

THE SUMMARY OF THE 4th APEC BLUE ECONOMY FORUM

– Advancing blue economy cooperation: Pathway and practice

28-29 June, 2016

Contents

1. INTRODUCTION
2. HIGHLIGHT -FORUM SESSIONS AND MAIN POINTS OFPRESENTATIONS
 - 2.1 Opening Session
 - 2.2 Keynote Speech
 - 2.3 Session 1: Technical Innovation and Development Approach of Blue Economy
 - 2.4 Session 2: Best Practices Sharing--Regional Development and Industrial Development of Blue Economy
3. CONCLUSION
4. ANNEX

THE SUMMARY OF THE 4th APEC BLUE ECONOMY FORUM

28-29 June, 2016, Haikou, People's Republic of China

1. INTRODUCTION

The 4th APEC Blue Economy Forum was held in Haikou, People's Republic of China from June 28th, 2016 to June 29th, 2016. This Forum was sponsored by the Department of International Cooperation of State Oceanic Administration, P. R. China and Haikou municipal Government and organized by APEC Marine Sustainable Development Center/ Third Institution of Oceanology of the State Oceanic Administration, Management Committee of Haikou National Hi-tech Industrial Development Zone and Haikou Municipal Ocean and Fisheries Bureau. Taking “Advancing Blue Economy Cooperation: Pathway and Practice” as the theme, this Forum attracted nearly 150 representatives from 13 member states of APEC economies in Asian-Pacific region, Cambodia, Sri Lanka, Tuvalu and 4 international organizations. The 13 member states of APEC economies included Chile, Canada, China, Hong Kong, Indonesia, Malaysia, Papua New Guinea, Philippines, Russia, Singapore, Thailand, America and Vietnam. The 4 international organizations included Intergovernmental Oceanographic Commission (IOC), the United Nations Development Program (UNDP), World Oceans Commission (WOC) and East Asian Sea Environmental Management Partnership (PEMSEA).

This Forum provided a valuable opportunity of communication and a platform of cooperation for government bodies and research centers in and around Asia, and had realized its main purpose and significance- to provide the platform of cooperation and practice for the development of blue economy. The Forum involved a series of issues under discussion including the effective pathways of technical innovation and development of blue economy, successful experience of practice of blue economy, and the conception of advancing the blue economy development and improving the blue economy cooperation with the help of different industries.

2. HIGHLIGHT -FORUM SESSIONS AND MAIN POINTS OFPRESENTATIONS

The Forum included the Opening Session, the Keynote Speech, and the two special reports on “Technical Innovation and Development Approach of Blue Economy” and “Best Practices Sharing--Regional Development and Industrial Development of Blue Economy”.

2.1 Opening Session

The opening session was chaired by Dr. Zhang Haiwen, Director General of the Department of International Cooperation of SOA. Five speeches were delivered by the Deputy Administrator of SOA, Mr. Chen Lianzeng; Vice Governor of Government of Hainan Province, Mr. Wang Lu; UNDP Assistant Country Director, Mr. Carsten Germer; Representative from the Office of APEC Senior Official of Ministry of Foreign Affairs, PRC, Mr. Wang Tao; and the Executive Director of AMSDC & Director General of TIO, Dr. Yu Xingguang respectively.



Mr. Chen Lianzeng pointed out that the Chinese government has attached great importance to the implementation of APEC regional marine cooperation and APEC cooperation proposal. In recent years, the State Oceanic Administration has actively coordinated the relevant administrations and institutions in China to participate in APEC projects, and has practically cooperated with APEC members in various marine fields, which has achieved fruitful success. Under the direction of the five development concepts of “initiation, coordination, green, open and sharing” and the proposal of the establishment the 21st Century Maritime Silk Way, China has

improved the continuous development of blue economy, and is looking forward to the joint promotion of the world's blue economy development by the APEC members. Mr. Chen Lianzeng suggested that APEC members could take full advantage of the platform of APEC Blue Economy Forum to promote the communication and cooperation, to share the experience of the practice of blue economy, to enhance the communication and cooperation among governments, enterprises and scientific research institutions, and to form the pragmatic cooperative mechanism of the improvement of blue economy development within the APEC framework.



Mr. Wang Lu pointed out that this Forum would further advance the sustainable development of blue economy under the APEC mechanism, and would greatly improve the development of blue economy of Hainan Province. Being a tropical province, Hainan has vast maritime space, plenty of harbors, excellent climate conditions, rich marine resources and a marine ecological environment that is kept well. All the above conditions can form a solid foundation for the development of blue economy. Hainan Province will seize the significant historical opportunities of China's strategy of building an ocean power and strategy of "One Belt and One Road" to make the strategy of building a powerful ocean province, to enhance the marine scientific research, cultivate and improve marine industries such as marine tourism, fisheries, marine biological industry and marine oil and gas, further advance the cooperation and development of marine industries, improve the ability of taking advantage of marine resources and protecting ecological environment and finally to make active contribution to the development of China's blue economy.



Mr. Carsten Germer stated blue economy would play an important role in promoting economic growth, which has to be done sustainably and be aligned with the 2030 Agenda consists of 17 Sustainable Development Goals (SDGs). For blue economy this also means be aligned with ecosystem conservation in the ocean and coastal areas. The United Nations Development Program (UNDP) is looking forward to a closer cooperation with China in the area of blue economy to jointly improve the development of blue economy and the protection of global oceans.



Mr. Wang Tao pointed out that it was the 25th year after China's participation in APEC. APEC has been a significant bridge connecting China and the world, and the regional opening and cooperation has brought a win-win outcome. He appreciated the efforts the State Oceanic Administration had made to advance the cooperation of blue economy and the success that had achieved, and expressed his belief that surely the

regional development of blue economy would be brought to a new stage through the cooperation among APEC economies.



Dr. Yu Xingguang said that APEC Marine Sustainable Development Center has made active efforts to advance the development of blue economy in Asia-Pacific Region since its establishment. APEC Marine Sustainable Development Center has successfully held three APEC Blue Economy Forums, put forward the “Blue Economy Demonstration Project” initiative, and has become an important platform of promoting blue economy in APEC, and attached much more focus on blue economy of international community. He also emphasized that after the process of putting forward the initiative and reaching consensus, the blue economy has currently developed into the practice stage by many parties. Sharing experiences in practicing blue economy could further promote the development of blue economy in Asia-Pacific region. This Blue Economy Forum would do a great deal of good for boosting practical cooperation in marine area and fastening practicing blue economy.



After the opening ceremony, it was the official start of the report part of the Forum, which included the keynote speech, the two special report sessions and the final part of discussion and conclusion. The contents summary of the forum reports is as follows.

2.2 Keynote Speech

This session included 7 reports made by representatives from China, Singapore, Intergovernmental Oceanographic Commission (IOC), West Pacific Branch Commission and World Oceans Commission (WOC) as the lecturers. This session was hosted by Dr. Chen Bin, Deputy Director General of TIO. This session attached importance to the effect of strategic planning and adaptive policies on the development of blue economy, the construction of coastal cities and the improvement of blue economy, the influence of climatic change on the blue economy, and measures of local governments to advance the development of blue economy, etc.



Presentation 1

The first presentation of keynote speech was given by Mr. Zhan Zhanhai, the Director General of the Strategic Planning and Economic Department, SOA, China. He spoke on the topic “Advancing Blue Economy Cooperation, Promoting Common Ocean Well-being”. Mr. Zhang started by highlighting the importance of ocean, especially in china. Then he proceeded to introduce that the Chinese government has attached great importance to the sustainable development of marine economy and opening cooperation. Mr. Zhang shared three points for promoting mutually beneficial cooperation and common well-being with the connection of ocean in China. First point is to develop blue economy sustainably, including promoting harmony between

the ocean and human, promoting innovation-driven development, and advancing inclusive cooperation; Secondly, as Mr. Zhang said, is to focus on the plan's leading role as well as the policy's guiding role, such as focusing on the plan leading role of the marine economic development of China, putting emphasis on strengthening the planning of marine spatial layout, and carrying out "the pilot project of national marine economy"; Thirdly, is to advance the construction of 'the 21st Century Maritime Silk Road', and expand the cooperation on the blue economy constantly. Finally, Mr. Zhang emphasized that the State Oceanic Administration of China would like to work with all economics together to promote the development of blue economy and the increase of oceanic well-being, to construct 'the 21st Century Maritime Silk Road' with political trusts, economic integration, cultural inclusiveness.

Presentation 2

The second presentation was presented by Paul Holthus, the Chief Executive Officer of World Ocean Council. He assessed the "Sustainable Development of Oceans and Coasts: The Role of The Private Sector". First of all, Mr. Holthus discussed that the private sector was a fundamental, essential partner in the sustainable development of ocean and coastal space, resources and ecosystems in support of responsible economic growth. He indicated that ocean sustainable development cannot succeed without constructive collaboration and leadership by those undertaking ocean economic activities, i.e. the ocean business community. The ocean is increasingly crowded - with more users and a greater range, intensity and duration of use. This creates complex challenges for ocean businesses, including: conflicts among users, cumulative environmental impacts, competition between economic activities, and conflicts with other values, e.g. marine protection. Mr. Holthus also explained that many companies were making significant efforts and progress in understanding, developing and implementing responsible ocean economic operations. However, the best efforts by a single company, or an entire industry sector, or one country were not enough. Mr. Holthus finally presented that Ocean industry leadership and collaboration in addressing shared responsibilities, stewardship and science in support of ocean sustainable development could bring benefits such as synergies and economies of scale and promote the development of public-private partnerships. Leadership companies are increasingly working on international, multi-sectoral ocean

sustainability leadership through the World Ocean Council (WOC), the only global, multi-sectoral business leadership alliance for “Corporate Ocean Responsibility”



Presentation 3

The third presentation by Mr. Wen Bin, the Vice Mayor of Haikou Municipal People's Government, was based on the topic “Extending the Blue Economy Development and Building the Charming Coastal City”. Mr. Wen began by outlining the rich tourism resource and good ecological environment of Haikou city. In his view, Haikou city has positively promoted the structural reform of supply chain of ocean economy, which made the Blue Economy achieved great development and advance. Nowadays, Blue Economy has become one of the important components and new growth point of Haikou's economy. Furthermore, the marine economy of Haikou has maintained a rapid development, which also at the same time attaches great importance to marine environment protection and promotion of marine ecological civilization construction. The measures included following aspects : 1) Strengthened Education and Publicity of the Ocean, and carried out activities for the purpose of advertising the ocean knowledge into communities, schools, inhabitants' zones in a planned way. 2) Restored the coastlines of West Coast and East Coast, and developed tourism spots with ocean scenery and tropical features for citizens. 3) Implemented the islands renovation and restoration . 4) Carried out Mangroves conservation and restoration. 5) Took the “PPP + EPC ++ tracking audit+ all-time supervision” pattern to treat water pollution. In his conclusion remarks, Mr. Wen emphasized that Haikou would extend the blue economy development, scientifically explore ocean resources, protect maritime ecological environment, as well as make contributions to establish a

beautiful international tourism island.



Presentation 4

The fourth presentation by Mr. Zhu Wenxi, the Head of WESTPAC, Intergovernmental Oceanographic Commission of UNESCO, assessed the “Building the knowledge base and capacities for blue growth”. First of all, Mr. Zhu discussed that the ocean was very important for human and a source of social and economic wealth. We need to develop blue economy because it is a sustainable development framework for poverty eradication as well as sustained economic growth, and founded upon the incorporation of real value of natural capital into all economic activities. Mr. Zhu also indicated that blue economy required knowledge base and capacities for blue growth, and the science for blue economy including research, observations, data management, forecasting, and information for societal benefit. He gave four main points as the scientific ways to improve the development of blue economy. This is concluded as follows: understanding the ocean ecosystems; ocean planning that increased predictability and certainty, reduced conflicts among users and preserved critical ecosystem services; increasing scientific knowledge, developing research capacities, and transferring marine technology; improving ocean health and enhancing the marine biodiversity.



Presentation 5

The speaker, Dr. Poh Poh Wong, the visiting associate professor of University of Adelaide spoke on the topic “Climate change impacts on the coasts and implications for East Asian blue economy”. He began by introducing that climate change was derived by sea level, ocean temperature and ocean acidity. The speaker then introduced that Asia Pacific is one of the most disaster prone regions in world, accounts for 90% of increase in people affected by intense disasters from 1971–1980 to 2001–2010, and climate change in East Asia exacerbated the impacts from natural disasters and coastal degradation. The increasing sea surface temperature and ocean acidification declined in coral-dominated reefs and other calcified marine organisms. Another challenge is that sea level rise caused increasing coastal flooding, coastal erosion and saltwater intrusion, which result in mangroves, salt marshes and seagrass beds declining. The presenter then reviewed the development of blue economy in APEC region and the talked about that developing blue economy would enhance the understanding of adaption and mitigation of the effects of climate change.



Presentation 6

The fifth presentation by Mr. Gu Gang, the Secretary of Haikou Hi-tech national Industrial Development Zone, was based on the topic “Sci-tech Innovation to Promote the Development of Marine Industry”. Mr. Gu Gang began by expounding on the importance of development of marine economy in Hainan. Then he introduced that Haikou was the center for development of marine industry in Hainan province, which relied on Haikou National Hi-tech Zone to promote and incubate the marine high-tech industry. Mr. Gu proceeded with her presentation stating that industrial park was one of the main forces of the development of sci-tech innovation, and has become the driving force of independent innovation in China. Innovation for speeding up the development of Marine Industry include strengthening the R&D capacity of marine science and technology, increasing the marine sci-tech personnel training and introduction, and supporting the development of technology and application of achievement transformation. To conclude, the presenter drew the attention of the audience to the current development status and development thoughts of marine industry in Haikou High-tech Zone. To promote the development of blue economy, Haikou High-tech Zone still needs to serve as the platforms of technology, talents, innovation.



2.3 Session 1: Technical Innovation and Development Approach of Blue Economy

This session was hosted by Dr. Sunoto, Advisor of Ministry of Marine Affairs and Fisheries of Indonesia, and Mr. Zhu Wenxi, the Head of WESTPAC,

Intergovernmental Oceanographic Commission of UNESCO. Eight reporters in this part came from the government agency, private sector and academic institution of China, Chile, Canada and Thailand, four of the APEC economies, and representatives from PEMSEA were also included. The influence of the current climate change and ocean acidification and the contribution of mangrove forest and blue carbon to blue economy development were mainly discussed in this part. Many effective political plans and plans about the ocean space, comprehensive management about the coastal zone and other blue economy management methods based on the management of ecosystem were shared, the elements and value of the Marine ecological capital were analyzed, classification system of blue economy was built and the approach of blue economy development has been reviewed and prospected.



Presentation 1

The first presentation by Mr. Pan Shijian, Former Deputy Mayor of Xiamen Municipal Government, looked at the “Ecological Construction and the Development of Blue Economy”. Mr. Pan expressed how ecological construction supported the development of blue economy in Xiamen City. He said that the ocean in Xiamen had been made full use and the marine natural ecosystems were affected by serious disturbance and destruction. Marine sedimentation phenomenon was considerably adverse. After ecological construction and remediation, Xiamen City achieved great economic and social benefits. At the same time, in the city construction process, through the legislation to limit human behaviors, islands and mangrove in Xiamen have been protected. Next, Mr. Pan introduced the protection of Xiamen beach. On one hand, beach repair brings the public and visitors leisure venues; on the other hand, Indo-Pacific Humpback Dolphins in the sea around Xiamen have been protected. Mr. Pan also gave another successful repair case of the city planning, Wuyuan Bay repair. The dam was removed, the Bay was back to the ocean, and the artificial beach was

built. Mr. Pan stressed that the blue economy was not only an economic issue, but also has created a beautiful home for future generations. Mr. Pan displayed, it was launched for “the three ship economy”, cruise, sailing and yacht, which has brought Xiamen City great economic benefits. Finally, Mr. Pan emphasized that the marine protection improved blue economy of Xiamen, and improved the trust and courage to live in the city for the citizen.



Presentation 2

The second presenter for this session was Mr. Jos éRetamales, the Director General of the Antarctic Research Institute in Chile, on his topic titled “Climate Change and Ocean Acidification on Antarctic Krill Sustainability”. Mr. Retamales began his presentation by summarizing opportunities and challenges of different research areas in Antarctica are, with emphasis on krill, key species in the Southern Ocean trophic web. He introduced that fishing of Antarctic krill started in the 70’s to quickly reached a peak of 528.000 Tons in 1982 and declined to around 100.000 Tons/year after the dissolution of the USSR. Krill harvesting grew again, mainly from three fishing grounds in the South Atlantic, but at this time there was a growing concern for the rapid environmental change in Antarctica, particularly loss of winter sea ice. A strong decline in krill since the mid-1970 s had been associated with changes in sea ice. Moreover, recruitment, driven largely by the winter survival of larval krill, was probably the population parameter most susceptible to climate change. It has been also shown that the increasing acidity of the Southern Ocean was a threat to krill embryos and larvae. Predicting changes to krill population was however complicated by an intense inter-annual variability in recruitment success and krill abundance,

explained by Mr. Retamales. In the conclusion, the presenter addressed the ecosystem-based management approach of krill fishery adopted by the Commission for the Conservation of Antarctic Marine Living Resources.



Presentation 3

Prof. Wang Xiaohui, the Chief Engineer of National Marine Data and Information Service, SOA, gave the third presentation on the topic “Blue Economy Classification System”. In this presentation, Prof. Wang stated by introducing the understanding of blue economy, which was interpreted in various forms. Then she defined Blue Economy as “The economic activities that directly or indirectly take place in ocean, put the goods and services into ocean activity and use the ocean resources as an input”. In her view, the core of blue economy included two aspects: ocean economy (market value) and ecosystem (non-market value). Based on this definition, Prof. Wang discussed the classification system of ocean economy, giving concrete examples of general framework of ocean economy accounting system in China, which had the following four aspects: principal accounting, means the gross ocean products (GOP) accounting; basic accounting including marine economy input-output accounting, marine economy fixed assets accounting, and marine foreign trade accounting; subsidiary accounting, consists of marine resources, environment and social activities, and marine natural resources accounting; ocean green accounting. Then the presenter introduced that non-market valuation for ecosystem was important in the classification system of ocean economy, because a strong blue economy also included indirect value, avoiding personal and financial losses by maintaining the climate, environment or protecting properties and infrastructure from flooding and erosion.



Presentation 4

The fourth presentation during this session was made by Dr. Gail Chmura, the Associate Professor of Department of Geography of McGill University in Canada, speaking on the topic “The Value of Preserving and Restoring Mangroves and Salt Marshes: Blue Carbon and More”. Dr. Gail Chmura presented that salt marshes and mangrove swamps provided us with a wealth of ecosystem services. These coastal marine ecosystems directly benefit the local communities by providing protection from storms, habitat for fish and wildlife and, if properly managed, harvestable wood. On a larger scale these ecosystems support of coastal fisheries. As the world’s most efficient carbon sinks, coastal marine ecosystems have global benefit as a natural means to mitigate climate change. Then Dr. Chmura introduced that carbon was stored in the wood of the mangrove trees, but the most important sink in both mangroves and marshes was in the mud, which stores what is branded as “Blue Carbon.” Their mud has been accumulating for thousands of years, encouraged by the past slow rise in sea level that allows the plants to accumulate enough organic matter and mud to maintain the level of the soil surface at sea level. Disturbance of Blue Carbon deposits could return millennia of stored carbon dioxide back to the atmosphere, exacerbating global warming. In final, Dr. Chmura emphasized that enhancement of Blue Carbon sinks was not just a means of mitigation of climate change, but also a means of adaptation to the sea level rise and increased storm energy that accompanies climate change.



Presentation 5

The fifth presenter, Mr. Chen Shang, the Research Fellow of The First Institute of Oceanography, SOA, spoke on the “Marine Ecological Capital: Assessment, Management and Investment”. In this presentation, Mr. Chen introduced that marine ecological resources were the important components of natural capital, and had direct or indirect contributions to humans’ social and economic production and provided benefits for humans, and ecological (or natural) capital has been the emerging issue in both scientific and economic communities. Then he defined Marine Ecological Capital Value as the monetized benefits for humans from marine ecological capital, including standing stock value of marine ecological resources and marine ecosystem service value. Constituent elements of Marine Ecological Capital Value should be considered in marine ecological capital assessment, including existing value of marine ecological resources and value of ecosystem services, he noted. Finally, Mr. Chen emphasized three aspects as the promotion of marine ecological capital assessment, which is concluded as follows: developing integrated assessment frameworks of both economic and ecological value; development of green credit and loan policy; increasing efforts for cooperation on marine ecological capital among APEC economies.



Presentation 6

The speaker, Dr. Suthida Kan Atireklap, the Fisheries Biologist of Department of marine and coastal resources, Thailand spoke on the topic “Marine resources and Their Application to Marine Spatial-Planning in Trat Province, Thailand”. Dr. Atireklap began by reviewing the status of the marine and coastal resources in Trat Province, stating that Trat province was one of the most important areas of marine and coastal resources in eastern part of the Gulf of Thailand, and consisted of mangrove forest, coral reefs and seagrass beds. Therefore, the marine biodiversity provides several habitats for marine life especially endangered species as well as fishing grounds. Increasing demands of marine resources and activities taking place in the marine area without appropriate management lead to loss of biodiversity, habitat depletion, irreversible damage to marine environment and conflicts among the various users. Marine spatial planning (MSP) is needed, which is proper allocation of human activities and resources, to solve the above conflicts, and poor management. The speaker then introduced her study, which considered marine spatial planning as a tool for the regulation and protection of marine environment. The results from her study not only identified status of marine resources, utilization and problems in demonstration sites in Trat province (Chang islands, Trat bay and Lam Glad-Had Lek) but also reviewed the community networks including resources and environmental conservation networks.



Presentation 7

The seventh presentation was presented by Dr. Zhu Xuan, the Associate Research Fellow of Institute of Oceanography Marine Development Strategy, SOA,

representing Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), titled “State of Oceans and Coasts Report”. Dr. Zhu introduced that as part of the GEF/UNDP regional initiative on scaling up the implementation of the Sustainable Development Strategy for the Seas of East Asia (SDS-SEA), PEMSEA was working with economy and non-economy partners on the development of regional and national State of Oceans and Coasts (SOC) reports. The first part of the proposed SOC report will focus on the state of ocean economy and ocean health and show the regional and country features. The second part of the report will focus on transforming the traditional ocean economy in countries to blue economy, addressing the sustainability and resiliency of ecosystems through innovative and sustainable economic activities, and environmental and resource management. The drivers of transformational change, innovations and sustainability will be examined. The third part of the report will focus on innovations in ocean stewardship and governance, and supporting mechanisms. The report will also present the opportunities for investment in blue economy, and the enabling conditions, including access to technologies, innovative financing mechanism and incentives to move forward the blue economy projects.



Presentation 8

Dr. Liu Zhenghua, the Deputy Director of APEC Marine Sustainable Development Center (MSDC), gave the last presentation of this session on the topic “Review of Previous APEC Blue Economy Forums and the Perspectives for Regional Blue Economy Development”. Dr. Liu started by discussing the major activities of AMSDC in recent years: promoting cooperation and development on Blue Economy among the

APEC economies; enhancing the capacity building for coastal and marine ecosystem-based management; information sharing and project/program implementation. As one of the most important activities of AMSDC, APEC Blue Economy forums had been hold for three times, and each of the forums achieved prominent achievements. From the summary of APEC Blue Economy forums, Dr. Liu discussed the perspectives for regional blue economy development, including policy level, actions for developing the blue economy, case studies and model programs, practice and experience sharing, promoting the ecosystem services of coastal ecosystem, and prosperity of blue economy to benefit the region. Base on the information sharing from more than 50 presentations in the previous APEC blue Economy forum, Dr. Liu presented recommendations for blue economy development as follows: mainstreaming blue economy; from concept to practice-guidelines; stocktaking the current status of blue economy; private sectors engagement; and concrete cooperation.



2.4 Session 2: Best Practices Sharing--Regional Development and Industrial Development of Blue Economy

The last session was chaired by Mr. José Retamales, the Director General of the Antarctic Research Institute in Chile, and Dr. Liu Zhenghua, the Deputy Director of APEC Marine Sustainable Development Center (MSDC). The session equally witnessed ten presentations with focus on Regional Development and Industrial Development of Blue Economy, laying emphasis on the opinions and field practice by representatives of APEC member countries and other business organizations and

experts.

Presentation 1

The first presentation by Dr. Sunoto, Advisor of Ministry of Marine Affairs And Fisheries of Indonesia, titled “Sustainable Ocean Management in Indonesia”. Dr. Sunoto stated that sustainable ocean management was necessary to maintain the balance between economic growth and environmental protection for the prosperity of the people. Indonesia is one of coastal states committed to developing an integrated ocean management by establishing Act 32 of 2014 on Ocean in which the blue economy is mandatory. Dr. Sunoto presented that a policy guideline on ocean management, economic development, and environmental protection was provided, and a national ocean framework was also initiated in dealing with at least three core issues: promoting good ocean governance as the guiding principles of achieving sustainable ocean management, a national policy framework as the guideline of policy implementation, and blue economy model of ocean-base economic development. Finally, Dr. Sunoto introduced that at the implementation level, the government needed to consider the following strategic actions: (1) implementing integrated sea use management, (2) developing blue economy zones, and (3) promoting blue economy models of investment. In order to promote effective sustainable ocean management among coastal states, Dr. Sunoto concluded by proposing a call for international cooperation with primary agenda in promoting blue economy , establishing an international guideline , information and expert exchange, and research, technology, and human resources development.



Presentation 2

The second presentation during this session was made by Ms. Wu Wei, manager of Shanghai Rainbowfish Ocean Technology Co., Ltd. Ms. Wu spoke on the topic “Establishing the Mobile Lab of Hadal Science to Promote the Development of Blue Economy”. Ms. Wu Wei first introduced that hadal was relating to, or constituting the zones of the oceans deeper than 6000 meters(18000 ft), and the hadal exploration was a broad concept included the developing of equipment and the research such as hadal geology, hadal ecology, hadal biology etc. The study of ecosystems in hadal zones is very important for understanding the processes responsible for plate tectonics and ocean chemistry, as well as the origins of life and mechanisms for speciation and it remains one of the least understood marine environments. Then Ms. Wu talked about Rainbowfish that planned to establish a complete platform on the hadal research and achievements transformation. Rainbowfish is now appealing for the attention to the hadal exploration as well as seeking for wider cooperation towards extensive applications. Finally, Ms. Wu concluded the relation between hadal exploration and blue economy: hadal exploration was an emerging and high-technology industry that actuated blue economy with comprehensive innovation; the cooperative research and application remained great potential value in economy; and the operating mode of this project might provide sample for similar project related to blue economy.



Presentation 3

The next presentation was given by Dr. Alan Resture, Environmental Consultant of Nukufetau Island Community, Tuvalu, titled “Seasonal Calendars Perspectives: The Tuvaluan Seasonal Calendar”. The speaker first introduced the Seasonal Calendar in

Nanumea, Tuvalu. He talked about that Tuvaluans had been living on their islands for over 100 years, and people's identity, culture, daily activities and livelihoods were centered around the landscape and their seascape. Planting of food crops depends on their knowledge of their traditional calendar, and fishing depends on the lunar cycle, the position of the moon, and the months of the year. Local ideas about the environment help local authorities plan well for the wellbeing of their communities in terms of Food security and Disaster preparedness. Understanding of traditional calendars is essential for community preparedness of Planting season, Spawning season, Cyclone/monsoon season and Droughts. Management and sustainably development of terrestrial and marine resources should depend on traditional knowledge of seasonal calendar and sound ecological knowledge of their environment, which will lead to Economic prosperity from, Environmental sustainability, Social well-being and Disaster preparedness. Talking about the future, Dr. Resture concluded that: seasonal calendar provided a wealth of information for assessing the status of the local environment and determine the sustainable activities of island communities; it was essential that the knowledge be revived in schools and local communities; seasonal calendars could be used as guiding tools for climate change policy.



Presentation 4

The fourth presentation for the last session was made by Mr. Agus Heri Purnomo, the Director of Research and Development Center for Marine and Fisheries Product Processing, Indonesia, spoke on the title “Progress and Relevant Future Direction of Blue Economy Development in Lombok Island, Indonesia.” Mr. Purnomo first presented the progress of blue economy development in Lombok Island and the

factors influencing the progress. The development was based on a pilot model that integrated the movement of different marine-based economic activities, aiming at sustainable maximum human welfare in the region, as he mentioned. Then Mr. Purnomo talked about the linkage between the progress and the encasing social and physical factors and suggested the future direction of blue economy development in the project location and in other places in the country. In general, he said, science-tech dissemination employed in the implementation of the blue economy project in the location successfully converted the mindset of local economy players from short-sighted subsistent exploitation to sustainable minimum waste ones. However, both biological as well as social-economic connectivity remains a challenging problem. In the end, Mr. Purnomo suggested that program integration between locations in the project area should receive more attention.



Presentation 5

The next presentation by Dr. Atikah Nurhayati, the Lecturer of Faculty of Fisheries and Marine Science, Padjadjaran University, assessed the “A Blue Economy Lesson from Cirata, Indonesia”. First of all, Dr. Nurhayati discussed that Cirata was undergoing an alarming rate degradation, which threatened the life of subsistent households and the future of other potential services. The increasingly dominating role of external landlords and the overuse of fish feed in aquaculture in the water are the main cause of the problems. She indicated that efforts which adopt the principles of blue economy were then placed to save the lost potential benefits, including empowering local people to improve their economic performance and bargaining power, development of local-material-based organic feed. Then she introduced an

aquatic plant locally called *enceng gondok*; the choice over this plant was at the outset targeted two objectives: (1) to provide cheap raw material for feed formulation, and (2) to increase water area available for aquaculture. Local people were trained to formulate the feed and operate their own aquaculture cages. The results showed that: (1) local people were increasingly able to improve their economic performance, (2) areal coverage available for aquaculture got wider, (3) the use of environmentally friendly feed increased. Finally she emphasized that the project has been going on for only four years but the outcome shows indications that the project's approaches can be continually implemented and adopted elsewhere.



Presentation 6

The sixth presentation was made by Mr. Weng Jiaqiang, the CEO of Dragon Clan group (China) Co., Ltd, and titled “Marine Biomaterials Boost the Transformation and Upgrading of Textile Industry”. First of all, Mr. Weng talked about the status of textile industry in China: it has always been one of the pillar industries for national economy; and as the first power in world textile economy, China takes up 53.8% of global total textile fiber processing. After an evaluation of the current state of textile industry, Mr. Weng gave an analysis on the utilization of marine biomaterials. He discussed that life was originated from the oceans. With high biological activity, marine biomaterials could improve the quality and value of textiles, produce ecological textile products of diversified functions (for example, skin-friendly, antibacterial, anti-flaming, anti-radiation, etc.) based on biological modification and proper chemical modification. Utilization of marine biomaterials served as an effective way to textile industrial upgrading. Then he introduced the production process of textiles that made

by different marine biomaterials, such as seashell, chitosan of healing properties, alginic acid fiber, and chitin. These textiles could be used in such fields as household clothing, biomedical materials, filtering material, protection, catalysis, energy, photo-electricity, foodstuff and cosmetics.



Presentation 7

The speaker, Dr. Tipamat Upanoi, the director of Marine and Coastal Resources Research Center, the Central Gulf of Thailand, spoke on the topic “Blue Economy Experience Sharing in Chumphon Province, Thailand: Problem learning”. Dr. Upanoi stated that coastal areas in Chumphon Province were very productive in marine and coastal resources such as mangroves, coral reefs, seagrass beds, endangered species and aquatic animals. Then she introduced that many laws for conservation of living marine resources have been adopted in Thailand. One of it was the recently law, namely the Promotion of Marine and Coastal Resources Management Act 2015. Under this act, valuable and unique marine habitat can be declared by Department of Marine and Coastal Resources (DMCR) as Marine Protected Area with community’s base participation. At beginning steps of Marine Protected Area Establishment in Chumphon Province, several concerns had learned. For example, decision making on the site selection must done with the stakeholder’s acceptance. Both Status and utilization of all marine and coastal resources have been mapped for basic information. Brainstorming from all stakeholders on problem analysis is also need for the effective plan and proper measures settlement. Finally, Dr. Upanoi emphasized that capacity building for government agencies, local governments and leader of communities especially the local people themselves were also important to be improved for the

outcome of natural resources and environmental sustainable management, which will aim to the objective to be a "Blue Economy".



Presentation 8

The eighth presentation was made by Mr. Thanh binh Nguyen, Deputy Director of Conservation and Aquatic Resources Development, Directorate of fisheries, ministry of agriculture and rural development, Vietnam. He spoke on the topic on



“Blue Economy: The Fisheries Sector of Viet Nam”. Mr. Nguyen first introduced his understanding on Blue Economy with the focus on development of sustainable fisheries sector of Viet Nam. Then Mr. Nguyen provided Viet Nam’s experience in how to develop the marine fisheries, aquaculture, processing and trade sustainably in term of socio-economics and environment. Blue growth initiatives in fisheries sector included increasing the resilience of small aquaculture farmers, developing innovative and sustainable production practices and management approaches, effective regulations in place and enforced, creating value chains for sustainable aquaculture, and pilot application of aquaculture planning and management tools. In the end of his presentation, Mr. Nguyen recommended on the development of blue economy as

follows: promoting innovation of relevant policies and management measures for sustainable development of ocean economy; improving marine environment monitoring and early warning ability particularly in the condition of climate change; making Policies to support small-scale fishermen and farmers.

Presentation 9

The ninth presentation during the afternoon session was made by Ms. Lin Xiufen, the General Manager of Xiamen Blue Bay Science and Technology Co. Ltd on the subject: Promoting High Purity Glucosamine Sulfate Industrialization via Science & Technology Innovation and System Reform. Beginning with an evaluation of the current state of marine biomedicine, Ms. Lin gave an analysis on the industrialization of High-Pure Glucosamine Sulfate and summed up with suggestions on industrializing the blue economy.



She explained that despite the high developmental potentials, marine industrialization however suffers low standards due to low technology and low add-on values. Her question is: How do we achieve the industrialization of marine biomedicine when the status of industrialization process and its research is out of balanced? Ms. Lin referred to the case of Glucosamine Sulfate, where despite its proven effectiveness on osteoarthritis, this product however cannot be produced on large scale due to technical limitation. The speaker emphasized that the key to achieve blue economy industrialization via scientific innovation is to combine cost control and green technology through interactions between research scientists and engineers at R&D stage and by creatively transforming current technology in order to reduce the cost of manufacturing etc. The presenter also noted the market access through innovative and systematic reform of industrialization. Ms. Lin wrapped up her presentation with a suggestion stating that to properly promote industrialization of the blue economy, enterprises should strengthen the international technology corporation, and create a long-term corporative system between enterprise and institutions.

Presentation 10

The Chairman of National Aquatic Resource Research and Development Agency of Sri Lanka, Dr. Anil Premaratne gave the last presentation on the topic “Sri Lanka Initiatives for Blue Economy and its Challenges”. Dr. Premaratne started by introducing the World Trend of growing population and Capture Fisheries. The Main Features of Blue Economy of Aquaculture were Novel aquaculture techniques, new breeds and Domesticated species of fish and shellfish. Dr. Premaratne introduced the main challenge of Blue Economy in Sri Lanka, and the methods to solve the problem. Research institutions, universities and training institutions have a key role to play for the environmental sustainability. Then Dr. Premaratne discussed inland aquaculture and culture based fisheries in reservoirs were being continued with the aim of providing fish and enhancing livelihoods for rural people in Sri Lanka. Introduction of proper species, selecting suitable culture cycles and small scale practices have avoided negative environmental consequences at present. He emphasized that when compared with global achievements in environmental sustainability through blue economy, their responsibility should be the protecting of the natural ecosystems while moving towards commercial aquaculture practices.



3. CONCLUSION

The summary was conducted by Dr. Chen Bin, Deputy Director General of TIO at the end. Dr. Chen Bin pointed out that the topic of “Advancing the Practice and Cooperation of Blue Economy” for this forum was selected based on the last three sessions of APEC Blue Economy Forum so as to further give full play of the

role of Blue Economy Forum as the platform. We should strengthen technological innovation of blue economy, promote the blue economic cooperation between members of APEC and explore & practice the development approaches for blue economy of APEC jointly through opening up and sharing. Dr. Chen Bin believed that this forum has built the platform for sharing of blue economic development approaches and technological innovation, widened the vision for blue economic development and opened up new approaches for further practical cooperation through face-to-face communication and the forum has achieved a complete success. Dr. Chen Bin provided some concluding comments on the APEC Blue Economy Forum based on the outcomes of the forum: Firstly, the development conditions of the APEC blue economy was suggested to be disentangled and summarized; secondly, blue economy was suggested to be developed based on the guarantee of the health of ecological environment; Thirdly, different regions and industries were suggested to strengthen blue economy practice persistently. At last, thanks for the support of every representative participated in the conference and the thanks for the efforts of every staff and volunteer who organized this forum.



ANNEX

Agenda of the Fourth APEC Blue Economy Forum

--Advancing Blue Economy Cooperation: Pathway and Practice

Jun 28-29, 2016 Haikou, China

Grand Ballroom, Haikou Marriott Hotel

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| June 27 | Registration | |
| June 28 | Forum | |
| 08:30-09:00 | Opening Ceremony | |
| Chair: Dr. Zhang Haiwen, Director General of Department of International Cooperation, SOA | 1. Welcome Address by Mr. Chen Lianzeng (Deputy Administrator of State Oceanic Administration); 2. Address by Mr. Wang Lu (Vice Governor of Government of Hainan Province); 3. Address by Mr. Carsten Germer (UNDP Assistant Country Director); 4. Address by Mr. Wang Tao (Representative of the Office of APEC Senior Official, Ministry of Foreign Affairs); 5. Address by Dr. Yu Xingguang (Executive Director of APEC Marine Sustainable Development Center & Director General of Third Institute of Oceanography, SOA). | |
| 09:00-09:10 | Signing Ceremony Chair: Mr. Gu Gang | |
| 09:10-09:40 | Group Photo and Coffee Break | |
| 09:40-12:00 | Keynote Speech | |
| | Topics | Speakers |
| Chair: Dr. Chen Bin, Deputy Director General of TIO | Developing Blue Economy towards Regional Cooperation and Improving Human Wellbeing | Dr. Zhang Zhanhai |
| | Sustainable Development of Oceans and Coasts: The Role of the Private Sector | Mr. Paul Holthus |
| | Extending the Space of the Development of Blue Economy, Building the Charming Coastal City--Haikou | Mr. Wen Bin |
| | Advancing Marine Science Cooperation, Promoting the Development of Blue Economy | Mr. Zhu Wenxi |

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| | Climate Change Impacts on the Coasts and Implications for East Asian Blue Economy | Dr. Wong Poh Poh |
| | Hi-Tech Promoting the Development of Blue Economy | Mr. Gu Gang |
| 12:00-13:30 | Lunch | |
| 13:30-15:20 | Session 1: Technical Innovation and Development Approach of Blue Economy | |
| Chair: Dr. Sunoto, Advisor of Ministry of Marine Affairs and Fisheries of Indonesia Mr. Zhu Wenxi, the Head of WESTPAC, Intergovernmental Oceanographic Commission of UNESCO. | Topics | Speakers |
| | Ecological Construction and Development of the Coastal City to Promote Blue Economy | Mr. Pan Shijian |
| | Climate Change & Ocean Acidification on Antarctic Krill Sustainability | Dr. Jose Retamales |
| | Blue Economy System | Prof. Wang Xiaohui |
| | The Value of Preserving and Restoring Mangroves and Salt Marshes: Blue Carbon and More | Dr. Gail Chmura |
| | Marine Ecological Capital : Assessment , Management and Investment | Prof. Chen Shang |
| | Marine resources and Their Application to Marine Spatial-Planning in Trat Province, Thailand | Dr. Suthida Kan Atireklap |
| | States of Oceans and Coasts Report | Dr. Zhu Xuan |
| | Review of Previous APEC Blue Economy Forums and the Perspective of Regional Blue Economy Development | Prof. Liu Zhenghua |
| 15:20-15:25 | Q & A | |
| 15:25-15:40 | Coffee Break | |
| 15:40-17:40 | Session 2: Best Practices Sharing--Regional Development and Industrial Development of Blue Economy | |
| Chair: Mr. Jos é Retamales, the Director General of the Antarctic Research | Topics | Speakers |
| | Sustainable Ocean Management in Indonesia | Dr. Sunoto |
| | Establishing the Mobile Lab of Hadal Science to Promote the Development of Blue Economy | Ms. Wu Wei |
| | Seasonal Calendars Perspectives: The Tuvaluan Seasonal Calendar | Dr. Alan Resture |

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| Institute in Chile, Dr. Liu Zhenghua, the Deputy Director of APEC Marine Sustainable Development Center (MSDC). | Progress and Relevant Future Direction of Blue Economy Development in Lombok Island | Dr. Purnomo Agus Heri |
| | A Blue Economy Lesson from Cirata, Indonesia | Dr. Atikah NURHAYA TI |
| | Promoting the Transformation and Upgrading of Textile Industry by Marine Biomaterial | Mr. Weng Jiaqiang |
| | Marine and Coastal Zone Management toward to Blue Economy in Chumphon Province | Dr. Tipamat Upanoi |
| | Blue Economy: The Fisheries Sector of Viet Nam | Dr. Nguyen Thanh Binh |
| | Innovation of Science and Technology and Institution to Promote Industrialization of Blue Economy | Ms. Lin Xiufen |
| | Sri Lanka Initiatives for Blue Economy and its Challenges | Dr. Anil Premaratne |
| 17:40-17:45 | Q & A | |
| 17:45-18:00 | Summary and Wrap Up Speech: Dr. Chen Bin (Deputy Director General of Third Institute of Oceanography/ APEC Marine Sustainable Development Center) | |
| 18:30-20:00 | Dinner | |
| June 29 | | |
| 08:00-12:15 | Field trip | |