

## **Report of the International Workshop Organized by PICES/MAFF Project on “Marine Ecosystem Health and Human Well-Being”**

### **1. BACKGROUND**

In 2012, PICES started a project “*Marine ecosystem health and human well-being*” which is funded by the Ministry of Agriculture Forestry and Fisheries of Japan (MAFF) for 5 years (April 1, 2012 – March 31, 2017). The overall goal of the project is to identify the relationships between sustainable human communities and productive marine ecosystems in the North Pacific under the concept of fishery social–ecological systems. In Japan, this concept attracts attention as the “*Sato-umi*” fisheries management system. Specifically, considering the global changes in climate and human social and economic conditions, it aims to determine: a) How do marine ecosystems support human well-being? and b) How do human communities support sustainable and productive marine ecosystems? The principal investigators of this project are Dr. Mitsutaku Makino (Japan) and Dr. Ian Perry (Canada) whose activities are supported and consulted by the project’s Science Team.

Based on the decisions made at the 1<sup>st</sup> Project Science Team meeting on October 11, 2012, in Hiroshima, Japan, the PICES-MAFF project would involve holding two workshops in in developing countries in three regions of the North Pacific (Southeast Asia, Pacific oceanic islands, and Central America). Indonesia was selected because of its large population and aquaculture-intensive industry. Palau was chosen because of its focus on the finfish capture fishery and its existing networks of community-based fisheries). Guatemala was selected because its coastline features an upwelling system favourable for the finfish fishery and aquaculture). This report is on the first workshop held March 13–14, 2013, in Jakarta, Indonesia.

### **2. GEMPITA-SPL CONCEPT IN INDONESIA**

The Indonesian Agency for the Assessment and Application of Technology (BPPT) has developed a concept of managing coastal and marine resources in a balanced, harmonious, integrated and productive environment by actively involving the community. This Indonesian concept is called GEMPITA-SPL (Gerakkan Masyarakat Peduli Kelestarian Sumberdaya Perikanan, Pesisir dan Laut ) or, in the English language version, as SFiCoMS (Sustainable Utilization of Fisheries, Coastal and Marine Resources for the Society). The GEMPITA-SPL or SFiCoMS concept has been implemented in the northern coastal area of Java Development Activities in West Java (GAPURA) by BPPT and the local Department of Fisheries and Marine Affairs through the development and promotion of environmentally friendly aquaculture technology called Integrated Multi-Trophic Aquaculture (IMTA). This approach features concepts of bio-recycling in idle and/or marginal brackish water ponds of the northern coastal area of West Java. By applying this concept, the coastal environment which has been heavily damaged by shrimp monoculture can be recovered to become more biodiverse and productive, leading to a balanced and harmonious way to improve the welfare of local communities. The GEMPITA-SPL concept fits very well within the framework of fishery social-ecological systems in the PICES/MAFF Project.

### **3. OUTLINE OF THE WORKSHOP**

The first PICES/MAFF project workshop, was held in March 13–14, 2013, in Jakarta, Indonesia. The workshop was attended by 93 participants from Indonesia, Japan, and the USA. Indonesia was represented by the Ministry of Marine Affairs and Fisheries, Ministry of Research and Technology, Ministry of Environment, Ministry of Public Works, Coordinating Ministry for the Economy, Finance and Industry, Coordinating Ministry for People’s Welfare, Ministry of Development of Disadvantaged Areas, Ministry for National Development Planning, Food Security Agency of the Ministry of Agriculture, Bandung Institute of Technology, Bogor Agriculture University, and local governments.

The objectives of the workshop were:

- To develop the contents of a manual that will describe GEMPITA-SPL/SFiCoMS and GAPURA experiences in Java Province according to local conditions at some candidate sites.
- To assess the utility of PICES' scientific tools for enhancing the human well-being of local communities and for rehabilitating coastal ecosystem at some candidate sites.

The first day of the workshop was spent at the Main Commission Hall of BPPT's Headquarters in Jakarta. It was started with a welcome by Ms. Nenie Yustiningsih (Director of the Center for Agricultural Production Technology of BPPT), followed by opening remarks and introduction by Dr. Makino (Fig. 1). The keynote speech was made by Professor Tetsuo Yanagi from Kyushu University, Japan. The opening of the workshop was formally announced by Dr. Listyani Wijayanti (Deputy Chairman of BPPT). A total of 10 presentations were given on the first day. Dr. Mark Wells (University of Maine, USA; Fig. 2) described previous activities of PICES in Indonesia and suggested ways that PICES science can support GEMPITA-SPL. Dr. Masahito Hirota (National Research Institute of Fisheries Science, Fisheries Research Agency, Japan) talked about how PICES scientific tools can support the analysis of well-being in coastal societies.



Fig. 1 Dr. Mitsutaku Makino giving opening remarks and introduction at the workshop.



Fig. 2 Panel discussion including participation by Drs. Masahito Hirota (far left) and Mark Wells (center).

The second day featured a field trip to the Karawan area of West Java where BPPT has developed GEMPITA-SPL (Fig. 3). Participants visited Center for Brackishwater and Marine Culture of West Java Province and the National Center for Brackishwater Aquaculture to observe aquaculture ponds that applied the GEMPITA-SPL approach, and had discussions with local stakeholders (fishers, managers, *etc.*).

The workshop attracted serious attention from the Indonesian media, with many reports appearing in newspapers, on TV and internet news (Fig. 4).



Fig. 3 Field trip to the West Java area.

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**OTHER CATEGORIES:** Daerah Pajak Entrepreneur Buku

**BPPT Kembangkan Konsep Perikanan Baru**  
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Badan Pengkajian dan Penerapan Teknologi (BPPT) bekerjasama North Pacific Marine Science Organization (PICES), Ministry of Agriculture, Forestry and Fisheries of Japan (MAFF) dan Fisheries Research Agency of Japan (FRA) akan kembangkan suatu konsep baru SATO-UMI.

Ini merupakan gerakan pembangunan, pengelolaan dan pemanfaatan sumberdaya perikanan, pesisir dan kelautan secara bijaksana, seimbang dan harmonis, terintegrasi dan lebih produktif.

Kegiatan tersebut akan melibatkan masyarakat secara aktif dalam konsep Gerakan Masyarakat Peduli Barat (GAPURA).

"Konsep baru pengelolaan sumberdaya perikanan ini dibuat seramah mungkin terhadap lingkungan," kata Deputy Kepala BPPT Bidang Agroindustri dan Bioteknologi, Listyani Wijayanti pada acara International Workshop SATO UMI-GEMPITA SPL-GAPURA yang diselenggarakan di BPPT Jakarta, Rabu (13/3).

Jadi SATO-UMI tersebut pendekatannya ada tiga yaitu masalah sosial, teknologi, dan kelestarian sumber daya. Intinya mengawinkan teknologi kearifan lokal, sosial dan ekonomi, ukapnya.

Menurutnya, konsep SATO-UMI, selain di Jepang sendiri juga sudah diterapkan di Guatemala, Filipina, dan selanjutnya akan diterapkan di Indonesia. Kalau di Indonesia, SATO-UMI pendekatannya melalui budidaya dengan melibatkan masyarakat.

M. Makino dari FRA-Japan, dalam kesempatan tersebut juga menggambarkan keuntungan penggunaan konsep SATO-UMI tersebut. Menurut manfaat SATO-UMI tidak hanya dari sisi perikanan saja tetapi juga dari unsur-unsur lain seperti pelestarian lingkungan, selain itu juga dapat ditanami rumput laut, sehingga akan meningkatkan pendapatan masyarakat, termasuk industri-industri di sekitarnya.

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Fig. 4 Media report about the LOI signing ceremony by Dr. Makino and Dr. Listyani (BPPT Vice Chairman).

#### 4. THE MAIN OUTPUTS FROM THE WORKSHOP AND THE NEXT STEPS OF THE PICES/MAFF PROJECT

Many important outputs have come from the workshop (March 13–14) and from discussions held the next day (March 15). The first output was a Letter of Intent (LOI; Appendix 1) between PICES and BPPT to recognize the benefits to their respective institutions of establishing an international link (Fig. 4). The second output was a draft list of parameters to assess GEMPITA-SPL performance (Table 1). In close coordination with Indonesian scientists, PICES scientists will support the assessment of these parameters in sample ponds where GEMPITA-SPL has been implemented. A third output was a table of contents developed for a GEMPITA-SPL manual to facilitate the dissemination of GEMPITA-SPL activities in Indonesia (Table 2). These main outputs will be discussed at the second meeting of the Project Science Team to be held June 11–12, 2013, in Honolulu. Based on the advice and comments from this meeting, the second workshop will be held around March 2014.

In addition to this Indonesian study, the PICES/MAFF Project will study a case in Guatemala in 2013, and in Palau in 2014. A progress report on these areas will be reported soon.

*Table 1 Draft list of parameters to assess the performance of GEMPITA-SPL.*

<b>Aquaculture production parameter</b>	<b>Marine Ecosystem parameter</b>	<b>Social system parameters</b>
1. Production (Number of species, Kg, Value). We have statistics.	1. Dissolved Oxygen	1. Number of employment (farmer, processors, distributors, retailers)
2. Quality of aquaculture products: changes in size, and weight.	2. Nutrient concentrations, chemical species, and ratios; Nitrate/nitrite and ammonium. P, Si	2. Multiple (synergy) effects (distribution, value chain, etc.)
3. Costs of Production: costs for feeds, seeds, labor, operation costs.	3. Water transparency	3. Added values (production, processing, distribution)
4. Disease: shrimp-virus (see 2-7), # of dead. Fish-bacteria/pathogen (pending) Shellfish-toxins (pending)	4. Phytoplankton abundance, and species composition	4. Social Infrastructure (hospital, Health care, disaster protection (evacuation plan, hazard map), Information system (IT), etc.)
5. Recovery of non-used ponds we can try	5. Bacteria abundance	5. Industrial Infrastructure (fish Market and Supply chain)
6. Other parameters?: origin of the seeds.	6. Virus abundance	6. Education system (Technical skill, food security, processing, etc.)
	7. Sediment quality Pre-ASV, Post-ASV (Ion selective electrode)	7. Average/range of Income (farmer, processors, distributors, retailers)
	8. Temperature and salinity	

*Table 2 The contents of GEMPITA-SPL Manual (Ver. 1).*

Executive Summary

1. Introduction for the concept of GEMPITA-SPL
  - S1 Concept of Sato-umi (by Prof. Yanagi)
  - S2 Concept of Gempita (by Dr. Suhendar)
2. Why we need Gempita (the expected outcome from Gempita to ecosystem and community)
  - S1 Ecological system perspective
  - S2 Social system perspective
3. How to introduce Gempita (technical how-to)
4. How to assess the effectiveness of Gempita (scientific assessment how-to)
5. Conclusion

Glossary



**Appendix 1** Draft Agenda and meeting report from 1<sup>st</sup> Indonesia Workshop

		
Agency for the Assessment and Application of Technology	North Pacific Marine Science Organization	Fisheries Research Agency of Japan

**DRAFT AGENDA**  
**INTERNATIONAL WORKSHOP ON SATO UMI-GEMPITA SPL-GAPURA**  
 (A New Concept and Model for Sustainable Fisheries, Aquaculture and Coastal Management)  
 Jakarta, March 13-14, 2013  
 Organized by BPPT Indonesia, PICES/MAFF, Fisheries Research Agency of Japan

**March, 13 : First Comission Room BPPT Bld.II 3<sup>rd</sup> Fl -JL. M.H.Thamrin No. 8 Jakarta 10340**

Schedule	Agenda	Speaker
08.30-09.00	Registration	
09.00-09.05	Opening	MC
09.05-09.15	Report and welcome remarks	Director of Centre for Agriculture Production Technology-BPPT
09.15-09.25	Welcome Remark	Deputy Chairman for Biotechnology and Agroindustry Technology-BPPT
09.25-09.45	Opening Remark and introduction of the workshop	M.Makino (FRA-Japan)
09.45-10.15	Keynote Speech of Sato Umi	Prof. T. Yanagi (Kyushu University)
10.15-10.25	Keynote Address and Opening Workshop	Chairman of BPPT
10.25-10.45	MOU, Group photos, Press Release etc	
10.45-11.00	Coffee Break	
Session 1		
Chairman		M. Husni Amarullah (BPPT)
11.00-11.15	Harmonization between local wisdom and new technology on the fisheries and coastal management.	Antropologist (Univesity) will be decided
11.15-11.30	Coastal restoration and rehabilitation programme to support aquaculture development in Indonesia	Director General for Marine Coastal and Small Islands, Ministry of Marine Affairs and Fisheries -INA
11.30-11.45	Aquaculture Development in the Coastal Area	Director General of Aquaculture- Ministry of Marine Affairs and Fisheries -INA
11.45-12.00	Infrastructure Support in the Coastal Area	Director General of WaterResources, Ministry of Public Works-INA
12.00-12.20	Discussion	
12.20-13.00	LUNCH BREAK	
Session 2		
Chairman		Prof. T. Yanagi-Kyushu University
13.00-13.20	Sato Umi, GEMPITA-SPL/SFiCOM- GAPURA Programme in Indonesia	Suhendar I Sachoemar (BPPT,INA)
13.20-13.40	Past PICES's activities Supproting GEMPITA-SPL- SFiCOM and GAPURA in Indonessia	Vera Trainer (NOAA, USA), Mark Wells (Maine System Univ., USA), Charlie Trick (Western Univ., Canada)
13.40-14.00	Well-being analysis for Sato-Umi in Indonessia	Masahito Hirota (FRA, Japan)

14.00-14.20	Ecosystem Modeling of Breackishwaterpond	Susanna Nurjaman (Bandung Institute of Technology, INA)
14.20-15.00	Discussion	
15.00-15.30	Coffee Break*	
<b>Session 3</b>		
Chairman		Suhendar I Sachoemar (BPPT)
15.30-15.45	Status and Problem of the Coastal and Fisheries Resources Management of West Java Province	Head of the Department of Marine and Fisheries in West Java Province
15.45-16.00	Status and Problem of the Coastal and Fisheries Resources Management of Bantaeng Region-South Sulawesi Province	Regent of Bantaeng – South Sulawesi Province
16.00-16.15	Status and Problem of the Coastal and Fisheries Resources Management of Tanah Bumbu Region–South Kalimantan Province	Regent of Tanah Bumbu – South Kalimantan Province
16.15-17.30	General Discussion, Summary and Action Plan Launch of Sato Umi Activities	M.Makino (FRA-Japan) Suhendar I Sachoemar (BPPT), Prof. T. Yanagi (Kyushu University), M. Husni Amarullah (BPPT)
17.30-17.45	Closing	MC
18.30-21.00	Dinner	

\*Special meeting for the leader of local government (West Java, Bantaeng, Tanah Bumbu)

### **March, 15 : Field Trip to Karawang (Center for Breackishwater Aquaculture)**

<b>Schedule</b>	<b>Agenda</b>	<b>Speaker</b>
06.30-09.30	Heading to Karawang	OC and Participant
Chairman		M. Husni Amarullah (BPPT)
09.30-09.45	Welcome Address	Head of Center for Breackishwater Aquaculture
09.45-11.15	Field Trip at Center for Breackishwater Aquaculture	Head of Center for Breackishwater Aquaculture
11.15-11.30	Heading to Center for Breackishwater and Marine Culture of West Java Province - Karawang	OC and Participant
Chairman		Suhendar I Sachoemar (BPPT)
11.30-11.45	Welcome Address	Head of Center for Breackishwater and Marine Culture of West Java Province - Karawang
11.45-13.15	Field Trip at Center for Breackishwater and Marine Culture of West Java Province - Karawang	OC and Participant
13.15-14.15	<b>LUNCH BREAK</b>	
14.15-16.45	Discussion with local leader of the northern coastal area of west Java communities, Summary and Action Plan Launch of Sato Umi Activities	M.Makino (FRA-Japan) Suhendar I Sachoemar (BPPT), Prof. T. Yanagi (Kyushu University)
16.45-17.00	Closing	
17.00	Return to Jakarta	OC and Participant

March 12 : Preliminary meeting at Sari Pan Pacific Hotel 08.00 pm.

March 14 : Wrap up meeting on the Bus 17.00-20.00

March 15 : Wrap up meeting at BPPT in 01.00 pm

**Appendix 2** Letter of Intent between PICES and the Agency for the Assessment and Application of Technology



Agency for the Assessment and  
Application of Technology



North Pacific Marine Science Organization

**LETTER OF INTENT**

**Between**

**AGENCY FOR THE ASSESSMENT AND APPLICATION OF TECHNOLOGY  
(BADAN PENGKAJIAN DAN PENERAPAN TEKNOLOGI / BPPT)**

**And**

**North Pacific Marine Science Organization (PICES)**

**Concerning**

**THE DISSEMINATION OF “SATO-UMI” GEMPITA-SPL/SFiCoMSCONCEPT  
IN INDONESIA**

1. The Agency for the Assessment and Application of Technology (Badan Pengkajian dan Penerapan Teknologi/BPPT) and the North Pacific Marine Science Organization (PICES), hereinafter referred to as the “Parties”, enter into this Letter of Intent (LOI) by recognizing the benefits to their respective institutions from the establishment of international links.
2. In the spirit of better and responsible management of global earth resources utilization, and in order to enhance the economic situation of the people and the region’s sustainability, through *wisdom harmonization of science and technology – natural resources and environment – humans*, which is getting urgent to implement in Indonesia, BPPT and PICES agree to promote the dissemination of the “Sato-Umi” concept in Indonesia, through the PICES/MAFF Project on “*Marine Ecosystem Health and Human Wellbeing*”.
3. The LOI implementation will be followed by the preparation of an Agreement on Development Research Co-operation within 6 (six) months from the signing of the LOI.
4. The LOI shall be in effect until March 31, 2017, or otherwise terminated in writing with at least one month’s advance notice of the intention of termination by the Parties.

The LOI shall be executed in two (2) copies in English, both Parties will retain one copy each.

Jakarta, \_\_\_\_\_

(Signature) \_\_\_\_\_  
(Name)

Deputy Chairman of BPPT  
For Agroindustry and Biotechnology

(Signature) \_\_\_\_\_  
(Name)

Representative of PICES

Alexander Bychkov  
Executive Secretary

Mitsutaku Makino and Ian Perry  
PI of the PICES/MAFF Project on  
“Marine Ecosystem Health and Human Well being”