

Reconstruction of railroads at Klaipėda National Seaport: Local Health Impact Assessment Case in Lithuania

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Abstract

Background: Introduction of health impact assessment (HIA) as a national legal requirement for planned economic activity projects in 2002 and the further development of related procedures and methodological requirements has boosted the number of HIAs carried out both as an integrated part of environmental impact assessment (EIA) procedures as well as an independent activity. Most of HIAs have been conducted for local projects. The HIA for the reconstruction of the southern section of the railroads in Klaipėda National Seaport is one of the local HIAs in Lithuania carried out as an independent procedure.

Methods: The HIA for the reconstruction of the southern section of the railroads in Klaipėda National Seaport was carried out following the national legal procedure for the cases not foreseen in the Law on Environmental Impact Assessment of Planned Economic Activity and the national HIA methodological regulations. The HIA included a literature review, analysis of related technical documentation, data on existing and estimated air pollution and environmental noise levels and possible health consequences, analysis of local demographic and health statistics; interviews with the residents living in proximity of the planned activity, analysis of public complaints on existing activities at Klaipėda National Seaport, site visit and round table discussions with the proponent of the planned activity, planning company and representatives of the public health authority. The standard or intermediate type of perspective HIA was applied.

Results: The HIA report has pointed out noise, vibration, ambient air pollution, psychological factors as related to possible negative impact on health of residents living in the mostly exposed locations. Interviews with inhabitants living in proximity of the planned activity have shown that majority of them knew nothing about the reconstruction plans. Recommendations were provided in the report how to minimise existing and prevent newly emerging negative health impacts from the planned economic development related to ambient air and environmental noise pollution as well as recommendations for communication improvement with the residents.

Conclusion: The HIA provided the proponent of planned activity, as well as the regional public health authority and the concerned public with relevant information on the main health determinants and possible health impacts of the planned reconstruction of the railway segment. HIA recommendations stimulated the proponent to agree on additional measures reducing negative health impact of the planned activity. This case of HIA also revealed some strengths and weaknesses of the overall HIA framework in Lithuania.

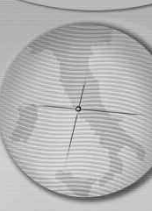
Keywords: Local health impact assessment case, national legal requirements for HIA, planned economic activity, railway reconstruction

Introduction

Health impact assessment (HIA) is often defined as a combination of procedures, methods and tools by which a policy, program or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population [1,2]. Promoted by international organisations such as the World Health Organisation [1], HIA is seen as one of the tools for public health promotion [2] as well as one of the practical means to increase co-operation

between health and other sectors creating an opportunity for intersectoral health improvement [3]. HIA is a multidisciplinary approach within which a range of evidence about the health effects of a proposal is considered in a structured way by combining together evaluation, partnership working, public consultation, and available evidence for more informed decision making [4].

In recent years there was a growing interest in the methodology of HIA and its possible application in Lithuania. This process involves



multiple policy choices on what shall be screened and assessed, how HIA shall be integrated, when it will be carried out, by whom and on what level [1]. HIA implementation practice shows that there is no single way or recommendation on which strategy to take [3, 4]. International projects have helped in setting a framework for a more systematic analysis of possible ways for embedding HIA in administrative processes and structures [3, 5]. An overview of international projects related to HIA implementation in Lithuania is given in Table 1.

Lithuania used the Gothenburg Consensus Paper [1] as a reference model in considering ways for embedding HIA in existing procedures. A number of choices have been made. HIA was introduced within the legal framework of Lithuania by the Law on Public Health Care (the Law on PHC) passed by the Parliament of the Republic of Lithuania in 2002 [6]. In the Law on PHC HIA is defined as the process of determination, description and evaluation of possible impact of intended (planned) economic activity upon public health. Subsequently, in 2004 two by-law acts have been developed and adopted by the Ministry of Health which kicked-off the application of HIA in Lithuania. It is worthwhile to mention the Procedures for HIA for cases not foreseen by the Law on EIA

introducing the HIA screening tool [7] and the HIA methodological instructions [8].

At present HIA is limited to prospective local projects for planned economic activities as it is closely linked with the procedure for Environmental Impact Assessment (EIA) for planned economic activities and, in a way, mimics it in terms of administrative requirements. HIA is compulsory when EIA for planned economic activity is carried out. In this case the formal EIA procedure has to be followed but health related analysis has to be prepared according to the HIA methodological instructions [8]. This gives more explicit consideration of health aspects within EIA. If planned economic activity is not subject to EIA, it has to pass screening procedure for HIA. In case screening will lead to the decision for further HIA, separate HIA procedure [7] and HIA methodological requirements [8] have to be fulfilled. A rough overview of health related aspects required by EIA and HIA procedures is given in table 2.

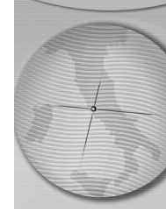
Only licensed legal persons can perform HIA within EIA or separately. Involvement of public health professional is the main requirement for getting a license and it is the responsibility of The State Public Health Service under the Ministry of Health to issue such licenses. There is no such requirement for EIA providers.

Table 1. Overview of international projects related to HIA application in Lithuania

Year	Name of the project and short indication on relation to HIA
2000-2001	The World Health Organisation and Danish Environmental Protection Agency Project "Implementing National Environmental Health Action Plans in the Czech Republic, Estonia, Lithuania, Poland and the Slovak Republic", Environmental Health Impact Assessment component.
2002-2003	PHARE Twinning Project "Strengthening Public Health Management in compliance with EU requirements". This Project had a component dedicated to HIA and Risk Assessment; twinning partners – the Netherlands and Germany.
2004	The World Health Organisation European Centre for Environment and Health (Rome Office) three days course on Environmental Health Impact Assessment within the Biannual Collaboration Agreement between the Ministry of Health of the Republic of Lithuania and the World Health Organisation Regional Office for Europe.
2005-2007	Project "Health Impact Assessment in New Member States and Accession Countries" (HIA-NMAC) within the Programme of Community Action in the field of Public Health 2003-2008. Leading partner – University of Southern Denmark.
2005-2007	Project "Effectiveness of Health Impact Assessment" within the Programme of Community Action in the field of Public Health 2003-2008. Leading partner - European Observatory on Health Systems and Policies.

Table 2. Rough overview of legal requirements for consideration of health related aspects

Aspects to be considered	EIA requirements	HIA requirements
Lifestyle	-	+
Environment	+	+
Social - economic	+	+
Occupational risk factors	-	+
Psychological factors	+	+
Health and social care accessibility	-	+



Strong legal provisions for HIA within and outside EIA procedures have raised some discussion on the legal “over-regulation” and need for integration [9].

This paper presents the HIA on railway reconstruction in the segment of Varnenu and Panevezio streets within the territory of Klaipėda National Seaport. It was conducted following national legal requirements. Objectives of the HIA were: 1) to identify, describe and analyse possible impact of planned economic activity on health determinants and public health 2) to suggest how to eliminate or minimise negative public health impact by appropriate measures.

Methods

The HIA was carried out following the national legal procedure and national HIA methodological instructions [7, 8]. A short description of the HIA procedure is given in Table 3.

Screening was initiated when the technical project on Reconstruction of South Part of Railways in the segment of Varnenu and Panevezio streets in Klaipėda National Seaport was submitted to the Regional Public Health Centre in Klaipėda (RPHC) for approval. Screening was carried out by the RPHC in October 2005 using the national screening tool (matrix). Information necessary for this screening was provided by the proponent and company contracted for the project's development (developer). The following main aspects have to be considered during screening in terms of significance for health impact: location; health determinants; scale and

duration of possible health impact. Conclusion of screening is that HIA is compulsory.

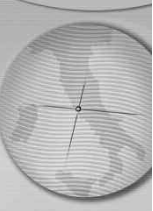
Scoping is not separated as a stage in the HIA procedure in Lithuania. It is integral part of health impact analysis stage and is responsibility of the HIA provider. HIA provider has to follow HIA methodological instructions [8]. HIA methodological instructions cover a broad range of health determinants and are based on comprehensive social health model. Aspects relevant for the planned economic activity are discussed in the HIA report.

A steering group was not created for this HIA. The HIA provider (SEHC) established the HIA working group from seven SEHC specialists for the preparation of the HIA report. Each specialist was responsible for a certain part of the report. Working group meetings were organized throughout the entire HIA. In additional round table discussions with the proponent, developer and representatives of public health authority were conducted in order to identify additional information needs, concerns and possible solutions. The HIA provider and developer were constantly involved in information exchange and consultation.

The HIA involved analysis of technical project documentation and literature review. Demographic data on the number, age and gender of inhabitants living in proximity of the planned railway segment reconstruction were obtained by a special query from the Statistical Department. Data on the morbidity and mortality of this group of the population were not available. Morbidity and mortality profiles for Klaipėda city have been

Table 3. Description of HIA procedure

Stage	Time frame	Responsible body
Screening	October 2005	Klaipėda Public Health Centre
Public information on screening conclusions (advertisement in local press)	November 2005	Proponent of the Project or contracted company for Project development: Klaipėda National Seaport Administration, contracted company “Pramprojektas”
Health impact analysis	December 2005	Proponent of the Project or contracted company for Project development. Carried out by licensed HIA provider: Contracted company “Pramprojektas” and State Environmental Health Centre
Development of draft HIA report	December 2005	Licensed HIA provider: State Environmental Health Centre
Public information on development of draft HIA report (advertisement in local press)	January 2006	Proponent of the Project or contracted company for Project development: Klaipėda National Seaport Administration, contracted company “Pramprojektas”
Public health expertise (evaluation) of the draft HIA report - Comments for the draft HIA report	January – February 2006	Regional Public Health Centre: Klaipėda Public Health Centre
Consideration of comments and amendment of the report	March 2006	Licensed HIA provider: State Environmental Health Centre
Approval of HIA report	May 2006	Regional Public Health Centre: Klaipėda Public Health Centre



described instead. Air pollution and environmental noise impacts were analysed based on measurements and modeling data. Percentage of annoyed people and people with sleep disturbance was estimated by using dose-response curves for motor vehicle and railway transport [10]. A questionnaire was created for the interviews with the residents living in proximity of the planned activity for more in-depth analysis of situation in local community at risk. 173 persons above 18 years old were interviewed; 150 questionnaires were used for analysis. Responses were analyzed using Epi Info 2002. Public complaints on existing activities at Klaipėda National Seaport received at the RPHC were considered too. Site visit to the reconstruction place and its proximities was organized.

Evaluation of the draft HIA report was carried out by RPHC. Concerns and additional requests for clarification were carefully considered by the developer and HIA provider. The HIA report was amended and submitted to RPHC again, which was then approved in May 2006. Subsequently, the technical project has also been approved and the proponent was able to start implementation of the project.

The RPHC is supervising implementation HIA recommendations. Monitoring of the real impact of the project has to be ensured by the Klaipėda National Seaport administration through environmental and public health monitoring activities.

The population was informed about the screening decision and the availability of the HIA report by announcements in the local newspapers. A period of ten days was allowed for public reaction to these announcements in accordance with official procedure requirements. Public response was received in written format.

Results and Discussion

Klaipėda National Seaport is located in the West part of Klaipėda city. In the seaport adjunct area (100 meters of sanitary zone) there are houses with 4069 inhabitants, a kindergarten, and a school for children with auricular impairment, a youth centre and several private companies.

Sea port and part of the resident's houses are separated by a four lane road. A two line railway parallel to the road is in the seaport territory separated by a concrete wall. The railway and road heavy transport traffic is very intensive, as two loading companies are located just opposite side of the resident's houses.

The number of train through reconstructed railroad will increase from 4-5 trips in 2005 to 12

trips in 2015. Each train has approximately 50 wagonloads.

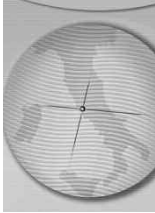
The strict timetable for the HIA was imposed to ensure that technical railroad plan, and legal procedures such as EIA and HIA will be provided before the final call for project from the EU structural funds. All assessment had to be presented prior to project submission to EU fund office. The initial timeline for the HIA was 6 weeks from the date from the agreement assignment.

Screening has revealed that reconstruction activities will be implemented on large scale and will double economic activities in the seaport after its full implementation in 2015. Reconstruction may have a significant impact on health of population living in neighbourhood of the seaport as well as to all inhabitants of Klaipėda City. Residents living in the neighbouring area to the seaport and its railroad are already affected by the negative impact of the economic activities provided in this area. The main health determinants are noise, vibration and ambient air pollution with carbon monoxide and solid particles. The RPHC identified that territory under reconstruction is in close proximity of residential buildings, several residential buildings are planned to demolish and inhabitants will be relocated by the start of reconstruction. One street will be moved closer to the residential territory and new railways are planned for loading companies. The number of trains through the reconstructed railway will double. Intensified activities may result in increased air and noise pollution in residential territories as well as in working environment. The RPHC noted that noise is already exceeding permitted norms both during the day and night time. The RPHC received complaints from inhabitants on existing enterprises activities. It was identified that there may be a negative impact on health but information on scale, duration and severeness is lacking. The screening process concluded that further HIA will be compulsory.

The HIA working group concluded [11] that planned economic activity for railroad reconstruction is related to negative impact of noise, vibration, ambient air pollution and psychological factors on residents living in close proximity to planned activity.

As household survey indicated that majority of inhabitants (more than 70 %) were not aware about the planned economic activity.

Complaints by inhabitants and from the household survey indicated that nearly 31 % of respondents were continuously or frequently annoyed by noise in their homes (windows closed); about 40 % - indicated that noise was the



cause of their sleep disturbance; about 60 % pointed out that felt irritated and frustrated because of noise. Main sources of noise were road transport, noise from trains, loading, freight and metal works in the seaport. About 60 % of respondents were not satisfied with air quality in living environment; nearly 50 % indicated that trains have major impact on bad air quality, about 30 % thought it was related to road transport.

Noise level measurements in residential areas closest to the planned reconstruction showed that in some places noise was already exceeding allowable levels and prognosis of noise levels showed that they will further increase. Therefore the application of compensation measures such as module noise barrier Royal and a protective line of green plantation was absolutely necessary.

Noise from heavy traffic was the main reason for complaints of inhabitants living in Minijos and Kalnupes streets (in proximity of the seaport territory), noise levels exceeded allowable levels.

Vilnius Gediminas Technical University carried out the feasibility study on transportation of Goods of Klaipėda National Seaport through Klaipėda city and suggested options for reconstruction of Klaipėda National Seaport road transport infrastructure and re-organisation of traffic flows. This feasibility study was not part of the HIA, however it provided useful information and allowed the HIA working group to recommend options for reduction of negative impact of goods transportation on the quality of residential environment of residents of Minijos and Kalnup s streets.

Air quality measurements carried out by regional public health centre in the territory of residential area situated in proximity of the territory under projection, identified that the mean 24 hours concentration of solid particles exceeded limit value by 1.3-1.9 times. According to the results of perspective modelling by EKOL V of impact of transport flows on residential area allowable single concentrations of carbon monoxide, nitrogen dioxide, sulphur dioxide, benz(a)pyrene, total solid particles will not exceed allowable concentrations. Modelling did not take into account the background concentrations of these substances and pollution which will come from parking sites of vehicles (up to seven).

After the implementation of the railroad's reconstruction in the planned segment, occupational risks may increase for employees of a few enterprises operating in the territory of Klaipėda National Seaport due to physical factors related to the railway and road transport activities.

There was a plan to establish a container warehouse site in the north of the seaport

territory which may have negative impact on health of residents living in proximity due to loading work related factors (noise, air pollution, bad esthetical view).

Taking into account the concerns of the residents living in neighbourhood of the seaport related to existing and planned economic activities in the seaport the HIA report recommended [11] to set a noise reduction barrier with higher acoustic isolation indicator than initially proposed by the projection company. It also pointed out the need to build acoustic screen before exploitation of infrastructure will start.

The HIA working group also recommended repeating noise, vibration and chemical air pollution investigations of transport infrastructure related impacts on residential environment and enterprises located in proximity of the seaport after railroad reconstruction. If needed, additional compensation measures shall be implemented.

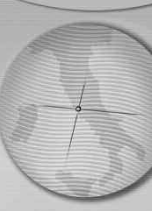
It was recommended to carry out measurements in the environment of goods loading enterprises in order to set sufficient in terms of public health safety distance from the container warehouse site to the nearest residential areas. In the initial proposal the marginal cargo terminal area will be 30-40 meters from residence houses. The planned traffic from and to seaport will be provided 80 percent by railroad and 20 percent by road.

The HIA report also noted the need to develop and foreseen implementation of environmental and public health monitoring programmes for the enterprise.

The HIA report provided recommendations for different measures for noise reduction from railway activities by modernisation of locomotives and other.

The Municipality was encouraged to ensure proper maintenance of streets, green plantations and foresee additional compensation measures.

The seaport was asked to implement more effective communication strategies, taking into account the situation of the residents who due to reconstruction of railroads will have to move from their existing places of residence and to ensure that the movement will be beneficial for the residents. Though moving from hazardous living environment was in general assessed as positive aspect, lack of information on when and how the process of changing residential place will take place caused psychological tension. The proponent was aware about the need for relocation of inhabitants before the HIA. The HIA highlighted the need for communication with inhabitants. Further it was left for the proponent's responsibility to deal with the issue.



It was strongly recommended to keep the order of work as such: move of inhabitants, reconstruction, establishment of acoustic screen, start exploitation.

All recommendations were discussed with the developer and the RPHC. Approval of HIA report also meant approval of recommendations. Compulsory nature of HIA implies that recommendations have to be implemented, and RPHC will supervise any further development in the National Seaport in light of HIA recommendations.

The population was informed of the results of the HIA. However, they were not informed about the results of negotiations on implementation of recommendations. The HIA provider was not aware of the further proponent communication with inhabitants and was not involved in any further activities after the HIA report was approved.

Though focused mainly on environmental determinants of health, the HIA also tried to consider socio-economic and psychological aspects of economic activities. However, due to insufficient information available, limited time and lack of capacities necessary for such assessment it was covered only in brief descriptive form.

Other aspects, such as lifestyle, equity have to be considered to cover full range of the potential impacts of this reconstruction project.

The HIA provider focused on health impacts of certain environmental and psychological factors related to railway reconstruction in a relatively short segment of railways and roads within the national seaport. This activity was only one stage within the broader plan of the National Seaport re-development. During the HIA it became clear that possible negative impacts on residents' health cannot be assessed comprehensively without having information and data on other stages of the seaport re-development as they are closely related and alternatives chosen. In this case the HIA of overall strategic development plan of Klaipėda National Seaport would be useful.

The HIA on railway reconstruction in Klaipėda National seaport is the only case in Lithuania evaluated regarding effectiveness of HIA. The HIA was considered effective regarding health but with only marginal effectiveness in terms of the community [12].

Extended evaluation of the implementation of legal acts related to HIA is foreseen for the end of 2007 in the Lithuanian National Public Health Care Strategy for 2006-2013 and its implementation plan for 2006-2008 adopted by the Government [13].

Conclusions

The HIA provided the proponent of planned activity, the regional public health authority and the concerned public with relevant information on the main health determinants and possible health impacts of the planned reconstruction of the railway segment. HIA recommendations stimulated the proponent to agree on additional measures reducing the negative health impact of the planned activity. This case of HIA also revealed some strengths and weaknesses of the overall HIA framework in Lithuania. The HIA procedure as a legal instrument helped the regional public health centre to insure highlighting health related aspects of the planned economic activity and guaranteeing that conditions for preventing negative health impacts will be fulfilled in the later stages of project development and implementation. Separation of screening, analysis and approval processes and responsibilities allows avoiding possible conflicts of interests.

The HIA was carried out during the technical project adoption phase which allowed for only limited modification suggestions and no alternatives were considered.

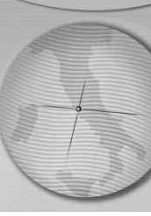
Public communication has to be improved. There is an utmost need for further capacity building of public health authorities and HIA providers in screening, scoping, health impact appraisal and communication.

Acknowledgements

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