. So, maritime co-operation with Oman is important to India’s strategic interests in the Arabian Sea.

**UAE**

UAE is another country with India’s political and diplomatic interactions have been increasing in past few years (Roy, 2017). Protection of maritime trade and combating terrorism are areas of co-operation between India and UAE. In 2016, the two sides agreed to ‘enhance co-operation to strengthen maritime security in the Gulf and Indian Ocean Region, vital for the security of and prosperity of both countries’ (Roy, 2017).

**Qatar**

India’s defence co-operation with Qatar has been described as arrangement just short of stationing troops in Qatar (The Financial Express, 2008). India and Qatar have defence agreements in several areas such as counter terrorism, money laundering and maritime security. The agreement provides for joint maritime security and training of military personnel.

**Saudi Arabia**

Defence co-operation, despite being a new area in India and Saudi Arabia’s relations, has gained prominence in a short span of time. Defence manufacturing, training of personnel, intelligence sharing and extradition treaty are the highlights of India-Saudi Arabia defence co-operation (Hussain, 2017). With strategic ties growing strong, both the sides reached an agreement in April 2016 on strengthening maritime security in the Gulf and Indian Ocean (Singh, 2017).

**Iran**

Deal for development of Chabahar port has been one of the important steps by India in increasing its strategic role in the Middle East. Facing direct security challenge from China and Pakistan from Gwadar port, this deal with Iran certainly strengthens India’s security profile in the region. Apart from security aspect, India also benefits from the connectivity it would gain through Iran into Afghanistan and Central Asia (Wolf, 2016).
5. Impact on India’s Maritime Security Interests in Indian Ocean

India’s growth as an economic power needs to be proportionately complemented through military power. In order to assert its status as a major power in Indian Ocean, India needs to assume a role in the security architecture. It serves two major interests of India. One is providing security to its own commercial interests in the Sea Lanes of Communications of Middle East. This includes counter terrorism and counter piracy. The other is deterrence against the regional and extra-regional powers in the Indian Ocean.

India and China are regarded as emerging super powers in the world. These two countries are also fierce competitors of each other. Many times, India’s policy formulation on diplomatic and strategic front could be seen as a combination of response as well as an alternative to Chinese policy.

With regard to India’s maritime interests in the Indian Ocean the eastern and southern side have claimed more attention than the western and northern side of Indian Ocean. One of the reasons has been China’s activities in South China Sea. China’s focus on South China Sea and the Southeast Asian Region had caused India to consider Southeast Asia as a competing ground with China. However there have been efforts from India to increase its strategic outreach in the Indian Ocean Region from Southeast Asia to Africa and the Middle East (Singh, 2015).

Volatile situation in the Middle East coupled with China’s increasing presence in the northern Indian Ocean from South Asia to Africa make it imperative for India to respond to this strategic expansion of China. Development of Gwadar Port in Pakistan and setting up a naval base in Djibouti in Africa not only increase China’s influence in the region, it poses a direct challenge to India’s security in the region.

India’s location with respect to Indian Ocean makes a compelling case for India’s increased involvement in the security aspect of Indian Ocean. As regards eastern and southern side of Indian Ocean claiming more attention, it is worthwhile to note that India’s diplomatic engagements with South East Asia, East Asia and Asia Pacific have increased only in the past almost three decades. And presently there have been efforts from India to build strong strategic relations with these regions. India’s relations with Middle East were close since the former’s independence in 1947 and continue to remain so. So India-Middle East ties already had a strong foundation to develop strategic engagements.
Past few years have witnessed changes in the geopolitical situation of Middle East. United States is limiting its role in the security of Middle East. At the same time China is increasing its diplomatic as well as strategic engagements in the Middle East. These developments call for increased role of India in the security of Middle East and Indian Ocean for protecting its interests and for forwarding its status as an aspiring super power.

6. Conclusion

With India pursuing strategically proactive foreign policy with focus on maritime security, naval diplomacy with Middle East indicates India’s aspirations to be a stakeholder in the security architecture of Indian Ocean. Strategically inclined foreign policy is a positive change in approach by India which must be followed by further enhancing India’s naval footprint in the Indian Ocean.

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References
THE IMPORTANCE OF PARCEL IDENTIFICATION IN LAND USE PLANNING IN MAURITIUS

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Abstract

This research paper aims to investigate the problems leading to a lack of awareness of the use, role and significance of the Parcel Identification Number (PIN) and the effects of a wrong PIN in land use planning and management. In this study, a mixed method approach was employed for data collection, analysis and interpretation. The information was gathered using in-depth interviews with main stakeholders as well as documentation analysis. This study examined the issues identified by respondents during the interviews and a close examination of the land administration systems regarding the use of PIN revealed that there is a lack of awareness about the use and importance of land administration systems in Mauritius. It was observed that in certain cases, wrong PIN have been registered in title deed, The role of the different authorities involved in land parcellation as well as an enforcement authority to monitor the use of PIN is not well defined. It was also observed that the objectives of the Land Administration Valuation and Information Management System (LAVIMS) have not been reached as it was supposed to provide reliable land information as well as a valuation roll for the Local Authorities to levy tax based on the market value of properties.

The findings of this study indicate a need for further research on the contribution of the LAVIMS project in land use planning in Mauritius.

Keywords: Parcel Identification Number (PIN), land use planning and management, interviews, land information

1.0 Introduction

Generally, sustainable planning and land use management are key elements in any society to maintain a good level of living of the population and also in the enhancement of the socio-economic

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development. Land administration system is mainly concerned with administrative and operational processes dealing with the information about the tenure, value and use of land. Careless planning may cause irreversible and negative impacts to local socio-economic environment and consequently may cause irreversible effect on the local community way of living (Rydin, 2010).

According to Olmstead (1914), the father of American town planning, one of the aims of planning is the management of private lands and the type of development there on. In order to have a proper management of land, it is vital to have a cadastral system which deals with land ownership and its spatial boundary. The cadaster is a main component for an efficient land administration system as land administration systems are mainly concerned with the administrative and operational processes dealing with information about the tenure, value and use of land and the cadastral component deals mainly with land ownership. The cadaster is a daily maintained record system which contains an unambiguous description of the physical location and extent of a parcel of land, the related rights to the land, and information on the other hand (Dashe, 1987). Information is a combination of the human and technical researches together with a test of organizing procedure that produces knowledge in support of some managerial requirements. Land information in particular gives support to land management by producing knowledge about the land and the resources upon it and the improvement made into it.

The aims of this study are to highlight the importance of the use of Parcel Identification Number (PIN) in the actual Land Administration Systems and the lack of awareness among the stakeholders about the role and significance of the PIN.

The main objectives of this study are:

i. To review the actual land administration system regarding the use of PIN;
ii. To highlight the role and significance of the PIN;
iii. To highlight the effects of a wrong PIN on the systems;
iv. To make proposals in order to create awareness among the stakeholders regarding the role, use and significance of PIN in the Land Administration Systems in order to prevent the existence of a wrong PIN.
2.0 Sustainable land use planning

According to Enemark (2009), the delivery of sustainable development is today the accepted theoretical framework for economic, social, and environmental development, together with good governance. Regarding sustainable development objective, Williamson (2000) argues that all lands have to be recorded in the land administration system to make a complete cadaster and that all rights, restrictions and responsibilities need to be included in the land administration infrastructure. This complete cadaster will prevent land from being stolen, corruption in the land tax processes will be reduced and transparency as well as good governance will be improved. However, Williamson (2000) is of the opinion that most land titling, land administration or cadastral projects in the world has not been able to produce a complete cadaster, although a policy of such nature was adopted by many developed countries during the past two decades. Although sustainable development is a new concept in land administration system, it will have an impact on the design of future projects.

There is misuse of resources when the land-related activities such as land rights, land usage, land taxations and land values are handled by entirely separate organizations. Such fragmentation between the government departments and different professional organizations has to be ceased and consideration should be given to all aspects of land and their inter-relationships so as to achieve sustainable development. The integrated electronic land administration system is a model for change in the right direction and land information for any disposal of land needs to be readily available.

The PIN is an important tool to manage land information about a parcel and hence plays an important role in the land administration system. It also enables the key stakeholders such as the Ministry of Housing and Lands (MHL), the Registrar General Department (RGD) and the Valuation Department (VD) to carry out their daily business activities. However due to the presence of wrong PINs in registered deeds, the good functioning of the Land Administration Systems is being affected.

The Cadastral Unit of the Ministry of Housing and lands was created in 2012 through the implementation of the Land Administration Valuation and Information Management System (LAVIMS) project after the digital cadastral database (DCDB) was completed. One of the activities of the cadastral unit is to issue PIN certificate based on Land Survey Report/Memorandum of Survey or Site Plan submitted by an applicant.
2.1 Land and Property

According to Dale and McLaughlin (1988), land is the foundation of all forms of human activity whereas for Dashe (1987), property means “Property is not an object but rather a social relation that defines the property holders with respect to something of value against all others”. According to Needham (2001), a property right is the right to use a particular item of property in a particular way. In fact, a property has a bundle of rights and each right is of a separate kind, such as occupy, enjoy and use; transfer, sell, purchase among others.

2.2 Land Administration Systems

UNECE (1996) defines land administration as “the process of determining, recording and disseminating information about the tenure, value and use of land when implementing land management policies. It is considered to include land registration, cadastral surveying and mapping, fiscal, legal and multi-purpose cadastres and land information systems”.

Enemark (2009) considers that both developed and developing countries use the land administration systems to implement their land policies. This important infrastructure is used by land managers and administrators as it is concerned with the social, legal, economic and technical framework, which support efficient land markets. Land, being a natural resource, is administered to follow the concept of sustainable development. Williamson (2000) considers that “the relationship of humankind to land, being dynamic, undergoes constant evolution as it is impacted upon by several global drivers such as sustainable development, urbanization, and environmental management among others”.

Land administration system provides the necessary infrastructure to manage land and is beneficial to any government as it includes:

i. development of a spatial information marketplace,
ii. subsequent dealings within the land administration system,
iii. economic development,
iv. social stability,
v. reduced land disputes, and
vi. improved environmental management.

The Land Administration Systems consist of the following components:
2.2.1 The Cadaster

The International Federation of Surveyors (1995) defines “the cadastre as normally a parcel based, and up-to-date land information system containing a record of interests in land (e.g. rights, restrictions and responsibilities). It usually includes a geometric description of land parcels linked to other records describing the nature of the interests, the ownership or control of those interests, and often the value of the parcel and its improvements. It may be established for fiscal purposes (e.g. valuation and equitable taxation), legal purposes (conveyancing), to assist in the management of land and land use (e.g. for planning and other administrative purposes) and enables sustainable development and environmental protection”.

Williamson (2000) believes that land administration and cadastral systems, based on manual processes or traditional structures, will not be sustainable if data and processes regarding land-related activities such as valuation, land registration and management of state lands and forests are held separately. Nowadays in developed countries information about natural resources, planning, land use, land value and land titles are integrated in multipurpose cadastral systems, which seems to be more difficult in a developing country.

The cadastral vision adopted by the UN-FIG Bogor Declaration on Cadastral Reform (1996) is to "... develop modern cadastral infrastructures that facilitate efficient land and property markets, protect the land rights of all, and support long term sustainable development and land management."

2.2.2 Land Registration

Land registration provides the framework and means for recognising formalised land ownership rights and for regulating the transfer of these rights (Dale and McLaughlin, 1988).

According to Williamson (2000), in order for the land registration system to be successful, it must be operated by professionals in an environment of accountability and good governance and accepted by
the general public. The good functioning of the system will depend greatly on the ability of the professionals within both the government and private sectors.

A land registration system has to support the national land information system in as much as information is a prime requisite for making decisions related to land investment, development and management.

2.2.3 Land Valuation

Land is regarded as one of the basic elements from which a nation can derive wealth. Land and property are important components in market driven economies and their value is a measure of wealth of any society. Land valuation is considered as the process related to assessment of the value of land and properties; the calculation of revenues through taxation; and the management of taxation disputes. Land valuation is an important component of the land administration system as it provides an indication of the market value of a property at a certain material date. This value has an impact on the land market and eventually on a country’s economy. The valuation of a property is carried out for various purposes, such sale and purchase, for loan, for compensation if all or part of the property is compulsorily acquired or for taxation.

The main activities of Mauritian Valuation Department are valuation of immovable properties for the Registrar Department to levy taxes such as land transfer tax and registration duty on land transactions; for the Municipal Council to levy ratings, for the Ministry of Housing and Land to rent State Lands and Pas-Géométriques and to determine the amount of compensation payable for compulsory acquisition of lands for Government projects.

2.2.4 Land-Use Planning

Land use planning is the process of allocating, particularly the land itself, in order to achieve maximum efficiency while respecting the nature of the environment and the welfare of the community. Town and country planning are essentially a matter of resolving conflicts between different land users and ensuring that various demands made upon limited land resources are met in an orderly fashion. The guiding principles of Agenda 21 in terms of sustainable development and land use planning are based around three main elements, which are economic growth, social development and environmental protection.
In Mauritius there is the Outline Planning Scheme which has the following objectives:

(i) To give a broad picture of how the planning authority intends to expect the area to develop over a specified period of time,

(ii) To indicate to developers, land owners and the general public the probable trends of development and changes in land uses,

(iii) To provide the planning authority with a framework of reference for the detailed control of development, and

(iv) To provide the Local Authority and other public authorities with a framework of reference in making their own plans for the provision of public services.

2.2.5 Advantages and disadvantages of the Land Administration Systems

Certain advantages of the land administration system are:

(i) Guarantee of ownership and security of tenure

(ii) Support for land and property taxation

(iii) Provide security for credit

(iv) Develop and monitor land markets

(v) Protect State lands

(vi) Reduce land disputes

(vii) Improve urban planning and infrastructure development

(viii) Support environmental management

And certain disadvantages are:

(i) Lack of community participation

(ii) Political influence

(iii) Lack of enforcement

(iv) Lack of resources

(v) Lack of awareness
2.3 Land Administration, Valuation and Information Management Systems (LAVIMS)

In order to have a modern and effective Land Administration Systems in Mauritius the Government has opted for the Land Administration, Valuation and Information Management System project in 2008. The main components of the LAVIMS project are: a digital cadastral database, a modern property valuation system, the Valuation Roll and a parcel-based Deeds Registration System, integrated in an appropriate Information Management System. The LAVIMS Project has introduced a cadastral system to support the land administration system that incorporates a Parcel Identification Number that is linked to the deed registration, land valuation and potentially to any other land related information systems in Mauritius.

The cadastral is the key spatial component of LAVIMS but is not a well-developed system in Mauritius although all land parcels are in themselves surveyed by qualified surveyors. The establishment of a survey cadaster and a land parcel based system in Mauritius will have complete spatial accuracy as well as comprehensive and authoritative in terms of uniquely identifying all land parcels. The Registration of Deed system of the Registrar General Department is modified to support a PIN and digital Land Index System. The introduction of imaging of documents for efficient storage, retrieval, distribution and backup will be a major enabler for reform.

The work undertaken by the valuation department will be greatly enhanced, particularly ongoing sales evidence, the land extent of all uniquely identified land parcels in a complete cadaster, timely access to Deeds information, names and street addresses. The components of LAVIMS are to be integrated and linked with a shared PIN, such that enquiries in one system can provide direct access to information and data transfer to information contained in any or all the other components.

The LAVIMS system is now operational and permits the tracking and recording of all land transactions. Its modular software application suite enables an integrated workflow among the key stakeholders, the Cadastral Unit, the Valuation Department and the Registrar General Department. The Cadastral unit initiates the workflow by processing PIN application made by either an interested person or a Notary or a land surveyor for a PIN certificate to the determination of the market value and eventually to the amount of revenue due.
2.3.1 The processes undertaken by the main stakeholders using LAVIMS

The Land Administration process begins with the application for a PIN certificate that is made either on-line or directly at the Cadastre Unit. The PIN is a unique code reference which is allocated to a land parcel for the Cadastre. For any land transaction such as for the sale of a property a PIN is needed before the title deed can be drafted by the Notary for registration. It has now become mandatory for every title deed to have a PIN before registration. Once the PIN Certificate is obtained, the surveyor hands it to the vendor who produced it to the Notary to put in the draft title deed. The Notary then can progress the property transaction and register the new title deeds containing the newly assigned PIN at the Registrar General’s Department. There, the process being that any new deed provided, would be registered onto their CHLive database (a pre-LAVIMS database linking deeds with their parties), the deeds would then be scanned, and uploaded into LAVIMS. Of prime importance in this metadata capture is the PIN itself, which is captured from the deed as a link. This link connects the spatial entity in the cadastre with the relative deed (and by extension the owner), thereby updating the cadastre ownership as part of the registration process.

Once the deed is registered a request is sent to the valuation department through the LAVIMS software to assess the open market value of the property. A process has been established called the IF process (Immovable property transaction Folio), through which the RGD and the Valuation Department communicate. This process is triggered by the RGD staff who raise IF cases on their IF dashboard, within the Deeds Module, which are then transferred to the Valuation Department for processing. Once the request is received from the RGD on the LAVIMS’ Valuation Module at the Valuation Department, it is allocated for inspection using the PIN of the land parcel. A correct PIN will locate exactly the parcel on the map and will also provide relevant information about it. After inspection, other processes, such as drafting report of inspection giving the required details of the property, analysis of comparable evidence, assessment of value and authorization of the value to the RGD, are carried out. This legislative change is ensuring that the LAVIMS Cadastre must be updated with each land transaction as the PIN is included in the title deed. There is a requirement for the PIN certificate to be included at deed registration. Therefore, any deed registered will have had work tracked through the Cadastre Module to produce the PIN certificate in the first place.
2.3.2 Land Unit Identifier

The International Association of Assessing Officers (IAAO, 2012) defines a parcel as "a feature that is assigned a PIN, as a single, discrete piece of land having defined physical boundaries and capable of being separately conveyed".

Parcels in a digital cadastral map layer must be linked to assessment data. The key link between parcels and tabular data is the parcel identifier (also referred to as the PIN (parcel identification number) or the PID (parcel ID). A PIN or PID can consist of numbers, alpha characters, code(s), or combinations thereof to identify one parcel (IAAO, 2012).

According to IAAO (2012) a parcel identification system provides a method for referencing land parcels or data associated with parcels, using a number or code instead of complete legal description.

According to the International Association of Assessing Officers (IAAO, 2012) a parcel identification number is a unique identification number assigned to each parcel or code that links the parcel with files containing data such as ownership, value, use, and zoning. Parcel identifiers provide a common index for all property records. They provide a means of referencing legal descriptions in a uniform and more manageable way. Parcel identifiers make possible an efficient property record system for office and field use.

According to the International Association of Assessing Officers (IAAO, 2012), there are many formats of parcel identifiers. Whether in use or proposed a PIN should be judged based on six attributes: compliance with standards, uniqueness, permanence, simplicity and ease of use, ease of maintenance, and flexibility.

Regarding uniqueness of the PIN, there should be a one-to-one relationship between a parcel and its identifier. Parcel identifiers should be permanent and change only when absolutely necessary, such as when the boundaries of a parcel change. Parcel identifiers should be easy to use and understand with as few digits as possible (IAAO, 2012).

The parcel identification system should be easy to maintain and should efficiently accommodate changes, such as the subdivision or consolidation parcels. The parcel identification system should be reasonably flexible. It should be capable of serving a variety of uses (IAAO, 2012).
2.4 Legal Framework for the Assignment and Use of PIN

The Cadastral Survey Act 2011 has provided the legal framework for the assignment and use of PIN.

Under the Act appropriate actions required by stakeholders are as follows:

1. The Cadaster Unit should process PIN application,
2. For Land Surveyors, PIN will be mandatory in all Survey Reports/Memorandum of Survey/Division in Kind prior to registration and also in all Site Plans.
3. For the Notaries/Attorneys/Lending Institutions, PIN should be extracted from Survey Reports/Memorandum of Survey/ or Site Plans and included in deeds of sale/charge/inscription or memorandum of seizure.
4. The Registrar General Department has to ensure that prior to registration and transcription (as applicable), PIN is included in Survey Reports, Memorandum of Survey, Division in Kind, Site plans.
5. The Local Authorities/Morcellement Boards have to ensure that application for subdivision/excision of a land parcel should include the PIN of the original land parcel where available

2.4.1 The Significance of the Local PIN

The PIN created by the cadastral unit through the LAVIMS system for a land parcel in Mauritius comprises 10 digits divided into 5 sets of digits. Each set of digits in the PIN has a specific meaning. For example, consider the PIN 1218110020, the first two digits, 12, stands for the district in which the parcel is found and for this case it is Pamplemousses District; 18 refers to the Municipal or Village Council Area (MVCA), which is Terre Rouge; 11 represents the Cadastral Area, which is Morcellement Raffray and 0020 stands for the Parcel Number in that block.
3. Methodology

Qualitative research has been conducted through primary and secondary sources. The primary sources are in-depth interviews whereas the secondary ones consist of research from books, journals, online information and other materials. According to Naoum (1998), qualitative research tends to be subjective in nature as it lays emphasis on meanings, experiences, description and so on. There are two categories of qualitative research, namely exploratory and attitudinal. The information gathered for this report is under the attitudinal category as the exploratory research is used when someone has a limited amount of knowledge about his topic. Naoum (1988) refers the attitudinal research as one which is used
to subjectively evaluate the opinion or the perception of a person towards a particular object, which can be an attribute, a variable, a factor or a question.

The approaches that have been used to conduct the research are fieldwork and desk study. The fieldwork research consists of primary data collection and the practical approach used is the in-depth interview approach. The desk study is about secondary data collection, which is as important as the primary one. By reading the secondary sources, it has enabled the collection of data regarding the use of PIN in other countries.

Boyce & Neale (2006) states that “in-depth interviewing is a qualitative research technique that involves conducting intensive individual interviews with a small number of respondents to explore their perspectives on a particular idea, program, or situation”. For the qualitative interviews, a structured questionnaire with open ended questions has been prepared open-ended questions have been chosen so that the interviewees could voice out their own views without having to select any answer and they could share their knowledge. The interviews were carried out with ten different professionals in the sector, such as Government Valuers from the Valuation Department, Land Surveyors working in the Ministry of Housing and Lands, Private Land Surveyors and Registration Officers from the Registrar General Department. The choice of these interviewees was based on the criteria of the people who come into contact with the use of PIN in their daily business activities and thus have acquired a certain amount of knowledge regarding its role and importance in the Land Administration Systems. These open-ended questions have enabled the interviewees to share their opinions about the use, role and significance of PIN in Mauritius and also whether the information available is sufficient for its awareness. The language of the interview is English as it is the language of the dissertation and the interviewees had no problem in answering the questions. Moreover, depending on the degree of involvement, the researcher’s immediate experience can be an extremely valuable source of data (Dashe, 1987). The author’s valuation background and experience acquired at the Valuation Department of the Ministry of Finance and Economic Planning as Government Valuer has helped to develop an understanding of the problems encountered with lack of awareness of the role and significance of the PIN and the effects of a wrong PIN when using the LAVIMS system to assess the open market value of a property for registration purposes in Mauritius.
4.1 Analysis and findings

The selected interviewees are professionals in the fields of land surveying, valuation and registration. The interviews were carried out at the office of each respondent at a time convenient to them. These professionals were from Government Agencies and the private sector. They are Land Surveyors, Government Valuers and Registration Officers. They were asked to comment on the land administration systems and the Parcel Identification Number (PIN). A range of questions were asked about the advantages and disadvantages of the land administration systems; awareness of the use, the role and the significance of the PIN and the effects of a wrong PIN on the current systems.

When the results were analyzed it was noted that the interviewees have confirmed that there is a lack of awareness regarding the use, role and significance of the PIN and the responsibility of the authority that should deal with the problem of wrong PIN in the systems is not clear.

The interviewees acknowledged that the land administration system has both its benefits and drawbacks as no systems according to them are perfect but has to be upgraded with new situations and time. Most of them accepted that the systems provide guarantee of ownership and security of tenure, develop and monitor land markets, reduce land disputes, provide security for credit and support environmental management. When asked about the potential disadvantages, they replied that there was a lack of community participation, awareness, resources and enforcement. They are also of the opinion that, due to fragmentation of legislation, the processing of application for development permit is time consuming and that the decision-making stage is most often subject to political influence.

4.3 LAVIMS

When questioned about the LAVIMS application software, all the interviewees unanimously agreed that they use it in their daily business activities. One interviewee pointed out that the RDG has stopped using it since 2014 for registration purposes although the LAVIMS software is still used for sending request to the Valuation Department to assess the open market value of registered sale transactions and for receiving recommendation of its proposed value. The RGD also uses the software of LAVIMS to communicate documents to the VD for cases coming before the Objection Unit. He added that since 2015 the RDG is using a new software system known as Mauritius eRegistry Project (MeRP) in a bid to transform the RGD from a Service to an e-Service organisation. It is used for registration
purposes and for eservices to customers such as retrieval of information to be used in land-related activities.

Another professional stated that the LAVIMS application software is the center-part of VD activities and the PIN is the key that starts its operation. The PIN is obtained from the request document of the RGD and it can be verified with information from the title deed for which a link has been created in the request itself. The PIN is used to create a Financial Property Unit (FPU) and the file is then allocated to a technical staff for site visit through the LAVIMS software. The details of the property after inspection are entered by the technical staff in the FPU and the document is forwarded to the valuer for assessment of its value. The valuer analyzed comparable sales evidence and then assessed its open market value, which is recommended to the RGD through the LAVIMS software.

One interviewee pointed out that the cadastral unit of the MHL uses the LAVIMS PIN application portal for processing online PIN application. After verification of the parcel details and plan submitted and after having satisfied that the information provided is correct, a PIN certificate is auto-generated by the system.

4.4 The Parcel Identifier

All the interviewees explained that the PIN is a unique code allocated to a parcel and has a one-to-one relationship with the land and a parcel should have only one PIN even when two or more parcels have to be amalgamated. The professionals pointed out that the PIN is used for land identification and the MHL is the authority that is responsible for the issue PIN certificate. Everyone is in the affirmative regarding that it is mandatory to have a PIN before registering a title deed. Only one interviewee said that there is a piece of legislation governing the use of PIN. Another interviewee said that his department only verify that a PIN is mentioned in the title deed before registration as per the requirement of the law and did not known about the significance of the digits in the PIN. Two interviewees said that the PIN certificate original should be annexed to the title deed for verification purposes. The interviewees mentioned that the PIN is a new tool in the land administration systems and acts as a link for the land registration, land valuation and potentially to any other land related information systems. Its role is to provide spatial and textual information to the users.
Regarding the 10 digits of the PIN, no one is aware of its significance and all of them agree that there is no such information available in the Guidelines on MHL website regarding the Use of PIN. The interviewees agreed that due to a lack of awareness of the significance of the PIN by the stakeholders, there is a possibility for the creation of a wrong PIN in the systems.

Regarding the effects of a wrong PIN they said that it is a wrong code, which cannot identify the correct plot of land and will provide unreliable information. They don’t think that the Cadastral unit can allocate a wrong PIN as the information submitted are verified and if found incorrect the application the application will be rejected, and the applicant will be notified. One interviewee confirmed having come across a wrong PIN while assessing the value of the property. The professional said that the LAVIMS software considered it as an error and the modules for working the case did not open. She has written to the authorities concerned and it has not been possible to resolve this problem as the responsibility to deal with such a problem is not well-established.

5. Recommendations

The main findings of this study are the following:

1. There is a lack of awareness regarding the use, role and significance of the PIN among the stakeholders and this has led to the creation of wrong PIN in the systems. Therefore, necessary actions have to take to resolve these issues of awareness and wrong PIN. Lack of awareness of the use, role and significance of PIN by the stakeholders: Based on information derived from the interviews, it has been noted that a lack of awareness of the role and significance of PIN in the Land Administration System among the stakeholders is the cause of the creation of wrong PIN. Some proposals for possible future action relating to the awareness of the role and significance of PIN in the Land Administration Systems are to create an information page on the internet giving details of its use in the present systems and how an owner can retrieve information about his land.

2. The effects of a wrong PIN on the systems: Only the professional from the valuation field has come across wrong PINs when carried out valuation for registration purposes. The valuation department needs a correct PIN in order to open the different modules of the LAVIMS system so as to perform the valuation of a property. If, however, the PIN is wrong, the system will threat it
an error and no module will be opened. Therefore, the valuation exercise cannot be carried out unless the correct PIN is obtained. Who is responsible to provide the correct PIN and what is the procedure to deal with such a case? These questions have to be considered and the appropriate actions taken, otherwise the PIN will not be regarded as a unique reference and will not play the role that it was allocated.

6.0 Conclusion

Throughout this study, a number of issues have been raised when using the PIN as a tool to provide land-based information for sustainable land use planning and management. The problem of wrong input of PIN is directly linked to a lack of awareness of its use, role and significance by the stakeholders.

Urban land is considered to be one of the most valuable economic and social resources of a country and it needs an efficient cadastral system to manage it in urban areas, cadastral information will help to solve housing and shelter blames, where there is population explosion that often results in slums. The information can help in the following ways: through provision of site and service by low cost exploitation of unused areas owned and controlled by government; upgrading of squatter settlements or regularization of illegal occupancy; information and planning of land resource: mortgage and financing: increase revenue through improved land taxation: improve map production: reduce litigation: ease land transactions, facts can easily be established: improve the provision of exchange with other organisations, facilitate land marks which will aid land use and help private development. However, there is a lack of community participation, awareness, resources and enforcement in this process. Due to fragmentation of legislation, the processing of application for development permit is time consuming and that the decision-making stage is most often subject to political influence.

It was also observed from this study that the objectives of the Land Administration Valuation and Information Management System have not been reached as it was supposed to provide reliable land information as well as a valuation roll for the Local Authorities to levy tax based on the market value of properties. The findings of this study indicate a need for further research on the contribution of the LAVIMS project in land use planning in Mauritius.

It is therefore expected that cadastral surveying and mapping be given more attention as an improved mapping awareness of its products, training, acquisition of state of art equipment, since the
best mapped countries are the most developed nations of world. Therefore, the authorities that are using the LAVIMS system for their daily business activities should work together to monitor and protect such a costly project as it is the foundation of future land-related projects. As well said by Dale and McLaughlin (1988) “maintenance is more important than initial system creation; without it, the system will become a historical monument and a folly”. 

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..the natural urge of the facts of geography should broaden itself to include the concept of an Indian Ocean Rim for socio-economic co-operation...

- Late President Nelson Mandela of South Africa

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