REPORT

NATIONAL SEMINAR ON SCIENCE TECHNOLOGY FOR SABANG MARINE TOURISM DEVELOPMENT AND THE 4TH INTERNATIONAL WORKSHOP ON SATO UMI

Science Technology for Sabang Marine Tourism and Sato Umi for Developing Sustainable Aquaculture and Coastal Management

IPTEK Pengembangan Wisata Bahari Sabang, Budidaya Perikanan dan Pengelolaan Kawasan Pesisir Berkelanjutan berbasis Sato Umi.

Jakarta, 5 - 6 October 2017

NATIONAL SEMINAR ON SCIENCE TECHNOLOGY FOR SABANG MARINE TOURISM DEVELOPMENT AND THE 4TH INTERNATIONAL WORKSHOP ON SATO UMI

Science Technology for Sabang Marine Tourism and Sato Umi for Developing Sustainable Aquaculture, FisheriesResources and Coastal Management

Implementing Agency

Agency fortheAssessment and Application of Technology (BPPT)
and
Coordinating Ministry of Maritime Affairs

Supporting by

Ministry of Research, Technology and High Education
Ministry of Tourism
Ministry of Fisheries and Marine Affair
Indonesian Ministry of National Development Planning
Agency for Meteorology, Climatology and Geophysic (BMKG)
Indonesian Institute of Sciences (LIPI)
Government of Aceh Province
Regional Management Agency of Sabang (BPKS)
Environmental Management of Enclosed Coastal Seas **(**EMECS), Japan
North Pacific Marine Science Organization (PICES)
Ministry of Agriculture, Forestry and Fisheries (MAFF), Japan
Indonesian Engineer Union (Himperindo)
Indonesia Researcher Union (Himpenindo)-BPPT
Indonesian Association of Oceanologists (ISOI)

Jakarta, October 5-6, 2017

EXECUTIVE SUMMARY AND RECOMMENDATION

NATIONAL SEMINAR ON SCIENCE TECHNOLOGY FOR SABANG MARINE TOURISM DEVELOPMENT AND THE 4TH INTERNATIONAL WORKSHOP ON SATO UMI

Science Technology for Sabang Marine Tourism and Sato Umi for Developing Sustainable Aquaculture, Fisheries Resources and Coastal Management
Jakarta, 5-6 October 2017

National Seminar on Science Technology for Sabang Marine Tourism Development and The 4th International Workshop on Sato Umi was held at Auditorium of Agency for the Assessment and Application of Technology (BPPT) on October 5, 2017. The seminar and workshop was held in cooperation between BPPT and the Coordinating Ministry of Marine Affairs, supported by speakers and participants from various research institutes, universities and professional organizations from within and outside the country, among others, the Coordinating Ministry for Marine Affairs, the Ministry of Technology and Higher Education, the Ministry of Marine Affairs and Fisheries, the Ministry of National Development Planning (Bappenas), the Ministry of Tourism, Agency for the Assessment and Application of Technology (BPPT), Agency for Meteorology, climatology and Geophysic (BMKG), Indonesian Institute of Sciences (LIPI), Aceh Provincial Government, Sabang Area Management Board (BPKS), universities, students, private, fishery and community industries, experts Sato Umi from Kyushu University and International EMECS Center of Japan, PICES (The North Pacific Marine Science Organization), MAFF (Ministry of Agriculture, Forestry and Fisheries) of Japan, FRA (Fisheries Research and Education Agency) Japan, Association of Indonesian Oceanology (ISOI), Indonesian Engineering Association (HIMPERINDO), Indonesian Researcher Association (HIMPENINDO). Seminar and workshop on the theme of Science and Technology for Marine Tourism Development of Sabang, Aquaculture, Fishery Resource and Coastal Management Based on Sato Umi aims to socialize Sabang Sail Program, Indonesian Marine Tourism Development and disseminate Sato Umi concept to support sustainable Aquaculture Development Program, fisheries and marine resources in the coastal areas of Indonesia. The results of these seminars and workshops are resumed in the following executive summary and recommendations :

I. Workshop SATO UMI

Fisheries, coastal and marine resources are very potential resources, to improve the economy of the community, especially the cultivators, fishermen and coastal communities. On the other hand, the logical consequences of fisheries, coastal and marine resources as common and open access resources often experience excessive over-exploitation over their over-exploitation. The existence of various threats and pressures on the existence of fishery, coastal and ocean resources indicates that management and utilization has not been balanced with the rate of recovery. As a result, the existence of its resources is increasingly threatened and its carrying capacity is declining in food supply. For that it is time for Indonesia to apply the concept of management and utilization of natural resources by considering the balance and stability of natural resources and the environment as in the concept of SATO UMI in the

whole Indonesian Coastal Areas. Implementation of SATO UMI concept of UMI is expected to optimize the utilization of marginal and idle farm area and fishery and marine resources in Coastal Region of Indonesia in order to improve people's prosperity and local, regional and national economic income.

In the Medium Term Development Program (RPJMN) 2015-2019 and the Long Term Development Program (RPJPN) 2015-2025, the target of the Marine Development Program is directed to the realization of Indonesia as an independent, advanced, strong and nation-based archipelagic country characterized by:

1. Establishment of facilities and infrastructure network as the glue of all islands of Indonesia.
2. Increasing and strengthening of Human Resources in the field of marine supported development of Science and Technology.
3. The establishment of the territory of the unitary state of NKRI, assets and related matters within the framework of national defense.
4. The development of marine economy in an integrated manner by optimizing the utilization of marine resources in a sustainable manner.
5. Reduced impacts of coastal disasters and marine pollution.

Techno Park-based Fishery Development with institutional strengthening in line with the Sato Umi Concept is indispensable for the development of fisheries business from upstream to downstream to improve the welfare of coastal communities, nations and countries.

Management of ecosystem-based fisheries resources in Asia Pacific including Indonesia should consider the ecological social conditions and their interactions positively and beneficially in maintaining environmental stability and sustainability of resource utilization as in the SATO UMI Concept

In line with the development of maritime in Indonesia, SATO UMI concept is a sustainable coastal management based on maritime, tourism and food as well as integrated upstream-downstream and sector integrated as to improve the welfare of coastal communities and fishermen and conserve marine resources. Therefore SATO UMI has been developed and succeeded in Japan and can be applied in Indonesia in encouraging the national development of the maritime field.

BPPT has produced innovative technology to produce food and non food that is ready to be applied in the development of SATO UMI in Indonesia.

In realizing prosperity, sustainability and sovereignty, as well as food security, Ministry of Marine Affairs and fisheries have developed sustainable aquaculture in freshwater, brackish water and sea water. To increase the utilization of marine resources, the Ministry of Marine Affairs is developing Offshore aquaculture of Floating Cages and Marine and Fisheries Integrated (SKPT) Zones in several Locations. One of its SKPT is in Sabang, so the development of SKPT can be synergized with the development of SATO UMI in Sabang, Aceh Province.

II. Sabang Marine Tourism Development

Indonesia has great marine tourism potential. But the contribution of marine tourism is only about 10 percent of total foreign exchange earnings in the tourism sector amounting to US $ 12.6 billion or around Rp 167 trillion in 2016. In 2017, the Ministry of Tourism projected revenue from maritime tourism of US $ 4 billion or approximately Rp 53 trillion. Malaysia's long coastal state is smaller than Indonesia able to reap up to 40 percent of its tourism revenues from marine tourism with a contribution of up to US $ 8 billion or 8 times Indonesia. For that it needs to do a variety of efforts to accelerate the marine tourism sector as a leading sector in raked in foreign exchange. One of them is the implementation of Sabang Sail which proclaimed by government to increase famor of marine tourism in Sabang and all marine tourism area in Indonesia. Sail is a momentum to raise the power and the entire potential of Indonesia's maritime tourism event in the event of national and international marine tourism promotion. Sail Sabang 2017 will be held on 28 November - 5 December 2017. As one of the world's maritime tourism destination, Sabang has the potential for the development of maritime tourism, but it also has challenges. Sail Sabang became the momentum of the revival of economic development of Free Port and Free Trade Area Sabang through the arrangement and development of Sabang area as the destination of sea tourism port of the world. In addition, it is one of the government's solutions to develop Aceh's economy, especially Sabang post-oil and gas autonomy in 2025 considering its strategic location and the gateway of western Indonesia, in particular the Gate Way in the Malacca Strait. In addition Weh Island is also located at the meeting of three very specific marine areas of the Indian Ocean - the Andaman sea and the Strait of Malacca which has a promising source of maritime potential in the future for the country, especially if the Thai Government plan to open the canal soon materialized.

In order to develop the maritime tourism of Sabang, the presence of science and technology development center as one of supporting instrument is very important. LIPI as one of the national research institute saw that Weh Island located in Sabang is one of the outermost small islands with the position at the far end of West Indonesia Region (KBI) which directly borders Malaysia, Thailand, Myanmar and Bangladesh. Position P. Weh is very strategic because it is in the vicinity of the waters of the Strait of Malacca, Andaman Sea, Bay of Bengal and East Indian Ocean where the utilization of fishery resources is still not optimal. Through Sail Sabang, LIPI will undertake the Development of Oceanographic Research Station as an Effort to Utilize Marine Resources and Support Marine Tourism. The development of this oceanographic research station has been started since mid-2017 by utilizing land grants from Local Government of Aceh and BPKS of 4.9 ha.

In addition, the utilization of science and technology is also very important in developing sustainable marine tourism, especially from the characteristics of the destination, the characterization of tourists, the type of tourism development and management of destinations. Coral reef park development plans, artificial reefs, remote sensing technology applications have been done for the development of marine tourism in terms of destination characterization and development. Approach of science and technology and public education was done to keep the hygiene of tourist destinations from plastic waste sea. To answer the

availability of energy in marine tourism locations that are sometimes located in separate locations, the development of alternative renewable energy, as well as hybrid.

In the development of the island of Sabang as a marine tourism destination, some of the challenges that need to be noticed by the government of Aceh in particular and the national government generally is to make the tourism industry a positive plus to support the economy of Aceh. In addition, the need to cultivate Aceh as the main gateway of the western region becomes the starting point of the entry of tourists to Indonesia. Regulations, services and creative industries that support Aceh's marine tourism sector are a challenge and need to be included as Aceh's strategic development plan in the future.

Another challenge in Sabang tourism development is the Threat of Earthquake and Tsunami. Nevertheless, the challenge is almost owned by the entire territory of Indonesia due to the world's earthquake paths stretching from the island of Sumatra, Java, Bali, Nusa Tenggara, Maluku, Sulawesi, to Papua. As an area located on the path of the earthquake, the physiographic conditions of the Indonesian territory are highly anticipated by the collision activity of the three major plates of the world, namely the Indo-Australian Plate, Eurasia, and the Pacific. This condition makes the territory of Indonesia as one of the areas with high seismic activity level in Indonesia. Strong earthquakes centered on the ocean with shallow depths can trigger a tsunami. Along with the progress of tourism development, now many developing maritime tourism in various places in Indonesia including in Sabang. In anticipation of the dangers of earthquake and tsunami, BMKG since 2008 has operated a system of monitoring, processing, and disseminating earthquake information and tsunami early warning. This system is known as Indonesia Tsunami Early Warning System (InaTEWS). BMKG is committed to providing earthquake information and tsunami early warning less than 5 minutes after the earthquake. This system provides information services for all regions of Indonesia through multi mode of dissemination, such as: SMS, Digital Video Broadcasting (DVB) / Warning Receiving System (WRS), facsimile, e-mail, website, television, radio, whatsap (WA) and media other social. To secure and support maritime tourism, BMKG is committed to supporting it through the earthquake and tsunami early warning system in the areas of marine tourism development in Indonesia, including in Sabang.

FOREWORD

Indonesia is the largest archipelagic country in the world that has marine area and large number of islands. Indonesia coastal length reaches 95,181 km (World Resources Institute, 1998) with an area of 5.4 million km^2 of marine that dominates the total territory of Indonesia which reached 7.1 million km^2. These potentials place Indonesia as a country endowed with vast marine resources including the richest marine biodiversity and non-biological riches in the world that are highly beneficial for the development of marine tourism and fishery resources.

Marine tourism is one of the government's flagship programs and is one of the priority programs in the development of national tourism. Indonesia has many wonderful marine tourism potentials. The Indonesian sea provides the biodiversity and beauty of the beach that can be the main destination of marine tourism. Indonesia maritime tourism sector that has not been utilized properly, should continue to be encouraged in order to increase tourist visits both local and abroad.

On the other hand, Indonesia has considerable potential of fishery resources, such as for the development of marine aquaculture and brackish water ponds. To optimize the utilization of marine and fishery resources potency and establish fishery sector as prime mover of national economic development, acceleration and breakthrough in marine and fishery development are supported with political and economic policy and conducive social climate.

Sato Umi is a concept of sustainable management of fishery and marine resources where human intervention in fishery resource management in coastal and marine areas can improve productivity and diversity of fishery resource types. This concept is very useful applied in Indonesia to maintain the balance of fishery resources and the environment of coastal areas as a source of food and income society by maintaining the stability of ecosystems in order to avoid damage in the future.

Through these seminars and workshops held within the framework of Science and Technology Jamboree of Sail Sabang is expected to get the government enter in developing marine tourism programs both in Sabang and other marine tourism areas in Indonesia. For fisheries, it is expected that the development of fishery resources in coastal areas can be optimally, harmoniously, productively and sustainably improved to ensure the provision of fishery-based food, the development of fishery and ecotourism for the glory of the nation and the State.

On this occasion, BPPT together with Coordinating Ministry for Maritime Affair invite various parties to participate in this seminar and workshop.

Jakarta, 5 October 2017
Chairman of BPPT,

Dr.Ir. Unggul Priyanto, M.Si

TABLE OF CONTENT

I. BACKGROUND

Indonesia has a great marine tourism potential. But the contribution of marine tourism is only about 10 percent of total foreign exchange earnings in the tourism sector that is amounting to US $ 12.6 billion or around Rp 167 trillion in 2016. In 2017, the Ministry of Tourism projected revenue from marine tourism amounting to US $ 4 billion or approximately Rp 53 trillion. Malaysia's long coastal state is smaller than Indonesia able to reap up to 40 percent of its tourism revenues from marine tourism with a contribution that reaches US $ 8 billion or 8 times Indonesia. For that it needs to do various efforts to accelerate the marine tourism sector as a leading sector in raked in foreign exchange. Sail Sabang is proclaimed by the government to increase famor of maritime tourism in Sabang and all marine tourism area in Indonesia, it become the right momentum to raise the power and all marine tourism potential of Indonesia in the event of national and international marine tourism promotion activities. One of the activities to support the promotion of Indonesian marine tourism through Sail Sabang activities is the organizing of national and international seminars on maritime tourism with its supporting fields. This activity is strategic enough to mobilize various support both at national and international level about marine tourism development program of Indonesia as well as introduce all potential and marine tourism destination of Indonesia.

Meanwhile, Indonesia as the largest archipelagic country in the world with coastline reaching 95,181 km, 5.4 million km2 marine area is very potential to be developed for aquaculture activities other than capture fisheries. Sea cultivation area reaching 12 million hectares, newly used as much as 325 thousand ha or about 2.69% of the total potential. The area of brackish water pond cultivation is 2,963,717 hectares, newly used 657,346 ha or 22.2%. These potential area need to be utilized and developed optimally and sustainable by applying the SATO-UMI Concept that has been applied in various countries. SATO-UMI is a concept of sustainable management of fishery resources where human intervention in fishery resource management in coastal and marine areas can increase productivity and diversity of fishery resources sustainably. Development of SATO-UMI integrated fishery cultivation model such as Integrated Multi Tropic Aquaculture (IMTA) using multi species of fishery commodity and bio-recirculation system on closed system model (CSIMTA-Closed System Integrated Multi Tropic Aquaculture) and open system model (OSIMTA- Open System Integrated Multi Tropic Aquaculture) under development of BPPT, it is expected that the development of aquaculture activities in coastal areas can be more productive and sustainable. With bio-recirculation systems, inorganic and organic waste from feed residues, fish debris and other sources of pollutants can be reduced and minimized, resulting in more stable, pollution-free and more productive water ecosystem conditions. On a broader scale, the basic concept of SATO-UMI can be applied to maintain the balance of natural resources as a source of food and income for coastal communities by maintaining the stability of their ecosystems. By applying SATO-UMI concept, it is expected that fishery resources and their special environment in coastal areas can run sustainably, more productively and richly diversity of resources in a balanced and harmonious way in accordance with marine tourism development program and fishery and marine sector development to improve community welfare.

To support the Sabang Sail program and the development of maritime tourism of Indonesia organized in the framework of the implementation of IPTEK Jamboree activities of the Coordinating Ministry of Maritime Affairs in cooperation with BPPT, in parallel will be held National Seminar on Science Technology for Sabang Marine Tourism Development and The

4th International Workshop on Sato Umi that is planned to be held on October 5-6, 2017 at BPPT II Building Lt. 3 JL. MH. Thamrin Jakarta.

The results of this seminar and workshop are expected to give input to the Government and inspire and give new spirit to the stakeholders in developing marine tourism program both in Sabang and other marine tourism area in Indonesia. In the future, the government together with the community must be able to manage and utilize all marine tourism potentials and fishery, coastal and marine resources in an optimal, harmonious, productive and sustainable way to ensure marine tourism sustainability, development of minawisata and ecotourism, Fisheries for the glory of the nation and the State. In the next 5 years, Indonesia is developing Techno Park with several development activities in several coastal areas where there are fishery cultivation activities, ecotourism including marine tourism and other fishery activities. The development of Techno Park is directed to become the New Economic Growth Center in Indonesia to improve the welfare of society, nation and state. Hopefully, Sato Umi concept which has the same spirit with Techno Park can be applied to support the implementation of Techno Park program in Indonesia. Techno Park Area on the base of fisheries can be used also as marine tourism area.

The seminar and workshop will be attended by experts, speakers and officials from the Coordinating Ministry for Marine Affairs, Ministry of Research and Technology, Ministry of Marine Affairs and Fisheries, Ministry of National Development Planning/Bappenas, Ministry of Tourism, Agency for Assessment and Application of Technology (BPPT), Meteorology Agency, Climatology and Geophysics (BMKG), Indonesian Institute of Sciences (LIPI), Aceh Provincial Government, Sabang Area Management Board (BPKS), Universities, students, private, fishery and community industries, Sato Umi experts from Kyushu University and International EMECS Center of Japan, PICES (The North Pacific Marine Science Organization), MAFF (Ministry of Agriculture, Forestry and Fisheries) of Japan, FRA (Fisheries Research Agency) Japan, Association of Indonesian Oceanology (ISOI), Indonesian Engineering Association (HIMPERINDO), Indonesian Researcher Association (HIMPENINDO).

II. OBJECTIVES

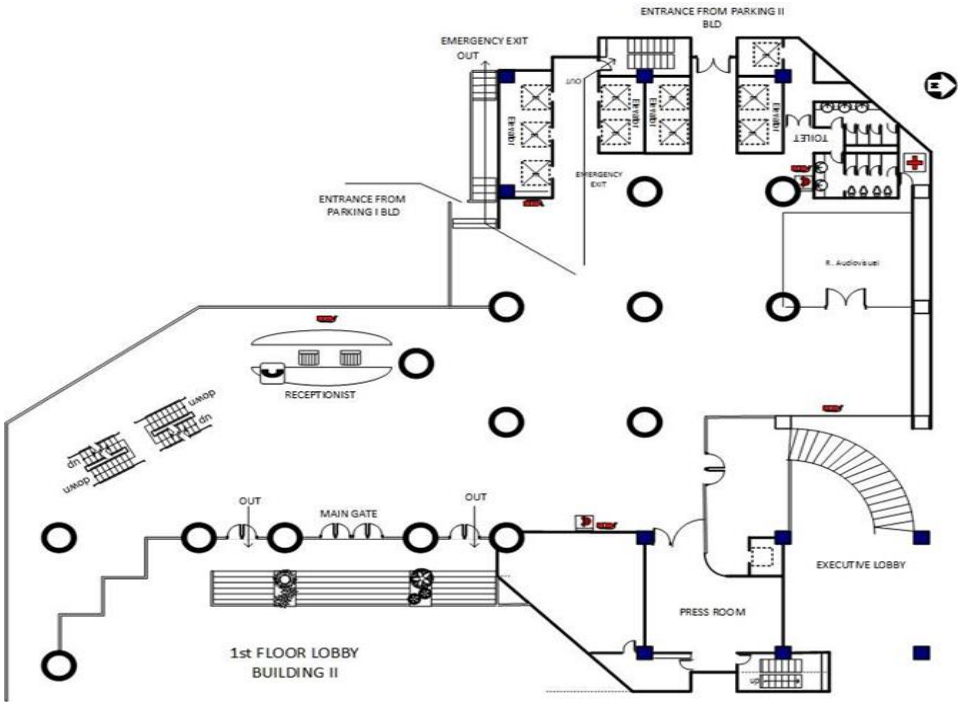
The purpose of this seminar and workshop is to socialize Sabang Sail Program and Maritime Tourism Development of Indonesia, and disseminate Sato Umi concept to support Sustainable Fisheries and Coastal Management Development Program in Indonesia. The results of this activity are expected to provide a recommendation to the Government, employers, communities and other stakeholders in utilizing all potential marine tourism resources both in Sabang and other regions in Indonesia optimally. Implementation of the concept of Sato Umi is expected to optimize the utilization of marginal and idle farms and fishery resources in Coastal Areas and Techno Park Indonesia Area in order to improve the welfare of local and regional, national and local economic income.

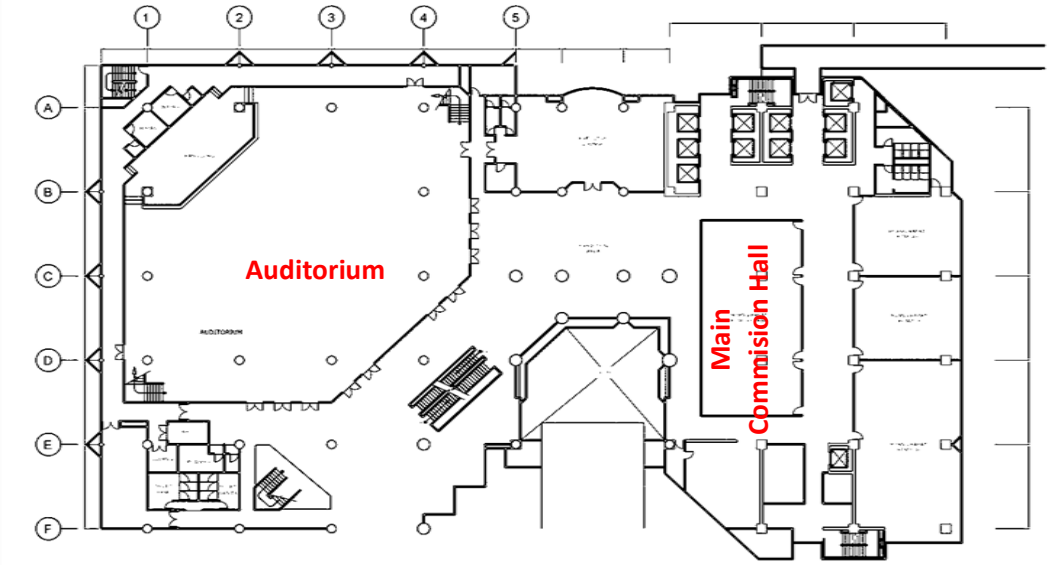
III. VENUE

The seminar and workshop were held for 2 days, consisting of:

1. Seminar and Workshop on Thursday, October 5, 2017 at the Auditorium and Main Commission of BPPT II BPPT Bld 3rd Floor, JL. M.H. Thamrin No. 8, Jakarta 10340.
2. Field trip on Friday, October 6, 2017 to the Brackishwater Aquaculture and Mangrove Area in the Northern Coastal Area of Karawang. Aquaculture Bussiness Unit of the Ministry of Marine Affairs, and Fisheries Center of Brackiswater Aquaculture of West Java Province Region.

Map of 1st Floor





Map of 3rd Floor

IV. AGENDA

1ST DAY : Thursday, October 5, 2017-Seminar and Workshop at The Auditorium and Main Commission Hall of BPPT. BPPT II Bld. 3rdFl. JL.M.H.Thamrin No. 8 Jakarta 10340	
08.30-09.00	**Registration**
09.00-09.10	**Opening, National Anthem (Indonesia Raya), Prayer, Saman Dance**
09.10-09.20	**Report of the Organizing Committee** Prof. Ir. Wimpie Agoeng Noegroho Aspar, MSCE., Ph.D Deputy Chairman of BPPT for Natural Resources Development Technology
09.20-09.30	**Keynote Address of Honorary Advisor for Ministry of Tourism** Prof. Dr. Ir. Indroyono Soesilo, M.Sc
09.30-09.45	**Keynote Speech of Sato Umi Development for Sustainable Aquaculture, Ecotourism and Coastal Management** Prof. Dr. Tetsuo Yanagi Prof. Emeritus of Kyushu University and International EMECS Center, Japan
09.45-10.00	**Secretary Ministry of National Development Planning** Dr. Ir. Gellwyn Daniel HamzahJusuf, M.Sc.
10.00-10.10	**Keynote Address of Vice Governor of Aceh Province** Ir.H. Nova Iriansyah, M.T
10.10-10.20	**Deputy for Coordination of Human Resources, Science and Technology and Maritime Culture,Coordinating Ministry of Maritime Affairs** Dr. Safri Burhanuddin, M.Sc
10.20-10.30	**Keynote Address of Deputy for Coordination of Human Resources, Science and Technology and Maritime Culture,Coordinating Ministry of Maritime Affairs** Dr. Ir. Safri Burhanuddin, M.Sc
10.30-10.40	**Keynote Address of Director General for Research and Development at the Ministry of Technology and Higher Education Research1** Dr. Muhammad Dimyati
10.40-11.00	**Keynote Address and Opening by Chairman of BPPT** Dr. Ir. Unggul Priyanto, M.Sc

<table>
<tr><th colspan="3">SESSION-1 (Paralel)
National Policy for Developing Sabang Marine Tourism and Sato Umi for Sustainable Aquaculture and Coastal Management</th></tr>
<tr><th></th><th>Auditorium Room</th><th>Main CommissionRoom</th></tr>
<tr><td></td><td>National Policy for Developing Sustainable Aquaculture and Coastal Management Development Based on Sato Umi
Moderator :
Prof. Dr. Ir. Suhendar I Sachoemar
Head of Center for Development, Education and TrainingBPPT</td><td>Development of Sabang Marine Tourism
Moderator :
Dr. Ir. Wahyu Pandoe, M.Sc
Deputi Chairman for Industrial Technology and Engineering Design of BPPT</td></tr>
<tr><td>11.00-11.15</td><td>Development of Techno Park Aquaculture
Dr. Ir. Gatot Dwianto, M.Eng
Deputy Chairperson of BPPT for Technology Policy
Agency for the Assessment and Application of Technology</td><td>Sail Sabang Programe
Dr. Ir. Safri Burhanuddin, M. Sc
Deputy for Coordination of Human Resources, Science and Technology, and Maritime Culture,
Coordinating Ministry of Maritime Affairs</td></tr>
<tr><td>11.15-11.30</td><td>National Policy for Developimg Sustainable Aquaculture and Coastal Management Based on Sato Umi
Dr. Ir. Slamet Soebjakto, M.Si
Director General of Aquaculture Fishery-Ministry of Fisheries and Marine Affairs</td><td rowspan="4">National Policy on Marine Tourism Development
Dadang Rizki Ratman, SH, MPA
Deputy for Tourism Destination and Industry Development
Ministry of Tourism

National Program of Marine Tourism Development
Ir. R. Anang Noegroho Setyo Muljono, MEM.
Director of Marine and Fisheries - Ministry of National Development Planning

Opportunities and Challenges of Sabang Development as a World Maritime Tourism Destination
Ir. Fauzi Umar, MM.
Director for Bussiness and Investation Board of Regional Management Agency of Sabang</td></tr>
<tr><td>11.30-11.45</td><td>Development of Coastal Management Method to Realize the Sustainable Coastal Sea Based on Sato Umi
Prof. Dr. Tetsuo Yanagi
International EMECS Center, Japan</td></tr>
<tr><td>11.45-12.00</td><td>Ecosystem-based fisheries management for Asia-Pacific
Dr. Mitsutaku Makino
PICES/FRA-Japan</td></tr>
<tr><td>12.00-12.15</td><td>Development of Fishery Production Technology
Prof. Dr. Eng. Eniya Listiani Dewi, B.Eng., M.Eng
Deputy Chairperson of BPPT for Agro Industry and Biotechnology</td></tr>
<tr><td>12.15-12.45</td><td>Discussion</td><td>Discussion</td></tr>
<tr><td>12.45-13.30</td><td colspan="2">LUNCH BREAK</td></tr>
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<table>
<tr><th colspan="3">SESSION-2 (Parallel)
Marine Tourism and Sato Umi for Sustainable Aquaculture and Coastal Management Development</th></tr>
<tr><th></th><th>AuditoriumRoom</th><th>Main Commission Room</th></tr>
<tr><td></td><td>Development of Coastal Management Method to Realize the Sustainable Coastal Sea (S-13 Project)
Moderator :
Prof. Dr.Tetsuo. Yanagi
International EMECS Center, Japan</td><td>Marine Tourism Development
Moderator :
Prof. Ir. Wimpie Agoeng Nugroho, A, MSCE., Ph.D
Deputy Chairman of BPPT for Natural Resources Development Technology</td></tr>
<tr><td>13.30-13.45</td><td>Management of Nutrient Concentrations in the Seto Inland Sea (Theme 1: Seto Inland Sea)
Dr. Tetsuji Okuda
Ryukoku University, Japan</td><td rowspan="6">Infrastructure Development, Infrastructure and Institutional Facilities To Support Marine Tourism Development
Dr. Ir. Ridwan Djamaluddin, MSc
Deputy Coordinator Ministry of Maritime for Infrastructure/President of Indonesian Association of Oceanologists (ISOI)

Strengthening Research and Innovation in Marine Tourism Development
Dr. Ir. Jumain Ape, MSi Director General of Innovation Reinforcement Ministry of Research Technology and High Education
Marine Tourism Development Based on Fishery and Marine Resources
Ir. Rifky Effendi Hardijanto
Secretary General of Ministry for Marine and Fisheries Affair
.
Potential Marine Resources to Support Marine Tourism Development Indonesia
Dr . Zainal Arifin
Deputy Chairman for Earth Science, LIPI

The Importance of Information System of the Earth Quake and Tsunami Early Warning System of BMCG to support marine tourism
Dr. Ir. Muhamad Sadly, M.Eng.
Deputyfor Geophysic. Agency for Meteorology, Climatology and Geophysic</td></tr>
<tr><td>13.45-14.00</td><td>Satoumi Approach for Realizing Sustainable Coastal Use in a Rias-type Bay: a Case of Shizugawa Bay in Sanriku Coast after the Huge Tsunami on 11 March 2011 (Theme 2: Sanriku Coast)
Prof. Dr. Teruhisa Komatsu
Yokohama College of Commerce, Japan</td></tr>
<tr><td>14.00-14.15</td><td>Management for Sustainable Use of International Semi Enclosed Sea, Japan Sea(Theme 3: Japan Sea)
Dr. Takafumi Yoshida
Northwest Pacific Region Environmental Cooperation Center (NPEC), Japan</td></tr>
<tr><td>14.15-14.30</td><td>The Integrated Coastal Zone Management Based on Ecosystem Services (Theme 4: Social & Human Science)
Dr. Satoquo Seino
Kyushu University, Japan</td></tr>
<tr><td>14.30-14.45</td><td>What’s Next : Integrating EMECS Experience into Disaster-Resilient Coastal Management
Singo Kochi
Director, International EMECS Center, Japan</td></tr>
<tr><td>14.45-15.15</td><td>Discussion</td><td>Discussion</td></tr>
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SESSION-3 (Paralel-Continue)		
	AuditoriumRoom	**Main Commission Room**
	Coastal Management at Okinawa and Sato Umi Development in Indonesia **Moderator :** Dr. Mitsutaku Makino PICES/FRA-Japan	**Pengembangan Wisata Bahari II** **Moderator :** Dr. Andi Eka Sakya,M.Eng Principal Engineer BPPT
15.15-15.30	**Community-based monitoring toward sustainable management of mangrove forest in Okinawa, Japan** Dr. Shion Takemura PICES/FRA-Japan	**Utilization of Science and Technology for Marine Tourism Development** Dr. Nani Hendiarti, M.Sc Assisstent Deputy of Maritime Science and Technology Coordinating Ministry of Maritime Affairs
15.30-15.45	**Sustainable Aquaculture Development Based on Sato Umi in The Coastal Area of Indonesia** Prof. Dr. Ir. Suhendar I Sachoemar, M.Si Head of Center for Development, Education and TrainingBPPT	**Marine Tourism Aceh:** **Opportunities and Challenges Towards World Class Tours**Dr. Muhammad Irham, M.Si. Head of Department of Fishery Resources Utilization Faculty of Marine and Fisheries - UniversitasSyiah Kuala, Aceh
15.45-16.00	**Development of Technopark at Bantaeng, South Sulwesi** Ir. Arief Arianto, M.Sc Director of Center for Agriculture Technology Production, Agency for the Assessment and Application of Technology BPPT	**Potency of Marine Tourims ofRiau Island Province** Dr. Agung Dhamar Syakti, S.Pi., DEA Dean Faculty of Fisheries and Marine Science, UMRAH
16.00-16.15	**Discussion**	**Discussion**
16.15-16.45	**General Summary (Panel)** Moderator : Prof. Ir. Wimpie Agoeng Noegroho Aspar, MSCE., Ph.D Deputy Chairman of BPPT for Natural Resources Development Representative of PICES, EMECS, BPPT, Coordinating Ministry of Maritime Affairs, Ministry of Tourism	
16.45-17.00	**Clossing** Dr. Ir. Soni Solistia Wirawan, M.Eng Principle Secretary BPPT	

2nd DAY : Friday, October 6, 2017 **Field Trip to the Brackishwater Aquaculture and Mangrove Area in the Northern Coastal Area of Karawang**	
07.00-16.00	Visiting the Brackishwater Aquaculture and Mangrove Area in the Northern Coastal Area of Karawang, Aquaculture Bussiness Unit of the Ministry of Marine Affairs and Fisheries and Center of Brackiswater Aquaculture of West Java Province Region.
16.00	**Return to Jakarta**

V. ABSTRACT

Dr. Ir. GatotDwianto, M.Eng.
Deputy Chairman for the Assessment of Technology Policy

Development of Fishery-based Pekalongan Techno Park

The Fishery-based Techno Park in Pekalongan City has been started since 2015 based on the agreement between BPPT and The Pekalongan Municipal Government. The area of Techno Park is designated at Fishing Area in North Pekalongan by way of Mayor's Decree in the same year. This 2 (two) Ha area is intended to be used for Management Area, Fish Feed Factory, Cool Storage, Hygienic Markets of Fishery Products, Fisherman Shelter Houses, Packaging House of Fishery Products, and Office for Incubator's Tenants. By now, several parts of that area have been built, such as the Fish Feed Factory, Cool Storage, Hygienic Markets of Fishery Products, Fisherman Shelter Houses, and Packaging Houses of Fishery Products. Other parts will also be built in the near future.

The current developments of Pekalongan Techno Park include the formation of the Adhoc Institution for managing the Techno Park and the Institute of Innovation Center as a service center for fisheries business. A Techno Park companion agency involving local universities and Diponegoro University is also being formed. The fish cultivation and processing have been initiated to serve as pilot projects. In addition, the incubation of prospective tenants engaged in fishery products has generated new SMEs in the field of fisheries.

Dr. Ir. Slamet Soebjakto, M.Si
Director General of Aquaculture Fishery-Ministry of Fisheries and Marine Affairs

National Policy in The Development of Aquaculture and Management of Sustainable Coastal Areas Based on *Sato Umi*

Aquaculture Development is one of the important sub-sectors in realizing national development goal, namely NAWACITA. It especially purposed to realize self-reliance and food security, improve people welfare, and environmental sustainability. Indonesia has a competitive and comparative advantages in the development of aquaculture supported by vast potential areas of total 17.92 million hectare, consisting of 12.12 million hectare of marine aquaculture area, 2.96 million hectare of brackish water aquaculture area, and 2.83 million hectare of fresh water aquaculture area (Data of Aquaculture Potential Areas, MMAF, 2015). According to the Indonesian Fisheries Statistics Data (2015),the utilization of aquaculture potential remains low, that is 24.15% utilization of pond area, 11.32% utilization of freshwater aquaculture areas, and 2.36% utilization of marine aquaculture areas.

Based on the existing potential and opportunities, the policy direction of national aquaculture development is to create an independent, competitive and sustainable aquaculture through the harmonization socio-economic, environmental, and technological aspects. This harmonization is expected to create an aquaculture development that is more productive, economically and socially profitable, and environmentally friendly and sustainable. This policy direction has been in accordance with the concept of *SATO UMI*, which emphasizes in increasing the productivity of land for multi-activities of human beings through a sustainable management to increase the economic value and community's welfare by implementing environmentally-friendly management.

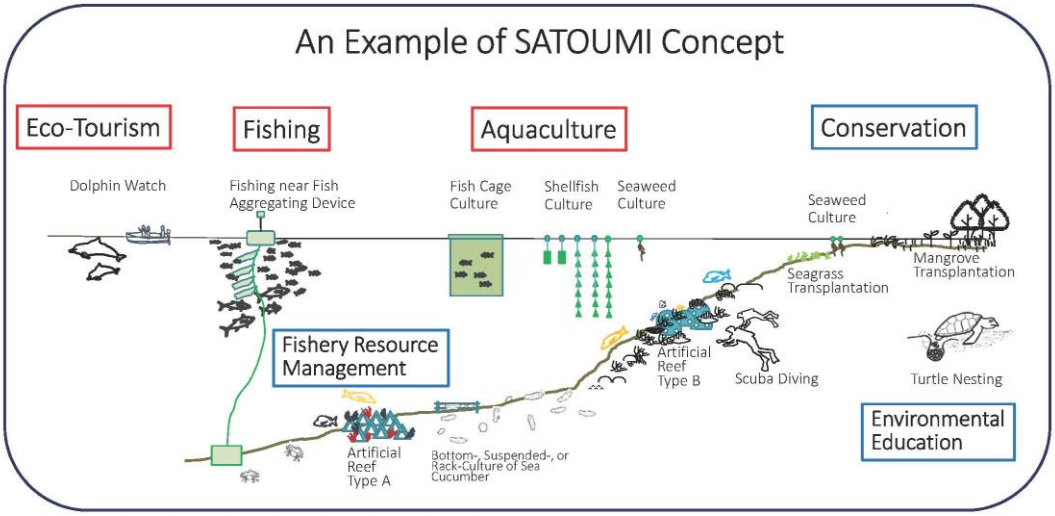
Some priority programs of aquaculture development in Indonesia that are in line with the concept of SATO UMI, among others, are: (i) the revitalization and arrangement of idle brackish water ponds areas to become a more productive ponds, by using the concept of cluster management and poly culture system and maintaining the existing mangrove trees; (ii) the development of rice fish farming, in order to optimize the productivity of paddy field areas for multi-product that is paddy-rice and fish in the same land; (iii) catfish production by using biofloc system as a solution for utilizing narrow lands, integrated with vegetable planting activities; and(iv) the provision of barramundi seeds in the community's brackish water ponds by using the concept of cluster management and environmentally friendly with maintaining the existing mangrove trees in order to fulfill barramundi seeds supply for offshore cages in locations of the Integrated Marine and Fisheries Centers (PSKPT).

The change of national development paradigm from land-based approach to maritime-based approach has also changed the development strategy in marine and fishery sector. One of strategy is to develop PSKPT, that aims to develop economies from outer islands in an integrated, cohesive, and sustainable manner from upstream to downstream, based on the potential and characteristics of the resources that exist on each island. One of PSKPT location in 2017 is Sabang Island. PSKPT Sabang aims to create a new economic growth center, as well as geopolitically, maintain and preserveIndonesia's sovereignty, given the geographical location of Sabang Island at the westernmost boundary of Indonesia. Economic activitiesin PSKPT Sabang are the development of offshore mariculture, development of environmentally friendly fishing whichpreserve local wisdom, and marine tourism. The development of PSKPT Sabang is a holistic and integrated activity, by involving multi-stakeholders, among others the Ministry of Marine Affairs and Fisheries, Aceh Provincial Government, Sabang City Government,SabangCity Management Board, local fish farmers and fishermen, State-owned Enterprises, private sectors, Cross ministries, and JICA Japan. Thus, the concept of SATO UMI is very possible to be implemented in PSKPTSabang Island as one solution in managing the utilization of existing resources and land for the development of aquaculture and sustainable coastal management.

Prof. Dr. Tetsuo YANAGI
Professor Emeritus, Kyushu University
Special Researcher, International EMECS Center

Sato Umi Development for Sustainable Fisheries, Ecotourism and Marine Resources Management

Sato Umi is defined as "The coastal sea with high productivity and biodiversity under the human interaction" (Yanagi, 2007, 2013). Many kinds of human activities must co-exist with nature there. For the successful implementation of Sato Umi creation, the trans-disciplinary study among natural, social and human sciences is necessary.



One example of the trans-disciplinary study for the establishment of Sato Umi in Japan will be introduced in this seminar.

Yanagi,T. (2007) Sato-Umi: a new concept for coastal sea management. TERRAPUB, Tokyo, 86p.

Yanagi,T. (2013) Japanese Commons in the Coastal Sea: How the Satoumi concept harmonizes human activity in coastal seas with high productivity and diversity. Springer, Tokyo, 113p.

Dr. Mitsutaku Makino
PICES/Japan Fisheries Research and Education Agency

Ecosystem-based fisheries management for Asia-Pacific

According to the FAO SOFIA 2016, the Asian countries occupies a half of global capture production (marine and inland), 90% of aquaculture production (marine and inland), 75% of fishing vessels, 85% of fishers. In other words, Asia is the center of the world fisheries now. The tropical-temperate marine ecosystems are the home of the variety of species. The diversity of catch is higher than the cold-water ecosystems such as in the north Europe or Alaska. Asian people largely rely on fish or seafood as the source of animal protein, i.e., it is important from the viewpoint of the food security policy. Also, fish processing and distribution sector produces large number of employments in the local community. Therefore, the ecosystem-based fisheries management in the Asia-Pacific should take these social and ecological conditions and interactions among them into account (social-ecological systems approach: SES Approach). In this presentation, the recent PICES experiences of SES study for the ecosystem-based fisheries study will be presented. Some of the key words are; 1) understanding the local community needs, and 2) Researching together: dissemination and capacity building.

Prof. Dr.Eng Eniya Listiani Dewi, B.Eng, M. Eng.
Deputy Chair Person for Agroindustry Technology and Biotechnology

Innovation Technology Bppt For Food and Health Based On Marine Resources

Indonesia is a maritime country located on the equator with a coastal length of about 81,000 km, 16056 islands and sea area 5.8 million km2, hence Indonesia is a country that has a great marine natural resources. There are three important issues related to marine and fishery activities in Indonesia's National Long Term Development Plan (RPJPN) for 2005-2025. First, making the fisheries sector as protein resources for food security. Second, making security of marine and fishery and the third developing sustainable marine and fishery industries. BPPT has a mission to produce innovative technology products to enhance industrial competitiveness and national independence.

BPPT has produced innovative technological products such as developing pharmaceutical salt industry, finding several marine biota candidates as raw materials for the drug, developing tilapia resistant to high salinity (20-25 ppt), marine tilapia (35 ppt), growth hormone fish with recombinant techniques, DNA vaccine for Streptococcus sp. in fish diseases. Recently, BPPT is developing new prototypes of male monosex freshwater giant prawns. BPPT also has successfully developed seaweed capsules for the pharmaceutical industry and produces polyunsaturated fatty acid (PUFA) from microalga.
As conclusion, BPPT marine technology innovation, is expected to open up opportunities for more optimal and sustainable sea utilization that will improve the economy and expand employment.

Dr.Tetsuji OKUDA
Associate Professor,
Ryukoku university, Kyoto, Japan

Management of Nutrient Concentrations in the Seto Inland Sea (Theme 1: Seto Inland Sea)

The Seto Inland Sea is a semi-enclosed sea with 23,203 km^2 of area and 38.0 m of mean depth, which were subject to severe eutrophication and pollution by industrialization and urbanization during the period of high economic growth in the 1970s. To improve water quality in the sea, a Total Pollutant Load Control System (TPLCS) has been implemented since 1979. The pollutant loads have steadily declined since the introduction of the TPLCS and water quality is improved. In this stage, highly sustainable coastal management techniques are required to maintain high water quality without the remarkable decline of biological productivity. However, the basic knowledge of ecosystem structure in the sea is lacking. We estimated the distribution of temporal and spatial primary production and then the production of zooplankton and planktivorous fishes. The decrease in the primary production was estimated about 20% from the first half of the 1980s to present even if the reduction of total nitrogen and total phosphorus was 40% and 61%, respectively, since nutrient load from the connecting sea (the Pacific Ocean) is dominant. We also identified the areas where excess phytoplankton growth will easily occur by natural topographical factors. The role of seaweed beds to prevent excess growth of phytoplankton in these areas was also evaluated.

Prof. Dr. Teruhisa KOMATSU
Professor, Yokohama College of Commerce
President of Société franco-japonaise d'Océanographie

Satoumi Approach for Realizing Sustainable Coastal Use in a Rias-type Bay: a Case of Shizugawa Bay in Sanriku Coast after the Huge Tsunami on 11 March 2011

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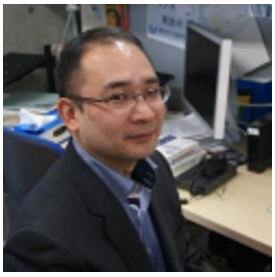
Abstract. Rias-type bays are one of the most common coasts in Japan where aquacultures are active due to calm sea condition and good water exchange with a deep sill depth. The huge tsunami hit Sanriku Coast consisting of open rias-type bays near the epicenter facing Pacific Ocean on 11 March 2011. For recovering Sanriku Coast, it is important to include sustainability in its program. *Satoumi* is defined as the human use and management of coastal seas for high productivity while maintaining high biodiversity. We proposed *Satoumi* approach to an open rias-type bay, Shizugawa Bay, in southern Sanriku Coast. We conducted scientific researches on mapping of coastal habitats and aquaculture facilities, hydrography, and material flows of nutrients, a minor element (Fe) and organic matters in the bay including those from the rivers and from the offshore waters. Based on these data, a physical-biological coupling model was used for calculating the number of aquaculture facilities that are suitable not only for yields but also for environments. At the same time, Committee for Shizugawa Bay Management of Fishermen's Cooperative of Miyagi Prefecture decided to decrease in aquaculture facilities for sustainable development of aquaculture. Aquaculture Stewardship Council certified oyster cultures in Tokura Branch in Shizugawa Bay as an environmentally and socially responsible seafood in 2015. These researches were established on strong collaborations among a fishermen's' cooperative, local governments and scientists. Results of this practice may help to realize sustainable coastal use of a rias-type bay.



Dr. Takafumi YOSHIDA

Senior Researcher, Northwest Pacific Region Environmental Cooperation Center, Japan

Management for sustainable use of international semi enclosed sea, Japan Sea

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(Northwest Pacific Region Environmental Cooperation Center)
Akihiko MORIMOTO, Ryota SHIBANO (Ehime University)
Naoki HIROSE, Katsumi TAKAYAMA (Kyushu University)
Xinyu GUO, Naoki YOSHIE, Yucheng WANG, Takashi MANO, Taishi KUBOTA
(Ehime University)

Japan Sea is a semi enclosed sea between the Eurasian continent and the Japanese Islands. This area is one of the most populated regions in the world with a rapid economic growth. It is also reported that the sea surface temperature has increased rapidly compared with other areas. In order to propose an effective management method for sustainable use in the Japanese coastal area on the Japan Sea, we studied impacts from the East China Sea, upper area of the Japan Sea, and impacts of the rise of sea water temperature on marine environmental conditions and low and high trophic ecosystems. Our study clarified that the Japanese coastal area on the Japan Sea is strongly influenced by the East China Sea, and it is necessary to have a large-scale perspective for its management.Then, we proposed a three-layer management for the Japan Sea. The first layer has a large-scale view with international monitoring for an integrated management of both the East China Sea and the Japan Sea. The second layer is a middle-scale view with designing dynamic MPAs for sustainable use of marine species in the Japan Sea. The third layer is a land-ocean integrated management in each bay in the Japan Sea

Dr. Satoquo SEINO
Associate Professor
Kyushu University, Japan

The Integrated Coastal Zone Management Based on Ecosystem Services (Theme 4: Social & Human Science)

Integrated Coastal Zone Management (ICZM) and Marine Protected Area (MPA) are area management approaches. Conflicts between human territory development and nature conservation have been occurred frequently in the world. Cultural studies linking natural science found effective methodology to harmonize human activities to natural conditions. “Satoumi" is one of the representative ways for sustainable use of natural resources. An economic assessment of ecosystem services in Japanese coastal seas and evaluate the sustainability of these regions is introduced. The framework formation of MPA in the Tsushima and Goto Islands, Nagasaki, were studied as practical target areas for coastal sea management, and cooperative efforts were made with local residents and fishery personnel in order to make policy recommendations for the approach to coordinated fishery activities.
Local knowledge at the sites were collected and turned it into a scientific methodology based on coastal environmental science techniques. Through collaborative observations and discussions in many sectors, the relationship between marine organisms, winds and currents, land-sea interaction were detected, utilized and managed by communities. These islands are in the dynamic fields of Tsushima Warm Current and strong seasonal wind. They come to face serious transition of the climate, especially sea water temperature warming and hard rain fall. Sato umi coastal MPAs have potential Ecosystem based Disaster Risk Reduction (ECO-DRR) to overcome this situation.

Singo KOCHI
Director, International EMECS Center

What's Next : Integrating EMECS Experience into Disaster-Resilient Coastal Management

There has been an appreciation that recovery is an opportunity to build back better. Although defined in many ways, one clear consideration is that build back better covers both the restoration of communities and assets/infrastructures that strengthen resilience. Over the year, various challenges were reported along the course of disaster recovery. In many mega-disasters for instance, recovery is often plagued by significant time-gaps, a lack of continuous attention by international and national partners, and declining resource commitments. Often, momentum tends to slow down following post-disaster assessments, making it hard to plan and implement later stages of recovery and reconstruction. Even with so many capacity building efforts, nations still face serious limitations in terms of planning and implementing recovery processes.

It is in this context that Director of International EMECS Center is proposing to make a presentation for governments and partners to share experiences, knowledge, strategies, technologies, and tools on Japan's largest enclosed coastal sea, Seto Inland Sea.
The topics will include;

1. Explore knowledge and understanding of 'build back better' in recovery, rehabilitation, and reconstruction" through sharing of country experiences
2. Spread emerging ideas and initiatives on enclosed coastal seas.
3. Propose set of policy recommendations and actions on build back better based on the experiences and messages.

Dr. Shion TAKEMURA
PICES/Japan Fisheries Research & Education Agency

Community-based monitoring toward sustainable management of mangrove forest in Okinawa, Japan

Dr. Shion TAKEMURA (PICES/Japan Fisheries Research & Education Agency)

People around Okukubi River in Okinawa, Japan, are going to use mangrove ecosystem as a resource of eco-tourism. However, the infrastructures such as river width narrowing due to bridge construction and discharge reduction due to expansion of dam capacity cause degradation of mangrove habitat directly and indirectly through change of soil condition associated with water flow alteration. In order to achieve sustainable uses of mangrove forest, monitoring system is necessary to identify changes in mangrove habitat and to utilize them for conservation activities. Therefore, we developed a community-based monitoring system that can grasp changes occurring in mangrove forest by a simple way; i) “Smartphone Monitoring” is utilized the photo and GPS functions of the smartphone, ii) “Bed Level Change Monitoring” is a simple method for ground survey using PVC pipe, iii) “Crab Distribution Monitoring” is also a simple method for pitfall trap using cans.“Smartphone Monitoring” can identify and record forest situations and their locations. “Bed Level Change Monitoring” can clarify long term patterns of river bed fluctuation in mangrove forest. “Crab Distribution Monitoring” can grasp changes of soil condition from composition of crab species. This monitoring system allow for stakeholders to monitor the mangrove forest by themselves toward sustainable management.

Prof. Dr. Ir. Suhendar I Sachoemar, M.Si
Dierector of Center for Development,
Education and TrainingBPPT

Sustainable Aquaculture Development Model Based on Sato Umi in The Coastal Area of Indonesia

Indonesia is the largest archipelago in the world. Its coastline is about 95.181 km with marine area of 5.4 million km^2. Indonesia has 2,963,717 hectares (ha) of brackish water pond area, but only 657,346 ha or 22.2%of them are used for aquaculture activities. While, marine culture area is only used about 325 thousand hectares (ha) or about 2.69%from 12 million hectares (ha) that is available. The low utilization of brackish water pond and marine culture area are generally caused by environmental damage due to the excessive exploitation by intensive aquaculture activities during the period of 1980s and the limitation of seed, capital and technology. In line with the growing global paradigm in the face of change and good environmental damage caused by excessive exploitation of natural resources and the consequences of climate change and global warming, it is time for Indonesia to implement the concept of management and utilization of natural resources taking into account the balance and stability of the natural resources and the environment, such as in the concept of SATO-UMI. The Integrated Multi Tropic Aquaculture (IMTA) on the bases of bio-recycle system and Sato Umi concept should be applied for sustainable aquaculture. An experiment of the IMTA in the brackish water pond as a close system model (CSIMTA-Close System Integrated Multi Tropic Aquaculture) has shown a good performance on the production of multi species fisheries commodities as well as water quality stability. On the onshore area, developing of open system model of IMTA (OSIMTA-Open System Integrated Multi Tropic Aquaculture) by combining seaweed culture and floating cage of multi species fisheries commodities seem also has a good prospective to improve productivity of coastal area. In the future, developing aquaculture models using the bio-recycle system to reduce and minimize the inorganic and organic waste from the remaining feed, feces and the other sources will be useful to maintain sustainable aquaculture in the coastal area.

Ir. AriefArianto, M.Sc.
Director of Center for Agricultural Production Technology

Technology of Fishery Production Based on Sato Umi in Bantaeng Technopark - South Sulawesi

Bantaeng Technopark is a real Nawa Cita program of Kabinet Kerja Indonesia in 2014-2019. Bantaeng Technopark activity involves university, business, government and society, which known as the concept of the "ABGC" (Academic, Business, Government, Community).Collaboration between Bantaeng Regency local government and Agency for The Assessment and Application of Technology (BPPT) are contributing to initiating The Technopark programs. BPPT provide technology and promote the emergence of a technology based entrepreneur candidate (PPBT) in seed and seedling production, also technology of fishery production and food processed products based on marine products.

Utilization of Satoumi concept in Technopark Bantaeng that is it creates to manage harmony between human activities in the fisheries sector with the preservation of coastal ecosystems. This activities in the harmonious of fishery sector will develop an economics sector and preserve a coastal ecosystems
Currently, Technopark Bantaeng has produced some fishery products, including tilapia seeds which have been sold to various regions in eastern part of Indonesia, seaweed seeds and various food processed products of fishery products.

To support the Technopark's activities, Techopark Bantaeng has started Diploma program since 2017 in Bantaeng, which aims to build skilled people in the field of seeds techniques and also thingking about the environment sustainability. Technopark Bantaeng uses informatics and communication Technology which is called e-Benih application, a special application intended for seed marketing.

Fauzi Umar
Director for Bussiness and Investation Board of Regional Management Agency of Sabang

Opportunities and Challenges of Sabang Development as a World Maritime Tourism Destination

If there is no crossroads the central government has appointed Aceh Province especially Sabang City to host the national / international event "Sail Sabang 2017" which took place on 28 November - 5 December 2017. This grand event became the momentum of economic revival of Free Port and Free Trade Zone Sabang with the government's plan to organize and build the Sabang Area as the destination of the sea tourism port of the world.

Sabang Sail momentum is one of the government's solution to develop Aceh economy, especially Sabang post oil and gas autonomy 2025 considering its very strategic location and become the gate of western part of Indonesia, specially become gate way in Malacca Strait. In addition Weh Island is also located at the meeting of three very specific marine areas of the Indian Ocean - the Andaman sea and the Strait of Malacca which has a promising source of maritime potential in the future for the country, especially if the plan of the Government of Thailand to open the canal manifested.

Dr. Ir. ZainalArifin, M.Sc.
Deputy Chairman for Earth Science, LIPI

Development of Oceanographic Research Station as an Effort to Utilize Marine Resources and Support Marine Tourism

Weh island is one of the outermost small islands with a position that is at the far end of the Western Region of Indonesia (KBI). Weh island water territory is directly adjacent to Malaysia, Thailand, Myanmar and Bangladesh. Position Weh island is also very strategic because it is located in the waters of the Strait of Malacca, Andaman Sea, Bay of Bengal and East Indian Ocean where the utilization of fishery resources is still not optimal. On the other hand, the results of previous studies have predicted that the Andaman Sea and the East Indian Ocean region are an up-welling area of the water masses. Therefore, the development effort of Oceanographic Research Station in Weh island (Sabang City) is aimed at 1) provision of oceanographic baseline data to support the utilization of marine resources, 2) strengthening of oceanographic research networks at national and regional levels, and 3) deep sea supporting marine tourism program.

The provision of basic oceanographic information (physical, chemical and biological) serves to understand up-welling phenomenon and to know the various potential of fishery and marine in supporting the activities of capture fishery, cultivation, and management of marine resources sustainably. Information on marine biodiversity and potential will also benefit the management of conservation areas of mangrove ecosystems, seagrass and coral reefs, as well as small island ecosystems. With a variety of basic research programs, the existence of LIPI Oceanographic Station can contribute positively not only in the utilization of marine resources in the fishery and maritime sectors, but also encourage the growth of marine tourism industry sector.

To accelerate the development process and initiate research activities, in the past two years there have been 1) several exploration activities as the basis for the development of oceanographic stations, 2) the preparation of blue-print oceanographic research stations, 3) the implementation of partnership research with national agencies and international organizations. The development of an oceanographic research station has been started since mid-2017 by utilizing land grants from the Government of Aceh and Management Board of Sabang (BPKS). of 4.9 ha.

Dr. Ir. Muhamad Sadly, M. Eng.
Dr. Daryono, S.Si., M.Si.
Meteorology Climatology and Geophysics Agency (BMKG)

The Importance of Earthquake Information And Tsunami Early Warning BMKG In Supporting Maritime Tourism

The Indonesian territory is part of the world's earthquake path that extends from the island of Sumatra, Java, Bali, Nusa Tenggara, Maluku, Sulawesi, to Papua. As an area located on the path of the earthquake, the physiographic condition of Indonesia is greatly influenced by the collision activity of the three major plates of the world, namely the Indo-Australian Plate, Eurasia, and the Pacific. This condition makes the territory of Indonesia as one of the areas with high seismic activity level in Indonesia. Strong earthquakes centered on the ocean with shallow depths can trigger a tsunami. Along with the progress of tourism development, now many developing maritime tourism in various places in the territory of Indonesia. This type of maritime tourism is usually associated with beaches and the sea, such as: panoramic beauty of the beach, coral reefs, fishing, sailing, surfing, rowing, diving, and others. However, some of our people still have a sense of the dangers of the tsunami while enjoying maritime tourism. This is considered reasonable, because it is a lot of earthquake sources in the territorial waters of Indonesia.

In anticipation of the dangers of earthquake and tsunami, the Meteorology Climatology and Geophysics Agency (BMKG) since 2008 has operated the system of monitoring, processing and dissemination of earthquake information and tsunami early warning. This system is known as Indonesia Tsunami Early Warning System (InaTEWS). The Meteorology Climatology and Geophysics Agency (BMKG) is committed to providing earthquake information and tsunami early warning less than 5 minutes after the earthquake. This system provides information services for all regions of Indonesia through multi-mode dissemination, such as: SMS, Digital Video Broadcasting (DVB) / Warning Receiving System (WRS), facsimile, e-mail, website, television, radio, whatsap (WA) and media other social.

Until now BMKG operates DVB / WRS dissemination equipment of 261 units. As a means of evacuation orders related to the tsunami threat, has already installed 52 tsunami sirens. To confirm the tsunami has operated 132 tide gauges and 9 CCTV units. All InaTEWS infrastructure is very important, and operated and developed by Meteorology Climatology and Geophysics Agency (BMKG) , one of which is to secure and support maritime tourism.

Dr. Ir. Nani Hendiarti, M.Sc
Assisstant Deputy of Maritime Science and Technology
Coordinating Ministry of Maritime Affairs

Utilization of Science and Technology for Marine Tourism Development

The maritime development vision of 2045 has been proclaimed by the National Development Planning Agency (Bappenas), where in 2045 the GDP reaches 30% of the maritime economy where one of them is obtained from the tourism sector. Tourism became a leverage of the national economy after the oil and gas and forestry sectors decreased. To that end, the government has set 10 Strategic Areas of National Tourism where seven of them are marine tourism. The Blue Economy concept of marine tourism should be applied by exploring natural resources for economic growth, community welfare and environmental health. Minimizing negative impacts and maximizing positive impact are two things that touch each other. This requires a strategy to address these challenges by prioritizing ongoing results. The utilization of science and technology plays an important role in developing sustainable marine tourism, especially from the characteristics of the destination, the characterization of tourists, the type of tourism development and the management of the destination. The Coordinating Ministry for Marine Affairs has initiated a coral reef park in Seribu islands as a major tourist destination as well as biodiversity conservation. Coordination of remote sensing technology applications has been made for the development of marine tourism in terms of objective characterization and development. Approach of science and technology and community education was done to keep the hygiene of tourist destinations from marine plastic waste. To respond to the availability of energy in marine tourism locations that are sometimes located in separate locations, coordination and synergy with relevant ministries and agencies to develop alternative renewable energy, as well as hybrid.

Dr. Muhammad Irham, M.Si.
Head of Department of Fishery Resources Utilization
Faculty of Marine and Fisheries - UniversitasSyiah Kuala, Aceh

Marine Tourism Aceh: Opportunities and Challenges Towards World Class Tours

The province of Aceh is the leading provision at the tip of Sumatera island bordering the Bay of Benggal to the North, the Indian Ocean to the West, the Malacca Straits in the East and North Sumatra to the southeast and the South. Geographically, Aceh is located between 20 - 60 north latitude and 950 - 980 east longitude, has a total land area of 56,759 km^2 and sea of 22,909 ha and coastline length is about 2,666 km. Aceh province that has flat topography 2% slope spread along the west - south coast and north - east coast with an area of 24.83% of the total area. With the topography of the coastal conditions, coastal areas are very feasible and have the potential to be developed into a tourist industry as one of the promising sectors of the economy. However, this is highly dependent on government policy. In addition, the development of human resources to improve the quality of services should also be improved. Government intervention and human resource reliability are expected to support economic development through increased tourism productivity.

Besides the geographical advantage, the development of the Aceh marine tourism sector also has the opportunity to utilize coastal nature attraction. Aceh is currently trying to make the tourism sector, especially marine tourism into the main sector driving the economy by offering various attractions both cultural and natural. Looking at the reality, Aceh as a marine tourism destination area is expected to contribute to the community because actually the tourism industry is an industry that is directly related to the economic development of society. Therefore, to achieve an international-class tourist destination, Aceh still has to sharpen some programs that support the improvement of tourism industry sector such as creative industry.

Some of the challenges that need to be considered by the government of Aceh in particular and the national government generally are to make the tourism industry a positive plus to support the economy of Aceh and as a world-class tourist destination. Nevertheless, the development of tourism sector in Aceh can not be separated from other challenges such as how to cultivate Aceh as the main gateway of the western region becomes the starting point of the entry of tourists to Indonesia. The idea of Sail Sabang 2017 as a tourism promotion to Sabang is an opportunity and opportunity that can be utilized for maritime tourism destination of Aceh. Therefore promotions, attractions, access and amenities (ac accommodating) need to be harmonized with government policy in the tourism sector. Another most reliable promotion is promoting conventions or business and government meetings in Aceh. The next challenge faced is the regulation, service and creative industries that support the marine tourism sector of Aceh. Therefore, marine tourism program should be implemented in Aceh strategic development plan in the future.

VI. LIST OF SPEAKERS, MODERATOR AND FOREIGN PARTICIPANT

No.	Nama dan Jabatan	Instansi
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2	Dr. Ir. Soni Solistia Wirawan, M. Eng Principle Secretary of Agency for the Assessment and Application of Technology (BPPT)	Agency for the Assessment and Application of Technology (BPPT)
3	Prof. Ir. Wimpie Agoeng Nugroho, A, MSCE., Ph.D Deputy Chairman of BPPT for Natural Resources Development Technology of BPPT	Agency for the Assessment and Application of Technology (BPPT)
4	Prof. Dr. Ir. Indroyono Soesilo, M.Sc Honorary Advisor for Ministry of Tourism	Ministry of Tourism
5	Prof. Dr. Tetsuo Yanagi International EMECS Center, Japan Professor Emeritus of Kyushu University, Japan	International EMECS Center, Japan
6	Dr. Ir. Gellwyn Daniel Hamzah Jusuf, M.Sc. Secretary Ministry of National Development Planning	Ministry of National Development Planning
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244.	Suzumu Higuchi, Mr.	Director, International EMECS Center, Japan
245.	Syah Johan Ali Nasiri, Ir. M.Sc, PhD	Center Of Technology For Material - BPPT
246.	T. Muhammad Arief, S. Sos	Bureau Of Human Resources And Organization - BPPT
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249.	Teddy Alhady Lubis, Ir. M.Eng.	Head of Laboratory For Machine Tools, Production, And Automation Technology - BPPT
250.	Teruhisa Komatsu, Prof. Dr.	Yokohama College of Commerce, Japan
251.	Tetsuji Okuda, Dr.	Ryukoku University, Japan
252.	Tetsuo Yanagi, Prof. Dr.	International EMECS Center, Japan
253.	Tien Turmuktini, Dr. MP	Winayamukti University
254.	Titin Handayani, Dr. Dra. M.Si.	Laboratory For Water And Waste Water Treatment Technology - BPPT
255.	Tjahjo Pranoto, Dr. Ir. M. Eng.	Head of Laboratory For Thermodynamics Engine And Propulsion Technology - BPPT
256.	Tjahjono Juwono Djatmiko Adi, Ir. M.T.	Head Of Laboratory For Ceramic Based Creative Industry - BPPT
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258.	Toto Purbiyanto, S Kom., M.T.I	Bureau Of Human Resources And Organization - BPPT
259.	Toufan Phardana	Marince Science - Bogor Agricultural University

260.	Tri Handoko Seto, Dr. S.Si., M.Sc.	National Laboratory For Weather Modification Technology – BPPT
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262.	Unggul Priyanto, Dr. Ir. M.Sc.	Chairman of Agency for the Assessment and Application of Technology (BPPT)
263.	Via Apriyani	University of Indonesia
264.	Wahyu Muzammil	Committed Officer - University of Indonesia
265.	Wahyu Purwanta, Dr. Ir. MT.	Center Of Technology For The Environment – BPPT
266.	Wahyu Widodo Pandoe, Dr. Ir. MSc.	Deputy For Design And Engineering Industrial Technology - BPPT
267.	Warih Hardanu, Ir. M.Sc.	Kerawang Aquaculture
268.	Warseno, SH	Center Of Technology For Specific Region- BPPT
269.	Wawan Cahyono Ashuri, M.Pi	Kerawang Aquaculture
270.	Wawas Swathatafrijiah, Drs. M.Sc.	Head of Inspectorate
271.	Widya Krisnawati	Cabinet Secretariat of Indonesia
272.	Wike Lisma Eka Putri	Muhammadiyah University - Tangerang
273.	Wimpie Agoeng N. Aspar, Prof. Ir. MSCE.,Ph.D	Deputy For Natural Resources Development Technology -BPPT
274.	Winda Nawfetrias, S.P	Center For Agricultural Production Technology - BPPT
275.	Wisman Indra Angkasa, A.Pi.	Center Of Technology For Specific Region- BPPT
276.	Wisnu Aji Nugroho	Ministry of Agrarian and Spatial Planning
277.	Witono Basuki, Prof. Dr. Ir. Msc	Center for Bioindustrial Technology - BPPT
278.	Yenny Bakhtiar, Dr. Dra. M.AG.Sc.	Head of Center for Technology Services - BPPT
279.	Yudho Andika	Bogor Agricultural University
280.	Yudi Anantasena, Ir. M.Sc.	Director of Center for Regional Resources Development Technology - BPPT
281.	Yudi Purwantoro, Dr. CISA, CRISC.	Director of Center of Technology for Electronics - BPPT
282.	Yulius	Marine Research Center
283.	Yusuf Afandi, Ir. MT	National Laboratory for Structural Strength Technology - BPPT
284.	Zainal Arifin, Dr. Ir. M.Sc	Deputy Chairman for Earth Sciences, Indonesian Institute of Sciences (LIPI)
285.	Zulfahri Abdullah, S.IK	Sula Islands - North Maluku, Indonesia

VIII. PHOTOS

Opening Address by Chairman of BPPT
Dr. Ir. Unggul Priyanto, M.Sc

Opening Ceremony of National Seminar on Science Technology for Sabang Marine Tourism Development and The 4th International Workshop on Sato Umi 2017 by Chairman of BPPT
Dr. Ir. Unggul Priyanto, M.Sc

Plenary Speakers on the Opening Ceremony of National Seminar on Science Technology for Sabang Marine Tourism Development and The 4th International Workshop on Sato Umi 2017

Group photo
National Seminar of Science and Technology of Marine Tourism of Sabang and International Workshop of Sato Umi 2017

Committee Report by Prof. Ir. Wimpie Agoeng Nugroho, A, MSCE., Ph.D
Deputy Chairman of BPPT for Natural Resources Development (TPSA)

Speech from Honorary Advisor to the Minister of Tourism
Prof. Dr. Ir. Indroyono Soesilo, M.Sc S

Speech of the Deputy for Coordination of Human Resources, Science and Technology and Maritime Culture. The Coordinating Ministry for Marine Affairs
Dr. Ir. Safri Burhanuddin, M.Sc

Speech of the Deputy Governor of Aceh Province

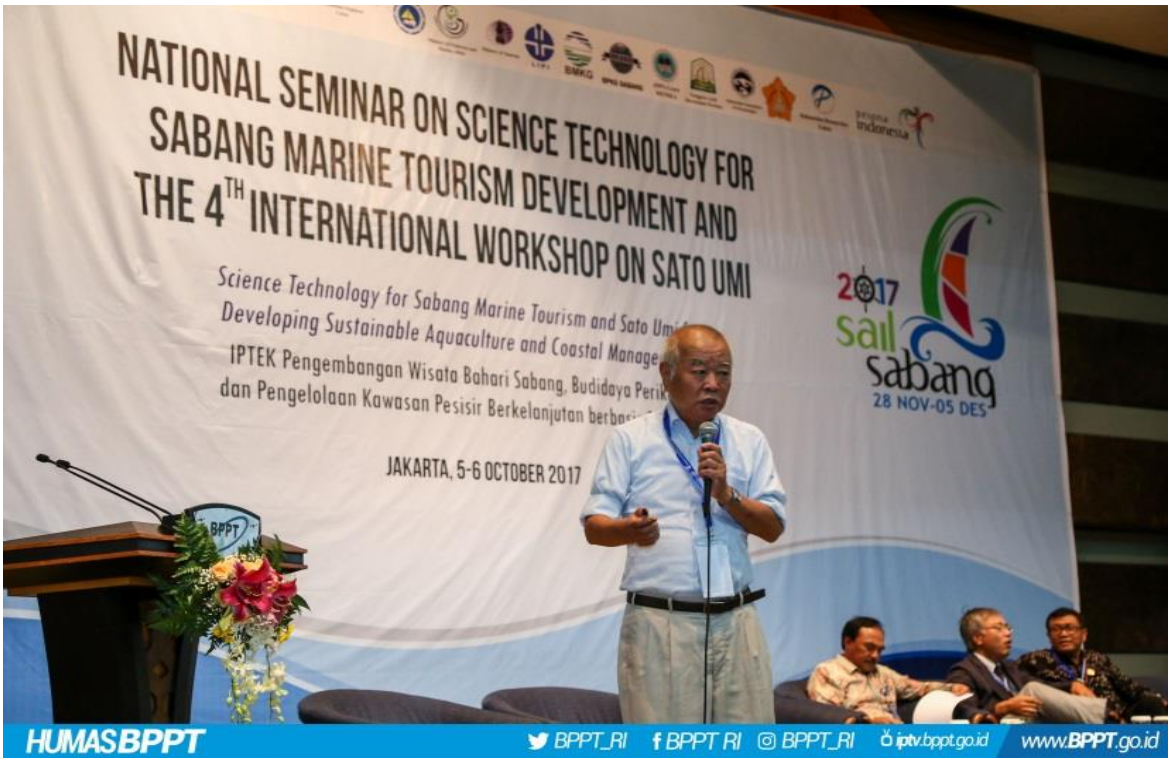
Ir.H. Nova Iriansyah, M.T

Speech of Secretary of the Minister of PPN / Main Secretary of Bappenas
Dr. Ir. Gellwyn Daniel Hamzah Jusuf, M.Sc.

Message from the Director General of Research and Development Reinforcement
Ministry of Technology Research and Higher Education
Dr. Muhammad Dimyati

Keynote Speech Prof. Dr. Tetsuo Yanagi
International EMECS Center, Japan
Professor Emeritus of Kyushu University, Japan

Closing remarks by the Principle Secretary of BPPT
Dr. Ir. Soni Solistia Wirawan, M. Eng



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Prof. Emeritus of Kyushu University and
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PICES/FRA-Japan

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Yokohama College of Commerce, Japan

Mr. Singo Kochi
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Dr. Takafumi Yoshida
Northwest Pacific Region Environmental Cooperation Center (NPEC), Japan

Dr. Shion Takemura
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Dr. Tetsuji Okuda
Ryukoku University, Japan

Dr. Ir. Gatot Dwianto, M.Eng
Deputy Chairperson of BPPT for Technology Policy
Agency for the Assessment and Application of Technology

Dr. Ir. Slamet Soebjakto, M.Si
Director General of Aquaculture Fishery-Ministry of Fisheries and Marine Affairs

Prof. Dr. Ir. Suhendar I Sachoemar, M.Si
Head of Center for Development, Education and TrainingBPPT

Ir. Arief Arianto, M.Sc
Director of Center for Agriculture Technology Production, Agency for the Assessment and Application of Technology BPPT

Presentation and discussion of the Sato Umi Workshop

Signing of MoU between BPPT and Sabang Region Management Board in the event National Seminar of Science and Technology of Marine Tourism of Sabang and International Workshop of Sato Umi 2017

Press Conference National Seminar on Tourism and Marine Tourism Sabang And International Workshop Sato Umi 2017

Material presentation at National Seminar of Science and Technology of Sabah Marine Tourism

Opening Ceremony, Group photo and Signing MoU of National Seminar on Science Technology for Sabang Marine Tourism Development and The 4th International Workshop on Sato Umi 2017

Field trip participants of the International Workshop Sato Umi 2017 at the Center for Aquaculture Fishery Services Ministry of Marine and Fisheries – Karawang

Field trip participants of the International Workshop Sato Umi 2017 at the Center for Aquaculture Fishery Services Ministry of Marine and Fisheries – Karawang

Field trip participants of the International Workshop Sato Umi 2017 at the Center for Aquaculture Fishery Services Ministry of Marine and Fisheries – Karawang

IX. DOCUMENTATION LIST & PRESS INFORMATION

1. Documentation

- http://pusbindiklat.bppt.go.id/unduh-16/satoumi-dan-sail-sabang
- http://pusbindiklat.bppt.go.id/unduh-16/sail-sabang
- http://pusbindiklat.bppt.go.id/unduh-16/booklet-satoumi-sail-sabang
- http://pusbindiklat.bppt.go.id/unduh-16/rumusan-17
- http://pusbindiklat.bppt.go.id/unduh-16/konferensi-17
- http://pusbindiklat.bppt.go.id/galeri/foto/300-sss-17

2. Press Information

- http://www.technology-indonesia.com/index.php/pertanian-dan-pangan/perikanan/1487-bppt-gelar-workshop-pengelolaan-kawasan-pesisir-berbasis-sato-umi
- https://twitter.com/MarbunSaortua/status/915801360766865409?s=08
- http://www.cakrawalanews.co.id/artikel/1479/BPPT-Akan-Terapkan-Konsep-Sato-Umi-di-Sabang-Aceh/
- http://mediaaceh.co/2017/10/05/30237/wagub-aceh-hadiri-seminar-bppt-bahas-wisata-sabang
- http://www.beritasatu.com/iptek/456431-bppt-akan-kembangkan-konsep-perikanan-sato-umi-di-sabang.html
- http://infopublik.id/read/226167/bppt-akan-terapkan-konsep-sato-umi-di-sabang.html
- http://infopublik.id/read/226251/wagub-aceh-apresiasi-langkah-bppt-tingkatkan-wisata-bahari-di-sabang.html
- http://www.rri.co.id/post/berita/441980/teknologi/sabang_akan_jadi_proyek_percontohan_sato_umi_di_indonesia.html
- http://www.technology-indonesia.com/index.php/pertanian-dan-pangan/perikanan/1487-bppt-gelar-workshop-pengelolaan-kawasan-pesisir-berbasis-sato-umi
- http://www.technology-indonesia.com/index.php/pertanian-dan-pangan/perikanan/1488-konsep-sato-umi-akan-diterapkan-di-sabang
- http://harianterbit.co/2017/10/05/bppt-terapkan-konsep-sato-umi-dukung-program-pengembangan-sumber-daya-perikanan-kawasan-pesisir/
- [05:35, 10/7/2017] Wiwi Humas: https://itechmagz.com/2017/10/06/bppt-terapkan-konsep-sato-umi-di-sabang-nad/