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Prevention of Conflicts between Klaipėda Seaport and Local Communities Based on Eco-Innovations

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Seaports are strategically important for the development of global, regional as well as local economy. However, nowadays, seaports are among the fastest growing industries, which in turn lead to a variety of coastal resource use conflicts and provoke strong resistance in communities adjacent to seaports. Currently, it becomes an increasingly important aspect of limitations and constraints for future seaport businesses growth. In order to reduce environmental impact, seaport companies are implementing eco-innovations to remedy the conflicts among seaport businesses and local communities. The present study is aimed at the development of a conceptual conflict management model regarding conflict prevention between seaport businesses and the society. The research was performed at three separate levels: technological process level, company level and across all businesses involved in the marine industry. The paper summarises knowledge gained during the research on reducing environmental impact using

eco-innovations. The paper provides an analysis of the main causes of environmental conflicts in Klaipėda seaport and, by providing the analysis of environmental measures according to the proposed conflict management model, contributes to conflict prevention and remediation by involvement of eco-innovations.

Keywords: *conflict management model, conflict prevention, eco-innovation, environmental protection, marine industry.*

Introduction

Lithuania has approximately one hundred kilometres of coastline, where more than two-thirds of the area are covered by various protected areas, i.e. national and regional parks, nature reserves. Only three other European countries – Montenegro, Slovenia, and Belgium – have a shorter sea coastline. The area of the Baltic Sea managed by Lithuania is the smallest among all Baltic countries. The area of the economic zone is 7,000 km^2 and represents only about 1.5% of the Baltic Sea area (Povilanskas and Urbis, 2004).

Many citizens live in the coastal area, providing an important source of food and raw materials, and important transport and trade connections. The coastal area also contains the most valuable habitats and is a favourite destination for leisure time (Grigelis et al., 2007; CEC 2007). Seaports are located nearby cities and determine the quality of the urban environment. Urban environmental anthropogenic pressure has recently reached a critical level in many urban areas of the world (Moussiopoulos et al., 2010). Many port cities tend to perceive that the port is like a foreign body but is not a potential driving force in promoting their social and economic development (Parola and Maugeri, 2013). Therefore, the rapid growth of the port sector leads to environmental problems, which in turn places a growing emphasis on the corporate social responsibility and leads to the search for the measures mitigating the pressure on the natural environment.

It is generally recognised that the industry should be responsible for adverse environmental effects. The government, through the legal instrument, is trying to encourage organisations to support more environmentally friendly relations, be in harmony with the environment and meet the needs of the market; companies are forced to include sustainability concepts into their strategies and achieve more efficient management of natural resources (Baroulaki and Veshagh, 2007). Thus, sustainable development, in particular, must develop technological, social and environmental changes (Hellstrom, 2007).

The success of the economic system is to create sustainable management of economy processes, involving environmental innovations to reduce the environmental burden (Çoban et al., 2012). Eco-innovation is understood as manufacturing, products, processes, services or management of novelty and business methods aimed at the entire life cycle, to prevent or substantially reduce the risk of environmental pollution and other negative impacts of resources use including energy (Matchiba, 2010; Elkins, 2010). Eco-innovative concepts formed clearly highlight the environmental impact reduction goal but are not limited to this ambition. Development of eco-innovations leads to a change of social responsibility and institutional structures. Big industrial organisations attract considerable public resistance, because these organisations often highly influence the quality of life of surrounding communities. Eco-innovation is the future strategy, which includes organisational changes in enterprises, developing new processes and products to ensure customer and business value of social responsibility towards sustainability (Baroulaki and Veshagh, 2007; Matchiba, 2010). Starting the presented case study, we assumed that it can also be used as a seaport and adjacent communities' conflict prevention tool, because the growth of public concern that may become a limiting factor for the development of the port in the future (Parola and Maugeri, 2013) is not really sufficiently investigated.

Klaipėda seaport was chosen as a case because it is the only seaport in Lithuania. Klaipėda seaport can handle up to 60 million tons per year (Port of Klaipėda 2014). However, currently, only a little more than 50% of full port capacity is used. Over the past decade, the port has developed rapidly, and its growth rate has been

6.47% per year. Therefore, if such a rate of growth is maintained, all port capacity will be consumed during the next 10 years. This will lead to further development and expansion of the port, followed by increased pressure on the environment and the city. In order to avoid the seaport and adjacent communities' conflict, it is needed to create 'friendly' port-city relationships to ensure further sustainable development. Thus, the main goal of this paper is to summarise and provide knowledge needed for the prevention of conflicts in terms of eco-innovative development. The paper was aimed to determine the main causes of environmental conflicts in Klaipėda seaport and to evaluate existing environmental protection measures. The results of the analysis lead to the development of the eco-innovations-based conceptual environmental conflict management model for environmental conflict prevention and remediation between Klaipėda seaport and neighbouring communities.

Methods

The study was conducted using the methods of comparative and logical analysis of data (seaport environmental pollution) from the Environmental Protection Agency of the Republic of Lithuania and seaport companies' data about seaport companies' activity and eco-innovations development. The processed survey data were integrated into the port's environmental protection system assessment and used for the development of the environmental conflict management model. The adequacy of environmental protection measures used for environmental conflict prevention was evaluated highlighting their advantages and disadvantages related to eco-innovation.

Case study

The cause of conflicts

Seaports are among the fastest developing industries in Lithuania (Jarašūnienė, 2012) and around the world (Berechman and Tseng, 2012). However, intensive development of a seaport also means the increasing impact of the seaport on the environmental quality and business conditions (Puig et al., 2014; Le et al., 2014). This leads seaports to experience greater pressure from the surrounding city community and other businesses (Moussiopoulos et al., 2010).

Modern production, particularly if it is international, is mostly related to the sea transport, which as a communication tool has always served people. Nowadays, seaways are not overloaded yet (Bergantino et al., 2013). Thus, there is no doubt that both passenger and cargo routes will stretch the sea (Žaromskis, 2008). It can be inferred that in the future Klaipėda seaport will continue to be developed intensively.

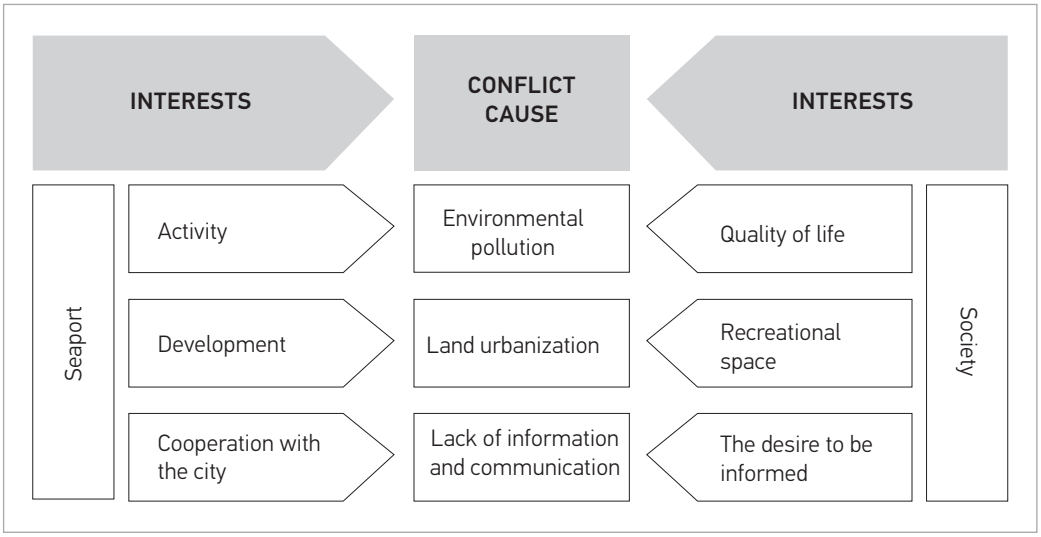
Seaports are located nearby cities and determine the quality of the urban environment. Therefore, it is important to establish and maintain the seaport-society relationship (Parola and Maugeri, 2013). This is important because missing social-business relations lead to the appearance of conflicts, which in turn can become another major factor limiting further development of the seaport (Burškytė et al., 2011; Parola and Maugeri, 2013). The investigation of preventive measures must be carried out not only to maintain and preserve the port that is competitive for future generations but also to save the natural environment that is productive and suitable for recreation.

The analysis of environmental conflicts in Klaipėda seaport distinguished 3 main causes determining Klaipėda seaport and adjacent communities' conflicts: environmental pollution, land urbanisation, and lack of information and communication (Figure 1).

Environmental pollution. Seaports in the world differ according to many aspects. However, seaports have similar environmental problems, such as water pollution, emissions to the air, dredging spoils, etc. (Le et al., 2011). The public perception of pollution is especially important, since ports are often located close to sensitive ecosystems (Le et al., 2014), recreational and residential areas, leading to pollution of the environment and resulting in deteriorating quality of life and impaired real estate. For this reason, the intertwining of seaport-society social, economic and environmental interests is unavoidable.

Land urbanisation. Lithuania has only a small part of the coastline that can be used for industrial activities.

Fig. 1
Seaport and adjacent communities' conflict causes



This is a particularly important reason in Lithuania facing socio-economic conflicts between the seaport and adjacent communities. The importance of this aspect is recognised by many authors, as seaport development often means loss of habitats, landscapes and valuable areas (Le et al., 2011; Le et al., 2014; Darbra et al., 2004).

Lack of information and communication results in social conflicts. The unsatisfied need of the public to be informed prevents the emergence of the seaport and city community relationship leading to the missing cooperation or any kind of 'social contract'. This in turn limits and constrains port-development-related decisions. Parola and Maugeri (2013) recognise that conflict management is an important aspect for successful seaport and society collaboration (Parola and Maugeri, 2013).

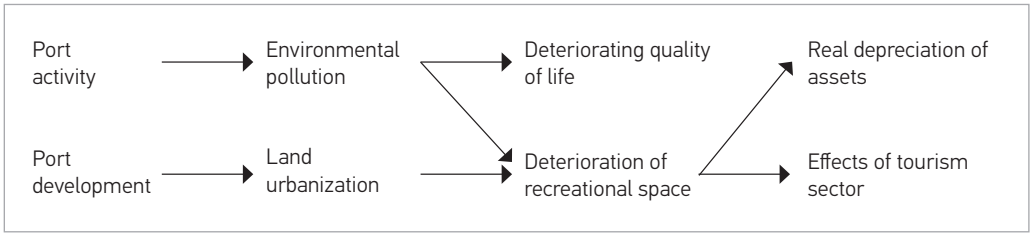
Previous studies on the assessment of Klaipėda seaport sustainability have shown that seaport activities have a material impact on the social growth ($r = 0.69$, $p < 0.05$) in Klaipėda region but do not affect its ecological stability of the area ($r = -0.75$, $p < 0.05$) (Burškytė et al., 2011, Burškytė and Belous, 2012a) and create many environmental problems, which result in a chain reaction and lead to environmental, social and economic seaport and neighbouring communities' conflicts. An example of a chain reaction created by seaport environmental impact is provided in Figure 2.

In order to avoid possible formation of seaport and society conflicts caused by marine industry activities, it is necessary to address its impact on the environment, preventing chain-environmental-social-economic interest conflicts altogether.

Eco-innovation development opportunities in the seaport

Eco-innovation is the future strategy, which includes organisational changes in enterprises, developing new processes and products to ensure customer and business value of social responsibility towards society (Baroulaki and Veshagh, 2007). Eco-innovation can be technological or systemic (Matchiba, 2010).

Fig. 2
Example of seaports environmental impact chain reaction



Technological innovation can be used where society and business are facing economic and environmental interests, since the introduction of eco-innovative technology not only reduces environmental impact but also helps to conserve natural resources having additional economic benefits. Systemic eco-innovation is more appropriate where environmental protection and social interests are intertwined, as systemic eco-innovations create functional relations, allowing to restore (or create) business and society social relations involving them into the company's social responsibility model.

Arduino et al. (2013) distinguished 2 broad concepts of innovation development in the maritime port sector: private commercial initiatives, generating revenue or cost reduction (technological innovation) and public-sector policy initiatives, increasing the social and economic well-being (system innovation). The same concepts of innovation development in seaports have been recognised by Hall et al. (2013). They also say that innovations are becoming an increasingly important factor in maintaining competitiveness and ensuring a high quality of life. There is a very important need for communication between stakeholders in order to create a suitable environment for the adoption of innovations.

The main objective of eco-innovation is the reduction of environmental impact. Ecological innovations, as a seaport and society conflict prevention tool, may be implemented where pollution initiates conflict. On the other hand, systemic eco-innovations introduce functional relationships between organisational levels within the enterprise and surrounding social environment, including the public sector. Therefore, it is appropriate to use eco-innovative development as a measure for seaport-society conflict resolution and prevention, addressing problems resulting from environmental pollution and the lack of communication and information availability in the public sector.

Seaports are complex organisational systems. Therefore, the seaport's activities and reasons of business and communities' conflicts were analysed at 3 separate levels: technological process, company, and marine industry level (Figure 3).

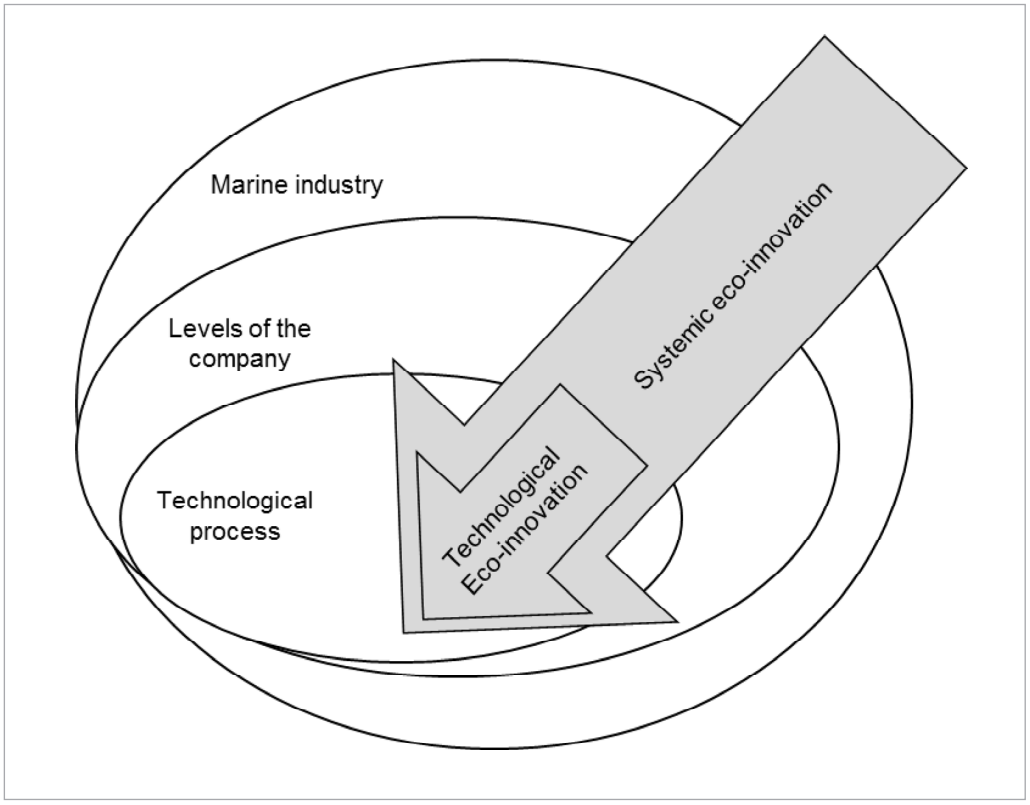


Fig. 3
Deployment levels of eco-innovations in the marine industry

Technological eco-innovation

Technological processes in facilities are responsible for major pollution. Such a technological level of the organisation is the main target of technological innovations implemented to reduce pollution loads. The study identifies seaport activities and their main impact on the environment (Lengvytė, 2012):

- liquid cargo terminals – 97% of the emissions of volatile organic compounds (VOCs);
- bulk product terminals – 85% of the emissions of particulate matter (PM);
- shipbuilding and repair companies – 39% of the emissions of VOCs, 26% xylene;
- shipping – 75% of the emissions of nitrogen oxides.

Air pollution resulting from technological processes affects pollution penetration into the water and soil of the port area as well as shipping and handling operations, which causes both underwater and terrestrial noise pollution problems. For the solution of environmental problems, seaport companies are investing 0.145–0.238 million euros annually. However, the effect of eco-innovative benefits is exceeded by the rapidly increasing performance of seaport facilities.

For example, one of the largest seaport terminals of liquid cargo in Klaipėda during 2005–2008 handled 11.9 to 18.4 million tons of liquid cargo per year. According to the data of Klaipėda Regional Environmental Protection Department, the terminal volatile organic compound emissions account for about 80% of the marine industry VOC emissions and account for about 74% of urban VOC emissions (Lengvytė, 2012). The company, during the analysed period, made a 1.70-million-euro investment to introduce the technology which allowed the company to reduce VOC emissions by 32.8% or 50.1% per ton, i.e. during the period 2005–2008 emissions decreased from 0.19 to 0.09 VOC per ton.

According to the Lithuanian law, the companies installing facilities reducing environmental pollution emissions into the atmosphere from stationary sources are applicable for exemption from the tax on pollution emission if the amount of emitted pollutant is reduced at least by 5% (MER, 1999). In the investigated case scenario, if the company did not implement eco-innovative technologies reducing VOC emissions of pollutants it would cost 10,067 euros (4.34 euros per ton). However, the main economic effect at the company is achieved not because of pollution tax savings, but because of savings on goods handled and natural resources saved.

The example of eco-innovative technology implementation at the seaport company showed that the pollution reduction measures introduced are not only effective in reducing emissions but also allows the company to save the tax on pollution funds and to save transshipped goods, which brings even greater economic effect. From the social point of view, practical benefits of eco-innovations reducing the environmental impact often remain invisible to the public as the true effect is hidden by rapidly growing volumes of the handled cargo. Therefore, to highlight the impact of technological eco-innovation implementation on the environmental conditions, sustainable development indicators need to be analysed, which allows the assessment of eco-innovative effect of new installation in time and the evaluation of port development process perspectives.

Systemic eco-innovation

It is appropriate to introduce systemic eco-innovations at all levels of companies and the marine industry. In terms of seaport and communities' conflict prevention, the environment monitoring system should be addressed first, especially in terms of systemic eco-innovations. Nowadays, the seaport business sector environment monitoring system operates on all 3 levels (companies, municipalities, government). However, this measure does not evaluate the influence of environmental impact mitigation measures in the background of the industry development process. This shows that environmental indicators presented do not reflect the real situation. The systemic eco-innovations promote sustainable development objectives in order to avoid seaport and adjacent communities' conflicts.

For example, according to the Klaipėda Regional Environmental Protection Department data, the liquid cargo terminal in Klaipėda seaport during the period 2004–2008 emitted from 2,317.2 to 1,789.6 tons of VOCs annually. The company is reducing VOC emissions by an average 6.6% of the total emission annually. However, these results do not reflect the impact of emission reduction in respect to the growing amount of the liquid cargo handled.

By using sustainable development indicators in such a company, it is possible to show the extent of the impact depending on the company's performance and report it to the public. For example, the company's performance during the period grew by about 18.20% per year. Because of company's technological eco-innovations, the amount of VOC emissions sustaining one ton of cargo loaded during the analysed period decreased by 20.16%. Therefore, the reduction rate of VOC emission was higher than the growth of company's activities.

The example demonstrates that the use of sustainable development indicators allows evaluating the development intensity of business activities and their environmental impact, and the analysed case shows that the VOC emission reduction rates are growing faster than the company's activity. The communication of such information to the public can be one of the measures for prevention of seaport and communities' conflicts.

Systemic eco-innovation creates functional relationships between the system components. The analysed literature recognises that systematic management of the environmental indicators can lead to sustainable development of seaports (Le et al., 2014; Ko and Chang, 2010; Darbra et al., 2009). However, most seaports, including Klaipėda seaport, currently use only some systems, such as environmental management system (EMS), environmental audit system (EAS), environmental impact assessment (EIA) and strategic environmental impact assessment (SEIA).

Nowadays, seaport companies are focused on quality assurance. More than half of the companies (52%) have already implemented quality management systems ISO 9001, while only 24% of the companies take care of the environmental quality assurance (have implemented ISO 14 001) (Burškytė and Belous, 2012b). The environmental management system is a tool for the environmental performance of organisations using systematic and documentary approaches. It aims to improve the environmental performance through pollution control, waste reduction, training, reporting to management and goal setting. EMS generally helps to promote cleaner production through the systematic production process re-design and review of procedures to find solutions for better efficiency and to reduce environmental impact. Unfortunately, public relations are not always created, and EMS is sometimes used only as a marketing tool, with low or no real change in the actual environment practice and environmental impact management (Le et al., 2014). Therefore, the development of environmental management systems is also one of the measures that could reduce seaport and communities' conflicts, because of the cooperation relationships between stakeholders created by the environmental management system.

Only two of the environmental protection measures in the seaport sector – environmental impact assessment (EIA) and strategic environmental assessment (SEA) – provide a seaport and society interest matching opportunity, i.e. environmental impact evaluation procedures provide an opportunity to submit reasoned proposals by the public. Such measures are applied for planning of seaport development and resolution of seaport and society conflicts due to land urbanisation. However, the seaport and society relationship created by using such measures is very limited because the EIA measure is only provided if it is required by law and only in the case of expanding business, but it does not allow defending the society interest during casual company activity. Therefore, a radical change in environmental protection is needed in order to successfully manage seaport and society interests during casual business activities.

Results and discussion

The Klaipėda seaport case study covering the evaluation of the seaport and society interests and causes of the formation of eco-innovative practices resulted in the development of a schema representing Klaipėda seaport environmental protection system (Figure 4), which also covers environmental seaport-society conflict management. According to the schema, the environmental protection system in the field of the marine industry should include several instruments grouped into columns:

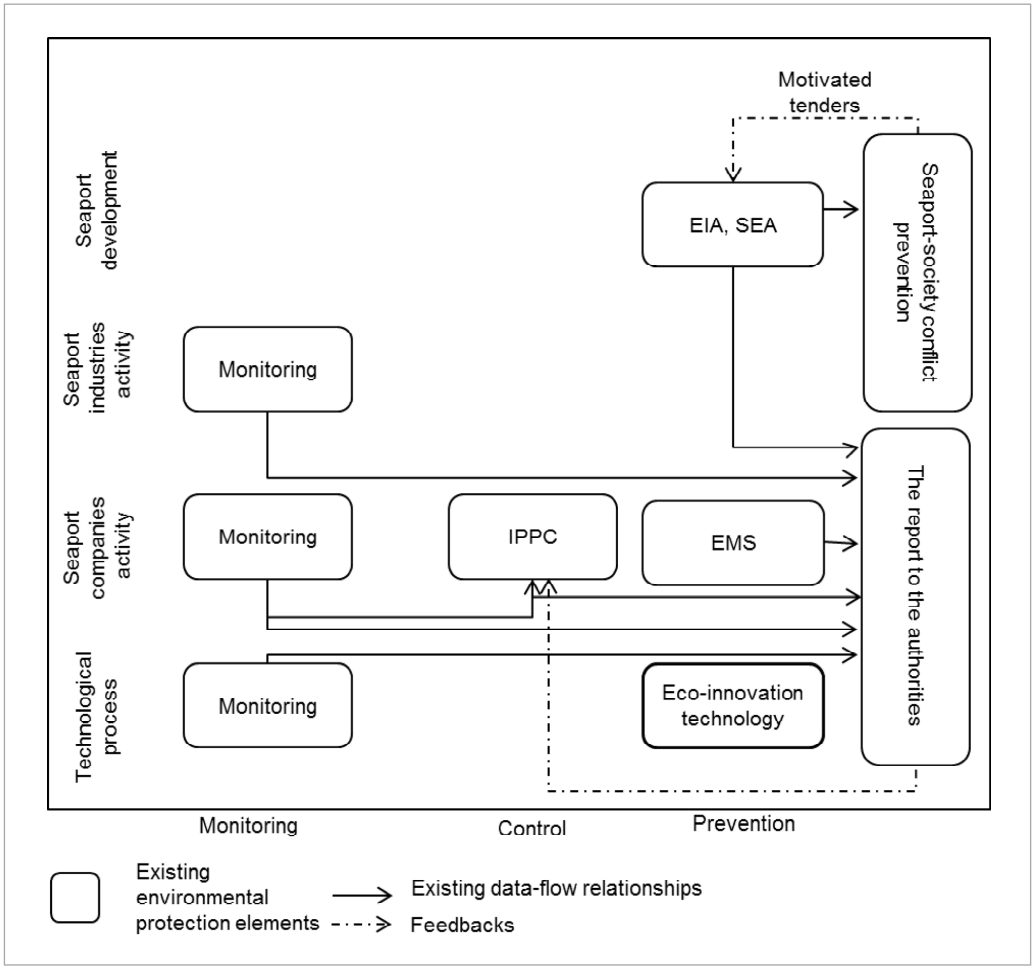
Monitoring instruments are used for environmental monitoring processes at the levels of companies and the marine industry of the seaport. This environmental measure is necessary to ensure that seaport operators are ready to deal with any potential problems (Darbra et al., 2009).

Control instrument is used for the control of the environmental situation, in Klaipėda seaport using the integrated pollution prevention control (IPPC) licenses and charges for environmental pollution. This measure is aimed at limiting emissions to the environment by setting limits and specifying emission reduction technologies. Although this measure has significantly reduced industrial pollution, it is criticised in the literature because of the inflexibility and economical inefficiency (Zieglera and Nogareda, 2009).

Prevention instruments are used for the prevention of seaport environmental pollution. Environmental Impact Assessment (EIA), strategic environmental assessment (SEA) measures (used only in the case of development) and environmental management systems (EMS) are used in some of the seaport companies. They are also used for technological eco-innovations. EMS implementation in the seaport sector involves a very complicated process. However, despite various difficulties, ports cannot ignore environmental problems. Therefore, during the last decade, seaport authorities have shown a growing interest in setting up such systemic eco-innovation (Darbra et al., 2004; Le et al., 2011). The importance of technological eco-innovation has also been recognised in the research by Arduino et al. (2009) and Celik (2009). Technological eco-innovation is a good measure for environmental pollution solutions, but it is insufficient and not always effective and must be used together with systemic eco-innovation.

Seaport and society conflict adjustment can be achieved through the EIA and SEA measures and EMS tools (Figure 4).

Fig. 4
Existing environmental protection system of Klaipėda seaport



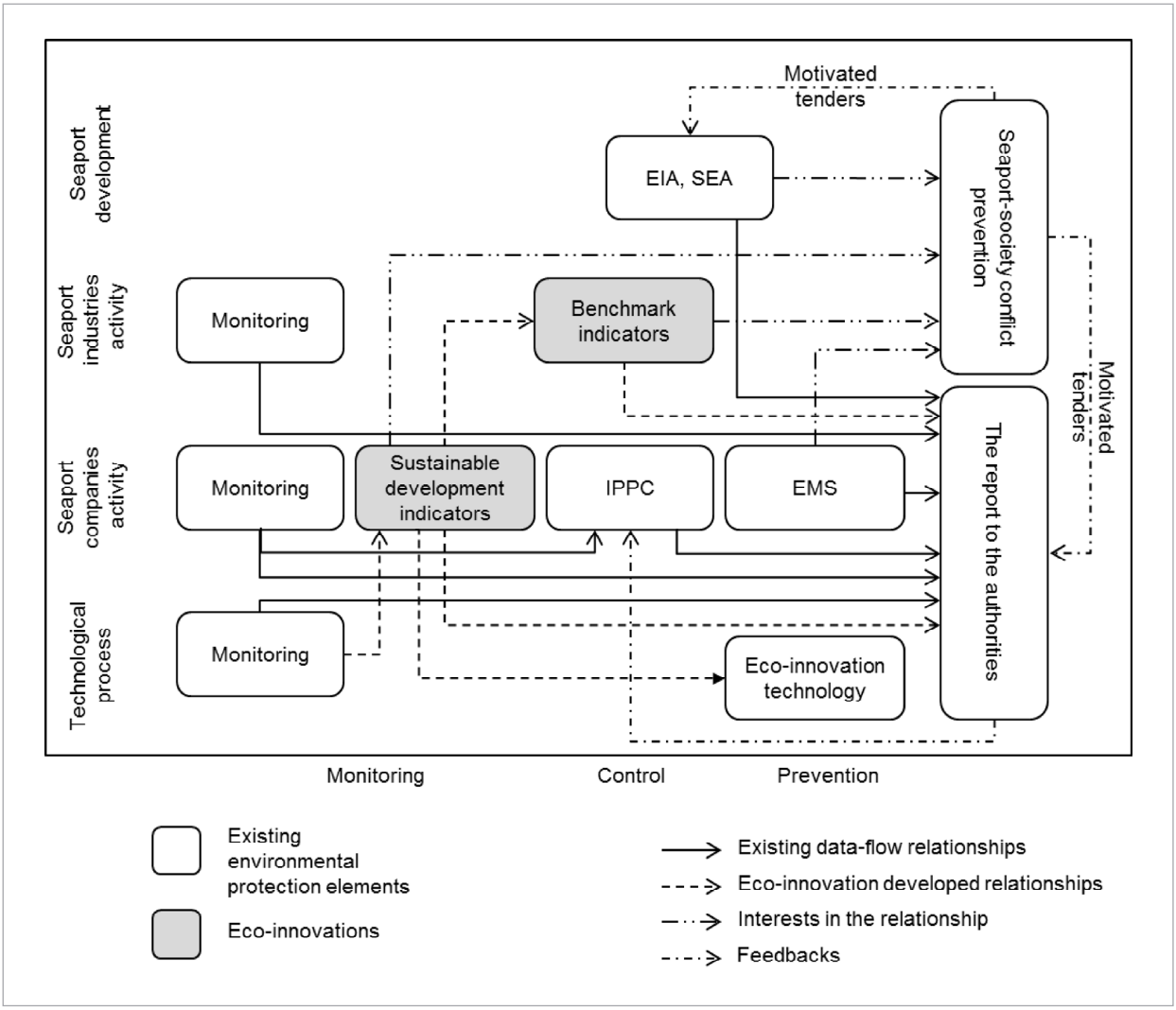
The measures used in the environmental protection system do not create functional links between the marine industry levels and society (excluding EIA and SEA). In order to successfully manage seaport and society interests, the environmental protection system should be supplemented with systemic eco-innovations, i.e. they should aid the development of functional relationships between environmental protection measures at different levels of the marine industry management and society (Figure 5).

It is appropriate to use sustainable development indicators in the marine industry sector, which allow measuring not only the quality of the marine environment but also show the seaport, efficiency, and environmental impact. VOC and liquid cargo ratio in tons, particulate matter and bulk cargo ratio in tons, etc. can be used as sustainable development indicators.

Seaports are very complex systems. They intertwine various industries and various terminal activities. Although the goal to compare Seaport effect on the environment

Fig. 5

The proposed environmental protection system of Klaipėda seaport based on the conflict management model



and to identify the most polluting company is often faced with a lack of appropriate indicators available for comparison. Therefore, sustainable development indicators, created using benchmark indicators (e.g. one ton of total emissions harming the environment; or the sum of taxes for pollution in EUR per business unit per processed tons of cargo), can be used to compare different industries or companies engaged in different activities.

Furthermore, by using sustainable development indicators and benchmark indicators, it is possible to monitor the trend (positive or negative) of seaport companies' development. It is possible to implement immediate decisions and eco-innovations on the notice of a decrease in seaport operating efficiency. Besides, sustainable development indicators and benchmark indicators create functional relationships among other elements of the seaport environmental protection system. The concept of the seaport environmental protection system based on the seaport-society conflict prevention model is presented in Figure 5.

The importance of sustainable development indicators and benchmark indicators has also been recognised by Moussiopoulos et al. (2010), Hall et al. (2013) and Saengsupavanich et al. (2009). They also mention the importance of monitoring on sustainable development achievement and progress over time, decision-making and public awareness. At the same time, it is expected that these measures will provide early warning of environmental damage, potential seaport-society conflicts and financial loss. The comparative analysis of environmental measures with an evaluation of advantages and disadvantages of their use for seaport-society conflict prevention is provided in the table (Table 1).

The comparative analysis of environmental measures (Table 1) shows that all the measures have their advantages in terms of conflict resolution between seaport businesses and the society. However, their effective functioning is limited by several disadvantages. Such shortcomings can be overcome by creating an integrated seaport-society conflict management model (example provided in Figure 5) by using a set of measures, which complement each other.

In summary of the results of current research, it can be stated that eco-innovative development can be effectively used for the prevention of seaport and society conflicts: with a priority taken to the systematic eco-innovative development, which creates long-term functional collaboration between the public and businesses. It is especially common in the cases where it is impossible to address reasons of conflict from the ground, and it is only possible to mitigate the effects of more rational management and use of recourses.

However, the technological eco-innovation approach is effective only in the cases where the reason of a conflict is an economic activity, which affects environmental quality. In order to avoid seaport businesses and society conflicts, it is important to ensure eco-innovative development at all levels of the organisation, from technological processes to management systems. Systemic eco-innovative development ensures a better environmental protection system, creates relationships with the public sector and brings results in shorter terms, although pollution problems here are solved gradually.

Conclusions

The marine industry is one of the most polluting industries, where intensive development causes business and society interest conflicts, which in turn, will continue to be one of the most important factors limiting further development of the marine industry in the region. Therefore search and introduction of preventive solutions today is very common. One of the possible business and society interest conflict prevention measures is the eco-innovative approach of development in the marine industry. Therefore, our research shows that such approach is effective only in the cases, where the reason of interest conflicts is an economic activity, which impacts environmental quality. The analysis of Klaipėda seaport and society environmental conflicts helped to identify 3 main reasons that cause conflicts: environmental quality, land development, and lack of environmental information. Further research showed that the existing environmental management systems were not capable of successful management of environmental conflicts incurred by seaport activities. The present study demonstrates that the technological and systemic eco-innovations, according to the proposed conflict management model, contribute to solving and prevention of conflicts between Klaipėda seaport and local communities only if communication channels for dissemination of the environmental information are created between all interested parties, and information covering sustainable development indicators with corresponding benchmark indicators is provided.

Table 1
Evaluation of the environmental protection measures for seaport-society conflict prevention

Measures	Situation assessment	Impact assessment	Identification of problem areas	Problem solving	Application activity time	Application development time	Advantages	Disadvantages
1	2	3	4	5	6	7	8	9
Monitoring	+	-	+/-	-	+	-	Represents environmental conditions	Does not represent changes of environmental conditions due to increased intensity of activities
IPPC	+/-	+/-	+/-	+/-	+	-	Effective in control of the pollution scale	
EIA, SEA	+	+	+	+	-	+	Enables business and society interest reconciliation	Implemented only during development and if only according legal requirements. Such evaluation may be not objective
Technological eco-innovation	-	-	-	+	+	+	Effective resolution of environmental pollution problems	Does not represent changes of environmental condition which depends on the increased intensity of activities
Environmental protection management systems	+	+	+	+	+	-	Establishes main environmental protection aspects. Provides continuous monitoring of the process. Creates a flow of information with stakeholders	There is a lack of company interest in environmental protection
Indicators for sustainable development	+	+	-	-	+	-	Allows monitoring changes in the environment depending on the activities. Allows evaluating the effectiveness of eco-innovative technology implementations	Does not provide feedback from the society
Standard indicators	+	+	+	-	+	-	Allows comparing the environmental impact of the similar companies. Shows the problem areas of the environmental protection system	Does not provide feedback from the society

+ Measure is suitable, +/- partly suitable, - not suitable

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Ekoinovacijos kaip visuomenės – Klaipėdos jūrų uosto konfliktų prevencijos priemonė

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Jūrų uostai yra strategiškai svarbūs tiek pasaulio, tiek vietos ar regionų ekonomikos plėtrai. Tačiau šiandien, jūrų uostai yra viena iš sparčiausiai augančių pramonės šakų, kurios savo ruožtu veda prie intensyvesnio pakrančių išteklių naudojimo, o tai skatina konfliktų, tarp jūrinės pramonės ir visuomenės, atsiradimą, kurie tampa vis svarbesniu aspektu ir ateityje gali tapti uosto įmonių augimą ribojančiu veiksniu. Uosto įmonės siekdamos sumažinti poveikį aplinkai įgyvendina ekologines inovacijas, tačiau tokios ekologinės naujovės retai kada būna veiksmingos sprendžiant uosto ir vietos bendruomenių konfliktus. Šio darbo tikslas sukurti koncepcinį uosto-visuomenės interesų konfliktų valdymo modelį. Tyrimas buvo atliekamas trimis skirtingais lygiais: technologinių procesų lygmenyje, įmonės ir visų uosto įmonių lygmeniu. Straipsnyje pateikiama apibendrinta informacija apie ekologinių inovacijų taikymą mažinant įmonių poveikį aplinkai ir didinant socialinę atsakomybę. Darbe pateikiama Klaipėdos jūrų uoste kylančių pagrindinių konfliktų priežastys, jų valdymo galimybės naudojant aplinkosauginių priemones, kurios gali būti taikomos jūrų uostų sektoriuje kaip ekologinės inovacijos bei jų tinkamumo aplinkosauginių konfliktų valdymui analizė.

Raktiniai žodžiai: *konfliktų valdymo modelis, konfliktų prevencija, ekologinės inovacijos, aplinkos apsauga, jūrinė pramonė.*