

**Climate Change and Anthropogenic Activities :  
Impact on Coastal Development and Management**

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# **Keynote Address**

## **Coastal Governance, Risk Control and Intergrated Coastal Zone Management in Sri Lanka: An overview**

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### **Introduction**

Coastal Governance provides a clear impression on currently managed and explores new approaches to make our coasts healthier. Drawing on recent national assessments, Professor Richard Burroughs[1] explains why traditional management techniques have ultimately proved inadequate, leading to polluted waters, declining fisheries, and damaged habitats. He then introduces the intellectuals to governance frameworks that seek to address these shortcomings by considering natural and human systems holistically.

Our oceans cover three-fourths of the earth's surface, contain 97% of the earth's water, and represent 99% of the living space on the planet by volume. Oceans, however, are under physical attack from a variety of pressures, including pollution, overfishing, introduced species, habitat loss and species extinction, and poorly planned and managed coastal development, with associated losses to ecosystems and the livelihoods that depend upon them. Climate change driven by greenhouse gas emissions only complicates an already challenging ocean management situation. This overall situation is clearly affects the coastal governance in Sri Lanka.

### **Coastal Governance**

As a key Department, "Department of Coast Conservation and Coastal Resource Management (CC&CRM)" have attempted to keep progressive steps so far. The combat Coastal Erosion in Sri Lanka dating back to centuries. Accordingly, a Coast Protection Unit was established in the Colombo Port Commission in 1963. The realization of the government that a comprehensive approach to coastal erosion control is required, led to the establishment of a Coast Protection Engineering Unit (CPEU) in the Colombo Port Commission in 1971. In 1978, the CPEU was transferred to the Ministry of Fisheries and Aquatic Resources (MFAR) and was functioning as Coast Conservation Division. It was upgraded to a Department, the Coast Conservation Department, in 1984[2]. Duing the last 38 years, the coast protection and management works were continued under different ministries and their supporters, and the Department was converted into as a Department of CC&CRM and "Director of Coast Conservation" of former CCD became as "Director-General" under the Coast Conservation (Amendment) Act, No. 49 of 2011[5].

In 1981, Parliament enacted the Coast Conservation Act No 57 of 1981 and amendment Act, No. 64 of 1988[3]. This Act decreed the appointment of a Director of Coast Conservation with the following responsibilities:

- 1) Administration and implementation of the provisions of the Act;
- 2) Formulation and execution of schemes of the work for coast conservation within the Coastal Zone; and
- 3) Conduct research, in collaboration with other Departments, Agencies and Institutions for the purpose of coast conservation.

The Coast Conservation Act requires a survey of the Coastal Zone and prepare a Coastal Zone Management Plan (CZMP). The CZMP, prepared by the CCD, was adopted by the Government and implemented as the Coastal Zone Management Plan 1990. A Resource Management strategy for Sri Lanka's coastal region, "Coastal 2000", which provided the direction for Coastal Resources Management of Sri Lanka, was prepared in 1992. The first revised CZMP was implemented since 1997[4]. The last revision of the CZMP was done in 2004 and is currently being implemented. The objectives of the plan are to:

- Identify coastal problems that need to be addressed;
- Indicate why these problems are important;
- Present the results to the Coast Conservation Department's Management Programme on order to address these problems;
- Identify what should be done by Governmental and Non Governmental organizations and the public to reduce the scope and magnitude of the coastal problems; and
- Identify research on issues that need urgent action to the management of coastal resources.

For this guardianship, the CC&CRM objectives are to: Improve the status of the coastal environment; Develop and manage the shoreline; Improve the living standards of coastal communities; Promote and facilitate economic development based upon coastal resources. Based on the above objectives, the expected outputs are to: Added value for the coastal resources; Environmentally friendly developments; Increased contribution to the national economy; Secured social, economic and cultural values of Coastal Community; Increased productivity of coastal habitat; and Mitigated disaster impacts on coastal inhabitants.

### **Risk Control**

Risk control is the method by which firms evaluate potential losses and take action to reduce or eliminate such threats. As a responsible Government Department, the DCC&CRM of Sri Lanka provide Coastal Services to control the noticeable risks that have emerged in the coastal zone of Sri Lanka. Of these services, erosion is the most vulnerable risk. Shoreline monitoring, exploration of coastal processes & erosion risk, and formulation and design of shoreline stabilization & development projects have been proposed to control coastal erosion. Construction of coastal protective structures and implementation of shoreline stabilization & development projects and surveillance for controlling of coral & sand mining are the preventive measures of the DCC&CRM. Similarly, supervision and monitoring of the coastal water quality, analysis of trends & issues, issuing alerts and warnings, identification of

polluting sources and coastal water are been undertaken. Management through development of standards, strategies, policies, plans and projects formulated and introduced by the Department. Regulation of Developments by Set Back Standards & EIA, Monitoring Compliances; Establishment of Public Beach Accesses by maintaining Right to Access to the beach for the Public are also under their purview.

Coastal Engineering is the other significant service of the DCC&CRM. It is concerned with the planning, design, construction and maintenance of works in the coastal zone. The purpose of these works includes the control of shoreline erosion; development of navigation channels, protection of offshore sand bars, harbors; defense against flooding caused by storms, tides, and seismically generated waves (tsunamis); the development of coastal recreation; and control of pollution in nearshore waters. Coastal engineering usually involves the construction of structures or the transport and possible stabilization of sand and other coastal sediments. Furthermore, this section has the responsibility for collecting, processing, and sharing the coastal hydrodynamic data.

Formulation and implementation of strategies, policies, plans and projects for restoration of mangrove ecosystems, coral reef etc. and formulation and implementation of lagoon & the estuary management plan are the other activities of the DCC&CRM. Similarly, conducting awareness programs for public, school children, government officers etc, preparing notices, participation in exhibitions; collecting, updating and make available for public and private retrieval of coastal information and publication on the web are the timely responsibilities of the department. Besides these, the establishment of beach parks; adding values for coastal resources; development & updating of coastal risk profile on erosion, tsunamis, storm surges and sea level rise and development of strategies, policies, plans and projects for risk reduction; establishment and maintenance of coastal green belts through community participation are the activities added at a late stage to the DCC&CRM.

For activities such as risk control, provision of engineering services including coastal protection works; undertaking public awareness programmes, the Department has spent trillions of International and National funds since 1978. Among such funding agencies are Norwegian Agency for Development Cooperation (NORAD); Finnish international development agency (Finnida), United States Agency for International Development (USAID), German Technical Cooperation Agency (GTZ); Japan International Cooperation Agency (JICA); World Bank; Asian Development Bank (ADB); International Fund for Agricultural Development (IFAD); Global Environment Facility (GEF) etc. are very important.

### **Intergrated Coastal Zone Management**

Integrated coastal zone management (ICZM) is a dynamic, multidisciplinary and iterative process to promote sustainable management of coastal zones. It covers the full cycle of information collection, planning, decision making, management and monitoring of implementation. The main purpose of Coastal Governance is Risk Control and Risk Management. Thus, ICZM or ICM is a process for the management of the coast using an integrated approach, regarding all aspects of the coastal zone, including geographic and socio-economic aspects, in an attempt to desired objectives as well as minimize or control all types of risks.

The legal framework for the coastal zone management provided by the Coast Conservation Act No. 57 of 1981 and the Coast Conservation Act (Amendment) No. 64 of 1988[3]. Based on this legal framework, based on the results of a survey of the Coastal Zone by the CCD, a comprehensive Coastal Zone Management Plan was formulated. It also established the Coast Conservation Advisory Council, which reviews coastal management problems of significant concern and advises the Minister in charge of Coast Conservation.

Since the Sri Lanka Coast Conservation Act came into operation in 1983 and the first CZMP was adopted in 1990[4], ICZM has been strongly embedded in Sri Lankan environmental management agenda. Over the years, the policy and management frameworks for ensuring sustainable development of the coastal areas have been improved, a more holistic and integrated approach to coast erosion management adopted and a significant proportion of the highly erosion prone areas stabilised. The regulatory framework for managing coastal development has been refined and awareness of coastal issues and need for action created at the political and policy levels. The ICZM programme has broadened to cover a wider range of issues such as water quality, coastal fisheries and aquaculture.

The second CZMP has been developed to address some coastal issues that were not covered by the first plan of 1990. At the same time, the experience gained through the implementation of the 1990 plan along with the present development trends in the country, have helped to refine the policies and guidelines of this plan. The Revised Coastal Zone Management Plan, Sri Lanka 1996, has been prepared in accordance with section 12 of the Coast Conservation Act No. 57 of 1981. It has been submitted to the Coast Conservation Advisory Council for review and was made available for public comments before submission to Cabinet. This Revised Plan has now been approved by the Cabinet of Ministers.

The Coastal Zone and Coastal Resources Management Plan of 2016 is the fourth generation Plan, the earlier Management Plans being the ones presented in 1990, 1997 and 2004[4]. The Coast Conservation Act No.57 of 1981 and Coast Conservation (Amendment) Act No.49 of 2011[5], mandate the preparation of periodic Management Plans to facilitate orderly implementation. This Management Plan presents the scope for Coastal Zone Management; the characteristics of the Coastal Zone; the role of the Department of Coast Conservation and Coastal Resources Management as well as the Legal Mandate, Preparatory Process of the plan.

The new CZMP addresses issues and risks that are needed to control and to minimize. To gain desired objectives, 7 Divisions namely: Coastal Works Division, Research & Design Division, Monitoring & Evaluation Unit, Coastal Resources Management Division, Finance Division, Administration Division, and Legal Unit are unceasing with Director General of the DCC&CRM. This team has external links with Disaster Management Centre of Sri Lanka, Ministry of Fisheries & Aquatic Resources Development, Marine Environment Protection Authority, Central Environmental Authority, Sri Lanka Tourism Development Authority; Provincial Councils, DSDs, Municipal Councils, Town Councils etc. Without fruitful link with such agencies, DCC&CRM cannot go front to achieve their objectives.

Global Warming and Climate Change create hazards all over the world. Although, whatever awareness programme undertaken to risk control or manage, after a couple of weeks or months people neglect responsibility. Accordingly, anthropogenic impact on coastline, berms, dune and dune vegetation, coastal wetland including mangrove swamp cannot keep healthier. There is a responsibility for any citizen, who use the coastal zone directly or indirectly. Therefore, highly need to dedicate risk control and preventive rules and regulations of DCC&CRM. For

this purpose, it is required undertaking and mitigation awareness programme for politicians and their followers, Government officials, Officials of Provincial Councils of coastal zone and other relevant agencies. By the year 2020 and the next decade, if continue Colombo Port City, and projects outside of Colombo, especially at Balapitiya, Weligama, Batticaloa, Tricomallee, Jaffna and Kalpitiya we cannot take care coastal dwellers and coastal resources. And without change the outdated attitude, we cannot control the coastal risk and coastal zone for the posterity.

## **Conclusion**

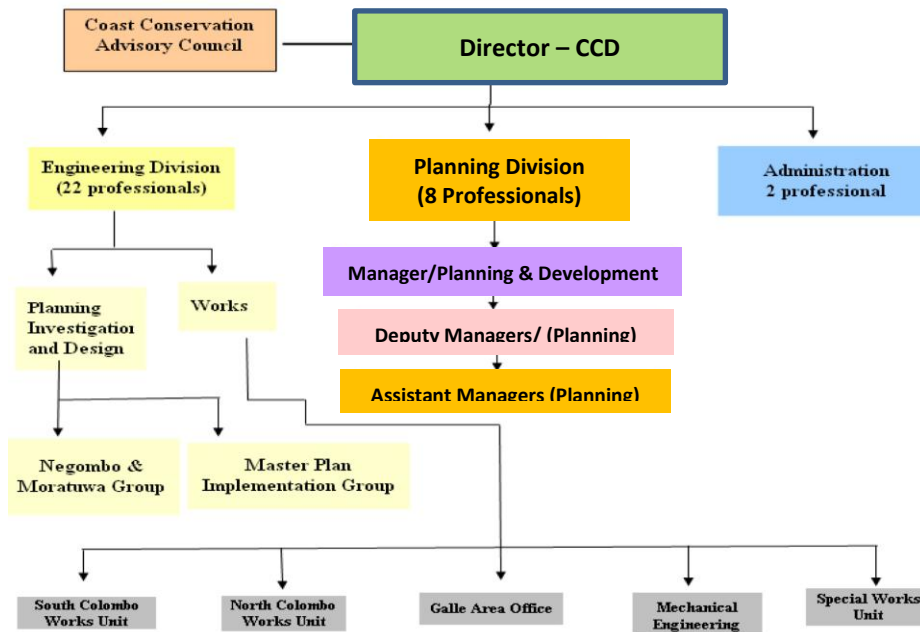
ICZM is a dynamic, multidisciplinary and iterative process to promote sustainable management of coastal zones. It covers the full cycle of information collection, planning, decision making, management and monitoring of implementation. With applying the Intergated Approach for coastal zone management by CCD&CRM of Sri Lanka, introduced CZM plans adopting CCD Act No. 57 of 1981 and Amendment Acts No. 64 of 1988 and 2011 to control and manage the all risks. This involes the protection of shorelines by erosion; against flooding caused by storms, tides and seismically generated waves (tsunamis); control of pollution in near shore waters; continue coastal engineering usually involving the construction of structures, mainly groins, revertment, getties, filling etc.; the transport and possible stabilization of sand and other coastal sediments. For these foremost activities, the DCC&CRM spent trillions money of Sri Lankan Government and Foreign Funded Projects to keep people safety and coast healthier.

## **References**

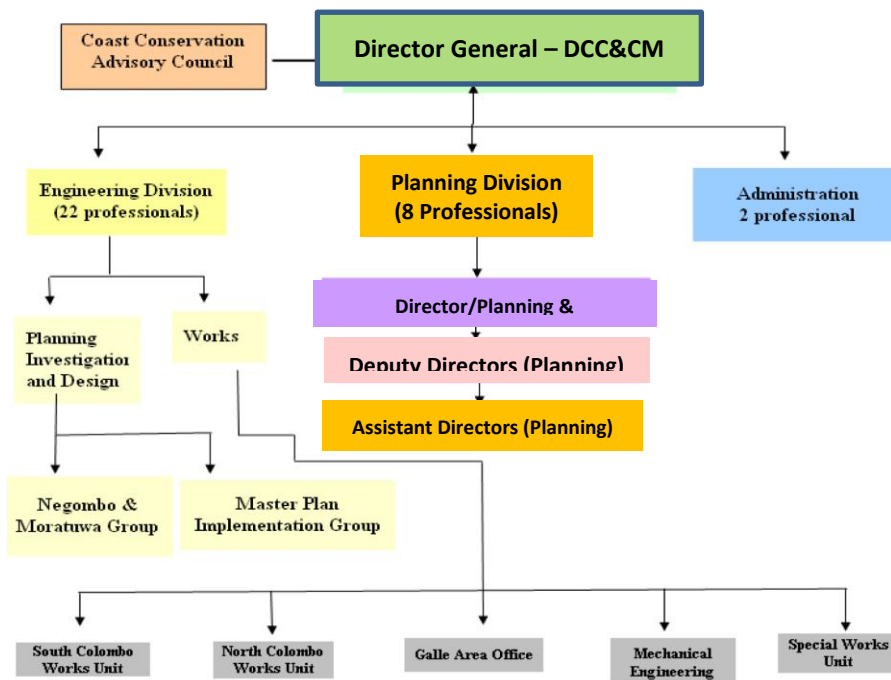
- [1] Burroughs Richard (2011). Coastal Governance. ISLAND PRESS. Island Press, 1718 Connecticut Ave., NW, Washington, DC 20009.
- [2] Samaranayake, R.A.D.B. (1995). Sri Lanka's Agenda for Coastal Zone Management. The Review of Advanced Technologies for the Integrated Management of EEZs and Coastal Zones Worldwide ICG Publishing Limited Edition 5.
- [3] Coast Conservation Act No. 57 of 1981 and the Coast Conservation Act (Amendment) No. 64 of 1988.
- [4] The Coastal Zone Management Plan of 1990, 1997, 2004 and 2016 (draft). Published by CCD/CC&CRM.
- [5] Coast Conservation (Amendment) Act, No. 49 Of 2011(Certified On 30th November, 2011).

**ANNEX: 1 Mentioned Figures and Photos related to the Keynote address**

**Sri Lanka Coast Conservation Organizational Chart**



**Sri Lanka Coast Conservation Organizational Chart**

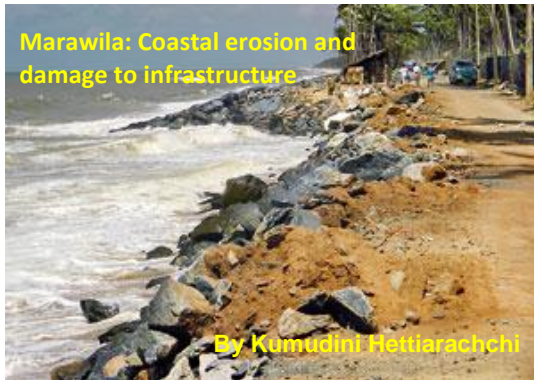


**Figure 1. Sri Lanka Coast Conservation Organization Chart.**





**Images 1 & 2: Coastal erosion at Uswetakeiyawa is the most vulnerable risk.**

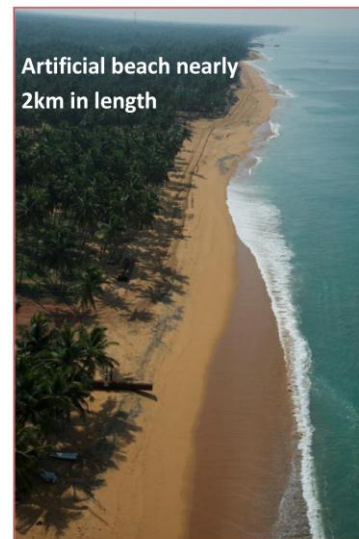
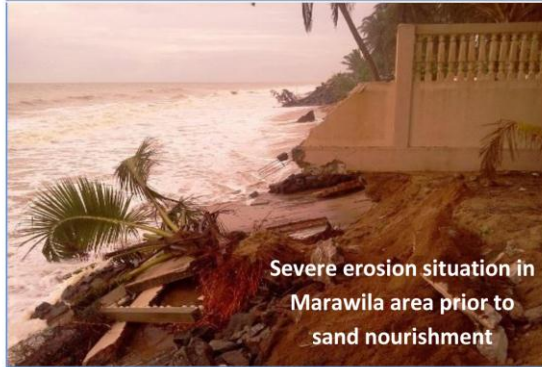


**Images 3 & 4: Coastal erosion at Marawila (Photo by Kumudini Hettiarachchi) and Beruwala (Photo by Rukshan Maliq).**



**Beneficiaries** - Community living in the area, Local & foreign tourists, Fisheries community & tourism industry

**Other important details** – 330,000m<sup>3</sup> of off-shore sand was pumped to the Marawila coastline to create a 30m wide and nearly 2km long artificial beach



**Image 5. Shoreline stabilization work at Marawila – Thalwila coastal stretch in Puttalam District (Source: DCC&CRM).**

**Beneficiaries - Hoteliers in Unawatuna bay coastline, local & foreign tourists and fisheries community**

**Other important details - 214,070m<sup>3</sup> of off-shore sand was pumped to the Unawatuna Bay coastline to create appr. 35-40m wide and 1.0km long artificial beach**

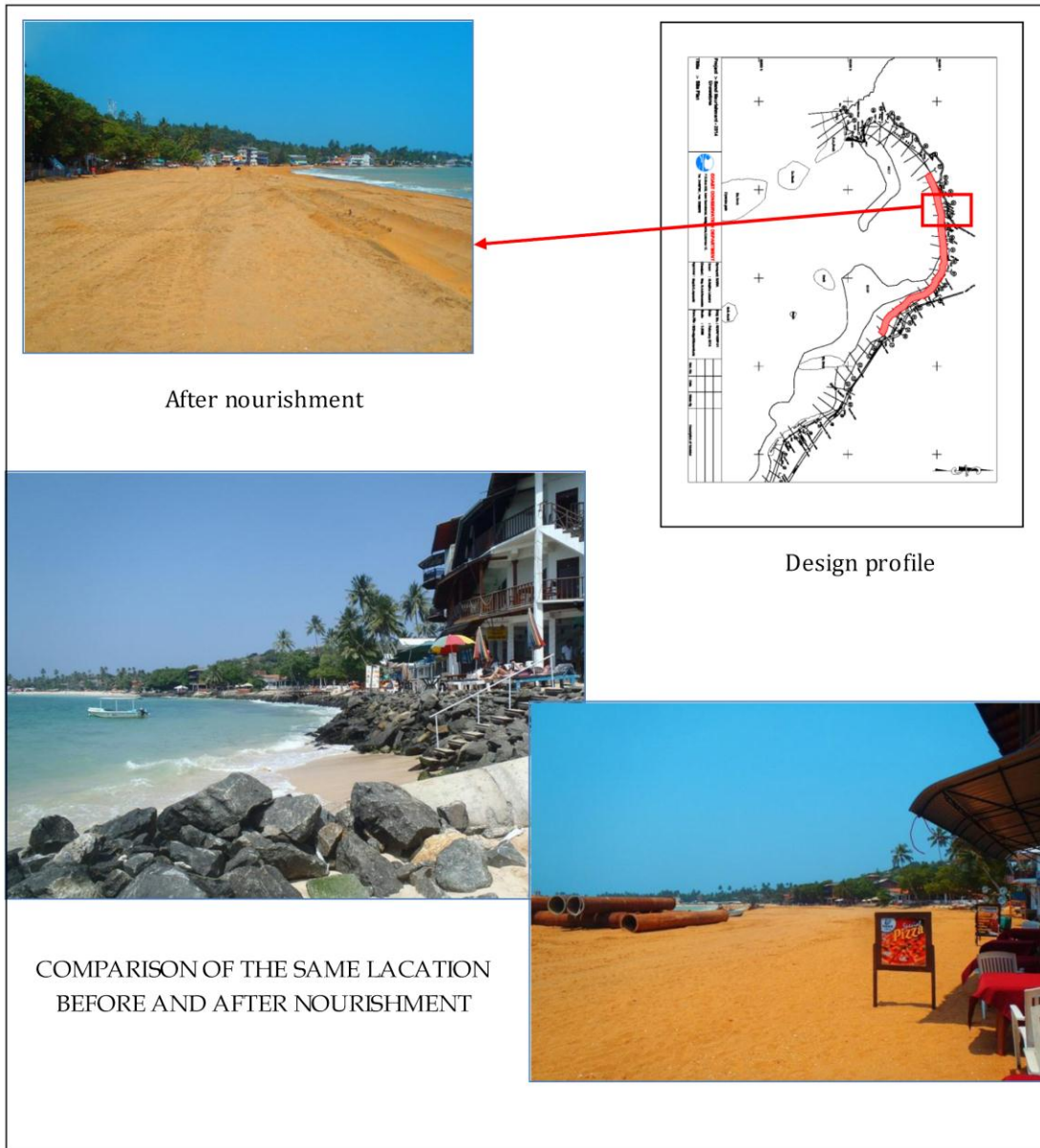
DURING THE CONSTRUCTION WORKS FOR DEVELOPMENT OF ARTIFICIAL BEACH



DURING BEACH NOURISHMENT WORK

**Image 6. During the construction works for the development of artificial beach at Unawatuna, Galle District (Source: DCC&CRM).**

## Beach Nourishment at Unawatuna - 2015



**Image 7. After completion of construction works at nawatuna, Galle District  
(Source: DCC&CRM)**

## CCD procedure for receiving and issuing permits

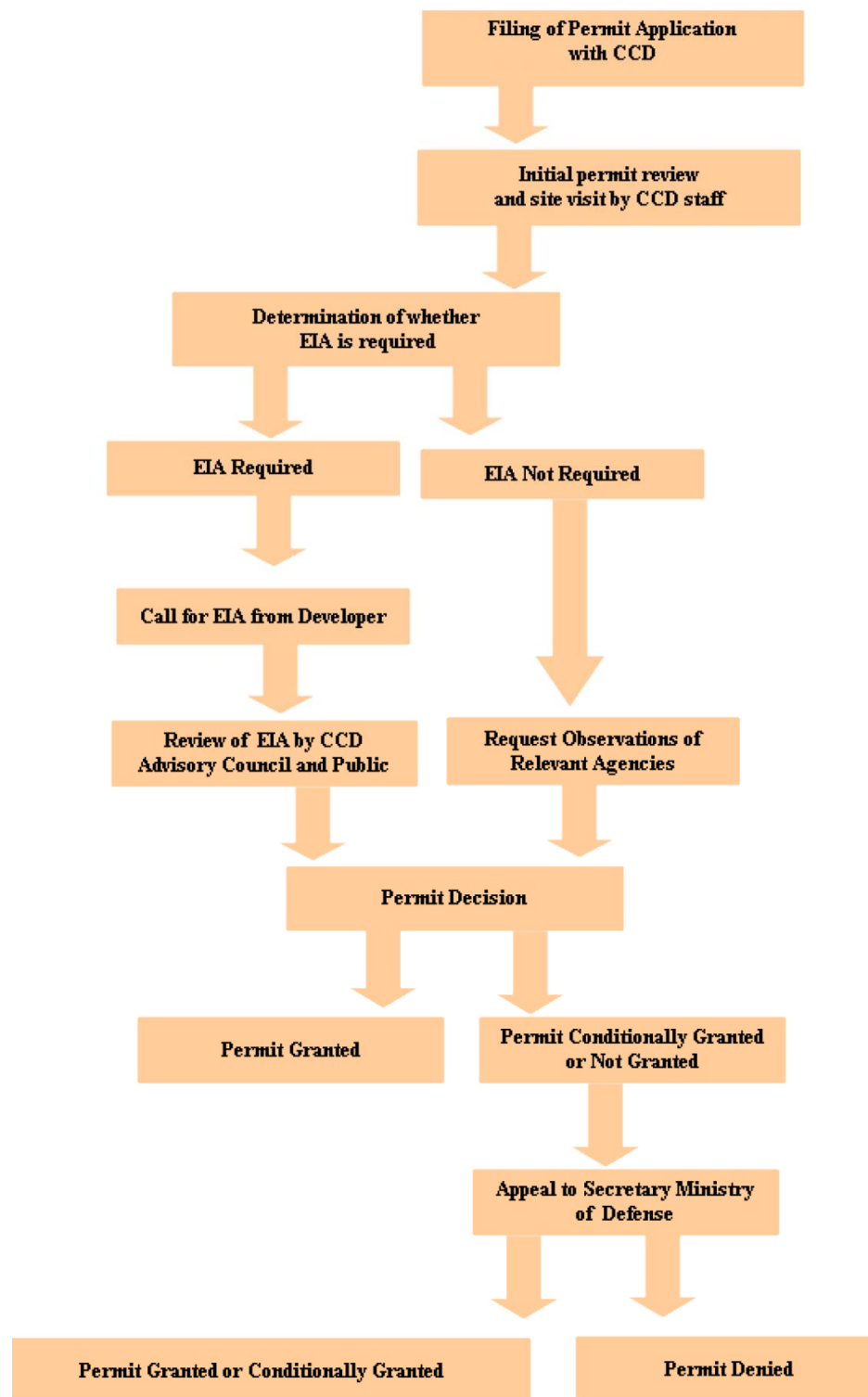


Figure 2. Coast Conservation Department procedure for receiving and issuing permits





**Images 8 & 9: Establishment of Public Beach Accesses by maintaining Right to Access to the beach for the Public.**



**Images 10 & 11. Restoration of mangrove ecosystem by the Turtal Conservation Project (TCP) at Rekawa Lagoon.**



**Images 12: Tsunami damaged sand dunes at Thalgasmandiya, and Image 13: Hambantota and the village of Sainathimaruthu in eastern Sri Lanka was completely destroyed by the tsunami. The officials advised move to erect a 100-metre no-build buffer zone along the coast.**



**Images 14 & 15 Establishment and maintenance of coastal green belts at Panama sand dunes through community participation.**



**Images: 15 & 16: Wider range of issues related to coastal water quality at Sainthamaruthu Beach area, Mullativ (Photos from KMS Perera).**



**Images 16 & 17: whale carcass in Chilaw on 13 June 2009 Sperm whale carcass in Wellawatte, Colombo on 16 June 2009.**