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From Monterey to Galway: Evolution of the Oceans in National Income Accounts

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From Monterey to Galway: Evolution of the Oceans in National Income Accounts

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The measurement of the economic values of the ocean within national income accounting frameworks has received increasing policy attention in recent years. Researchers and governments in a number of countries across the globe have undertaken a variety of efforts to develop methodologically consistent approaches to measuring the contributions of oceans to national income across time and space. More recently a number of international agencies have been going beyond measuring the direct output and employment values of the ocean related industries by generating ocean economy satellite accounts that capture additional activity that cannot be easily identified in published data. These satellite accounts provide additional insights into the contribution of the ocean economy to non-ocean sectors. The impact of current and potential human activities on marine and coastal ecosystem are also key determinant of the ocean's health and of the derived societal benefits through the outputs of the ocean economy industries and the continued delivery of marine ecosystem services. While a decade ago research on the valuation of marine ecosystem service benefits and marine natural capital stock lagged a long way behind the equivalent analysis for terrestrial habitats this has now changed with a sharp rise in marine related valuations in the literature (Torres and Hanley, 2017)

In 2015, the Center for the Blue Economy (CBE) of the Middlebury Institute of International Studies at Monterey (California) convened a meeting of invited experts from governments, international organizations, and academic institutions to explore ways in which the economic values of oceans and marine resources could be incorporated into national income accounts (Colgan, 2015). Since that first event in California, the International Symposium on the Oceans in National Income Accounts has been held on five separate occasions and has provided a crucial platform to develop the methods by which international organizations measure and monitor ocean economic activity and has led to a greater understanding of the economic contributions of the oceans. The symposium has been hosted twice by the CBE, once by the Chinese National Marine Data Information Center in Tianjin, China, once by the Ocean University of Qingdao in Qingdao, China and once by the Socio-Economic Marine Research Unit (SEMURU) at the National University of Ireland Galway.

The fifth International Symposium on the Oceans in National Income Accounts, hosted by SEMURU, was held on 24th and 25th of March 2021.¹ Due to Covid-19 related international travel restrictions the symposium was an on-line event. Rather than being a limitation, the virtual nature of the symposium meant that some of the leading representatives from government, industry,

¹ All presentations from the symposium can be viewed at <http://mosesproject.eu/watch-it-again-all-of-the-conference-video-now-online/>

academia and international organizations from across the globe were able to share their national and international perspectives on progress made in measuring and monitoring the ocean economy and marine ecosystem service values.

The European Regional Development Fund and the EU Interreg Atlantic Area Program 2014–2020 supported the event through the EU MOSES project (EAPA_224/2016 MOSES). SEMRU were the lead partner on the EU INTERREG Atlantic Area MOSES project where the focus was on examining the ‘blue’ growth pathways for the sustainable development of the major ocean economy industries and developing indicators and tools to monitor the progress toward these sustainable growth paths.

In his opening remarks at the fifth International Symposium on the Oceans in National Income Accounts Professor Charles Colgan noted that in putting together the first symposium the organizers had to expend considerable effort in identifying participants that might be interested in the subject of ocean economy accounting. The fact that over 200 persons registered for the 5th iteration of the event is a remarkable tribute to the growth of interest in this research area. The key driving force behind this increased interest is the global attention that has been given to the concept of the ‘blue economy’ and ‘blue growth’ and the idea of the ocean as a source of potentially untapped new national wealth. It is however a challenging source of wealth generation and with that in mind there is also increased awareness of the fragility of the oceans particularly in terms of the impacts of climate change and pollution that undermine the resilience of the ocean economy and society as a whole (European Commission, 2021).

The recognition by coastal nations that a healthy ocean is essential for a sustainable economy means that data is required not just to monitor the change in activity of the ocean economy industries but also to assess changes in the flow of ecosystems to societies. As discussed by a number of participants at the symposium many nations are putting increasing emphasis in government policy on sustainable ocean economic development particularly in relation to offshore renewable energy and the reduction of the carbon footprint of maritime transport and ports. This focus was discussed at the symposium in relation to the European Union’s Green Deal, the South Korean Ocean New Deal Strategy and the US Ocean Climate Action Plan.

Since the first symposium, one of the major contributions of practitioners in the field of ocean accounting has been the development of a framework that conceptualizes the many facets of the blue economy and allows for the determination of the direction of travel along a sustainability pathway for the ocean related industries. This is a complex research agenda and since

Monterey ocean accounting have evolved from the standardization of the definitions of the main marine related industries and the production of core ocean accounts to a point where the research is focused on the refinement of ocean environmental and economic accounts in line with the UN SEEA accounting framework (United Nations, 2021). This integration of economic and environmental perspectives has been brought together in the ocean context through the Global Ocean Accounting Partnership. (www.goap.org)

The papers from the very first symposium held in California were compiled into a special issue of the *Journal of Ocean and Coastal Economics* (Vol. 2, Issue 2, 2016). In an effort to highlight more broadly the developments since those early days of ocean economy accounting it was decided to also compile some of the key papers from the fifth symposium into this second special symposium issue. In line with the symposium the papers in this special edition are organized around a number of major themes:

- Why we need improved ocean economy statistics and the role of satellite accounting
- Revised national standards for ocean and related industry classification
- Tools for improved usage of ocean economy statistics
- Pathways to a sustainable ocean economy
- Ecosystem service valuation and natural capital accounting for the oceans

The question of “Why we need improved ocean economy statistics” is touched upon in virtually every paper of the special issue but it is particularly focused on by Joliffe et al. (2021) and Norton et al. 2021. Joliffe et al. (2021) reviews ongoing OECD efforts to identify and separate useful ocean economy data from international economic statistics and outlines some of the key issues of concern when considering the production of internationally comparable statistics on ocean economic activities. Norton et al. (2021) discuss the challenges of identifying suitable indicators for the monitoring of objectives set out in marine policies using as an example the EU Atlantic Action Plan (AAP). The authors argue that the generation of an extensive range of indicators to monitor the success or otherwise of policies such as the AAP would result in better coordination and management of marine industries’, and more broadly society’s, interactions with the ocean.

Two papers in the special issue examine the topic of revised national standards for ocean and related industry classification. In their contribution, Choi et al. (2021) review the establishment of an industrial classification system that reflects the characteristics of the ocean and fisheries industry in South Korea. The paper reviews the ocean enterprise sampling framework, the survey instrument used to collect the data and presents the marine industry trends based

on the developed classification system. Song et al. (2021) similarly review the statistical approach for measuring the contribution of the ocean to the national economy of China and compare and contrast the approach to that employed in Canada.

While the standard system of national accounting provides a means for measuring progress in terms of the sustainable development of the ocean economy, discussions at the symposium indicated that ocean accounting requires expansion to adequately cover marine related household produced services and the role of ocean natural capital. In their contribution to this special issue Joliffe et al. (2021) also outline ways in which international ocean economy statistics can be improved through satellite accounting approaches. Adkins and Grasso (2021) presented the recently completed US Marine Economy Satellite Account while in this special issue Chang et al. (2021) outline the progress made to date in developing an ocean economy satellite account in South Korea.

Tools for improved usage of ocean economy statistics was another important topic of discussion at the Galway symposium and two papers from the event are highlighted in the special issue. In the first, O'Donoghue et al. (2021) provide an overview of an economic, social, spatial, and environmental modelling framework developed for impact assessment of ocean related industries. The modelling framework is applied to the ocean economy of Ireland and provides a multi-dimensional approach to analyze both individual ocean economy industries and the ocean economy as a whole. The framework works within the data confines of ocean economy accounting but extends the input-output type models used in marine economics to incorporate micro and spatial dimensions by linking datasets through spatial microsimulation approaches. The authors argue that ocean satellite accounts, would allow the release of data more frequently and the modelling of marine policy impact assessment to progress more rapidly.

Hynes et al. (2021) also focus on spatial microsimulation models for marine policy impact analysis. They argue that such a modelling approach allows for a regional level of analysis, particularly useful from a maritime spatial planning perspective not generally possible when dealing with ocean economy statistics which, the authors point out, are often even difficult to compile at a national level.

As part of the symposium one session focused on the EU MOSES project and its 'Blue Growth Pathway' case studies. Adopting the *transition management* (TS) approach as a broad analytical framework through which to stimulate thinking about how more sustainable marine management regimes may be realized in the future, four presentations in the session applied the

approach to case studies in aquaculture, marine tourism and leisure, offshore renewable energy, and port development. In this special issue Kelly et al. (2021) bring these four case studies together into one paper to demonstrate how TS can be used to coordinate a wide range of actors to achieve long-term sustainability. This is achieved through the creation of a shared understanding of a problem and the development of a long-term vision and sustainable pathway scenarios through which the problem can be addressed. It is argued that by adopting the TS approach and engaging key stakeholders in the discussions, marine governance authorities could minimize the impacts on coastal communities and the marine environment while at the same time maximizing the implementation of sustainable practices and addressing issues such as biodiversity loss and climate change.

Three papers in this special issue tackle the complex issue of ecosystem service valuation and natural capital accounting for the oceans. In their contribution Grilli et al. (2021) discuss the opportunities, challenges, and limitations in developing coastal and marine ecosystem accounts based on the experience of compiling an initial experimental set of accounts for the United Kingdom based on the UN SEEA Experimental Ecosystem Accounting framework. The authors argue that the ultimate success of marine ecosystem accounts will depend on the benefit provided by the additional information that's such accounting systems generate for decision makers. They explain how new technologies for remote data collection and automated data analysis, offer potential for significant advances in ecosystem accounts analysis and information flows but also contend that more study is needed to improve the potential policy uptake of the information provided in marine ecosystem accounts.

This is a theme also picked up on by Tinch et al. (2021a). In this case the authors argue that while progress has been made there remains a pressing need for better integration of marine environmental values in policy processes. In its critique of the role of economic valuation and appraisal in achieving marine ecosystem conservation and restoration objectives the paper highlights the fact that focus on natural capital accounting, and more generally on blue growth and market instruments, could create a reliance on exchange values at the expense of welfare values required for policy appraisal. In a related paper in this special issue, Tinch et al. (2021b) assess the different points of view that exist in marine research, management and policy communities regarding the estimation of monetary values for marine ecosystems and services and their use in appraisal and policy settings using the Q-method statistical approach to 'discourse analysis'. While divergent perspectives are evident across the different groups, points of general agreement are identified that the authors believe could be used as a basis for constructive dialogue and building trust.

Ultimately, the sustainable development of our ocean resources requires the protection of marine ecosystems to ensure non-declining opportunities for future generations (the capital approach to sustainable development), that policy makers manage the means of producing and mobilizing current ocean outputs and ensure an equitable distribution of the resulting income flows (Fenichel, 2021). To achieve this, measurement of the use of the oceans and the impacts on marine ecosystems are needed to plan future policies, evaluate past decisions and to frame discussions around social and environmental goals for marine policy. Repeated measures across a range of indicators are much more valuable in monitoring progress along the path to sustainability than a focus on the value added by market output of the ocean industries to GDP at any point in time (Jorgenson, 2018).

While it was important around the early years that coincided with the first symposium in Monterey to deliberate on the definition and measurement of current production of the ocean industries the focus now must, as demonstrated by the latest symposium in Galway, change to developing a suite of indicators for national ocean accounting that go beyond just summary statistics related to GDP to an information system that provides decision makers with the facts they need around marine ecosystem service flows and changes in the marine natural capital stock.

The papers in this special edition document the evolution of thinking on ocean economy and environment accounting and highlight the challenges that still remain in ensuring that policy makers have the most relevant information at their disposal, in the most accessible format, for the effective management of marine natural capital and the promotion of sustainable marine industry developments. The next phase of development following from Galway is likely to be the continued integration of marine ecosystem service flows into national income account frameworks and the integration of the concepts of ocean related human and social capital and equity considerations into an expanded dashboard of ocean economy indicators.

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