



Regional Workshop on **Catalyzing Blue Economy Investment** in East Asia

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W O R K S H O P S U M M A R Y

World Ocean Week 2016

Workshop Summary:
Regional Workshop on Catalyzing Blue Economy Investment in East Asia

5 November 2016

Sponsor

Partnerships in Environmental Management for the Seas of East Asia (PEMSEA)

Co-sponsors

PEMSEA Network of Local Governments (PNLG) Secretariat
China-ASEAN Marine Cooperation Center
Coastal and Ocean Management Institute (COMI), Xiamen University
Fujian Institute of Oceanography

1. INTRODUCTION

- 1.1. Blue economy offers a practical, ocean-based economic model using sustainable infrastructure and technologies, innovative financing mechanisms and effective institutional arrangements for protecting our oceans and coasts and enhancing economic development. There is no shortage of capital available for investing in a blue economy, but more work must be done to develop a pipeline of investible projects offering appropriate risk and financial return, along with positive social and environmental impact.
- 1.2. This 1-day workshop brought together investment professionals, financiers, development organizations, local and national government officials, project proponents, business organizations and others to provide background on blue economy investment in the region and explore the potential for developing a pipeline of bankable investment opportunities.

Objectives

1. Understand blue economy investment and highlight examples of investment opportunities in the region.
2. Discuss investors' expectations and identify information, actions and partnerships needed to address barriers to developing a pipeline of bankable projects.
3. Explore emerging financing mechanisms with the potential to access and integrate different sources of capital / funding.
4. Learn about platforms to help facilitate investment in the blue economy through measurement, data sharing and knowledge management.
5. Discuss approaches and establish connections between financiers / investors and project proponents with investment concepts and proposals.

2. OPENING REMARKS

- 2.1. The workshop was opened by **Mr. Stephen Adrian Ross**, Executive Director for PEMSEA, highlighting the tremendous need for investment in coasts and oceans, but the current lack of experience on how to develop such investments. Mr. Ross emphasized that the workshop was intended to address this gap and help to facilitate the link between blue economy projects and investors.
- 2.2. Mr. Ross introduced **Mr. Pan Shi-Jian**, former Vice Mayor of Xiamen City and currently the Secretary General of the PEMSEA Network of Local Governments (PNLG), to deliver a welcome address. Mr. Pan shared that the marine economy's share of the GDP is growing and it is the new growth point for socio-economic development in East Asia. Governments have been paying greater attention to this area and economic growth can and should take place with environmental protection, simultaneously. Mr. Pan called attention to the fact that just the day before the Paris agreement on climate change was ratified, which should have a significant impact on developing the blue economy. He expressed his appreciation for PEMSEA's work in helping to break down the barriers of investment and build a platform between projects and investors.
- 2.3. **Mr. Yang Aiwu**, Party Secretary and President of the Xiamen Branch of China Development Bank delivered a keynote presentation on *Taking Advantage of Development Finance to Promote the "Belt and Road Initiative" and National Marine Power*. Mr. Yang shared the bank's measures to contribute to the marine economy and how China's "Belt and Road Initiative" is an important part of its strategy. The bank is providing development finance to promote marine economic development improvements, with examples including marine equipment manufacturing, support for building high-tech ships and marine equipment and marine tourism programs focused on cities with rich marine resources. Mr. Yang called for new financial models to serve the marine economy and a platform to provide these financial services.
- 2.4. **Ms. Jun Shen**, Deputy Director, Department of Strategic Planning and Economic Development, State Oceanic Administration (SOA), PR China delivered a presentation on *Financing Marine Economy in China*. Ms. Shen opened by saying that the marine economy has captured the attention of important stakeholders in government and business and posed the question, "How do we make use of financial tools to upgrade and sustain the marine economy?" The scale of the marine economy requires equivalent financial support. The marine economy accounts for 10% of GDP in China, and for every 1% of overall economic growth, 10% is from the marine economy. The marine industrial cluster needs financial support, and long-term returns from the marine economy require sustainable, effective, reliable finance. SOA and China Development Bank jointly launched a project for promoting "financing marine economy" (FME), which designates funds, insurance and banking branches. However, FME in China can be overly narrow and simple and the distribution of capital invested is unbalanced. There is a lack of communication between industries and institutions. There is a lack of financial tools and products, which constrains investment in marine industries. Ms. Shen called for optimization of the top-level design of FME in China. State owned, development and commercial banks should work

cooperatively to support FME, and there is a need to establish designated institutions to support the marine economy. There's also a need for providing suitable financial products, services and tools to fill the gap and address information asymmetry, along with a sound platform for knowledge exchange and matchmaking of marine industry with capital markets.

- 2.5. **Mr. Stephen Adrian Ross** provided further context for the workshop, delivering a presentation on Integrated Coastal Management (ICM) as a Foundation for Blue Economy Investment. Mr. Ross provided background on PEMSEA, which started in 1993 with two ICM sites (Xiamen, PR China and Batangas, Philippines). Since then it has grown into an international organization serving national governments, local governments, the private sector, funders, scientific organizations, regional organizations and civil society. Its work has helped to cover 17% of the region's coastline under ICM, with a target of 25% by 2021. The Sustainable Development Strategy for the Seas of East Asia (SDS-SEA) has been adopted by 14 countries in the region, and incorporates new and emerging global priorities (e.g., UN SDGs, Aichi Biodiversity Targets, Sendai Framework, UNFCCC) and promotes sustainable economic development towards a blue economy through ICM. Proper governance serves as an important prerequisite for investment, and indeed an Economist report in 2015 emphasized that sustainable growth is more likely in the context of well-developed regulatory frameworks for integrated coastal and ocean management. PEMSEA has identified at least 300 ICM investment areas / needs through its network, but a 2015 report by PEMSEA found that funds for restoring and protecting ecosystems remain small in comparison to the need. The report, which examines over US\$10 billion in flows of funding to ICM / blue economy projects in East Asia, found that investment-readiness support is needed to strengthen ICM-related projects to meet the expectations of investors. Projects need to be packaged properly and there's need for a platform to help local governments to engage investors and build investors' confidence in the projects.

3. EXAMPLES OF POTENTIAL BLUE ECONOMY INVESTMENT

- 3.1. The morning panel, facilitated by Mr. Ross, explored examples of emerging investments in the region as a basis for discussion of investors' interests and expectations. The panel featured examples of projects for community-based seaweed farming and an integrated PPP project for water supply, sewage collection and wastewater treatment.
- 3.2. The first speaker, **Mr. Fabian Mollet**, Sustainable Fisheries and Aquaculture Specialist from Blueyou Consulting, shared an impact investment model for community-based seaweed farming. Mr. Mollet shared trends for seaweed production, globally and in the Philippines, and described the market applications of farmed seaweeds for producing carrageenan, which can be used in several commercial products. The Philippines had been the top producer of carrageenan seaweeds until it was overtaken by Indonesia in 2007. Seaweed farming can be a good business exhibiting relatively constant demand and supply, with short farming cycles, low costs, a non-perishable product and easy supply chain. Since both men and women can do the work, it provides livelihood opportunities for many families. It has low environmental impact and can provide more predictable income for coastal communities. Currently, production systems are not optimized. There is scope for improvement by: 1) adding a seaweed culture lab to provide constant supply of high quality seedlings; 2) providing training to farmers on best

practices to optimize productivity, planting design, farming cycles, etc; 3) installing better infrastructure, including storage facilities; and 4) setting up cooperatives with proper financial administration, raw material administration, marketing, etc. This integrated community-based seaweed farming model of 100 farm units in Green Island, Palawan would produce 11,000 tons of seaweed annually sold at P30/kg. CAPEX would go primarily toward installations, along with working capital, buildings and vessels. At the cooperative level, the net profit is projected at 27%, which at first would pay back the investment, and then towards increased farmer income. The model can be scaled up by another 120 farms units across four other nearby sites.

3.3. Capital Markets and Investment Banking Expert, **Ms. Anna Valcheva**, provided reaction and financial assessment of the community-based seaweed farming model. She opened with the question, “How does the finance side view marine development projects and how do we attract investors to these projects?” Ms. Valcheva provided financial investment objectives for the projects, such as establishing proper capital structure to meet the project’s net funding needs, assessing a suitable debt profile, satisfying lenders’ requirements for credit ratio performance, assessing and optimally sizing the equity investment, ensuring a project has adequate payback timeframe and NPV cashflows profile and providing attractive returns on equity, debt and the overall project. Ms. Valcheva provided an investment summary for the seaweeds project, with a total investment CAPEX of PhP 25.65 million and projected IRRs of 40% on the project, 12% on debt and 57% on equity, with a payback of 4 years. She emphasized that there are no guarantees on the revenue side, which increases the financial risk of the project. Debt is usually 70-80% of total, but here the ratio is 50-50 because it’s set in an emerging market, which makes it a high-risk profile. The structure provides sufficient returns to satisfy debt and equity investors. Ms. Vacheva felt the project had aggressive revenue and EBITDA projections, and the assumptions should be stress-tested. The project funding characteristics include PhP 5.61 million in debt, fully amortized, which pays interest plus commitment fees. The rest of the project is financed by equity, also at PhP 5.61 million. Any earnings will go to equity holders after debt holders are paid. The structure ensures that the project generates enough cash to service the debt each year. Ms. Valcheva closed with recommendations for following a standard template for an “apples to apples” comparison of investment opportunities.

3.4. The second project was presented by **Mr. Jeurgen Lorenz**, Managing Director, Partner and Shareholder for JL Business and Technology Consultancy. Mr. Lorenz presented a case for an Integrated PPP Project Development Approach for Water Supply and Sewage Collection and Wastewater Treatment in Puerto Galera, Philippines. He highlighted that uncontrolled development since the 1970s has led to several challenges in Puerto Galera, including overfishing, low water supply, water pollution, flooding, deforestation and sedimentation, open burning of solid waste, low income levels and loss of indigenous values. To address the water pollution problem, a combined sewer/interceptor system has been proposed for the Sabang area and, over time, will be expanded to cover other communities along the coastline. The treatment process is a modular design, which can be expanded at a later stage as wastewater loadings increase. Other expansion options include nutrient treatment and reduction, sludge processing and use as an organic fertilizer, and methane gas generation, recovery and use as an alternative energy source.

- 3.5. One particularly innovative aspect of this project is the integration of added value features and investments that bring benefits to the community. For example, the corridor for housing the wastewater collection system will be built along the coastline, incorporated into the construction of a new bay walk and pier facility. Another feature is the development of series mini-hydro plants integrated into a proposal for a refurbished water supply and distribution system for the community.
- 3.6. Benefits from this integrated approach include: optimization of capital and operating costs; a reduced carbon footprint; access to renewable energy/on-site power generation; protection and conservation of biodiversity (treated wastewater will be discharged into a natural wetland, which will be protected from further development); improved access/amenities for tourists and the tourist industry; safe anchoring for tourist vessels; etc.
- 3.7. Mr. Lorenz shared that the total estimated cost of the investment project was approximately USD40 million. The project would be rolled out in stages over a time period that would be commensurate with revenue generation. The principal sources of revenue for start-up of the project are user fees from households and tourist establishments connected to the sewerage system, and environmental fees collected from arriving tourists. The financing structure would be approximately 30% equity and 70% debt, financed through local banks. The guaranteed return as stipulated in the contract is 20%. Mr. Lorenz concluded his presentation by stating that this integrated approach exhibits a lower cost than comparable benchmarked projects in the country, while achieving the highest environmental protection levels and socioeconomic benefits to the local community.
- 3.8. The audience had several questions about the project in Puerto Galera. Mr. Lorenz explained that the proposed centralized collection and treatment system and modular treatment process are a least-cost approach in the case of Puerto Galera. He further explained that the coastline in the bay area is rocky, so the collection sewer/pipeline system needs to be built above ground. The bay walk provides a safe corridor for the pipeline while preventing further encroachment by developers into the coastal area. The bay walk would be under control of the municipality. Treated wastewater is fully infiltrated into the natural wetland, with no direct discharge into the sea.
- 3.9. A question was raised about the return on investment (ROI) for the PPP model: How much is the return? Are there any guarantees? Will the Philippine local governments provide assurance? Once participant shared that they have similar sewerage treatment plants in their country, but the ROI is unstable. Mr. Lorenz responded that there is very limited market risk. Guarantees come from the local government unit (LGU) and the contract. He did recommend that the LGU secure further support from the national government.
- 3.10. It was pointed out that the project has a large social impact, but it's an example of where government support is needed to guarantee the revenue stream. Returns depend on tourist income, which can be volatile as a cashflow. The government could provide assurance that, if there's a drop in tourist revenue, there's a guarantee. Mr. Lorenz responded that tourist arrivals are up, despite the degrading

environment conditions in the beach area, and would only improve if investments in infrastructure were made. With its proximity to Manila, the area can attract higher-end tourists.

3.11. Mr. Lorenz concluded by emphasizing that the project uses an enhancement approach. If all components are implemented, the project has potential to lower the user fees.

4. LESSONS LEARNED FOR SUCCESSFUL SUSTAINABLE INVESTMENT

- 4.1. The second morning panel focused on exploring key success factors and pitfalls to developing sustainable investments. The objective of the session was to generate insights on barriers, enablers and concrete steps towards establishing a pipeline of blue economy investments.
- 4.2. The panel opened with a presentation by **Ms. Qiuping Li**, Director for Asia for R20 Regions of Climate Action, on Generating a Pipeline of Bankable Sustainable Development Projects. Ms. Li shared that R20 was founded by Arnold Schwarzenegger in 2010 to support sub-national authorities in the creation and successful financing of renewable energy and sustainable infrastructure projects. It is designed to produce local environmental, social and economic benefits, as well as attractive financial returns for investors. R20 works with government and UN agencies, businesses, financial institutions, NGOs and other organizations to provide capacity building and training, identify and prepare projects for investment and secure financing. Currently, R20 focuses in four operating areas: energy efficiency, solar power, biofuels and waste management.
- 4.3. R20 has developed a business model that includes a pre-investment facility (PIF). The PIF identifies, structures, prepares and reduces investment risk, and generates a portfolio of bankable projects. An investment facility then invests in projects developed by the PIF, including selecting assets to diversify risk, structuring, diversifying investor types and increasing available financing. Projects are primarily received at the idea stage, and they are moved through a process from inception to feasibility, financing, implementation and M&E.
- 4.4. Ms. Li shared that the Leonardo di Caprio Foundation is building a platform where the returns are directed to conservation projects. For other investments, the fees are returned to support the PIF (i.e., a revolving fund to ensure sustainability). Ms. Li presented case examples from Algeria, Burundi, Mali and Shenzhen, along with new initiatives including a 100 Project Campaign, an online match-making platform and a women entrepreneurs' fund in green economy and trade, which empowers female entrepreneurs globally.
- 4.5. The next speaker, **Ms. Natasha Garcha**, Manager, Business Development and Advisory, Impact Investment Exchange Asia (IIX), explored the Potential of Impact Investing to Catalyze Blue Economy Investments in Asia. Ms. Garcha opened by highlighting that oceans are valued at USD24 trillion, equivalent to the world's 7th largest economy. Across the SDGs, oceans have a significant impact. Three billion people look to the oceans for their main source of protein. The marine economy has huge

repercussions for economic growth. It's an issue not just for the public sector, but the private sector as well. Ms. Garcha shared that impact investment could help address gaps in financing the blue economy. Impact investments are those intended to create positive social impact beyond financial return.

- 4.6. IIX, which seeks to bridge the gap between development and finance, has facilitated over USD25 million in impact investment capital, raising capital for over 26 deals. Ms. Garcha shared lessons learned for financing sustainable fisheries and ICM, including challenges such as lack of an investment ready pipeline, weak understanding of the business case for sustainability (e.g., it's 15 years behind clean energy investments), high perception of risk, lack of alignment of stakeholder incentives and lack of sophisticated tools to measure impacts. From IIX's research, impact drivers can vary based on capital source, from livelihood to food security to environment. Preferred investment opportunities include early to growth stage entities, operating downstream in the value chain. Investors are still not comfortable with the risk profile of these type of investments. There tends to be a preference for debt over equity, with returns on debt of 4-6% and returns on equity of 15-20%.
- 4.7. A number of financial and impact risks exist (e.g., liquidity, catastrophe, negative externalities), with risk mitigation strategies available. IIX has been mobilizing capital through innovative instruments such as an IIX Sustainability Bond, which pools smaller-scale impact investments, backed by guarantees from agencies like DFAT and USAID. Ms. Garcha emphasized the need for a structured approach to developing demand for capital, including accelerator programs for refining business plans and eventually pitching to potential investors. She closed with thoughts on a strategy to catalyze blue economy investments at small, medium and large scales.
- 4.8. Workshop participants had several questions for the panelists. First, Ms. Garcha was asked about the estimated cost and time to take a deal from inception to close. She responded that it can take three months to close a deal, with costs of around USD50-75K (with a leverage factor of at least 10). IIX has been successful in funding development of such deals through private sector CSR programs or bilateral aid funding. Bonds took 1.5 to 2 years for development, and the cost is commensurate to the timeframe. Ms. Li shared that R20's pre-feasibility and feasibility studies take less than 12 months to complete, but the decision-making process takes time.
- 4.9. In response to questions about the size of the deals that IIX has closed and the profile of investors, Ms. Garcha stated that these are mostly early stage, ranging from USD300K minimum up to a few million USD. The total bond was USD16 million. Microfinance organizations can absorb USD3 million, but smaller organizations can only absorb up to USD100K. The most traction has been in organic agriculture, health and education. If there is an anchor investor who requires due diligence, it gives individual investors more confidence. Most Asian investors are from India, but there are more opportunities for funding from China and Philippines occurring.
- 4.10. When asked about debt financing for more sizable projects, Ms. Li responded that in R20's experience, the market leans more towards the debt side. R20 is trying to secure funds from more private investors as well as governments like Switzerland.

- 4.11. A question was asked about dealing with stakeholders with conflicting motives. (i.e., impact vs. financial returns). What lessons have been learned from this? Ms. Garcha responded that IIX tries not to let these different sources of capital compete with each other. Investors require higher yield deals. But donor organizations can help de-risk investment and increase investor confidence (e.g., Rockefeller Foundation funding the upfront structure for a deal). Innovative finance addresses conflicting investor interests.
- 4.12. Questions were raised about R20's business model, how it was developed and whether there was a lot of upfront design. Ms. Li shared that R20 views itself as a startup, allowing its business model to evolve as it learns. It encounters operational challenges like other organizations, and they are learning the challenges of infrastructure projects and the time and expertise required. When a problem is solved, there is potential for more opportunities and projects. Not many banks want to directly invest in the preparation/pre-feasibility stage, so R20 works with foundations for this, before they approach banks to scale up. It takes a lot of time.
- 4.13. Mr. Lorenz, shared that from an entrepreneur point of view, the Puerto Galera project is at an early stage. They have no venture capital to provide the funds. There is a need to optimize the technology so it's not too expensive and a need to develop a standardized approach. It's pointless, even destructive, to finance uneconomic and environmentally damaging infrastructure.
- 4.14. Ms. Valcheva shared that it's a challenge for infrastructure finance to value funding for such projects because of the long terms, which average 20 years or so. She inquired if R20 has tracked how its investments have performed. Ms. Li responded that R20 has seen returns in the 10-15% range.

5. OCEAN FINANCING AND INVESTMENT MECHANISMS

- 5.1. The afternoon panel focused on ocean financing and investment mechanisms. Participants had an opportunity to learn about emerging financing mechanisms and facilities for investing in sustainable development of coasts and oceans and discuss benefits, drawbacks and potential linkages between various platforms.
- 5.2. **Prof. Damien Hine**, Associate Professor of Innovation and Commercialization at UQ Business School, University of Queensland, facilitated the panel. He opened the panel by emphasizing that the discussion was about "building an investment ecosystem", and there is a need to consider not just the elements of the ecosystem but the relationships between them. This type of investment approach to the marine economy is perhaps 15 years behind other sectors, but that's not necessarily a bad thing as we can learn from previous mistakes and successes.
- 5.3. The first speaker, **Mr. Paul Holthus**, Founding President and CEO of the World Ocean Council (WOC), shared background on WOC and its new Ocean Investment Platform for accelerating investment in ocean sustainable development. Mr. Holthus provided background on the estimated USD4 trillion in ocean economic activity and its critical role in economic development. The ocean business community is

made up of direct ocean users, supporting industries and infrastructure providers. Industries include shipping, cruise line tourism, aquaculture, oil and gas, offshore wind, submarine cables, fisheries, ocean energy, coastal construction and seabed mining, among others. Ocean industry is expanding in the types of ocean use and level and location of activities. Environmental impacts associated with ocean use cut across industries, no company can address them alone. WOC serves as a multi-sectoral global business leadership alliance to collaborate on shared issues of corporate ocean responsibility. Business value to companies includes access and social license, synergies and economies of scale in addressing issues and stability and predictability in ocean operations.

- 5.4. Cross-cutting WOC program areas include the SDGs for the Ocean Business Community, Young Ocean Professionals Network, Sustainable Ocean Summit (SOS) and a new Ocean Investment Platform. WOC is involved as the only industry body engaged in the SDG process, engaging the ocean business community to develop SDG targets and indicators. The Ocean Investment Platform links large ocean industry users with innovators and entrepreneurs providing solutions to marine challenges. The platform seeks to provide a common process to identify, articulate and evaluate ocean industry priorities for investment in sustainability solutions. The Sustainable Ocean Summit (Rotterdam, Nov 30 – Dec 2) will include an Ocean Executive Forum and launch of the Ocean Investment Platform, Young Ocean Professionals Network and Maritime Cluster Alliance for Sustainable Development.
- 5.5. **Ms. Anna Creed**, Standards Manager for the Climate Bonds Initiative (CBI), shared CBI's current work in developing marine standards for green bonds. CBI's mission is to mobilize the USD100 trillion debt capital markets to meet the low-carbon transition. CBI activities include establishing and running the Climate Bonds Standard & Certification Scheme, facilitating information flows for ratings agencies and index providers (e.g., State of the Market report), reaching out to inform and stimulate the market for green bonds and providing advisory services to stock exchanges and a range of partners worldwide.
- 5.6. Ms. Creed shared general background on bonds, which are a form of debt used to finance and refinance large mature assets. Bonds are issued by companies, governments, municipalities and banks and serve as an important part of portfolios for investors. *Green* bonds are bonds where the proceeds are used to finance environmentally friendly assets. Green bond market growth has risen significantly, and there is opportunity for green bonds to finance the USD50-90 trillion low carbon and climate resilient investments needed over the next 5 years. Since the implementation of the Paris agreement, we expect to see significant ongoing growth for the market, with green bonds coming out of Europe, US, Australia, South Africa and India, a good mix of both developed and developing countries. The most common sectors are clean energy, low carbon buildings and transport infrastructure.
- 5.7. Marine bonds are few and far between. There are cases of renewable energy, such as offshore wind, and some instances of fisheries and coastal protection, but it's a tiny fraction of the total green bond market. As more players enter the market, everyone is defining "green" for themselves, raising concern about "greenwashing". A standard and certification scheme is designed to give investors confidence. The Climate Bond Standard & Certification Scheme is a Fairtrade-like scheme for green bonds, which have been independently verified that the use of proceeds complies with the sector specific Climate

Criteria of the Standard. CBI works sector by sector to create science-based criteria through working groups and technical advisors.

- 5.8. A technical working group is developing eligibility criteria for marine investments, looking at marine renewable energy, fisheries and aquaculture and coastal infrastructure (natural and built). The marine space is challenging to set criteria that can apply in a global standard.
- 5.9. **Dr. Veerle Vandeweerd**, entrepreneur and former Director from UNEP and UNDP, presented a new Ocean Investment Facility being designed to help catalyze the transition to a sustainable economic development model. Dr. Vandeweerd opened by sharing her view that investing in coasts and oceans is the new frontier and makes economic sense. It could follow the same path as investing in energy efficiency. We should not underestimate the value of regional action programs like PEMSEA, which have developed action programs that are ratified by governments. But as a regional program, PEMSEA can't rely on donors to sustain it forever. As a consequence of these regional programs, there are science-based planning and action frameworks for coastal and marine areas that provide a fertile space for sustainable investments and for an economically viable transition to more sustainable economic models. These can provide some of the certainty and commitment that investors are looking for.
- 5.10. Dr. Vandeweerd pointed out that some of the trillions of dollars needed for implementation of regional action programs for seas and oceans like PEMSEA could be better channeled. However, this raises a number of questions. What is the financial mechanism we need to set up to catalyze these investments at such a scale? How do we translate government approved action plans into the capacity needed in the region to scale up investments? The technical, scientific and financial disparities among countries in the East Asian region are quite large. How can we use the expertise, and the efforts of the "One Belt One Road" initiative from China, for example, to support the region and facilitate the implementation of PEMSEA's regional ocean strategy and action plan? What guidance can this workshop give PEMSEA on how to build on this experience? Dr. Vandeweerd reminded the session that the other speakers have shared innovative approaches, and there is no need to set up something to compete with these efforts. What is needed is to work together, to find new ways of measuring returns on investment and to develop the right structures to incentivize investors.
- 5.11. The discussion opened with Mr. Holthus highlighting that that should be no concern about competition or duplication. We can actively work together towards the same goals.
- 5.12. Prof. Hine raised the point about the challenge of information asymmetry and the disconnect between investors/donors and sustainable development projects. This challenge must be addressed to build a pipeline of investable projects in the region.
- 5.13. Ms. Creed pointed out that the investment case needs to be sound, whether or not a project is "green". We need to be thinking about what types of finance are required for different types of projects. Mr. Holthus responded that he hears this consistently. The scale of projects and the mix and type of financing is key. You may hear about a project in one country, but if you expand the context across

different coastlines, different communities, it becomes a massive investment/business opportunity. It's a big job to figure out a healthy mix of financing sources.

5.14. The panelists were asked if they were aware of major financial institutions looking at the ocean space the way transport and energy infrastructure has been developed. The overall response from the panel was that, for the most part, investments are made in large-scale infrastructure. One participant offered that having a clear mechanism to pay back the debt is a key obstacle to many projects. There is a need to lower costs and barriers for investment, e.g., bundling of technology solutions. Focus needs to be on optimization and securing full support from users and those who must pay back the investment.

5.15. Dr. Vandeweerd replied that most development banks don't have a specific push for blue economy. GEF is focused on scientific assessments of LMEs. There is a Green Climate Fund, but it's very difficult to find a project for its private sector facility. Banks are rapidly moving into sustainable development. The G20 has an infrastructure focus that includes fisheries infrastructure. National development banks are not yet moving into oceans in a meaningful way, but there is growing awareness. One participant shared that the World Bank has a blue economy program, but investments tend to be large scale (e.g., ports). Ms. Creed shared that there isn't much bond activity yet, and it's far behind technology driven sectors.

5.16. A question was raised about how green projects are tracked in terms of impact and performance, including financial performance. Ms. Creed responded that people hardly go back to their own forecasts to assess performance. Dr. Vandeweerd added that there is no track record yet since this is so new, but we might be at a turning point with the uptake of the SDGs. One participant shared that there is no problem raising capital for green investments. There is enough money flowing in. Barriers are created by regulations and caps put in place by policymakers. There is a feasibility gap that needs to be covered.

5.17. The discussion concluded with one participant commenting that it is ultimately the returns that investors are seeking, regardless of the asset class. It doesn't matter if an investment is considered "sustainable" or "unsustainable". Any investment is competing for funds. A financial case needs to be made to the proper investors for adequate returns. Unless a government comes in with funding, no investor will come in to fill in those gaps if there aren't attractive returns. Efforts need to be focused on the ground to source investments that can be made bankable.

6. PLATFORMS FOR BLUE ECONOMY DEVELOPMENT AND INVESTMENT

6.1. The final session of the day, facilitated by Dr. Vandeweerd, featured emerging platforms for blue economy investment.

6.2. The first speaker was **Dr. Charles Colgan**, Director of Research for the Center for the Blue Economy and Editor-in-Chief of the Journal of Ocean and Coastal Economics. Dr. Colgan explored the problem of measurement, and whether the blue economy is growing, shrinking or stable. Definitions of blue economy are fluid and we're still struggling to figure out what it means. We're in a stage of enthusiasm for the concept of blue economy, but this stage will end. At that point, we'll need to ask ourselves – did

all of this create any impact? What was the cumulative effect? Similarly, what is the ocean worth and what does the ocean contribute to regional and national economies?

- 6.3. Dr. Colgan indicated that China and some other countries have begun to answer these questions. There are lots of pieces that we don't know yet how to put together. The focus is very much on sustainability. We have some basic tools for measuring and the frameworks for measurement exist. There are multiple lenses on the blue economy including national income accounts (GDP) for the output of ocean related industries, environment accounts and ecosystem service accounts. Currently, we don't measure investment in the ocean. We should, however, so that we know the level of investment versus the depreciation of ocean assets. Natural resource asset accounts help answer questions like "what is the value of fisheries and the current worth of fish stocks?" We can measure annual flow of services provided by "natural capital". Climate change will be a huge issue for the blue economy. For everything we're planning and predicting for the blue economy, will it hold as the climate changes? Temperatures will fluctuate, fish will migrate and acidification will change the ocean as we know it. Sea level rise will threaten trillions of dollars of the global economy. Our ability to sustain interest in blue economy will depend on our ability to answer the right questions, using the right indicators. We need consistent indicators.
- 6.4. **Mr. Lawrence Ang**, Director for Asia for SSG Advisors, presented Electronic Catch Documentation and Traceability (CDT) as an emerging opportunity for investment and sustainable fisheries. Mr. Ang opened with insights from the recent UNEP FI Global Roundtable held in Dubai. USD5-7 trillion is needed for sustainable investments, with 60-70% needed for developing countries. USD1 trillion per year is needed to decarbonize our energy system, USD400 billion per year to ensure resilient infrastructure and USD50 billion per year to halt tropical deforestation. Banks manage USD140 trillion in assets and institutional investors over USD100 trillion. There is no lack of resources available that could potentially be invested in this space. How do we unlock it? It requires innovation: new models, new assets, new tools, and the political will.
- 6.5. Mr. Ang provided background on SSG Advisors, which works across six practice areas that mirror the SDGs, including sustainable investment. One area where SSG has been working is IUU fishing in Asia. Asia has already overfished much of its marine resources and illegal activity dominates small and large scale fisheries. It's estimated that 8-16% of fish caught in Asia is caught illegally, which can include destructive fishing gear and even slave labor. Fisheries are poorly documented. There's a growing market for sustainable seafood market, which reputedly hit USD11.5 billion. This market requires tracking to ensure that there are no unscrupulous practices taking place in the seafood value chain.
- 6.6. Ideally, data are logged as the fish are caught, while data on human welfare are also captured. This can be tedious, but is legally required in high value markets like the EU and US. CDT sets the stage for emerging investment opportunities, such as investment in new technologies and human capacities to manage the supply chain. The USAID Oceans project is developing an ASEAN catch documentation system and database with data collected across the region. New opportunities for entrepreneurs are emerging including low-cost and integrated vessel tracking systems, technology platforms for

traceability and new financing opportunities. More investment vehicles are becoming available as new technology tools and solutions come online.

- 6.7. The final speaker of the day was **Mr. Ryan Whisnant**, Head of Professional Services for PEMSEA, who shared information about PEMSEA's Seas of East Asia (SEA) Knowledge Bank for helping to facilitate investment in blue economy. Mr. Whisnant opened with background on PEMSEA's work on sustainable development and how it has learned that investment is the next necessary step. How can we help projects to be financially sustainable after the development funding ends? Can projects generate financially sustainable impact and scale, beyond the life of the project? There is no shortage of investment capital available, but investors cannot find quality, investible projects.
- 6.8. PEMSEA is seeking to bridge the gap between projects and investors. Mr. Whisnant shared the framework that PEMSEA developed, which includes developing an enabling environment for investment, identifying gaps and opportunities for investment and assessing the investment-readiness of projects. He proceeded to demonstrate the SEA Knowledge Bank, which was beta launched in November 2015 at the East Asian Seas Congress. The platform includes knowledge management features with resources to support project proponents and assessment that incorporate indicators from PEMSEA's State of the Coasts reporting system. A tool for assessing investment-readiness of a project provides feedback on types of investment to consider along with a scorecard rating various aspects of the business / investment model for a project. The platform allows a user to create a profile for their project and submit it to a database of potential investments. The SEA Knowledge Bank targets investments emerging from government and international development projects.
- 6.9. Mr. Whisnant briefly shared another platform targeting private entrepreneurs and new technologies, the Ocean Impact Alliance (OIA). Like the SEA Knowledge Bank, the OIA platform seeks to connect project proponents / entrepreneurs, technical service providers and investors.
- 6.10. Discussion opened with a suggestion for PEMSEA to explore crowdfunding as one funding mechanism for projects in the SEA Knowledge Bank. Different sources of capital will be required, and crowd funding could be relevant for higher risk, more impact-oriented investments. Dr. Vandeweerd supported the possibility of crowdfunding as a kind of sieve to see if the market will support a project. Mr. Ang highlighted the movement of fintech into this space, and recommended Cropital as one group to consider.
- 6.11. Session participants suggested that segmentation within this new asset class is very important. Different segments require different investors. The need to educate the investor community about this asset class was emphasized, because most investors don't even think of it. It is necessary to involve financiers to educate the investors. Efforts are needed in both the investor community and in the projects.
- 6.12. It was noted that there has been push back and skepticism from the investment community about the marine space. To develop this as a separate class of investment, one needs to disrupt the current

mindset. As intermediaries, we must collectively leverage our resources, but we can't forget about our own financial sustainability as organizations.

6.13. It was further suggested that we should identify specific requirements from different funding sources along with the investment criteria for defining project classes related to the blue economy. We must also define requirements from the project development side and from the user side as separate considerations. What are the gaps, and how do we align and make it all work?

6.14. Finally, the session closed with a comment that we will need to standardize the approach for both the investor and the project proponent. Everyone involved needs to be on the same page in order to move forward, defining together what makes a successful proposal.

7. CONCLUSIONS AND NEXT STEPS

7.1. The workshop produced a number of insights to help inform PEMSEA's continuing development of blue economy investment in the region. Mr. Whisnant summarized some of the insights and conclusions generated from the workshop:

- Consider the elements needed for a regional investment facility for oceans, as well as the relationships between its elements.
- There is generally a poor understanding of the business case by impact project proponents, and therefore a lack of investment-ready pipeline. There is a real need for some type of pre-investment facility for oceans.
- Such a facility should provide standardized, replicable systems, but they must also be tailored to the local context. Examples, guidelines, templates and lessons learned are available.
- We need to be asking "What finance? When? From where?"
- The cost to develop an impact investment is approximately USD50-75K, for an investment size of USD300K to a few million USD. There is an issue of scale and transaction cost to address.
- Targeted returns for impact investments can be as low as 4-6% (on debt). For infrastructure projects expected returns are more in the range of 10-15%.
- Investors are not yet fully comfortable with oceans, and we need ways to help minimize (perceived) risks.
- Developing investible projects requires time spent on the ground.
- There's opportunity to look beyond traditional business models in marine infrastructure, fisheries and aquaculture, etc.
- A major challenge for the blue economy is to forecast how the world will change with respect to climate change: solutions need to be provided not just for today's issues, but also for future barriers and obstacles.
- There are encouraging precedents for the development of a regional investment facility for oceans and there is a handful of similar platforms emerging, with opportunities for mutual support.

7.2. Overall, participants felt that the workshop highlighted a lot of important data and tools. The question now is how to organize, prioritize and make sense of this evolving ecosystem. Mr. Whisnant closed the workshop by sharing next steps, which include follow up discussions with participants to incorporate their input into the development of a regional blue economy pre-investment facility, and the possible formation of a virtual advisory board. PEMSEA will also continue partnerships for developing supporting financing and investment mechanisms, such as an Ocean Investment Fund, ICM bond and a blue carbon financing instrument.

Regional Workshop on Catalyzing Blue Economy Investment in East Asia

PROGRAM

TIME	ACTIVITY/PRESENTATION	OBJECTIVE
0900 – 0905	Welcome Address Pan Shi-Jian , Secretary General, PEMSEA Network of Local Governments (PNLG)	
0905 – 0920	Keynote: Taking Advantage of Development Finance to Promote the “Belt and Road Initiative” and National Marine Power Yang Aiwu , Party Secretary and President, Xiamen Branch, China Development Bank	Objective: Set context for the workshop, highlighting the role and importance of innovative financing and investment for blue economy development.
0920 – 0935	Financing Marine Economic Development in China Jun Shen , Deputy Director, Department of Strategic Planning and Economic Development, State Oceanic Administration (SOA), PR China	
0935 – 0945	Integrated Coastal Management as a Foundation for Blue Economy Investment Stephen Adrian Ross , Executive Director, PEMSEA	Objective: Provide background on blue economy investment in the region and the role of ICM.
0945 – 1100	Examples of Potential Blue Economy Investment Impact Investment Model for Community-based Seaweed Farming Fabian Mollet , Sustainable Fisheries and Aquaculture Specialist, Blueyou Consulting Anna Valcheva , Capital Markets and Investment Banking Expert Integrated PPP Project Development Approach for Water Supply and Sewage Collection and Wastewater Treatment in Puerto Galera, Philippines Juergen Lorenz , Managing Director, Partner and Shareholder, JL Business and Technology Consultancy	Objective: Explore examples of emerging investments in the region as a basis for discussion of investors' interests and expectations.
1100 – 1115	Coffee break	
1115 – 1215	Lessons Learned for Successful Sustainable Investment Generating a Pipeline of Bankable Sustainable Development Projects Qiuping Li , Director for Asia, R20 Regions of Climate Action Exploring the Potential of Impact Investing to Catalyze Blue Economy Investments in Asia Natasha Garcha , Manager, Business Development and Advisory, Impact Investment Exchange Asia (IIX)	Objective: Learn about key success factors and pitfalls in developing sustainable investments and generate insights on barriers, enablers and concrete steps towards establishing a pipeline of blue economy investments.
1215 – 1315	Lunch	

TIME	ACTIVITY/PRESENTATION	OBJECTIVE
1315 – 1430	<p>Ocean Financing and Investment Mechanisms Facilitator: Prof. Damian Hine, Associate Professor, Innovation and Commercialization, UQ Business School, University of Queensland, Australia</p> <p>Ocean Investment Facility: Catalyzing the Transition to a Sustainable Economic Development Model Veerle Vandeweerd, Entrepreneur, Former Director, UNEP, Former Director, Environment and Energy, UNDP</p> <p>Ocean Investment Platform: Accelerating Investment in Ocean Sustainable Development Paul Holthus, Founding President and CEO, World Ocean Council</p> <p>Green Bonds for Marine Investments Anna Creed, Standards Manager, Climate Bonds Initiative</p>	<p>Objective: Learn about emerging financing mechanisms and facilities for investing in sustainable development of coasts and oceans; discuss benefits, drawbacks and potential linkages between various platforms.</p>
1430 – 1445	<p>Coffee Break</p>	
1445– 1600	<p>Platforms for Blue Economy Development and Investment</p> <p>Is the Blue Economy Growing? Shrinking? Stable? The Problem of Measurement Charles Colgan, Director of Research, Center for the Blue Economy and Editor-in-Chief, Journal of Ocean and Coastal Economics</p> <p>Electronic Catch Documentation and Traceability: emerging opportunities for investment and sustainable fisheries Lawrence Ang, Director for Asia, SSG Advisors</p> <p>The Seas of East Asia Knowledge Bank Ryan Whisnant, Head of Professional Services, PEMSEA</p>	<p>Objective: Learn about and discuss emerging platforms that can facilitate blue economy investment.</p>
1600 – 1630	<p>Final Discussion and Next Steps</p>	
1630 – 1730	<p>Networking Cocktails</p>	

PRESENTERS' BACKGROUND



Pan Shi-Jian
Secretary General
PEMSEA Network of Local
Governments (PNLG)

Mr. Pan Shi-Jian, whose ancestral home is Jieyang, Guangdong Province, was born in Xiamen in October, 1953. Since 2012 he has served as Secretary General of the PEMSEA Network of Local Governments (PNLG). He graduated from Wuhan Institute of Water Transport Engineering and served in the followed posts:

- From 1983 to 1993: Deputy Director General of Xiamen Transportation Bureau;
- From 1993 to December 1999: General Manager of Xiamen Road and Bridge Construction Investment Corporation;
- From December 1999 to March 2000: Assistant to the Mayor of Xiamen Municipal Government and General Manager of Road and Bridge Construction Investment Corporation of Xiamen;
- From March 2000 to January 2012: Vice Mayor of Xiamen Municipal Government;
- From 2006 to 2012: President of PEMSEA Network of Local Governments (PNLG);
- From January 2012 to January 2016: Vice Chairman of Xiamen Committee of CPPCC.



Yang Aiwu
Party Secretary and
President, Xiamen Branch,
China Development Bank

Mr. Yang Aiwu was born in 1969 and graduated with a Master's degree. Previously, he was a Director with the Ministry of Labor and Social Security. In April 2012, Mr. Yang was appointed as Party Member and Vice President of the China-Africa Development Fund, which is a subsidiary of China Development Bank. From April 2016, he became the Party Secretary and President of Xiamen Branch of China Development Bank.



Jun Shen
Deputy Director,
Department of Strategic
Planning and Economic
Development, State
Oceanic Administration
(SOA), PR China

Jun Shen is the Deputy Director of the Department of Strategic Planning and Economic Development, State Oceanic Administration (SOA), PR China. Ms. Shen has been involved in research and formulating of oceanic economy development policies and planning for more than ten years. She took part in the compilation of *The 12th 5-Year-Planning of National Ocean Economy Development*. She is now in charge of ocean economy statistical accounting, operational monitoring, planning and policy-making.



Stephen Adrian Ross
Executive Director
PEMSEA

Stephen Adrian Ross has more than 25 years of experience working with international organizations, national and local governments, donors, private sector and scientific and technical institutions. He has been associated with PEMSEA for the past two decades in various capacities including the development and adoption of the Sustainable Development Strategy for the Seas of East Asia (SDS-SEA) by 14 countries, as well as the development, demonstration and scaling up of ICM programs. He is an environmental policy and technical advisor with a longstanding record of capacity building and implementation of sustainable coastal development in East Asia, with extensive experience in deepening partnerships with national and local governments, international organizations, NGOs, the private sector and universities in the region. Prior to joining PEMSEA, he was with the International Maritime Organization (IMO), where he worked on building national government capacity for hazardous and industrial waste management and alternatives to dumping wastes at sea.



Fabian Mollet
Sustainable Fisheries and
Aquaculture Specialist
Blueyou Consulting

Fabian has been working with Blueyou Consulting Ltd for 6 years, focused on guidance for sustainability concepts in fisheries and aquaculture, development and implementation of fisheries improvement programs, co-management in the context of developing countries, technical advice to seafood companies, market and value chain analyses in the seafood sector, development of new seafood products and supply chains and the development of innovative business plans for impact investment in the seafood sector. Mr. Mollet holds a PhD in Fisheries and Evolutionary Biology from the University of Wageningen and a Postgraduate Master in Statistics from the University of Neuchâtel. He previously worked as scientist within European networks on the evolutionary effects of fishing and implications for sustainable management, including empirical analysis, stock assessments, as well as modeling for management advice.



Anna Valcheva
Capital Markets and
Investment Banking
Expert

Anna Valcheva is a Capital Markets and Investment Banker who advises corporations, governments and financial sponsors on raising capital in the global private and public capital markets. During her career she has raised capital for over 150 corporations and governments from developed, emerging and frontier markets in the United States, Western Europe, Australasia, Central and Eastern Europe, Latin America and Africa. She spent the majority of her career in Global Capital Markets and Investment Banking at JPMorgan, working in New York, London and Sydney. She has worked on some of the largest government privatizations in the world. She has advised private equity funds, venture capital, hedge funds, sovereign funds, start-up accelerators and their portfolio companies on various issues related to raising debt, equity, hybrid and derivative capital. She worked at the forefront of recapitalizing the U.S. banking sector during the 2008-2009 financial crisis. Anna graduated Magna Cum Laude, Honors, with a triple-major Bachelor's degree in Economics, International Relations, Organizational Behavior and Management from Brown University in the U.S. She was a Visiting Scholar in Developmental Economics at the University of Oxford in the U.K. Anna holds the Global MBA of Columbia Business School and London Business School.



Juergen Lorenz
Managing Director, Partner
and Shareholder
JL Business & Technology
Consultancy

Juergen Lorenz is founder of JL Business and Technology Consultancy, established to identify viable government infrastructure under the Build-Operate-Transfer scheme. JLBTC covers project development from the preparation of pre-feasibility and feasibility studies to the formation of appropriate proponent consortia to undertake identified projects, including equity and finance, engineering, procurement and construction partners. JLBTC strives to locate and provide the latest global technology in harmony with local people and environment, adapted within the frame of existing conditions and available resources. Previously, Mr. Lorenz was involved in the development and marketing of energy saving systems (e.g., distributed power generation, heat pump technology, solar thermal collector systems) and development of related infrastructure projects. He specialized in the technical development, financial modeling and packaging of privatized infrastructure projects. Among Mr. Lorenz's major accomplishments is the development of the NH4-PO and the ANEK Process for advanced wastewater treatment. The process is under implementation in several cities in Germany and has been granted patent rights in the European Union, USA, Taiwan and Asia, with rights pending in China, Japan and Korea. He acquired his Master's Degree in Process Engineering and Business Administration (Dipl. Wirtsch. Ing. (TH), (M.Sc., MBA.) from the Technical University of Darmstadt, Germany.



Qiuping Li
Director for Asia
R20 Regions of Climate
Action

Qiuping Li has been working on bridging cutting edge clean technologies between developed and developing countries for the past ten years, including recent focus on providing solutions to South America, Africa and South East Asia in cooperation with low carbon technology providers worldwide. Qiuping has six years' experience in business development, market research and analysis in the private sector, focusing on the industrial, renewable energy and energy efficiency sectors. She also has three years' experience in the United Nations, in the field of green economy development, advising governments on policy and low-carbon industry development. In 2012, Qiuping joined R20 as the Director for Asia, in charge of business development in developing countries and bringing low-carbon technology and green finance to deliver economic returns as well as environmental and social value to sub-national governments in Asia. Qiuping holds an Electrical Engineering degree from Beijing Jiaotong University and MBA from HEC Geneva. While working on establishing a foundation for world women entrepreneurship in green economy and green trade, Qiuping is an active member of the Swiss China Association and the China Europe Business Association. Qiuping was born in Tianjin, China and currently resides in Geneva, Switzerland.



Natasha Garcha
Manager, Business
Development and Advisory
Impact Investment
Exchange Asia (IIX)

Natasha Garcha heads the Business Development and Advisory team across IIX and its sister organization, Shujog, where she spearheaded key projects including the Social Finance Roadmap for the Malaysian government, the IIX-N-Peace Innovation Challenge for the United Nations Development Program and the Women's Livelihood Bond, IIX's commitment to action to the Clinton Global Initiative. Prior to IIX, Natasha worked in the impact investing space in the United Kingdom at Ethex and Impact Investment Partners (IIP). She entered the impact investing world after a career in finance with D.E. Shaw & Co., a New York-based hedge fund where she worked with both the Investor Relations and Corporate Social Responsibility (CSR) teams. Natasha is the Founder of the Shades of Happiness Foundation (SoHF), for which she spearheaded operations in Hyderabad from 2010-2014, supporting +250 direct beneficiaries from slums, orphanages and local government schools. Natasha holds an M.B.A. from the University of Oxford, graduating with distinction and meriting a spot on the Dean's List (MT, TT). She co-chaired the Social Impact Oxford Business Network, winning a BNY-Mellon award for her efforts. Natasha also holds a Master's in Business Law from National Law School, Bangalore.



Prof. Damian Hine
Associate Professor,
Innovation and
Commercialization
UQ Business School,
University of Queensland,
Australia

Prof. Damian Hine is an evolutionary economist focused on innovations that enhance firm growth. His work lies at the crossroads of innovation and strategy, in the field of dynamic capabilities. Prof. Hine's research employs novel quantitative modelling techniques on large data sets to offer new insights on innovation and knowledge creation and exchange. In addition to publishing dozens of journal articles, he's been commissioned to write papers on innovation for the OECD and UNESCO and has published two books, one on BioEntrepreneurship and the other on Innovation and Methodologies for Enterprise research. Prof. Hine has been invited to lead projects on innovation and commercialization by governments in Chile, Brazil, Panama, Vietnam, Fiji and France, and he currently leads a component of a World Bank project in Indonesia and the Philippines focused on business development and innovation. He's also currently the International Consultant on Vietnam's National Innovation Training Program. Based on years of work helping researchers progress their technologies to market, Damian has developed a framework for commercialization that is itself being commercialized, having gained the support of the Australian Government's AusIndustry. Damian was previously a Director in the UQ Biotechnology Program, and Director of Innovation and Strategic Connections for UQ Business School.



Dr. Veerle Vandeweerd
Entrepreneur, Former
UNEP Director,
Environment and Energy,
UNDP

Dr. Veerle Vandeweerd, a Belgian national, has over 25 years of experience in global, national and local environmental and sustainability policy setting and programme implementation, spanning diverse fields from integrated sustainability assessments, forwarding inclusive green economic transformations and global environmental norm setting to financial, regulatory and institutional capacity building in over 160 countries. Dr. Vandeweerd has been teaching at the University of Zambia, heading the environmental reporting department in the Flemish Government, Belgium, and has over 20 years' experience in the United Nations, starting with the United Nations Environment Programme, where, amongst others, she initiated and directed the Global Environment Outlook report series, and UNDP, where she directed the UNDP Environment and Energy division, including the UNDP/GEF and Montreal Protocol divisions. Dr. Vandeweerd served as the Special Advisor to the UN Global Compact, the UN leadership platform for responsible corporate policies and practices, and serves on the boards of several international and national organizations, including CCICED (China). Dr. Vandeweerd is currently an entrepreneur and co-founder of a new financial mechanism to redirect major private capital flows to sustainable investments. She is also the convener of the not-for-profit European Partnership for Sustainable Economic Growth and Employment, geared toward supporting European policy setting in the field of sustainability.



Paul Holthus
Founding President and
CEO
World Ocean Council

Paul Holthus is the founding President/CEO of the World Ocean Council (WOC), the international business leadership alliance on corporate ocean responsibility. The WOC brings together oil and gas, shipping, fisheries, aquaculture, tourism, offshore renewables, seabed mining and other ocean industries. The WOC is an unprecedented ocean business community that creates private sector leadership in addressing shared marine sustainability challenges. Mr. Holthus has worked in over 30 countries with companies, communities, industry associations, UN agencies, international non-governmental organizations and foundations. He has held senior positions with the United Nations Environment Programme (UNEP) and international environmental organizations, including serving as Deputy Director of the IUCN Global Marine Programme. Since 1998, Mr. Holthus has worked primarily with the private sector to develop practical solutions to ocean sustainability and responsible use. He is a frequent speaker at international ocean and industry conferences. He was one of 5 people invited to be a member of the UN Secretary General's Expert Group on Oceans for the 2012 Rio+20 conference, and is on the Advisory Committee of The Economist World Ocean Summit. He is a graduate of the University of California and University of Hawaii, was a Fulbright scholar in Australia and is an East-West Center alum. A major priority for Paul and the WOC is the establishment of the Ocean Investment Platform.



Anna Creed
Standards Manager
Climate Bonds Initiative

Anna Creed is the Standards Manager for the Climate Bonds Initiative, where she coordinates the development of the Climate Bond Standard Programme, working with global scientific experts and financial industry leaders to establish the green benchmarks across all sectors of a low carbon economy. She also engages with governments, regulators and financial institutions to explain the value proposition and spread the word around the importance of green bonds and the Climate Bond Standard and Certification Scheme. A strategy specialist, Anna has significant experience advising on green growth and low carbon development, and for the previous 8 years has worked with companies, governments and non-governmental organizations advising on national and international policy development for REDD+ and mechanisms to engage the private sector in sustainable land use. Anna began her career in the private sector, where she worked in consultancy and then in industry. This included working as a Strategic Planning Manager in a large FTSE 100 company, developing company strategies based on economic analyses and market modelling. She holds an MSc in Economics and a BSc in Economics & Philosophy, both from the London School of Economics.



Charles Colgan
Director of Research,
Center for the Blue
Economy
Editor-in-Chief, Journal of
Ocean and Coastal
Economics

Dr. Charles Colgan oversees the conduct of research activities at the Center for the Blue Economy (CBE) and serves as Editor-in-Chief of the Journal of Ocean and Coastal Economics (JOCE). For 14 years, Dr. Colgan served as a consultant with the National Ocean Economics Program (NOEP), creating the ocean and coastal economic data series for the United States, states, and counties. NOEP pioneered the field of study on ocean and coastal economics and its methodologies are being used in over 20 countries around the world. Prior to his role as Research Director for the CBE, Dr. Colgan served as a Professor of Public Policy and Management in the Edmund S. Muskie School of Public Service at the University of Southern Maine. Dr. Colgan was the Chair of the Muskie School's Graduate Program in Community Planning and Development, and was Director of the USM Center for Business and Economic Research. Prior to joining the University of Southern Maine, he served in the Maine State Planning Office, was State Economist, and Director of Natural Resource and Economic Policy.



Lawrence Ang
Director for Asia
SSG Advisors

Lawrence is the Director for Asia for SSG Advisors, a global development solutions firm and impact investment advisory. He brings nearly ten years' experience at the nexus of sustainable development and private investment in the Asia-Pacific region with expertise across industries such as renewable energy, natural resource management and ICT. As Partnership Advisor for various developmental and impact-oriented projects around the world, Mr. Ang plays a key role in a range of high-profile partnerships with companies such as Microsoft, Vodafone, SMART and Globe. In addition, he served as a Regional Advisor to MStar, a project by USAID and FHI360 focused on identifying innovative business models to promote digital inclusion. Prior to joining SSG, Lawrence was an advisor to government for multilateral agreements in the areas of climate change, forestry and biodiversity as well as a sustainability officer for a large renewable energy company. Lawrence graduated from the Australian National University.



Ryan Whisnant
Head of Professional
Services
PEMSEA

Ryan Whisnant is Head of Professional Services for PEMSEA, guiding its work on investment services, regional business partnerships and blue economy for coastal sustainable development. Mr. Whisnant has built and led new capabilities and systems for companies, financial institutions and international organizations including Microsoft, Cisco, UBS, TIAA-CREF, World Bank, UNDP and USAID with an emphasis on environmental sustainability and technology. While based in New York City, he established the sustainability office for SunGard, a \$4.5 billion company with operations in 30 countries. As a consultant, his work has included performance measurement and reporting systems for a \$32B financial services institution and sustainability trends analysis and development of KPIs informing investment strategy for an asset manager with \$640B in AUM. Mr. Whisnant has authored numerous articles and reports on topics including business model innovation, blue economy, energy and carbon management systems and organizational culture for success of corporate sustainability initiatives. He holds a Bachelor of Science in Environmental Engineering from Northwestern University, and a Master of Science in Natural Resources & Environment and Master of Business Administration from the University of Michigan.