Institution: University of Wales, Trinity Saint David

Unit of Assessment: 17

Title of case study: Global Forum on Oceans, Coasts, and Islands

1. Summary of the impact. Professor Mike Philips' research has contributed to understandings of coastal erosion causes, its impacts, mitigation and adaptation strategies. His research and his involvement in numerous policy networks including most notably the Global Forum on Oceans, Coasts, and Islands (GOFCI) has influenced coastal policy discussion and outcomes at a global level. The research has led to coastal tourism and climate change being considered at the highest political level. This is evidenced by Phillips's contribution to international policy documents and processes, such as Rio +20, and wide public and professional recognition.

2. Underpinning research. Coastal erosion is a global problem and Europe's coast is under increasing threat with a fifth of the EU27's coastlines severely affected to date. Underpinning research led by Prof Mike Phillips has focused on two overarching research themes: **a)** erosion causes and **b)** erosion impacts, mitigation and adaptation. The research was led by Phillips at University of Wales Trinity Saint David (formerly Swansea Metropolitan University) where he has led the Coastal and Marine Research Group since its inception in 2006.

a) Coastal erosion: causes. Phillips and Williams' (2007) research for the first time established an empirical relationship between the seaward (Depth of Closure) and landward (Mean High Water) limits of the active beach profile. Building on this research Phillips (2008) subsequently demonstrated that marine aggregate dredging was not responsible for beach erosion in South Wales. The research findings were accepted by opponents of marine aggregate dredging on the UK east coast and influenced Welsh Government policy. Thomas et al. (2011) subsequently showed how short-term beach rotation and wave climate are affected by the North Atlantic Oscillation (NAO) while work by Phillips et al. (2013) established relationships between sea levels, wind speeds and directions, and the North Atlantic Oscillation, explaining how these interact to cause morphological change. Sea level predictions have been adopted for Severn Estuary flood risk and scenario management to 2050, while the work on storminess, trends and time-lagged coastal response are predicted to make a lasting contribution to shoreline management strategies.

b) Coastal erosion: impacts, mitigation and adaptation. Beach erosion poses a threat to all stakeholders, especially tourism which according to the United Nations World Tourism Organisation is the world's largest industry. Responding to these issues, Phillips and Jones (2006) undertook an assessment of erosion and tourism infrastructure in the coastal zone, evaluating potential problems and consequences with respect to climate change. Key findings highlighted a major economic issue of global importance. Community resilience has been the focus of his recommended adaptation and management strategies which centre on shoreline response to physical processes and wider implications of climate change. This has enabled the development of adaptation strategies under various risk based scenarios. Following the importance of their paper (91 citations as at 20th October, 2013), the authors were invited by CABI to edit a major collection entitled *Disappearing destinations: climate change and future challenges for coastal tourism*. Published by CABI, this edited collection includes contributions from experts in various fields of coastal tourism threatened by the impacts of climate change (Jones and Phillips, 2011). Phillips' contribution, and that of the work as a whole, examines the importance of coastal zones to the tourism industry and shows that protecting resources is not only vital to national economies, but presents a growing global dilemma. It recommends strategies to ameliorate projected climate change impacts and suggests how to manage coastal resources while accommodating increasing tourism pressures. This research has achieved significant global interest from a readership of policy makers, academia and industry.

3. References to the research.

a) Phillips, M.R. and Williams, A. T., 2007. Depth of Closure and Shoreline Indicators – Empirical Formulae for Beach Management. *Journal of Coastal Research.* Vol. 23(2): 487-500. *21 citations*

b) Phillips M.R., 2008. Beach erosion and marine aggregate dredging: a question of evidence? *The Geographical Journal.* Vol 174(4): 332-343. *7 citations*

c) Thomas, T., Phillips, M.R., Williams, A.T. Jenkins, R.E., 2011. Short-term beach rotation, wave climate and the North Atlantic Oscillation (NAO). *Progress in Physical Geography,* Vol 35(3) 333–352. *11 citations.*

d) Phillips, M.R., Rees, E.F. and Thomas, T., 2013. Winds, sea levels and NAO influences: An evaluation. *Global and Planetary Change.* Vol 100: 145-152. *1 citation.*

e) Phillips, M.R. and Jones, A.L., 2006. Erosion & tourism infrastructure in the coastal zone: problems, consequences & management. *Tourism Management*. Vol. 27(3): 517-524. *91 citations.*

f) Jones, A.L. and Phillips, M.R. (eds) (2011). *Disappearing destinations: climate change and future challenges for coastal tourism*. CABI, Wallingford, Oxford. 296pp. *20 citations*

Evidence of quality: This work has informed sediment studies worldwide and underpinned a £611,000 Technology Strategy Board project in 2009 to find a technique for measuring the effects of coastal erosion under the sea surface and to consequently evaluate whether remedial action is possible or desirable (ASTEC / Automated Sensing Technologies for Coastal Monitoring, Project No. 100614). This expertise has led to Professor Phillips being appointed as International Expert Advisor to the following Portuguese Foundation for Science and Technology (Fundação para a Ciência e a Tecnologia) funded projects: CLIVAGE (Climate variability and change: adaptation strategies for small islands); SMARTPARKS (Planning and Management System for Small Islands Protected Areas); and ADAPTARIA (Climate Change Modelling on Ria De Aveiro: Littoral Adaptation Strategy for Coastal and Fluvial Flooding). Phillips and Jones (2006) has been referenced by authors in high impact English language journals, as well as by work published in Chinese, French, German, Italian, Korean, Portuguese and Spanish. It has informed research topics such as: Climate Change, Coastal Economies and People, Coastal Engineering, Coastal Planning, Destination Tourism, Ecology, Economics, Fetch Limited Environments, Hurricanes, International Tourism, Natural Hazards, Oceanic and Coastal Interactions, Poverty, Sedimentology, Social Justice, Strategic Environmental Assessment, Sustainable Tourism, Tourism Policy and Weather. Origins of citing authors include: Alabama, Alaska, Algarve, Australia, Baltic Sea, Barbados, Brazil, Caribbean, Caspian Sea, Cork, Cyprus, Delaware, Florida, France, Germany, Greece, Gulf of Aqaba, Iceland, Northern Ireland, Italy, Malaysia, Martinique, Matagorda Peninsula, Mediterranean, North Carolina, Philippines, Sicily, South Africa, South Wales, Spain, Sydney, Taiwan, Tanzania, Texas, Thailand and the UK.

4. Details of the impact.

Global Forum on Oceans, Coasts, and Islands. GOFCI is Global Environment Faculty funded collaboration, with the United Nations Environment Programme and United Nations Development Programme acting as implementing agencies. The forum was set up in 2001 as a global policy and lobbying organisation to help the world's governments place issues related to oceans, coasts and small island developing states on the agenda of the 2002 World Summit on Sustainable Development. While its original remit was to assess progress in the implementation of the outcomes of the 1992 Earth Summit in Rio de Janeiro it was subsequently formalised at the 2002 World Summit and continues its work to date by feeding back on progress via international conferences in 2003, 2006, 2008, 2010 and 2012 (Rio+20). The Global Forum produces a broad variety of policy analyses, publications and information services with the goal of providing relevant and timely information about integrated ocean policy to the global oceans community, with a particular emphasis on decision-making at UN and National Government Levels (GFOCI, 2013a). GFOCI collaborators include, among others: Intergovernmental Oceanographic Commission; National Oceanographic and Atmospheric Administration; Fisheries and Oceans Canada; Portuguese Committee for IOC; South Pacific Applied Geoscience Commission; IOC Sub-Commission for the Caribbean and Adjacent Regions; Partnerships in Environmental Management for the Seas of East Asia; New Partnerships for Africa's Development; Centre of Ecology, Fisheries and Oceanography of the Gulf of Mexico; Mexican Secretariat of Environment and Natural Resources; and the World Bank - Global Environment Facility.

In 2008, following an invite to attend their fourth conference Professor Phillips became a member of the Climate, Oceans and Security Working Group (COSWG) of GFOCI. In his role Phillips has brought the issue of climate change and coastal tourism to the international policy agenda. His role

has been to show the economic impacts of climate change with respect to coastal tourism and has suggested policy responses. Community resilience has been the focus of his recommended adaptation and management strategies. His extensive knowledge of shoreline response to physical processes and wider implications of climate change, including NAO influences has enabled development of adaptation strategies under various risk based scenarios. This subsequently underpinned human community and policy work with special reference to Small Island States through international policy engagement, not only with GFOCI but as Trustee/Director of the US Coastal Education and Research Foundation, advisor to MARUM (German Cluster of Excellence of Marine Environmental Sciences), and the European Union for Maritime Spatial Planning.

Examples of this engagement include work, by invitation, where Phillips developed and moderated a session in the Policy, Science and Technical Symposium at the Fifth Global Conference on Oceans, Coasts and Islands at the UNESCO Headquarters in May 2010. The session highlighted the importance of the climate change and coastal tourism and this took place in for a high-profile audience including senior officials and key global decision makers, (including Heads of State, Government Ministers (marine and environment), EU Commissioners, UN Ambassadors, industry and academics). A significant contribution to the policy debate was developed here as the session's objectives, the summary of issues considered, details on the path forward and recommendations for national and international decision makers were published in an official document authored by Hamon and Balgos (2010). This volume was distributed at the Symposium and to the Roundtables of National Ocean Leaders, Ocean Parliamentarians, and Regional, Provincial and Local Authorities and to the high-level participants during the following Policy Conference to inform their discussions. Post-conference developments included leaders of the world's museums, aquaria, and other public outreach organizations meeting at Nausicaa in Boulogne-sur-Mer, in the 4th International Meeting of the World Ocean Network. Here participants evaluated past and ongoing education and outreach activities on sustainable use of the ocean and drew up an action plan to further mobilize citizens and civil society in different regions of the world.

Rio +20. Phillips' contribution to the global policy making process is also seen in his subsequent contribution to the GFOCI summary document for decision makers given to world leaders at Rio+20 (Cicin-Sain *et al*., 2012). The Rio+20 Conference was a joint endeavour of the entire UN System which marked the 20th anniversary of the 1992 United Nations Conference on Environment and Development and the 10th anniversary of the 2002 World Summit on Sustainable Development. It took place at the highest possible level, including 79 Heads of State and representatives from 191 countries. Its outcome, to which Phillip's contributed, was a focused political document which was promoted by the United Nations Development Programme in pursuance of the Millennium Development Goals (1, 7 and 8). The report measures the progress made toward the broad aims, targets, and timetables established by the international community and argues that a) the information included is critical for global policymakers to absorb and b) that there is a pressing need to assess coastal vulnerability alongside impacts on economic resilience. Contributions from the GFOCI were reflected in a strong outcome from the Rio+20 Conference, embodied in 20 paragraphs of the policy document (one of the largest thematic sections of the document). In this context climate change impacts on coastal tourism were seen by GFOCI as consequences of vulnerability and resilience and as Phillips' research has demonstrated, there will be variations in shoreline vulnerability depending on location and the issue is how to respond to events and maintain economic resilience. COSWG subsequently recognised that policy responses needed to focus on adaptation to these issues.

Policy developments following Rio+20 include the convening of an Expert Group Meeting on Oceans, Seas and Sustainable Development by the UN Department of Economic and Social Affairs (April 18-19, 2013). The group met to drive opportunities and consider challenges in implementing the Rio+20 ocean outcomes. Key issues discussed included climate change and marine tourism with many participants noting the important role of the tourism industry in sustainable development (GFOCI, 2013b). Participants also discussed the disconnection between science and policy-making, an issue highlighted by House and Phillips (2012). Subsequently, governments, research councils and national agencies are funding initiatives on coastal vulnerability and resilience. One such initiative is the Belmont Forum and G8 Research Councils'

Initiative on Multilateral Research Funding - International Opportunities Fund. Led by the President of GFOCI, Phillips is participating in a proposal entitled Comparative, Cross-National, and Ecosystem Approach to Coastal Vulnerability and Resilience under the theme section: Coastal Vulnerability. The report has likewise been widely used to contextualise Rio+20 Ocean outcomes and underpin subsequent high level meetings. In June 2013 for example the UN Open-ended Informal Consultative Process (ICP) on Oceans and the Law of the Sea under the auspices of a meeting of the UN Open Working Group on Sustainable Development Goals. This engaged stakeholders and government representatives in progressing post-Rio+20 priorities and included reference to the value of emerging research on sea level rise (GFOCI, 2013c). This is essential in managing tourism, the most important source of revenue for Small Island Developing States.

Further policy contribution. Further work evidencing the impact of Phillip's work and contribution to the global policy making agenda is found in his participation in the EU-US Conference Series on Sustainable Oceans - Reconciling Economic Use and Protection. By Invitation Phillips attended the 3rd Conference , 'Good Governance for Sustainable Marine Development' in Portugal (June 2013). Organized by the Dräger Foundation (in association with The European Commission, DG for Maritime Affairs and Fisheries) the conference brought together international experts in politics, academia, business including Rt. Hon. David Miliband, as co-chair of the newly launched Global Ocean Commission. One of the key objectives of the conference series is to help establish an independent European Ocean Alliance and to link it with the U.S. Joint Ocean Commission Initiative. Phillips participated in discussions regarding the development of a comprehensive international architecture for sustainable marine development and an inter-governmental level action plan towards sustainable oceans. Developments at the event saw the 'Blue Economy' emerge as a vehicle for sustainable economic growth and agreement that joint research initiatives should be instigated at US and EU Member State government levels. In October 2013, the UK-US Global Innovation Initiative was launched, and this is a shared commitment of the United States and the United Kingdom to support multilateral research collaboration. Further invitations to policy forums include the UK National Commission for UNESCO Colloquium (Wales June 2013) to contribute to efforts to ensure that Wales is engaged with UNESCO and its international and multi-lateral work in Education, Science and Culture. The Colloquium highlighted and considered the role of UNESCO in Wales and the contribution of Welsh civil society to UNESCO's programmes. It brought together the leading Welsh experts in UNESCO's work and included the Rt. Hon. Carwyn Jones (First Minister of Wales), Professor W. John Morgan (Chairman, UK National Commission for UNESCO), His Excellency Matthew Sudders (United Kingdom Ambassador and Permanent Delegate to UNESCO), Sir John Cadogan (President, Learned Society of Wales) and Professor Gretchen Kalonji (Assistant Director-General for Natural Sciences, UNESCO). It enabled collective expertise and experience to identify new ways of supporting UNESCO's work in Education, Science and Culture and formulated a strategy to develop a more effective organisation.

5. Sources to corroborate the impact

i) President, Global Ocean Forum
ii) Minister for Environment and Energy, Seychelles
iii) Program Coordinator, Global Ocean Forum
iv) Hamon, G. and Balgos, M. (eds), 2010. Global Forum on Oceans, Coasts and Islands Volume of Symposium Session Summaries: Policy, Science and Technical Symposium. UNESCO http://www.globaloceans.org/sites/udel.edu.globaloceans/files/symposium_4web.pdf
v) Cicin-Sain, B., Balgos, M., Appiott, J., Wowk, K. and Hamon G., 2012. Oceans at Rio+20: How Well Are We Doing in Meeting the Commitments from the 1992 Earth Summit and the 2002 World Summit on Sustainable Development? Summary for Decision Makers. Global Ocean Forum. http://www.globaloceans.org/sites/udel.edu.globaloceans/files/Rio20SummaryReport.pdf
vi) GFOCI, Press release May 2012 http://www.globaloceans.org/sites/udel.edu.globaloceans/files/PressReleaseMay12FINAL1.pdf#
vii) GFOCI, 2013bNewsletter, June 2013. http://globaloceanforumsecretariat.files.wordpress.com/2013/06/undesaexpertgroup-june20132.pdf
viii) GFOCI, 2013c. Newsletter, July, 2013. http://globaloceanforumsecretariat.files.wordpress.com/2013/06/gofnewsletter-july-2013.pdf
ix) Fifth Global Ocean Conference, 2010. http://www.youtube.com/user/2010globaloceans