

survey and certification of ships. Together the Convention and Protocol are to be read as one instrument and is usually referred to as MARPOL 73/78. MARPOL prevents pollution by governing the design and equipment of ships with an established system of certificates and inspections. It requires states to provide reception facilities for the disposal of oily waste and chemicals. MARPOL covers all the technical aspects of pollution from ships, except the disposal of waste into the sea by dumping; it applies to all ships of all types but does not apply to pollution arising out of the exploration of seabeds.

Regulations covering the various sources of ship-generated pollution are contained in six Annexes of the London Convention and are updated regularly. Annexes I and II are compulsory and govern oil and chemicals; Annexes III – VI govern packaged materials, sewage, garbage, and air pollution and are optional. Under the Convention, “special areas” are provided with a higher level of protection than other areas of the sea. The term “special areas” is defined as “a sea area where for recognized technical reasons in relation to its oceanographical and ecological conditions and to the particular character of its traffic, the adoption of special mandatory methods for the prevention of sea pollution by oil, noxious liquid substances, or garbage, as applicable, is required.”

Ramsar Convention⁸⁰. The Convention on Wetlands of International Importance, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. The Convention’s mission is “the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world”. The Convention uses a broad definition of the types of wetlands covered in its mission, including lakes and rivers, swamps and marshes, wet grasslands and peatlands, oases, estuaries, deltas and tidal flats, near-shore marine areas, mangroves and coral reefs, and human-made sites such as fish ponds, rice paddies, reservoirs, and salt pans. Currently there are 160 Contracting Parties with a total of 1,897 sites designated for the Ramsar list covering a total surface area of 185,621,539 hectares (ha).

United Nations Convention on the Law of the Sea. The United Nations Convention on the Law of the Sea (UNCLOS) is the international agreement that resulted from the third United Nations Conference on the Law of the Sea (UNCLOS III), which took place from 1973 through 1982. The Law of the Sea Convention defines the rights and responsibilities of nations in their use of the world’s oceans, establishing guidelines for businesses, the environment, and the management of marine natural resources. The Convention, concluded in 1982, replaced four 1958 treaties. UNCLOS came into force in 1994, a year after Guyana became the 60th state to sign the treaty. To date, 158 countries and the European Community have joined in the Convention. However, it is uncertain as to what extent the Convention codifies customary international law (*Acropora* Biological Review Team 2005).

3. **Conservation Efforts**

As mentioned in the Introduction, the purpose of this Management Report is also to identify and summarize conservation efforts pursuant to ESA section 4(b)(1). For this report, conservation efforts included non-regulatory conservation actions undertaken by both governmental and non-

⁸⁰ http://www.ramsar.org/cda/en/ramsar-home/main/ramsar/1_4000_0__

governmental organizations (NGOs, e.g., conservation groups, private companies, academia, etc) that may address threats identified by the BRT Report (Brainard et al. 2011). Conservation efforts with the potential to address the threats to the 82 corals include a vast array of coral reef-oriented agreements, organizations, management plans, monitoring efforts, research, education and/or outreach, marine debris removal projects, restoration programs, etc. These conservation efforts are often conducted by countries, states, local governments, individuals, NGOs, academic institutions, private companies, etc. They also include global conservation organizations that conduct coral reef and/or marine environment conservation projects, global coral reef monitoring networks and research projects, regional or global conventions, and education and outreach projects throughout the range of 82 species.

3.1 Conservation Efforts Addressing GHG Emissions

Global Carbon Project⁸¹. The Global Carbon Project (GCP) was formed in 2001 to assist the international scientific community in establishing a common, mutually agreed upon knowledge-base that would support policy debate and action to slow the increasing rate of GHG emissions into the atmosphere. The scientific goal of the project is to develop a complete picture of the global carbon cycle, including both its biophysical and human dimensions together with the interactions and feedbacks between them. The GCP is responding to this challenge through a shared partnership between the International Geosphere-Biosphere Programme, the International Human Dimensions Programme on Global Environmental Change, the World Climate Research Programme and Diversitas. This partnership constitutes the Earth Systems Science Partnership. The GCP has published the state of global carbon cycle annually since 2007. For a summary of accomplishments and scientific findings over the past 10 years, see http://www.globalcarbonproject.org/global/ppt/GCP_10years_med_res.pdf.

Global Methane Initiative⁸². The Global Methane Initiative is an action-oriented international initiative to reduce global methane emissions, enhance economic growth, promote energy security, improve the environment and reduce greenhouse gas emissions. It was launched as the Methane to Markets Partnership in 2004 with participation from the Departments of State, Energy, and Agriculture, and from the U.S. Trade and Development Agency and the Agency for International Development. The Global Methane Initiative targets three major methane sources: landfills, underground coal mines and natural gas and oil systems. The Initiative focuses on the development of strategies and markets for the recovery and use of methane through: technology development, demonstration, deployment and diffusion; implementation of effective policy frameworks; identification of ways and means to support investment; and removal of barriers to collaborative project development and implementation. Member countries will work in collaboration with the private sector, multilateral development banks, and other governmental and non-governmental organizations to achieve these objectives. More information can be found at EPA's Global Methane Initiative Site and the Global Methane Initiative Site.

Intergovernmental Panel on Climate Change⁸³. The Intergovernmental Panel on Climate Change (IPCC) is a leading international body for the assessment of climate change established by the United Nations Environment Program and the World Meteorological Organization in 1988. The

⁸¹ <http://www.globalcarbonproject.org/>

⁸² http://epa.gov/climatechange/policy/international_multilateral.html

⁸³ <http://www.ipcc.ch/>

goal of the IPCC is to provide the world with a clear scientific view on the current state of knowledge in climate change and its potential environmental and socio-economic impacts. The IPCC is a scientific body that does not perform scientific research; rather, it reviews and assesses the most recent scientific, technical and socio-economic information produced worldwide relevant to the understanding of climate change. Thousands of scientists from all over the world contribute to the IPCC on a voluntary basis. It is an intergovernmental body open to all member Countries of the United Nations and World Meteorological Organization. The work of the organization aims to be policy-relevant and yet policy-neutral, never policy-prescriptive. The IPCC has released four major publications to date known as the IPCC Assessment Reports (1990, 1995, 2001, 2007) as well as many other publications and reports. Information summarized and released in the assessment reports has been integral in informing major international negotiations and treaties to address climate change including the UNFCCC, Kyoto Protocol, and Copenhagen Accord.

International Energy Agency⁸⁴. The International Energy Agency (IEA) is an intergovernmental organization which acts as an energy policy advisor to 28 member countries in their efforts to ensure reliable, affordable, and clean energy for their citizens. Founded during the oil crisis of 1973-74, the IEA's initial role was to coordinate measures in times of oil supply emergencies. Energy security remains a key priority, but IEA's focus has expanded beyond concerns about oil supplies to include natural gas and electricity. The Agency's mandate has also broadened to incorporate the "Three E's" of balanced energy policy making: energy security, economic development, and environmental protection. Current work focuses on diversification of energy sources, renewable energy, climate change policies, market reform, energy efficiency, development and deployment of clean energy technologies, energy technology collaboration and outreach to the rest of the world, especially major consumers and producers of energy like China, India, Russia and the OPEC countries. The most recent meeting of the Governing Board of IEA member countries at Ministerial level was held on 14-15 October 2009 in Paris. With a staff of around 250, mainly energy experts and statisticians from its 28 member countries, the IEA conducts a broad program of energy research, data compilation, publications and public dissemination of the latest energy policy analysis and recommendations on good practices.

International Renewable Energy Agency⁸⁵. The International Renewable Energy Agency (IRENA) was officially established in January 2009. To date, 148 states and the European Union have signed the Statute of the Agency including 48 African, 38 European, 35 Asian, 17 American and 10 Australia/Oceania States. Mandated by these governments worldwide, IRENA's mission is to promote the widespread and increased adoption and sustainable use of all forms of renewable energy. Acting as the global voice for renewable energies, IRENA will facilitate access to renewable energy information including technical data and renewable resource potential data, and will share experiences on best practices and lessons learned regarding policy frameworks, capacity-building projects, available finance mechanisms and renewable energy related energy efficiency measures. A Preparatory Commission was established to act as an interim body until the Statute entered into force with the 25th ratification

⁸⁴ www.iea.org

⁸⁵ <http://www.irena.org/>

instrument which occurred on June 8, 2010. They are currently in the process of establishing member representatives to form a Council to implement the 2010 Work Program⁸⁶.

Asia-Pacific Partnership on Clean Development and Climate⁸⁷. The Asia-Pacific Partnership on Clean Development and Climate is an innovative new effort to accelerate the development and deployment of clean energy technologies. Participating countries include: Australia, Canada, China, India, Japan, Korea, and the United States. The seven partner countries collectively account for more than half of the world's economy, population and energy use, and they produce about 65 percent of the world's coal, 62 percent of the world's cement, 52 percent of world's aluminum, and more than 60 percent of the world's steel. These countries have agreed to work together and with private sector partners to meet goals for energy security, national air pollution reduction, and climate change in ways that promote sustainable economic growth and poverty reduction. The Partnership focuses on expanding investment and trade in cleaner energy technologies, goods and services in key market sectors. The Partners have approved eight public-private sector task forces for Aluminum, Buildings and Appliances, Cement, Cleaner Fossil Energy, Coal Mining, Power Generation and Transmission, Renewable Energy and Distributed Generation, and Steel.

Australia's Bilateral Climate Change Partnership Program⁸⁸. Under Australia's Bilateral Climate Change Partnership Program, Australia maintains partnerships with China, South Africa, New Zealand, the European Union, the United Kingdom, Japan, and the United States. These partnerships provide opportunities for building stronger political relationships and influencing other countries' climate change policies at the highest level. Through these partnerships, Australia supports practical activities that address climate change issues of mutual concern. The partnerships with developing countries aim to build their capacity to tackle climate change alongside sustainable development. Examples include collaboration with China and South Africa on projects involving capacity building on emissions reporting, renewable energy technology, energy efficiency, capture and use of methane, climate change and agriculture, climate change and biodiversity, land use, land use change and forestry, and adaptation and climate change science.

Australia-China Bilateral Cooperation on Climate Change. In 2003, officials from Australia and China agreed on a joint declaration of the Australia-China Bilateral Cooperation on Climate Change (Government of Australia 2003). This Memorandum of Understanding (MOU) between the two countries is a cooperative effort to combat climate change, focusing on several key themes including climate change policies, climate change impacts and adaptation, national communications (greenhouse gas inventories and projections), technology cooperation, and capacity building and public awareness. The MOU between Australia and China is expected to open up trade benefits in greenhouse technologies as well as exemplify both countries' willingness to cooperate on bilateral, multilateral, regional, and domestic levels in regards to the global issue of climate change (Government of Australia 2003).

⁸⁶ http://www.irena.org/pdf/IRENA_Work_Programme_2010.pdf

⁸⁷ <http://www.asiapacificpartnership.org/english/default.aspx>

⁸⁸ <http://www.climatechange.gov.au/government/initiatives/bilateral-cc-partnership-program.aspx>

Carbon Sequestration Leadership Forum. The Carbon Sequestration Leadership Forum seeks to develop cost-effective technologies for the separation and capture of carbon dioxide for its transport and long-term storage. The purpose of the Carbon Sequestration Leadership Forum is to make these technologies available internationally, and to identify and address wider issues relating to carbon capture and storage. The forum, which now includes 21 countries as well as the European Commission, has approved 17 capture and storage projects as well as a Technology Roadmap to provide future directions for international cooperation (info and summary adapted from http://www.pi.energy.gov/usa_china_energy_cooperation.htm and <http://www.cslforum.org/>).

Caribbean Community (CARICOM) Climate Projects⁸⁹. CARICOM climate projects include the Caribbean Renewable Energy Development Programme and the Mainstreaming Adaptation to Climate Change. The mission of Caribbean Renewable Energy Development Programme is “to reduce barriers to the increased use of renewable energy thus reducing the dependence on fossil fuels while contributing to the reduction of greenhouse gas emissions.” Caribbean Renewable Energy Development Programme is an initiative of the Energy Ministers of the Caribbean Community region established to change the market environment for Renewable Energy in the Region. Currently 13 Caribbean countries are participating, with another 4 countries pending.

Mainstreaming Adaptation to Climate Change⁹⁰ is a program by CARICOM, and implemented by the World Bank with funding of \$5 million from the Global Environment Fund. The executing agency is the CARICOM Secretariat. The project’s main objective is to incorporate mainstream climate change adaptation strategies into the sustainable development agendas of the Small Island and low-lying states of CARICOM. This program is comprised of 5 components, including: building capacity to identify climate change risks, reduce vulnerability to climate change, effectively access and utilize resources to minimize the costs of climate change, increase public education and awareness, and finally, project management. The participating countries include: Antigua and Barbuda, the Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, Saint Lucia, St. Kitts and Nevis, St. Vincent, and Trinidad and Tobago.

Caribbean Community Climate Change Center⁹¹ coordinates the Caribbean region’s response to climate change. Officially opened in August 2005, the Centre is the key node for information on climate change issues as well as the region’s response to managing and adapting to climate change in the Caribbean. It is the official repository and clearing house for regional climate change data, providing climate change-related policy advice and guidelines to the CARICOM Member States through the CARICOM Secretariat. In this role, the Centre is recognized by the UNFCCC, UNEP, and other international agencies as the focal point for climate change issues in the Caribbean.

China-EU Climate Change Rolling Work Plan. China and the EU issued the Joint Declaration on Climate Change which established the bilateral Partnership on Climate Change at the EU-China Summit in Beijing on 5 September 2005. The Partnership is to provide a mechanism for

⁸⁹ <http://www.caricom.org/jsp/projects/macc%20project/cpacc.jsp>

⁹⁰ <http://www.caricom.org/jsp/projects/macc%20project/macc.jsp>

⁹¹ <http://www.caricom.org/jsp/community/ccccc.jsp?menu=community>

the EU and China to take a strategic view of shared climate change objectives, and to take an overview of, give direction to and develop bilateral cooperation activities that contribute to these objectives. Delegations have met at regular intervals since 2005 to exchange information and discuss ways to jointly address the sources and impacts of climate change (For more information see the following links: <http://www.mfa.gov.cn/eng/wjb/zzjg/tyfls/tfsxw/t283051.htm>, http://ec.europa.eu/clima/documentation/international/docs/minutes_6_meeting.pdf)

Energy Star⁹². Energy Star is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy to help save consumers money and reduce greenhouse gas emissions through energy efficient products and practices. EPA has entered into agreements with the following foreign governments of Australia, Canada, European Union, European Free Trade Association, Japan, New Zealand, Switzerland, and Taiwan to promote specific Energy Star qualified products. These partnerships are intended to unify voluntary energy-efficiency labeling programs in major global markets and make it easier for partners to participate. These countries are using Energy Star products for offices, consumer electronic products, and home appliances.

India-China Bilateral Agreement on Climate. In 2009, one month prior to high-profile climate talks in Copenhagen, India and China signed a bilateral agreement pledging partnership to tackle climate change (ICTSD⁹³ 2009). The memorandum of understanding was signed by India's environment minister, Jairam Ramesh, and minister and vice-chairman of China's National Development and Reform Commission, Xie Zhenhua. The agreement promises of continued cooperation on climate at the international level, and "seeks to broaden joint research and development into emissions-reducing technologies, in areas such as wind, solar, forestry and even 'clean coal.'" Considering half of the world's population resides in one of these two countries, both India and China need to be on board to make any climate actions successful.

International Partnership for a Hydrogen Economy. Established in 2003, the International Partnership for a Hydrogen Economy is comprised of 17 member countries and the European Union, in a partnership to foster international cooperation on research, development and demonstration programs that advance the transition to a global hydrogen economy. The Partnership for a Hydrogen Economy organizes and coordinates national strategies for hydrogen and fuel cell research and development (info and summary adapted from <http://www.iphe.net/> and http://www.pi.energy.gov/usa_china_energy_cooperation.htm).

International Thermonuclear Experimental Reactor. The International Thermonuclear Experimental Reactor is an international research and development project that aims to demonstrate the scientific and technical feasibility of fusion power. The project's partners are the United States, China, Japan, India, Russia, the Republic of Korea, and the European Union (represented by EURATOM). The experimental fusion reactor will be constructed at Cadarache, France and is expected to be completed in 2015 (info and summary adapted from <http://www.iter.org/default.aspx> and http://www.pi.energy.gov/usa_china_energy_cooperation.htm).

⁹² http://www.energystar.gov/index.cfm?c=about.ab_index

⁹³ ICTSD stands for International Centre for Trade and Sustainable Development

Midwest Greenhouse Gas Reduction Accord⁹⁴ The North American Midwest has intensive manufacturing and agriculture sectors, making it the most coal-dependent region in North America. Realizing the unique and major impact that the Midwestern states place on the emissions of carbon, nine Midwestern governors and two Canadian premiers have signed on to participate or observe in the Midwest Greenhouse Gas Reduction Accord (Accord). Through the Accord, these governors agreed to establish a Midwestern greenhouse gas reduction program to reduce greenhouse gas emissions in their states, as well as a working group to provide recommendations regarding the implementation of the Accord. The participating Midwestern states and Canadian provinces include: Iowa, Illinois, Kansas, Manitoba, Michigan, Minnesota and Wisconsin. Observing parties of the Accord include Indiana, Ohio, Ontario and South Dakota.

North American Declaration on Climate Change and Clean Energy⁹⁵. Leaders from the North American countries (U.S., Canada, and Mexico) made a Declaration on Climate Change and Clean Energy in August 2010. In the Declaration, the North American Leaders state their recognition of the broad scientific view that the increase in global average temperature above pre-industrial levels ought not to exceed 2 degrees C. Additionally, they declare their support of a global goal of reducing global emissions by at least 50% compared to 1990 or more recent years by 2050, with developed countries reducing emissions by at least 80% compared to 1990 or more recent years by 2050. The Declaration states the Parties' goals of working together to reduce GHG emissions from transport and oil and gas sectors, pursue a framework to align energy efficiency standards in the three countries, develop comparable approaches to measuring, reporting, and verifying emissions reductions, and collaborate on climate friendly and low-carbon technologies, among others. In order to facilitate these actions, the North American leaders aim to work cooperatively to develop and follow up on a Trilateral Working Plan and submit a report of results at the next North American Leaders Summit.

Regional Greenhouse Gas Initiative⁹⁶. The Regional Greenhouse Gas Initiative is the first greenhouse gas emissions reduction effort by the United States that is market-based and mandatory via regulations in each participant state. This Initiative is represented by ten Northeastern and Mid-Atlantic States that have capped, and will continue to reduce CO₂ emissions from the power sector by 10% by 2018. In order to accomplish this goal, states sell nearly all emission allowances through auctions and invest proceeds in consumer benefits such as energy efficiency, renewable energy, and other clean energy technologies. The Regional Greenhouse Gas Initiative is thus able to spur innovation in the clean energy economy and create green jobs in each state. Participating states in the Regional Greenhouse Gas Initiative include: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island and Vermont.

Transportation and Climate Initiative⁹⁷. Eleven Mid-Atlantic and Northeastern states, as well as the District of Columbia, announced a Declaration of Intent for the Transportation and Climate Initiative on June 16, 2010. The main goals of the Transportation and Climate Initiative include:

⁹⁴ <http://www.midwesternaccord.org/midwesterngreenhousegasreductionaccord.pdf>

⁹⁵ http://www.whitehouse.gov/the_press_office/North-American-Leaders-Declaration-on-Climate-Change-and-Clean-Energy/

⁹⁶ <http://www.rggi.org/home>

⁹⁷ http://climatechange.transportation.org/pdf/markstout_trclimateinit.pdf

reducing greenhouse gas emissions, minimizing the transportation system's reliance on high-carbon fuels, promoting sustainable growth, addressing the challenges of vehicle-miles traveled, and helping to build the clean energy economy. Included in this initiative are the ten Regional Greenhouse Gas Initiative members (Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont), Pennsylvania, and the District of Columbia. Currently, transportation accounts for a total of 30 percent of greenhouse gas emissions in the Mid-Atlantic and Northeastern U.S. The states involved with the Transportation and Climate Initiative will establish and fund the Transportation, Energy, and Environment Staff Working Group to direct the initiative's planning and seek public and private funding for projects.

US-China Oil and Gas Industry Forum. Launched in 1998, this bilateral forum provides opportunities for U.S. and Chinese government and industry leaders to conduct open discussions about their respective ventures in the oil and gas sector. The Departments of Energy and Commerce co-host the forum on the U.S. side and the National Development and Reform Commission is the lead agency for China. Additionally, a variety of industry representatives play an active role in formulating meeting agendas and delivering timely and informative presentations on private sector opportunities and issues (info and summary adapted from http://www.pi.energy.gov/usa_china_energy_cooperation.htm and <http://www.uschinaogf.org/>).

US-China Strategy for Clean Air and Energy Cooperation⁹⁸. The goal of the joint US-China Strategy for Clean Air and Energy Cooperation is to enhance the effectiveness of collaborative efforts to reduce the emissions intensity (air pollution and greenhouse gases) of China's rapidly growing economy. To achieve this goal, the U.S. EPA and the State Environmental Protection Agency of China plan to develop and implement a coordinated strategic framework for cooperation on matters related to air quality management, public health, clean energy and transportation.

US-India Green Partnership⁹⁹. In November 2009, President Barack Obama and Indian Prime Minister Manmohan Singh launched a "Green Partnership to Address Energy Security, Climate Change, and Food Security," reaffirming their countries' strong commitment to taking vigorous action to combat climate change, ensuring their mutual energy security, working towards global food security, and building a clean energy economy that will drive investment, job creation, and economic growth throughout the 21st century. Toward that end, Prime Minister Singh and President Obama agreed to strengthen U.S.-India cooperation on clean energy, climate change, and food security by launching various initiatives.

US-Indonesia Partnership on Climate Change and Clean Energy¹⁰⁰. In 2009, President Obama and Indonesian President Yudhoyono committed to making combating climate change, including improved cooperation on clean energy, a key element of the new U.S.-Indonesia Comprehensive

⁹⁸ http://www.epa.gov/oia/regions/Asia/china/2004_sca_eng.pdf

⁹⁹ <http://www.america.gov/st/texttrans-english/2009/November/20091124173218eafas0.8567425.html#ixzz1823kF2JM>

¹⁰⁰ <http://www.america.gov/st/texttrans-english/2010/November/20101109180315su0.9502614.html#ixzz1827gyDGh>

Partnership. Emphasis was placed on efforts to implement two major international climate and energy agreements: the Copenhagen Accord's call to reduce global emissions and the G-20 Leaders' commitment to phase out inefficient fossil fuel subsidies while promoting renewable energy and improving energy efficiency.

US-Korea Climate Technology Partnership. To accelerate the implementation of methane recovery technologies in Korea, it was determined in 2001 by the Korean and U.S. governments that a new program approach was needed. This is when the Climate Technology Partnership was developed with considerable consultation among the U.S. Agency for International Development, the U.S. Environmental Protection Agency, the Department of Energy, and the National Renewable Energy Laboratory. Climate Technology Partnership is a follow-on from the Technology Cooperation Agreement Pilot Project which started in 1997 with the goal of developing an international process that assesses needs and fosters private sector development of climate friendly technologies in developing nations. In 1999 Korea joined Technology Cooperation Agreement Pilot Project and an assessment of technologies with market-based status, applicable developing country-driven strategy, and available resources was done. To better focus resources under Climate Technology Partnership Korea, two of the three priority technologies that were identified by Technology Cooperation Agreement Pilot Project – energy management and methane recovery – were selected for further development. Climate Technology Partnership differed from Technology Cooperation Agreement Pilot Project in that it had the added feature of strategic activity to complement project activity. This bifurcation of tasks between strategic and project objectives sought to create a suitable environment for the formation of active new markets in energy service companies and landfill gas (LFG) development (summary and info adapted from Larney *et al.* 2006).

Western Climate Initiative¹⁰¹. The Western Climate Initiative is a collaborative effort to reduce greenhouse gas emissions while spurring investment into clean-energy technologies that create green jobs and help to reduce dependence on foreign oil. This initiative represents numerous independent jurisdictions that are working together to identify, evaluate, and implement policies to tackle climate change at a regional level. Regional partners include Arizona, British Columbia, California, Manitoba, Montana, New Mexico, Ontario, Oregon, Quebec, Utah, and Washington. Observers of the Initiative include: Alaska, Colorado, Kansas, Nevada, Idaho, Wyoming, Saskatchewan, New Brunswick, Nova Scotia, Yukon, and several Mexican states.

IUCN Climate Change and Coral Reefs Marine Working Group (CCCR)¹⁰². The main objective of the Working Group is to form a bridge between theoretical science and management in coral reef ecosystems. They address this by identifying information gaps and issues through workshops and research tracks to synthesis the most recent and relevant information, especially that pertaining to coral reefs and climate change. Projects under implementation of the CCCR include measuring resilience in coral reef monitoring programs and rapid resilience assessments of coral reefs around the world, improving bleaching early warning and response plans, measuring herbivory, and creating a resilience bibliography and coral reef resilience and resistance DVD.

¹⁰¹ <http://www.westernclimateinitiative.org/>

¹⁰² <http://www.iucn.org/cccr/>

3.2 Conservation Efforts Addressing Local threats

Many international and national programs exist to conserve corals and coral reef habitat through addressing local threats such as fishing, land-based sources of pollution, physical damage, etc.. Also, numerous international and multinational agreements and conventions on coral reef conservation are also aimed at reducing such threats. Likewise, numerous non-governmental organizations (NGO) support coral research, monitoring, restoration and protection, thereby addressing such threats in various ways. For a relatively exhaustive list of coral-centric NGOs visit the International Coral Reef Information Network (ICRIN) website¹⁰³.

Conservation International (CI)¹⁰⁴. CI is an NGO whose mission is to assist communities to responsibly and sustainably care for nature, biodiversity, and humanity. CI is staffed with scientists, managers, and policy analysts all working to provide current information used by governments and international organizations in policy making decisions. One example of a project CI is working is the Oceanscapes Initiative, which works closely with the heads of state and six governments in the Coral Triangle¹⁰⁵ region. Also through Oceanscape, CI is working closely with the government of Kiribati to launch a multi-governmental effort to improve ocean health.

Global Coral Reef Monitoring Network (GCRMN)¹⁰⁶. The objectives of the GCRMN are to connect and train people and organizations in monitoring ecological, social, cultural, and economic aspects of coral reefs by providing a monitoring program framework; and to enable people at the local, regional, and global level to disseminate information on the sustainable use and conservation of coral reefs. Monitoring experts in each of these fields train trainers in participating countries and information on coral reef status is gathered into databases within the GCRMN. For example, experts from Reef Check train people in ecological monitoring and the Socioeconomic Manual for Coral Reef Management is used to train people in socioeconomic monitoring. All these data are gathered into ReefBase so that researchers around the world can access it.

The Global Programme of Action (GPA)¹⁰⁷. The GPA for the Protection of the Marine Environment from Land-Based Activities was adopted in 1995 and is designed to be a source of conceptual and practical guidance to national and/or regional authorities for devising and implementing that prevents, reduces, controls, and/or eliminate marine degradation from land-based activities. More specifically, it is recommended that States identify and assess problems related to food security, poverty alleviation, public health, coastal and marine resources, ecosystem health, economic and social benefits, cultural values, impacts of contaminants, physical alteration and degradation of habitat, and affected or vulnerable areas of concern.

International Coral Reef Initiative¹⁰⁸. The International Coral Reef Initiative (ICRI) was originally initiated by the governments of Australia, France, Japan, Jamaica, the Philippines,

¹⁰³ <http://www.coralreef.org>

¹⁰⁴ <http://www.conservation.org/Pages/default.aspx>

¹⁰⁵ <http://www.conservation.org/sites/marine/initiatives/oceanscapes/cti/Pages/overview.aspx>

¹⁰⁶ <http://www.gcrmn.org/>

¹⁰⁷ <http://www.seafriends.org.nz/issues/cons/gpa.htm>

¹⁰⁸ <http://www.icriforum.org/>

Sweden, the United Kingdom, and the United States in recognition that tropical and sub-tropical coral reefs are facing serious degradation. Additional partners from governments, United Nations organizations, multilateral development banks, environmental and developmental NGOs, and the private sector have subsequently joined the partnership and are currently collaborating in the ICRI. The partnership strives to protect and preserve coral reefs and their related ecosystems by calling on states to: “identify marine ecosystems exhibiting high levels of biodiversity and productivity and other critical habitat areas and should provide necessary limitations on use of these areas, through, inter alia, designation of protected areas” (Chapter 17, Section 17. 86, ICRI). ICRI objectives call for governments and international organizations to strengthen their commitments to programs at the local, national, regional, and international levels to conserve, restore, and promote sustainable use of coral reefs and associated environments. Objectives also include development of management provisions for protection, restoration, and sustainable use of coral reefs and associated environments, strengthening capacity for development and implementation of policies, management, research, and monitoring of coral reefs and associated environments, and establishment or maintenance of international, regional and national research and monitoring programs to ensure efficient use of scarce resources and a flow of information relevant to management of coral reefs and associated environments.

International Coral Reef Action Network (ICRAN)¹⁰⁹. ICRAN was established in 2000 with a historic grant from the United Nations Foundation (UNF). It was formed in response to a Call to Action by the International Coral Reef Initiative (ICRI), ICRAN supports the implementation and regular review of ICRI's Framework for Action. The main objectives of ICRAN are to link scientific monitoring and management activities in coral reefs systems across local, national, and global scales. Traditional knowledge, training, and information about alternative livelihoods are shared within ICRAN.

International Union for Conservation of Nature (IUCN). Also known as the World Conservation Union, IUCN helps the world find pragmatic solutions to our most pressing environment and development challenges. It supports scientific research, manages field projects all over the world and brings governments, non-government organizations, United Nations agencies, companies and local communities together to develop and implement policy, laws and best practices.

IUCN Marine Programme¹¹⁰. The IUCN's Marine Programme is broken down into 8 separate themes: Climate Change Mitigation & Adaptation, Conserving Threatened Species, Energy & Industry, Fisheries & Aquaculture, Managing Marine Invasive Species, Marine Protected Areas, and Ocean Governance. Under the Climate Change Mitigation & Adaptation theme, the IUCN conducts work in the areas of coral reef monitoring, research, resilience, and ocean fertilization and other geo-engineering issues.

IUCN Red List of Threatened Species¹¹¹. The main objective of the IUCN Red List is to organize and evaluate the conservation status of plant and animal species around the world. Many government institutions and NGOs refer to this list to help in conservation decisions.

¹⁰⁹ <http://www.icran.org/>

¹¹⁰ <http://www.iucn.org/about/work/programmes/marine/>

¹¹¹ <http://www.iucnredlist.org/about/red-list-overview#introduction>

Man and the Biosphere Programme (MAB)¹¹². The MAB, started in the early 1970s, proposes an interdisciplinary research agenda and capacity building aiming to improve the relationship of people with their environment globally. It notably targets the ecological, social and economic dimensions of biodiversity loss and the reduction of this loss. It uses its World Network of Biosphere Reserves as vehicles for knowledge-sharing, research and monitoring, education and training, and participatory decision-making. Coastal marine biosphere reserves are reference sites for monitoring coastal and marine biodiversity. Marine protected areas are essential for observing and measuring human impacts on the coastal/marine habitats and developing more rigorous and innovative guidelines for their conservation and sustainable management. Biosphere reserves are sites of excellence recognized under UNESCO's Man and the Biosphere Programme. They offer privileged arenas for melding science and society. Their system of zoning allows targeted management, with different requirements for protection, scientific research, and human use; a great number of these requirements encompass coastal and marine areas.

The Nature Conservancy (TNC)¹¹³. TNC is an NGO with marine conservation staff and projects in more than 33 countries and all coastal U.S. states and territories, The Nature Conservancy works with partners to create lasting conservation results that benefit marine life, local communities and economies. TNC's Marine Conservation Initiative is working toward a future of healthy oceans that support plants, animals and people for generations. Their work is focused on restoring coastal habitats, helping people and marine life adapt to climate change, developing better approaches for fisheries, and expanding ocean protection and improving management. The Nature Conservancy also works to create networks of protected areas, in order to help nearby degraded marine habitats recover and rebuild. TNC also works with local communities to provide managers with tools and training to help make their reefs stronger in the face of climate change and are currently partnering with NOAA to advance coral reef conservation efforts in seven United States coral reef jurisdictions. TNC, along with partners like NOAA, offer reef resilience training to coral reef managers around the world to implement strategies that address the effects of climate change.

Regional seas partnership on marine and coastal protected areas (UNESCO-UNEP (United Nations Environment Programme) Regional Seas- CBD (Convention on Biological Diversity))¹¹⁴. This is a partnership on Marine and Coastal Protected Areas. It is designed to coordinate information related to marine and coastal protected areas in United Nations and other international processes. The aim is to contribute to establishing representative networks of marine protected areas by 2012, as agreed at the World Summit on Sustainable Development.

Reef Check Foundation¹¹⁵. Reef Check is a global NGO established to facilitate community education, monitoring and management of coral reefs. Reef Check is active in more than 70 coral reef countries and territories, where it seeks to: educate the public about the coral reef

¹¹² <http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/man-and-biosphere-programme/>

¹¹³ <http://www.nature.org/>

¹¹⁴ <http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/specific-ecosystems/island-and-coastal-areas/>

¹¹⁵ <http://www.reefcheck.org/>

crisis and how to prevent it; create a global network of volunteer teams that regularly monitor and report on reef health under the supervision of scientists; scientifically investigate coral reef processes; facilitate collaboration among academics, NGOs, governments and the private sector to solve coral reef problems; and stimulate community action to protect remaining pristine reefs and rehabilitate damaged reefs worldwide using ecologically sound and economically sustainable solutions. Under the ICRI framework, Reef Check is a primary GCRMN partner and coordinates GCRMN training programs in ecological and socio-economic monitoring, and coral reef management throughout the world.

Territorial Use Rights in Fisheries (TURFs). TURFs are community-controlled fishing areas established around the world. They are managed either by traditional or modern methods by legal or illegal terms (Christy, 1982).

United Nations Environment Programme (UNEP)¹¹⁶. The UNEP was established in 1972 to address environmental issues within the United Nations system. UNEP's mission is to "provide leadership and encourage partnering in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations." UNEP promotes conservation and sustainable development at the global scale through partnerships and programs around the world. It often acts as a catalyst, advocate, educator, and facilitator to other United Nations entities, international organizations, and private businesses. UNEP's work encompasses assessing global, regional and national environmental conditions and trends; developing international and national environmental instruments; strengthening institutions for the wise management of the environment; facilitating the transfer of knowledge and technology for sustainable development; and encouraging new partnerships and mind-sets within civil society and the private sector.

UNEP's Regional Seas Programme¹¹⁷. UNEP's Regional Seas Programme was launched in 1974 after the 1972 United Nations Conference on the Human Environment held in Stockholm to address the "accelerating degradation of the world's oceans and coastal areas." The Regional Seas Programme seeks to accomplish this through the sustainable management and use of the marine and coastal environment, by engaging neighboring countries in comprehensive, and though specific actions to protect their shared marine environment. It has accomplished this by stimulating the creation of Regional Seas programmes prescriptions for sound environmental management to be coordinated and implemented by countries sharing a common body of water. There are more than 140 countries participate in 13 Regional Seas programmes established under the auspices of UNEP.

UNESCO's Programs. The United Nations Educational, Scientific, and Cultural Organization (UNESCO) has several major programs aimed at conservation of corals and coral reefs, including the World Heritage Convention, the Man and Biosphere Program, and the Regional Seas Partnership on Marine and Coastal Protected Areas.

¹¹⁶ <http://www.unep.org/>

¹¹⁷ <http://www.unep.org/regionalseas/about/default.asp>

World Heritage Convention¹¹⁸. The World Heritage Convention defines the kind of natural or cultural sites which can be considered for inscription on the World Heritage List. The Convention sets out the duties of States Parties in identifying potential sites and their role in protecting and preserving them. By signing the Convention, each country pledges to conserve not only the World Heritage sites situated on its territory, but also to protect its national heritage. The States Parties are encouraged to integrate the protection of the cultural and natural heritage into regional planning programs, set up staff and services at their sites, undertake scientific and technical conservation research and adopt measures which give this heritage a function in the day-to-day life of the community.

Barbados Programme of Action¹¹⁹. The Barbados Programme of Action was established in April 1994 during a global conference held in Barbados, to address how small island States could rise to meet their unique challenges. The Global Conference on the Sustainable Development of Small Island Developing States identified sustainable development as the most reasonable solution. Thus, the Barbados Programme of Action GPA for the Sustainable Development of Small Island Developing States was adopted. The Small Islands Developing States Programme of Action specifically identifies coastal and marine resources as an area that requires imperative action. In addition, it asks for the establishment and/or strengthening of programs within the framework of the Programme of Action and the Regional Seas programs, to evaluate the impacts of planning and development on areas including: coastal communities, wetlands, coral reefs habitats and other areas.

Action Plan for the Protection and Development of the Marine and Coastal Areas of the East Asian Region (1981)¹²⁰. This is a plan steered by the Coordinating Body on the Seas of East Asia (COBSEA) made up of the countries of Australia, Cambodia, the People's Republic of China, Indonesia, the Republic of Korea, Malaysia, the Philippines, Singapore, Thailand, and Vietnam. Under this plan, COBSEA assesses the effects of human activities on the marine environment; controls of coastal pollution; protection of mangroves, seagrass and coral reefs; and wastewater management.

The Action Strategy for Nature Conservation in the Pacific Islands Region¹²¹. Developed through the cooperation of countries within the Roundtable for Nature Conservation, this strategy addresses issues concerning nature conservation in the Pacific Islands. The Roundtable had its first meeting in 1997. More recently, each meeting includes representatives from national governments, donors, NGOs, and regional organizations, and produces an action strategy that is updated every five years. In 2007, the Action Strategy for Nature Conservation 2008-2012 was drafted and it links national biodiversity strategies and action plans (NBSAPs) to the regional strategy of nature conservation. Notably, it also suggests that countries within the Roundtable recognize community involvement, traditional rights over natural resources, and sustainable use of resources.

¹¹⁸ <http://whc.unesco.org/en/conventiontext>

¹¹⁹ <http://www.unep.ch/regionalseas/partners/sids.htm>

¹²⁰ <http://www.cobsea.org/>

¹²¹ <http://www.sprep.org/Roundtable/>

Apia Convention (1976, in force in 1990)¹²². This is an agreement between Australia, the Cook Islands, Fiji, France, and Samoa that seeks to preserve unique natural ecosystems across the South Pacific. These can include superlative scenery; striking geological formations; or regions and objects of aesthetic interest or historic, cultural, or scientific value.

Association of the Southeast Asian Nations (ASEAN) Heritage sites¹²³. ASEAN is an economic and geo-political organization of Indonesia, Malaysia, the Philippines, Singapore, Thailand, Brunei, Burma (Myanmar), Cambodia, Laos, and Vietnam. A list of nature parks, called ASEAN Heritage Parks, was started in 1984 and relaunched in 2004 to protect the natural and cultural sites in this region.

ASEAN Policy Framework for Forestry Cooperation¹²⁴. ASEAN countries participate in a Strategic Plan of Action on Forestry with goals to conserve biological diversity, promote sustainable forest management, and eradicate unsustainable practices namely illegal logging and associated trade.

Bay of Bengal Large Marine Ecosystem Project (BOBLME)¹²⁵. This project involves the countries of Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka, and Thailand. It is broken into five parts: the Strategic Action Programme; coastal/marine national resources management and sustainability use; improved understanding and predictability of the BOBLME environment (including MPAs); maintenance of ecosystem health and management of pollution; and project management, monitoring and evaluation, and knowledge management.

Coral Reef Initiative for the South Pacific (CRISP)¹²⁶. This initiative is sponsored by France and was prepared by the French Development Agency (AFD) as part of an inter-ministerial project started in 2002. The Secretariat of the Pacific Community (SPC) is also involved in CRISP which aims to develop a vision for the future of these unique ecosystems and the communities that depend on them and to introduce strategies and projects to conserve their biodiversity, while developing the economic and environmental services that they provide both locally and globally. Also, it is designed as a factor for integration between developed countries (Australia, New Zealand, Japan and US), French overseas territories and Pacific Island developing countries. CRISP has 3 main components:

- 1) Integrated Coastal Management and Watershed Management (marine biodiversity conservation planning, marine protected areas (MPAs), institutional strengthening and networking, integrated coastal reef zone and watershed management).
- 2) Development of Coral Ecosystems (knowledge, beneficial use and management of coral ecosystems, reef rehabilitation, development of active marine substances, development of regional data base (ReefBase Pacific)).

¹²² <http://www.sprep.org/Factsheets/pdfs/Archive/The%20Apia%20Convention.%20Fact%20sheet%202012-5-Reduced.pdf>

¹²³ <http://www.asean.org/15524.htm>

¹²⁴ http://www.aseanforest-chm.org/issue_pages/about/asean_policy_framework_for_forestry_cooperation.html

¹²⁵ <http://www.boblme.org/>

¹²⁶ <http://www.icran.org/action-crisp.html>

3) Programme Coordination and Development (capitalization, value-adding and extension of CRISP Programme activities, coordination, promotion and development of CRISP Programme, support to alternative livelihoods, vulnerability of ecosystems and species, economic task force).

Coral Triangle Initiative¹²⁷. This agreement between Indonesia, the Philippines, Malaysia, Timor-Leste, Papua New Guinea, and the Solomon Islands states that each country will develop an action plan to implement four objectives: sea conservation, sustainable marine resource management, protection of endangered species, and adapting to climate change. Partner nations in this initiative include Australia, France, Germany and the United States. Partnering organizations (and sources of funding) include the World Wildlife Fund, Conservation International, and The Nature Conservancy. Destructive fishing is practiced in this region and this initiative is developed to help curtail this practice. This initiative developed a plan for the region entitled "CTI Plan of Action" with the objectives of conducting meetings and working groups, researching topics of interest to the region, promoting the World Ocean Conference, developing a network of MPAs, and establishing an alternative livelihood program.

Eastern and Southern Africa (ESA) Workshop: This workshop was organized by the ICSF and International Ocean Institute (IO) to bring together fishworker organizations, NGOs, research institutions, universities, and policy makers from Kenya, Tanzania, Mozambique, South Africa, the Seychelles, and seven other countries bordering the Indian Ocean. It was meant to identify fisheries issues in this area and discuss policies for sustainable fisheries development. To date, two workshops have taken place, one in 2006 and the second in 2008. Among the main issues are human rights, biodiversity and fisheries management strategies that incorporate traditional fishing techniques¹²⁸.

Indian Ocean Commission (IOC)¹²⁹. This organization composed of the Comoros, Madagascar, Mauritius, the Seychelles, and France promotes sustainable development through diplomacy, the economy, trade, agriculture, fishing, the conservation of resources and ecosystems, culture, science, and education. The IOC regulates illegal fishing as well, mostly tuna and tuna-related fisheries.

Regional Convention for the Conservation of the Red Sea and Gulf of Aden Environment (The Jeddah Convention (established in 1982))¹³⁰. This convention was the result of a Regional Intergovernmental Conference and supported by UNEP. It provides an important basis for environmental cooperation in the Region. The Regional Intergovernmental Conference also adopted a "Programme for the Environment of the Red Sea and Gulf of Aden (PERSGA)," and established a Secretariat for the Programme in Jeddah. Additionally, the Conference produced two important tools: (a) an "Action Plan for the Conservation of the Marine Environment and Coastal Areas in the Red Sea and Gulf of Aden"; and (b) a "Protocol Concerning Regional Cooperation in Combating Pollution by Oil and Other Harmful Substances in Cases of Emergency." These provisions are complemented by those of MARPOL and the Basel Conventions. Participating Parties to the Jeddah Convention include: Djibouti, Egypt, Jordan,

¹²⁷ <http://www.cti-secretariat.net/>

¹²⁸ http://www.icsf.net/icsf2006/jspFiles/eastAfrica/statement/english/statement_2008.jsp

¹²⁹ <http://www.fao.org/newsroom/en/news/2007/1000608/index.html>

¹³⁰ <http://www.persga.org/inner.php?id=61>

Palestine, Saudi Arabia, Somalia, Sudan and Yemen. In addition to the Convention, the Conference produced and signed another important instrument, which is also legally binding: the "Action Plan for the Conservation of the Marine Environment and Coastal Areas in the Red Sea and Gulf of Aden." While, as the case in all international and regional conventions, the Jeddah Convention is a legally binding document, it does not include specific control measurements and actions. Hence, the mechanisms of developing associated protocols allow countries for a wide range of actions to be agreed upon on specific problems.

The Kuwait Regional Convention for the Co-operation on the Protection of the Marine Environment against Pollution from Land-Based Sources , 1978 (Kuwait Convention)¹³¹. Through this convention, the governments of Bahrain, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates agree to coordinate efforts to protect the marine environment. The Convention was adopted with the objective to ensure that development projects and other human activities do not in any way cause damage to the marine environment, jeopardize its living resources or create hazards to human health. Another objective of the Convention was the development of an integrated management approach to the use of the marine environment and the coastal areas in a sustainable way which will allow the achievement of environmental and developmental goals.

The Protocol for the Protection of the Marine and Coastal Environment of the Western Indian Ocean from Land Based Sources and Activities (LBSA Protocol)¹³². The LBSA Protocol was added to the Nairobi Convention by the UNEP in 2010. It applies to activities that cause pollution in ports and harbors that contribute to marine and coastal pollution and degradation. These can be point-sources, diffuse sources, and transboundary sources of pollution and harmful activities. Countries under this agreement have yet to ratify the instrument, however, there are present efforts both to ratify and implement the Protocol. It is expected that the LBSA Protocol will contribute to the regional and global efforts to protect the marine and coastal environment of the WIO region from land based sources and activities causing pollution and degradation.

Locally Managed Marine Areas¹³³. Locally managed marine areas (LMMAs) are marine areas that are managed at a local level by the coastal communities, landowning groups, partner organizations, and/or collaborative government representatives for sustainable use. The way in which LMMAs are managed is extremely variable, and many of the more formally regulated LMMAs belong in the regulatory mechanism section of this report. However, less formally regulated, and/or less known LMMAs, may be considered a type of conservation effort, thus are included in the Conservation Effort portion of this report. Most LMMAs restrict resource use, and many contain permanent, temporary, or seasonal fishery closures as well as other fisheries controls. In the Indo-Pacific, LMMAs are prevalent in parts of Melanesia, including Fiji, the Solomon Islands, and Vanuatu, and appear to be effective at controlling overfishing. An additional advantage of such local management is that the concept can be rapidly transmitted between neighboring communities and islands (Burke *et al.* 2011).

¹³¹ <http://maritimesafety.pmo.ir/marineenvironmentprotection-regionaltreaties-kuwaitconvention-en.html>

¹³² http://www.unep.org/NairobiConvention/LBSA_NCText_SAP_Workshop/index.asp

¹³³ <http://www.lmmanetwork.org/>

Mangroves for the Future¹³⁴. This is a regional initiative coordinated between the UNDP and IUCN and local governments, non-governmental organizations, and community-based organizations in India, the Maldives, Indonesia, Sri Lanka, Seychelles, and Thailand promotes coastal ecosystem management of mangrove habitat, lagoons, estuary, and seagrass systems.

The Micronesia Challenge (launched in 2006)¹³⁵. This initiative is a commitment between Micronesian governments to balance the need to use their natural resources today between the need to sustain those resources for future generations. The five Micronesian governments of the Republic of Palau, the Federated States of Micronesia, the Republic of the Marshall Islands, the U.S. Territory of Guam and the Commonwealth of the Northern Mariana Islands all committed to “effectively conserve at least 30 percent of the near-shore marine resources and 20 percent of the terrestrial resources across Micronesia by 2020.” It is supported by a number of nationally and internationally recognized organizations including TNC, CI, MCT, NOAA, DOI, SPREP, SPC, USFWS, USFS, CCN, LMMA, RARE, SOPAC, and FORUM.

The Middle East Peace Park¹³⁶. This park originated from a special Research and Monitoring Workshop, hosted by the Aqaba Regional Authority and funded by the Middle East Regional Cooperation Program (MERC), held in Aqaba in December 1996. As a result of this workshop, Israel and Jordan have developed a project for coordinated management and monitoring of a Bi-national Marine Peace Park in the Gulf of Aqaba. This project involves collaboration between the Aqaba Regional Authority (ARA) and the Israel Nature Reserves Authority (NRA) with the participation of the Marine Science Station (MSS) in Aqaba and Israel’s Inter-university Institute (IUI) as research agencies. Two million dollars for this three-year program is being provided by MERC with contributions in kind from Israel and Jordan, and additional funding by the Jordan Global Environmental Facility sponsored by the World Bank. The project is being coordinated by the NOAA. Both Israel and Jordan look at this program as the basis for longer term collaboration in the future.

The Mtwara-Quirimbas Complex¹³⁷. A shared park between Tanzania and Mozambique was created to reduce pressure on near-shore fisheries and to assess, monitor, conserve and restore coral reefs, mangroves, and seagrass beds.

The Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (The Nairobi Convention) (signed in 1985; came into force in 1996; amended in 2010)¹³⁸. All ten Eastern African countries have ratified the convention and include: Comoros, France, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, Somalia, Tanzania, and the Republic of South Africa (Contracting Parties). The convention provides a mechanism for regional cooperation, coordination and collaborative actions, and enables the Contracting Parties to harness resources and expertise from a wide range of stakeholders and interest groups towards solving interlinked problems of the coastal and marine environment. Activities set out by the Nairobi Convention include: assessing pollution

¹³⁴ <http://www.mangrovesforthefuture.org/index.html>

¹³⁵ <http://www.micronesiachallenge.org/>

¹³⁶ http://celebrating200years.noaa.gov/magazine/mideast_peace_park/welcome.html

¹³⁷ <http://eame.wiomsa.org/tanzania.html>

¹³⁸ <http://www.unep.org/nairobiconvention/>

loads affecting the marine environment, and their harmful effects; setting up monitoring programs and development strategies; preparing and implementing a regional action plan; and strengthening capacity of coastal States to intervene in case of accidents and emergencies.

The Nature Conservancy's (TNC) Improving Resiliency to Climate Change project in Mozambique¹³⁹. This project is providing climate change technical assistance to partners in Mozambique by identifying coral reef communities that are more naturally resistant to bleaching events and stresses. The main goal of this project is that by intentionally identifying and protecting these species, the entire reef community has an increased ability to adapt to climate change, and continues to support spawning grounds for a fishery that feeds thousands of artisanal fishers.

Northwest Pacific Action Plan (NOWPAP)¹⁴⁰. This plan was adopted in 1994 by the four Member States, namely the People's Republic of China, Japan, the Republic of Korea and the Russian Federation as a part of the UNEP Regional Seas Programme. The origin of the Action Plan dates back to 1991 when a regional meeting of experts and national representatives from the four countries was held in Vladivostok to develop a regional seas action plan. The implementation of NOWPAP is financed mainly by contributions from the Members. Implemented activities of NOWPAP affecting coral reefs include long term biodiversity assessments, a review report for the state of the marine environment in the region, development of a regional action plan on marine litter and an overview of the protection and management of the marine and coastal environment of the Northwest Pacific Region.

The Convention for the Protection of Natural Resources and Environment of the South Pacific Region, 1986 (Noumea Convention)¹⁴¹. This convention provides a broad framework for co-operation in preventing pollution of the marine and coastal environments. Each Party is committed to endeavor to participate in bilateral or multilateral agreements that protect, develop and manage the marine and coastal environments of the Convention Area. SPREP is the Secretariat for this convention. It carries out institutional arrangements, calls meetings of Parties, and acts as an information clearing-house.

The Pacific Oceanscape Initiative. This is a multi-national agreement to address all ocean issues from governance to climate change. It effectively represents the largest marine conservation initiative in history. This agreement specifically covers the management and conservation of coral reefs via addressing threats from climate change and the establishment of multiple use marine protected areas. The participating countries include: Australia, Cook Islands, Federated States of Micronesia, Republic of Kiribati, Nauru, New Zealand, Niue, Palau, Papua New Guinea, the Republic of the Marshall Islands, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu (Pratt and Govan, 2010).

Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA)¹⁴². This is an intergovernmental body dedicated to the conservation of coastal and

¹³⁹ <http://www.nature.org/ourinitiatives/regions/africa/wherewework/mozambique.xml>

¹⁴⁰ <http://www.nowpap.org/>

¹⁴¹ http://seanet.org.nz/index.php?option=com_content&task=view&id=177&Itemid=75

¹⁴² <http://www.persga.org/index.php>

marine environments of the Red Sea, Gulf of Aqaba, Gulf of Suez, Suez Canal, and Gulf of Aden surrounding the Socotra archipelago. Countries that have joined PERSGA include Djibouti, Egypt, Jordan, Saudi Arabia, Somalia, Sudan, and Yemen. The mission of PERSGA is as follows: to perform the functions necessary for the implementation of the Jeddah Convention on a sustained and cost effective basis, aiming at rational use of living and non-living marine and coastal resources in a manner ensuring optimum benefit for the present generation while maintaining the potential of that environment to satisfy the needs and aspirations of future generations. PERSGA seeks to remedy destructive fishing practices and over-exploitation of fishery resources by implementing various management plans. Some applicable programs included in these plans are monitoring ornamental fish trade and conducting creel surveys. Parrotfish are specifically mentioned in creel surveys from the “Status of the Living Marine Resources in the Red Sea and Gulf of Aden and Their Management.” A program instituted by this organization ameliorates the impacts on coastlines and mangrove areas from future development of shrimp and fish farms.

The Red Sea Regional Coral Nursery. This nursery is managing reef restoration through the Gardening Concept. Due to many coral species’ ability to reproduce via fragmentation, creating coral nurseries for the purpose of restoring degraded reefs has become a popular rehabilitation tool. In this project, large pools of farmed corals and spats are constructed within specially designed underwater coral nurseries. These nurseries are installed in sheltered zones where the different types of coral recruits are maricultured to sizes suitable for transplantation. This practice also makes use of minute size coral fragments that would have died in direct transplantation. Then, nursery-grown coral colonies, in different size and species combinations, are transplanted to degraded reef sites. Various coral nurseries are now being used in numerous countries around the world to help restore coral reefs (Rinkevich, 2007).

Reef Check Australia¹⁴³. This is a not-for-profit environmental organization that engages the Australian community in coral reef conservation. Reef Check Australia recruits a global network of volunteers to regularly monitor and report on reef health. The aims of this organization are to protect and help to rehabilitate Australia's coral reefs through combination of community education, to raise awareness of the key issues, and scientific research, to collect data that contributes to solutions. Reef Check Australia runs a number of conservation programs and projects including educational activities and monitoring programs. The Coral Trout Search program enables both recreational and commercial fishers, as well as snorkelers, to help monitor the populations of vital fish stocks that are essential to the sustainability of the reef. The EcoAction program includes material to help snorkelers and new divers, as well as casual reef visitors, to identify some of the vital species that find a home in our coral reefs. Reef Check Australia has a unique way of involving the general public in coral reef conservation via Scuba Monitoring Programs. Their volunteers are recreational scuba divers who monitor the health of reefs around Queensland (with future plans to spread the network to wider Australia and the Indo-Pacific). All volunteers complete one of PADI’s accredited Training courses to qualify as Coral Reef Surveyors. The Great Barrier Reef Project is run with support of dive operators in Cairns, Port Douglas and Airlie Beach, conducts at least annual surveys at over 25 selected sites.

¹⁴³ <http://www.reefcheckaustralia.org/>

Regional Coastal Management Programme of Indian Ocean Countries (ReCoMap)¹⁴⁴. An agreement that came out of the Nairobi Convention between the Comoros, Madagascar, Mauritius, Kenya, the Seychelles, Somalia, and Tanzania that promotes sustainable use of marine and coastal resources with the goal of reducing the toll on coastal and marine resources. It also involves finding ways to adapt and implement national plans for Integrated Coastal Zone Management (ICZM).

Regional Commission for Fisheries (RECOFI) (1999)¹⁴⁵. This commission includes Bahrain, Iran, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates and its purpose is to promote the development, conservation, management, and best utilization of living marine resources and the development of aquaculture in the region. They also combat illegal, unreported, and unregulated (IUU) fishing.

Regional Organization for the Protection of the Marine Environment (ROPME)¹⁴⁶. The ROPME Sea Area covers eight states that joined forces in 1978 to adopt the Kuwait Regional Convention for Cooperation on the Protection of the Marine Environment from Pollution, otherwise known as the Kuwait Convention and four associated Protocols. These eight states include Bahrain, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. In the same year, an Action Plan for the region was adopted to address activities relating to oil pollution, industrial wastes, sewage and marine resources. Projects under the Action Plan include coastal area management, fisheries, public health, land-based activities, sea-based pollution, biodiversity, oceanography, marine emergencies, GIS and remote sensing to environmental awareness and capacity building. The ROPME became the secretariat for the Kuwait Convention and Action Plan in 1982.

Secretariat of the Pacific Community (SPC)¹⁴⁷. The SPC provides technical and policy advice and assistance, training, and research services to 26 member countries in the Pacific. The member islands territories and countries are: American Samoa, Cook Islands, Federated States of Micronesia, Fiji Islands, French Polynesia, Guam, Kiribati, Marshall Islands, Nauru, New Caledonia, Niue, Northern Mariana Islands, Palau, Papua New Guinea, Pitcairn Islands, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu, Wallis and Futuna, Australia, France, New Zealand, and the United States of America. There are six technical divisions within the SPC that strive to help the Pacific community sustainably manage its resources. The SPC contains an Education, Training and Human Development Division; a Public Health Division; a Fisheries, Aquaculture and Marine Ecosystems Division; a Land Resources Division; an Economic Development Division; and an Applied Geoscience and Technology (SOPAC) Division. Other services the SPC provides are through the Strategic Engagement, Policy and Planning Facility and the Statistics for Development Programme. The Coastal Fisheries Programme within the Fisheries, Aquaculture and Marine Ecosystems Division ensures coastal fisheries, nearshore fisheries and aquaculture are managed and developed sustainably. They conduct workshops and produce media information available to fishers and managers. Coral Reef Initiative for the South Pacific (CRISP) (see above for more information) is hosted by the SPC.

¹⁴⁴ <http://www.recomap-io.org/>

¹⁴⁵ http://www.fao.org/world/regional/rne/statut/region/page57/page57_en.htm

¹⁴⁶ <http://www.ropme.com/>

¹⁴⁷ <http://www.spc.int/>

South Asia Cooperative Environmental Programme¹⁴⁸. This organization is a coordinated program between Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka that is aimed protecting and managing the marine environment and related coastal ecosystems.

South Asia Seas Action Plan (1995). A plan developed for Bangladesh, India, Maldives, Pakistan, and Sri Lanka to protect and manage the marine environment and related coastal ecosystems of the region, mainly focused on coral reef management. This plan includes integrated coastal zone management, developing national and regional oil spill contingency plans, human resources development, and protection of the marine environment from land based sources of marine pollution (South Asia Co-operative Environment Programme, 1995).

South Pacific Biodiversity Conservation Programme. This program ran from 1992 to 2001 and was funded by the Global Environment Facility and the Australian Agency for International Development, and managed by the South Pacific Regional Environmental Programme and the United Nations Development Programme. It was designed help develop strategies for the conservation of biodiversity using the principle of sustainable use in the South Pacific. The program identified and initiated a series of strategic conservation projects in fourteen South Pacific countries. The implementing agency was the South Pacific Regional Environmental Programme, an independent, intergovernmental environmental agency. Specific objectives include establishing a series of conservation areas, protecting terrestrial and marine species that are threatened or endangered in the Pacific region, identifying new areas important to biodiversity conservation, improving awareness in Pacific Island countries of the importance of conserving biodiversity, and improving capabilities and cooperation among different sectors of society in the Pacific Islands (Baines *et al.* 2002).

South Pacific Regional Environment Programme (SPREP)¹⁴⁹. This regional organization was established by the governments and administrations of the Pacific region to serve as a conduit for environmental interests in this area. The SPBCP (see above) is funded through the SPREP. Other notable projects the SPREP is involved in include Climate Change, Coastal Management Programme, Coastal Systems Living Resources, Conservation Area Training, Community-based Conservation, Coral Reef Initiative, Mangrove Task Force, Marine Pollution, National Biodiversity Action Plans, and Wetlands Management.

US Coral Reef and Reef Fisheries Conservation Efforts. As described in the Conservation Efforts portion of Appendix A, in the US there are numerous federal and non-federal government programs intended to address conservation of US coral reefs. Some of the non-federal programs also address management of coral reef fisheries.

World Wildlife Fund (WWF) Coastal East Africa Eco-region¹⁵⁰. This is one of the WWF's largest and most ambitious marine conservation initiatives covering the countries from Somalia to South Africa. Projects in this region focus on conservation to improve socioeconomic status,

¹⁴⁸ <http://www.sacep.org/>

¹⁴⁹ <http://www.sprep.org/sprep/about.htm>

¹⁵⁰ <http://www.worldwildlife.org/what/wherewework/coastaleastafrica/projects.html>

empowering local communities, creating sustainable fisheries, and protecting coastal forests. WWF and its partners work with communities to tackle illegal fishing, establish new national parks, educate children and others about conservation, and manage tourism to benefit communities and protect the resources upon which they rely.

World Wildlife Fund (WWF) Conservation of Coral Reefs in the Persian Gulf project¹⁵¹. The aim of the project is to assist regional governments and NGOs in the development and implementation of a comprehensive conservation strategy for coral reefs in the Persian Gulf that takes into account the unique habitat and biodiversity and the local community in this area. It also aims to increase regional awareness of the importance and uniqueness of coral reef habitats for this region. The project includes the development of published materials on coral reef habitat, distribution, and identification in the region. Additional objectives include mapping and inventorying reef habitats, investigating diversity, assessing reef fish and benthic life status, evaluating approaches to reef rehabilitation, building capacity for national research personnel, and increasing stakeholder awareness in the Persian Gulf.

World Wildlife Fund (WWF) Mafia-Kilwa-Rufiji Seascape Programme¹⁵². The Mafia-Kilwa-Rufiji Seascape Programme promotes improved socio-economic well-being of coastal communities in Rufiji, Mafia, and Kilwa communities in Tanzania through sustainable fishing practices, protecting threatened habitats and species, and natural resource management of marine and coastal resources.

¹⁵¹ http://wwf.panda.org/who_we_are/wwf_offices/united_arab_emirates/?uProjectID=AE0007

¹⁵² http://wwf.panda.org/what_we_do/where_we_work/east_african_coast/publications/?21998/Rufiji-Mafia-Kilwa-Seascape-Programme-Tanzania