A response to coastal risks

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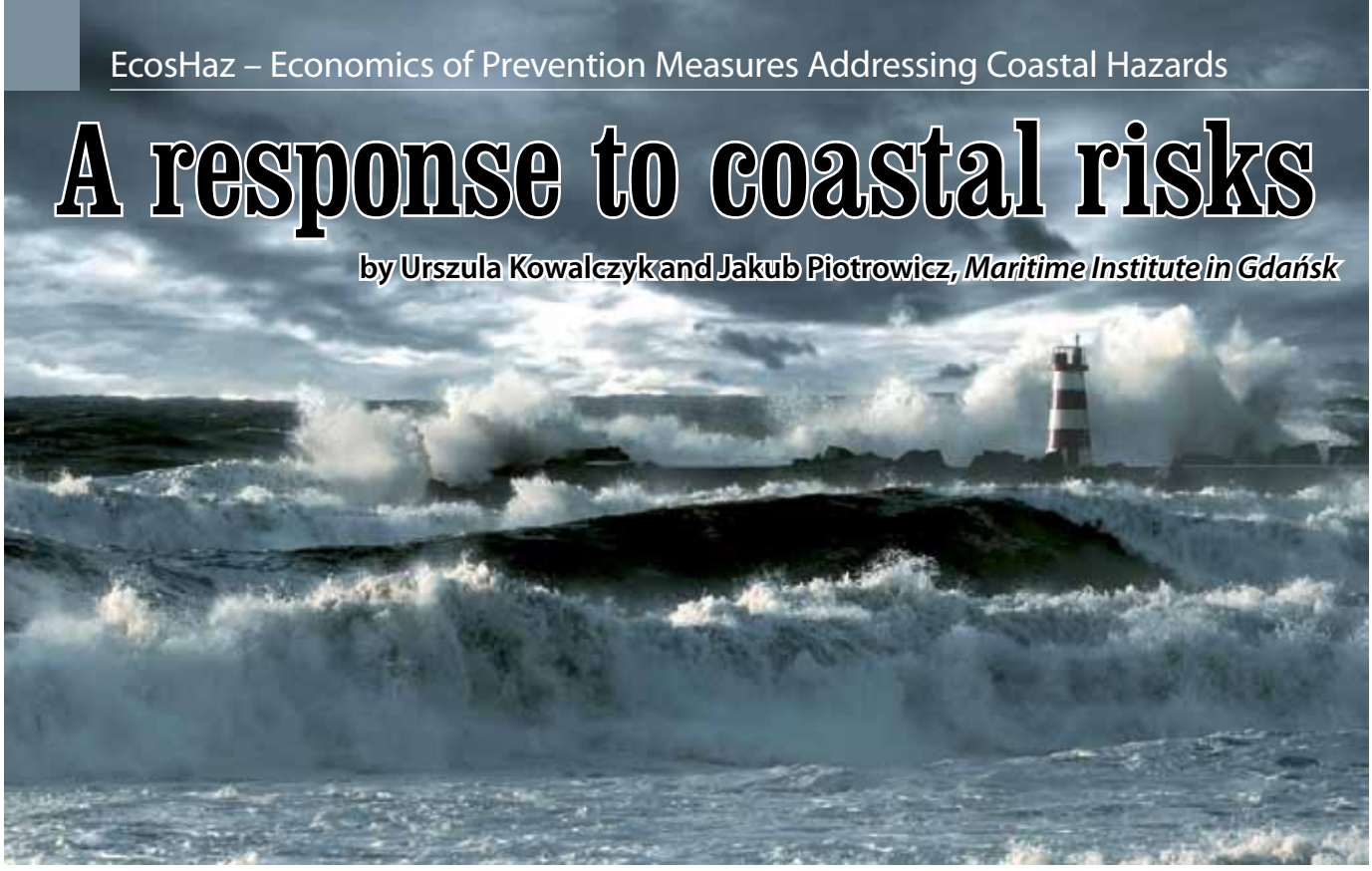

Floods, storms, shoreline erosion, rising sea levels and oil spill accidents may be perceived as quite typical for coastal living. But they are also a big concern for local populations since the interaction between coastal processes and human activities can dramatically affect the economy, health, well-being and safety.

Effective hazard mitigation planning requires a cost-benefit assessment of various risk prevention measures related to the expenses of response or rehabilitation. Considerable progress has been made over the past few decades in the fields of hazards' analysis and modelling; however, common use of a cost-benefit analysis (CBA) and other related assessment methods like a multi-criteria analysis, still remains very challenging. The CBA method allows to determine options that provide the best approach for adopting a contingency plan in terms of benefits compared with the costs of implementation.

The aim of EcosHaz is to establish a sustainable knowledge framework addressing the costs and benefits of prevention and response to coastal hazards.

CBA in use

For example, this method is applied to comparing different means of oil spills prevention, as well as to calculate the costs of a management plan for risk assessment and its benefits. The CBA employs economic efficiency as the criteria guiding the decision making; yet it also takes into account possible damages to nature. The result of such damages depends on the duration, velocity, amount of discharged and type of oil that is spilled. Thus, all these factors influence the social and economic activities of the affected area, causing indirect losses as well. It brings such effects on humans as environmental loss, cleaning and recovery expenses, impact on economy (e.g. fishing, fish processing, tourism, farming, etc.).

Unfortunately, a significant diversity in national methodological approaches and terminology complicates the deduction of robust and comparable cost-benefit figures. Besides the methodological differences, the lack of reliable publicly available cost assessment data is a major obstacle for process development. The existing cost databases are rather scarce, usually containing heterogeneous data or figures defined at an aggregated level. Moreover, many parameters

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related to the coastal hazards' impacts are barely reflected resulting in considerable uncertainties during the evaluation process of the appropriate mitigation measures.

A plan is needed

Any coastal hazard management plan should attempt to identify preventive measures which can halt a potential rise in risk. There is a danger that without these measures, plans will become simply the catalogues of engineering works designed to protect particular communities or coastlines at risk. Such situation must be avoided, because documents need to identify the full range of measures for coastal hazard and risk reduction, along with highlighting areas where each type of measure should be investigated and implemented. All coastal hazard and risk management plans (incl. prevention, protection and preparedness) should also point out areas for other necessary investments. Another important aspect to consider is that risk management plans need to take into account geographical differences among areas. There are areas registering a higher likelihood of accidents than others, and these have to be prioritized, taking a cost-benefit analysis approach.

Fits like a glove

Those above-mentioned issues are addressed by EcosHaz – a research project funded by the Directorate General for Humanitarian Aid and Civil Protection of the European Union, running since January 1st, 2015 until the end of 2016. Its main aim is to establish a sustainable knowledge framework addressing the costs and benefits of prevention and response to coastal hazards. EcosHaz intends to overcome the limitations & weaknesses by reviewing and analysing the available frameworks, methodologies and tools, providing state of the art, as well as necessary data sources and supporting structures for the economic assessment of coastal risk prevention, and finally – by validating the applicability of the developed materials. Workshops, seminars and practical exercises are an important part of EcosHaz's activities enabling stakeholders to get to know the CBA methods and showing that coastal hazards can have both negative (environmental, human and economic damages) and positive effects (a boost of the local economy and labour market coming from the restoration process). The project's final outcomes will also include guidelines on procedures implementation for the economic assessment of coastal prevention against respectively natural and anthropogenic hazards.

The project is targeted at three main groups. It can attract policy makers (e.g. EU central services for civil, or environmental protection, national ministries, etc.), secondly, other stakeholders, like scientists, consulting companies, or equipment providers can be interested as well, but one should not forget about the end users – regional authorities responsible for civil protection, water management, ports and harbours, spatial planning, and public health.

Tab. 1. The main focus of EcosHaz

The project's actions:
Setting up flexible structures ensuring the active involvement of key actors and enforcing their capacity to respond properly to the project requirements
Assessing current knowledge and specifying gaps, deficiencies and challenges in cost-benefit analysis process
Developing an effective knowledge exchange mechanism capable of exploring and capitalizing on good practice from both partners and international experience
Creating an integrated information system and its support tools to provide guidance as well as access to a network of special advisers, materials and other links
Undertaking pilot actions which will highlight and demonstrate examples of good practices and facilitate adaptation to desirable methods at the local level
Linking the project outputs with follow-up initiatives at the local and EU level
Establishing national clusters of key stakeholders that will evolve into EU transnational cooperation structure

EcosHaz research studies are run by a consortium of six partners – SIGMA Consultants Ltd. as the main partner (Greece), the Pablo de Olavide University, and the University of Santiago de Compostela (Spain), the University of Catania (Italy), the Middlesex University Higher Education Corporation, the Flood Hazard Research Centre (the United Kingdom), and the Maritime Institute in Gdańsk (Poland).

We, at the Maritime Institute in Gdańsk, support EcosHaz in the analysis of stakeholders' views on cost-benefit assessment methods. We contributed to the development of the project's Knowledge Toolkit and other EcosHaz tools, namely the website, helpline centre and forum. We are also responsible for organising meetings, training seminars and informative workshops, which have already taken place in Greece, Spain and the UK, and the next one is scheduled for May 17-18, 2016 in Gdańsk.

Project partners' targets

The project's partners analyse local stakeholders and end users' views and needs in terms of economic assessment and knowledge of CBA. Preliminary results of the project show that countries involved have different degrees of framework development and supporting structures to evaluate coastal hazards prevention measures. The consulted end users and stakeholders mainly operate at regional and community levels, covering a variety of tasks and competencies (e.g. plans formulation and execution, emergency response, monitoring) and operating across all fields of expertise.

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The UK and Poland already have a solid coastal hazard management background. Specifically, they have implemented laws and regulations that deal with the economic valuation of coastal hazard management measures and a uniform application of CBA. Other countries (Greece, Italy, and Spain) show a more fragmented situation, although in the presence of several significant initiatives. Though CBA is considered as a useful decision-aiding tool to select the most efficient option, the interest in multi-criteria analysis is also observed. The shortage of funds and internal experts together with the fear that CBA may increase conflicts with stakeholders is considered by interviewed stakeholders as the main limitation to the use of this method. A good example on EcosHaz's practicality is that it has examined the oil spill case and the flooding effects on the British coastline, together with the impact on health, environment, local economy and tourism. Further studies will continue including a Common Framework on Coastal Hazard and Risk Management and the creation of the EcosHaz Knowledge Toolkit containing good practices, case studies, literature and other information on different modules of coastal risk management.

EcosHaz presents a full scope of data and analysis on preventing coastline catastrophes. It is a useful tool for people and organizations dealing with water-caused dangers every day, since floods and oil spills cannot be prevented or fought by debates or resolutions. A practical and functional EcosHaz, based on academic experts' work will provide detailed knowledge on what should be done in order to prevent coastal hazards. ■