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Proactive Involvement of Local Population in Oil Spill Incidents: Gauging the Potential of Informal Information Networks

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Abstract

The analysis of tanker accidents shows varied degrees and forms of involvement of local inhabitants at the different stages of specific events. The aim of the paper is to gauge, through a pilot survey, the potential of marine incident information networks among coastal or island populations within an accident setting. The authors review how reactions to tanker accidents of potentially affected populations may have an impact on the selection, design and implementation of the handling by the authorities of an evolving incident The paper argues that networks such as the Shore Awareness of Vessel Emergencies (S.A.V.E) proposed can eventually create a proactive mechanism to prevent chaotic reactions or disruption/distortion of the optimal response. A pilot survey was conducted to estimate population reactions to shipping accidents with a pollution risk and the willingness to participate in S.A.V.E type networks. The authors process data collected through questionnaires distributed to residents of a major maritime Greek island with a large number of active or retired seafarers. Questionnaire data are analyzed with an emphasis on gauging the degree of confidence in an unofficial but well-organized, network as S.A.V.E which would be based mainly on ad-hoc trained members from targeted parts of the local communities.

JEL Classification: R41; Q28; Q58.

Keywords: Oil pollution; information network; seafarers.

1. Introduction

Oil spill creating accidents cannot be eliminated as a possible negative outcome of tanker traffic. Despite the decrease in their total number and volume in recent decades

(Burgherr, 2007, p. 245) no zero probability can be assigned to future large-scale events. Shipping is a safe mode of transport, but not accident-proof, although a massive improvement in terms of containing oil leakages to the marine environment has coincided with a period of phenomenal expansion of the world fleet: World tonnage, having grown by more than 40% already between 1996 and 2006 (Clarkson, 2012), grew by well over a third between the start of 2008 and this of 2012 (UNCTAD, 2012; Clarkson, 2012). In the case of tankers, the growth in new deliveries was partly compensated by the progressive but compulsory demolition (or withdrawal) up to 2010 of almost all single-hulled tonnage. Still, within the aforementioned dates, the world tanker fleet grew by 25% and 24% respectively.

Measures destined to accident prevention at the level of ship management and navigation, as well as construction specifications since the early 1990s, seem to have yielded greatly. The average for the past decade in terms of occurrences of medium and large spills was almost half this of the previous one (ITOPF, 2012, p.2). On an even more positive note, in no other year since 1970 had the number of large oil spills been reduced to just one incident before 2008; in 2012, and for the first time in the records for many decades, their number finally dropped to zero (ITOPF, 2013). However, while the overall improvement is evident in data for the long-term trend for the larger spills and for medium oil spills, ranging from 7 up to 700 tones, the year 2010 shared the same number of occurrences of large spills with 1982, and witnessed one more large spill than 1995, 1996, 2001, 2002 or 2005 (ITOPF, 2012); this points to a strong stochastic element in their appearance, especially as all these dates include years of very different states in the tanker freight market. Moreover, while increased measures to avert what is termed technological disasters (Fischer, 1998) from maritime transport seem to have been extremely successful, the occurrence of natural disasters which may impact on ships' safety can hardly be predicted. The separation of the two types of disasters may not be so easily to separate as made evident by the various impacts of the tsunami off the coasts of Japan in 2011 (Georgoulis *et al*., 2011).

However, as made evident invariably ex-post, despite the declining trends in oil spills due to improvements in anti-pollution technologies and the strengthening of requirements from ship managers, once an oil leak has occurred authorities are relatively powerless in altering its course. As a rule, to escape a more or less significant part of the impact they have to rely on elements outside their control. Oil spill movements are mainly related to wind, currents and sea condition (Reed *et al*., 1999; Ruiz-Villarreal *et al.,* 2005). Although methods for containing the spill can be applied, the speed and extent of the impact, along with the effectiveness of the former depend largely on natural elements out of direct control. The issue is not only relevant to all coastal and island areas close to shipping routes but especially to Greek islands, which are close to busy tanker routes as these to/from the Black Sea.

In the next section, the paper addresses the general theme of tanker accidents and related policy measures, and introduces the potential role of population reaction. In section three, the authors propose the creation of information networks for Shore Awareness of Vessel Emergencies (S.A.V.E) relying on specific segments of local populations with familiarization with the maritime environment or with vested direct interests in its preservation; seafarers, members of the fishing community or tourist executives are advanced as prime candidates. In the fourth section, the authors process data collected through questionnaires distributed to residents of a major maritime Greek island, the population of which includes a large number of active and retired seafarers. The analysis of questionnaire data analysis places emphasis on gauging the degree of confidence and potential participation of the general population in a

voluntary network such as the proposed S.A.V.E The limitations of the pilot survey inform the conclusions on the design of future surveys where such networks could be established.

2. Tanker accidents: Policy, State and General Population reaction

As underlined in Alexopoulos *et al*. (2002), which quotes Moller (1999) – the literature suggests that effective combatting of oil spills by national authorities is possible especially where there is support from outside the frontiers of the state affected. Nevertheless, the extensive damages awarded in more or less recent times to the victims of oil pollution shipping accidents in various continents, point that, whatever the degree of success of interventions for damage limitation, residual effects often remain severe literally and metaphorically.

Prevention of oil spills has become the main underlying theme of new ship design specifications or additional operational regulations over the past decades; related policy measures, as presented in Table 1, have been numerous. Policy changes prompted by disasters in areas with significant importance in terms of environment or for the national economy have been equally numerous during the last decade or so (Ventikos and Psaraftis, 2004). The 1999 Erika accident triggered emergency legislation by the European Union on top of the provisions of - relatively recent at the time - international regulation regarding the phasing-out of single-hull tankers. The same occurred after the 2002 Prestige accident which started evolving off the coasts of Galicia, Spain, and resulted in one of the greatest environmental maritime disasters with oil spilled on three European coasts (BEAmer, 2003); it also resulted to further acceleration of the phasing-out program of single-hulled tonnage through the revision of regulation 13G which became regulation 20 in the revised Annex of Annex I of MARPOL (IMO, 2013a).

The Prestige case also brought to the fore the role of the interaction between the population and the politicians in the evolution of a shipping pollution incident. The role of population in tanker accidents is more often associated either with claims for damages or with clean-up operations mainly as volunteers. However, population may well play a role during the course of accidents. Mobilization of the local population while the incident is unfolding has been observed during the Prestige case in 2002 which marked the worst marine pollution to ever impact on Spanish coasts (Gimenez, 2003). While the vessel was still afloat and in search of safe refuge, decisions were made under pressure to informed politicians by an uninformed public. Time pressure does not usually allow in a similar context to arrive to the necessary consensus anyway as not all stakeholders evaluate consequences identically (Wirtz *et al.*, 2007). As Wirtz *et al.* (2007) propose, multi-criteria methods can be used to arrive to decisions when conflicting options, such as towing directions in the case of Prestige, need to be considered. However, in the literature, the subjective cost for an offered safe haven has been related to "depend on the information the population receives (mainly through the mass media)" (Gimenez, 2003, p.2). Such reliance may or may not thus be in favor of an objective estimation of the risk involved in providing safe refuge to the vessel.

Table 1. Conventions/ Recommendations/ Guidelines related to marine pollution (operational and accidental) by oil from ships

Source: EMSA (2013), IMO (2013b), IMO (2013c), IMO (2013d), REMPEC (2013), US COAST GUARD, (2013).

Convention/ Recommendation/ Guidelines	Organization	Geographical Coverage	Field of application
MARPOL, 1973/78, as amended	IMO	International	Contingency plan, pollution drills, oil discharge monitor on board, Crude Oil Washing, pollution fighting materials on board, double hull tankers phase-out, hydrostatic balance loading.
The Barcelona Convention 1976 (Convention for the Protection of the Mediterranean Sea against Pollution)	Mediterranean Sea States	Mediterranean	Creation of Regional Emergency Pollution Centre for the Mediterranean waters
The Protocol Concerning Cooperation in Preventing Pollution from Ships and, in Cases of Emergency, Combating Pollution of the Mediterranean Sea 2002	REMPEC	Mediterranean	National emergency plans for prevention and fighting of oil pollution incidents
International Convention on Oil Pollution Preparedness, Response and Co-operation, 1990, (OPRC 1990), as amended	IMO	International	Shipboard Oil Pollution Emergency Plan (SOPEP), national response plans
Vessel response plan	U.S Coast Guard	U.S waters	Tankers' tracking (entrance in US Economic Zone), cleanup contractor, key contacts, oil pollution drill
ISM Code (Phase I in force from 1/07/1998)	IMO	International	Safety Committee on board, review to accidents, identification of threats, report of incidents and near misses, ship – company permanent link.
Packages of measures after Erica and Prestige accidents and their resulting oil spills Directive 2005/35/EC and 2009/123/EC amendments	EMSA	European waters	Satellite surveillance of spills, ships' tracking, imposition of penalties (incl. criminal) for pollution.

3. Oil pollution potential and the role of information networks

The evolution of an oil related marine pollution incident as it unfolds is either relayed directly to the local population through local and national media (press conferences, speeches and breaking-news announcements) or/and covered by the media which bring in specialists or comment on the basis of their best knowledge. In the first case the danger of distrust is omnipresent. In the second case the light shed on the incident can potentially lead to the distortion of the perception of the issues involved and, most critically, of the full range of the alternative options for taking action.

As the reaction of the Heads of Seamen Guilds along Galicia in November 2002 exemplifies even seafarers may well opt to prevent an attempt for damage mitigation (Ruiz-Villarreal *et al*., 1999: 140). This is apparently the result of the absence of a prior plan for treating information and formulating a reaction. Without ex-ante planning or training for such an event, selecting the best option *ad hoc* would be purely a chance outcome.

In order to address such issues of lack of appropriate information, proper information dissemination, distrust in public information or – worse – scaremongering taking hold of the public and leading to political pressure for fast - yet not necessarily optimum action, the authors have proposed (ERA, 2011) the creation of a special information network in island and coastal areas. The .S.A.V.E network concept aims at educating coastal populations to react in an empowering way during vessel emergencies near island shores or coastal areas. Its main goal is to eliminate a weak link which can otherwise hinder the mission for pollution mitigation through delays caused by lack of information on the best options for an environmentally responsible response from the appropriate authorities.

The concept of S.A.V.E is based on the formation of a network which would be based mainly on ad-hoc trained members of coastal and island communities sourced from the sea-related tourist professions. Such a network can serve as a trusted education and information source and create both a virtual and physical relay center for the general local population. Such communities are highly familiar with - or heavily reliant on - the quality of the local maritime environment and either have prior knowledge of appropriate response to an evolving incident or are more eligible for becoming network relays through training.

However, at this conceptual stage of S.A.V.E, there exists yet no estimation of the potential for such a network or for the distinct role that the segments of the local communities with a vested interest in the maritime environment can play. The general idea of the network was presented to the local media in the summer of 2011 at the Maria Tsakos Foundation – International Centre for Maritime Research and Tradition (Pyliatis, 2011) and was well received by the media but with unknown reception from the general population. In this context, the authors proceeded to a pilot survey in order to test the level of appeal and applicability of such a concept in an island or coastal community.

Table 2.Stages for setting up a S.A.V.E network

Stage 1: Estimating local potential for a S.A.V.E network
(Questionnaire survey for current attitudes towards vessel emergencies in coastal areas)
Stage 2. Transforming local coastal populations into a crisis resource
▪ *Description of potential courses of action for managing and minimizing risk following incidents*
▪ *Mapping of stages of vessel emergency handling and challenges for information distortion contributing in delays or damaging inefficiencies in handling the vessel emergency*
▪ *Selection of appropriate local information relays among local population on the basis of professional experience and related knowledge background*
Stage 3: Design of a S.A.V.E network of education and information
▪ *Designing short educational courses for selected local "relays" with relevant experience*
▪ *Designing the mechanism for the coordination of information dissemination among the general population in a vessel emergency context*
▪ *Designing the complete network for S.A.V.E: Human resource and electronic interface*
Stage 4: Expanding and disseminating results
▪ *Analyzing the lessons from the network set-up.*
▪ *Lessons learned - Limitations*

4. Gauging the potential appeal of S.A.V.E: Survey and results

4.1 The concept

The purpose of the survey was to estimate the potential appeal of a voluntary network such as S.A.V.E among an island population, as well as the potential among active and retired seafarers for self-inclusion among its participants and amplifiers.
The survey questionnaire depicted in Figure 1, was designed with a focus on the role of information and of the perception of local populations in defining partly and indirectly the outcome of an evolving incident, through pressure on local and national authorities. Its main aim was to examine the potential role of a local information network based on trained seafarers which would act as a trusted relay of information in the case of an incident. In the background it also aimed at obtaining information in order to identify the level of familiarity of a local island population with significant to events involving environmental pollution by oil from maritime accidents.
The survey was carried out among the residents of the Aegean island of Chios. The island was chosen for two main reasons:

1. Chios island is located across a major route of tankers from Bosporus to the wide Mediterranean sea;

2. The level of sea experience and familiarity to marine incidents is considered high compared to other island populations in Greece who are mostly involved in tourism and farming.

The island boasts the larger (GG) seafaring community, active on the ships of Greek shipowners who originate from the island, mainly from the maritime communities of Vrontado, Kardamyla and the little island of Oinousses which lies very close to Chios' northeastern coast. Common origin and kinship have been a foundation for the success of Greek shipping (Harlaftis, 1996). Chios related companies regularly top the list of Greek shipowners, the latter being at the top of world shipping for almost 45 years and are deemed to be the largest geographically defined group within Greek shipping. The number of shipping related families on the island of Chios, including those related through involvement in shipping of close relatives is also very high.

4.2 The survey: Methodology and Questionnaire

The pilot nature of the survey was based on non-probabilistic sampling, which could be further sub-categorized as "convenience sampling" (Kitchenham and Pfleeger, 2002, p.19). In order, however, to reach a sample varied as much as possible in age, professional status and other demographics, the survey questionnaires were distributed to and collected from public services (local tax office, local social security office) visited by a large part of the general population annually.

The research was carried out in April 2012. One hundred questionnaires were distributed, fifty at each public service building. Overall 83 questionnaires were returned over a period of about three weeks; questionnaires were retrieved mid-May. A written invitation with the information that the survey relates to the coasts was placed over the boxes of the questionnaires asking for the members of the public visiting the venues to complete them.

The questionnaire (in Greek) was initially designed to fit the average background of the islands' residents. In order to facilitate respondents, since they were bound to fill it without supervision from the research team, questions (Qs) were further simplified. Hence, the formulation of questions was calibrated towards minimum rather than average education and minimum degree of familiarization with questionnaire filling. Citizens visiting the tax office and social security offices were assumed not to differ much in general from the general adult population for the purpose of the pilot survey.
The first section covered personal and residence data through two questions aiming also at identifying seafarers among the respondents. As shown in Appendix, the first question included also age brackets to identify any minors and obtain an estimate of the share of respondents over the retirement age. In the latter case the general retirement age upheld was the one still valid until recently in the country, i.e. 65 years; this was increased to 67 a few months after the time of the survey.

4.3 The analysis

There were 83 questionnaires recovered from the two points of distribution. Only six of the respondents replied that they were seafarers, sixteen were members of the wider shipping family by occupation or relation and the remaining sixty-one respondents were not related to shipping in any close way.

The completed questionnaires presented few problems in terms of completeness or clarity of answers. In four instances respondents to the first question in the demographics' "general" first section, provided double answers which were easy to clarify. In these cases respondents had checked, also the box of "members of the wider shipping family" (or "shipping" community as this would translate semantically more accurately from the Greek expression used). In the one instance the self-definition as seafarer clearly superseded the notation of belonging to the shipping community; in the three others the self declared non-seafarers were taken to belong to the third category "members of the wider shipping family (shipping executive, seafarer's relative)" as this was easily inferred from the sequence of questions in the distributed questionnaire (cf. Appendix).

Figure 1. Mean value and standard deviation per question

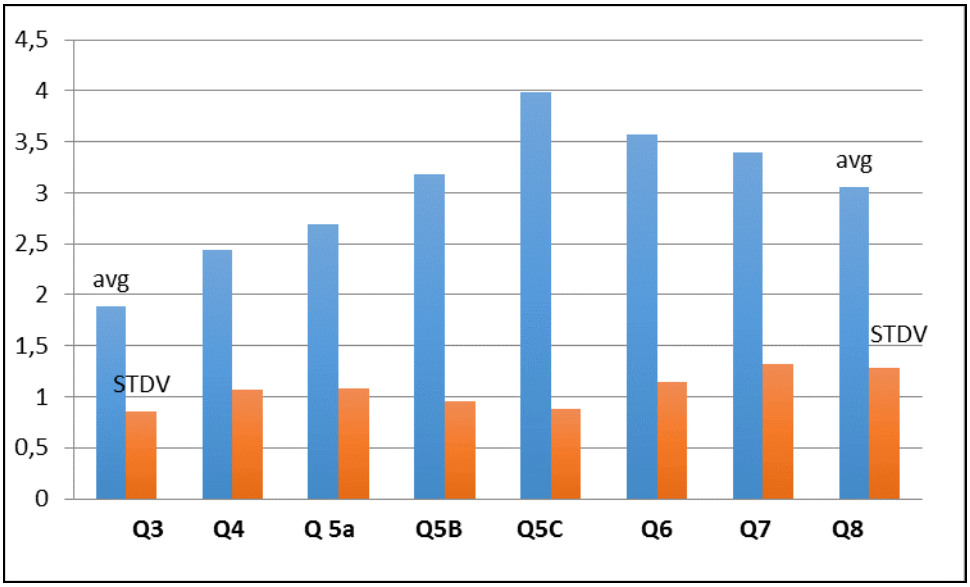


Figure 1 depicts the distribution of the mean values and standard deviations of the provided answers per question of the questionnaire employed in the survey. The values shown range within a scale from 1 to 5 which corresponds -for the majority but not all of the questions - to the linguistic terms used, from 'Not at all' to 'Very much' respectively, as described in the Annex.

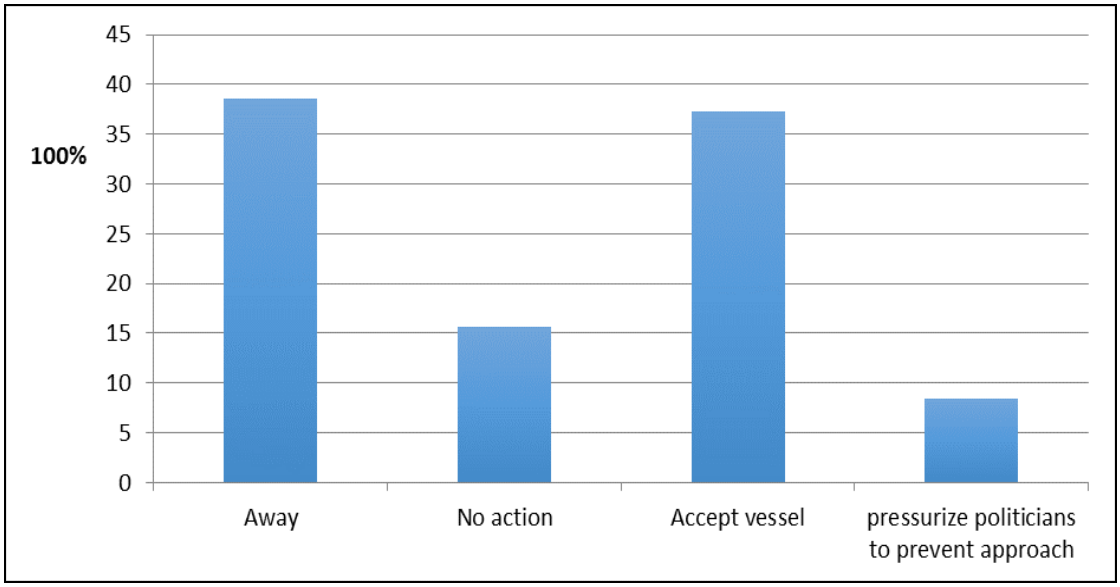
Indicatively some of the results are commented hereafter:

The answers given for Q3 "*How much informed are the residents in your community on the proper management of a potential shipping accident in the area*?" point to a low score, converging to an average corresponding to less than the equivalent value of 'A little' i.e. somewhat less than 2; this is showing that there is still significant room for the briefing and training of the general public to topics related to marine accidents and oil spills. Moreover, the central tendency of the answers

provided to Q6 "*Do you believe that the creation of a local network of information on shipping accidents involving possible marine pollution from oil, would help to reduce problems in the management of the emergency*?" suggests that the general public would react rather positively to such an initiative, therefore to S.A.V.E The results for answer of Q5c, yielding the highest score, give eventually the strongest indication that specially trained seafarers would be considered trusted relays of information.

The most critical results are these from answers to question Q9: "*Which would you think your reaction would be learning that a ship requests a port of refuge in your area while facing problems involving a grave danger for marine pollution from oil?*" where answers surprisingly clustered by almost 40% on sending the vessel away, with only about 15% stating they would not react, while another small percentage of about 8% would call upon the intervention of politicians to avert the approach of the vessel. While about 37% of the respondents opted for accepting the vessel in distress, the distribution of the shares in Figure 2 shows the potential for a public disagreement of the community during an unfolding incident and also mirrors the remarks in Wirtz *et al*. (2007).

Figure 2. Question 9 results: Stated reactions to eventual shipping incident unfolding



Delving further into the data, with a view to inform larger surveys in the future beyond the pilot stage, an intriguing difference was noted in the answers to Q9 between questionnaires collected form their two points of distribution. Out of the 50 questionnaires completed by visitors to the local social security office, 21 (representing 42%) chose the option they would be expected to choose after S.A.V.E training. The respective figure was only about 30% among the 33 questionnaires collected from the tax office. It can be noted that all but one of the seafarer respondents were tracked in the first group of questionnaires. However, any inferences at such detailed level would have no more worth than anecdotal evidence due to the small number of participant seafarers in the sample. Their share would be expected to be low in terms of participation in a general survey even on traditional islands like Chios, especially in this period. Active seafarers would be absent apart from the

proportion on regular leave or between recruitments, while both active and retired mariners would tend to visit both questionnaire distribution points eventually at even somewhat lower rates than the rest of the population. Due to absence, seafarers' tax affairs are often dealt by proxies to relatives; by the same token, seafarers would visit less frequently the local social security. This last point raises the question of limitations of this pilot survey and points to the need for a different questionnaire distribution system in larger scale future surveys to gauge the potential and the required training effort for setting up such networks.

4.4 Survey limitations

The population of the island of Chios according to 2011 census data was 53,004 (NSSG). Allowing for adult population only, since no minors were recorded among the respondents in the survey data, and for more relaxed alpha and beta errors, as this is a pilot survey would not point to too large a sample; in any case, the one which emerged for the survey would not be sufficient for a full-scale survey. The final number (n=83) of the completed questionnaires (out of the 100 ones made available in total at the two points of distribution) is not a negligible sample size *per se*. However, it is well below the 5% mark in terms of proportion in the total or adult population or – in absolute figures - the 120 mark (where t becomes 1.96 for 0.05 Type I error). Sample size calculations resulting from any formula, such as in Bartlett *et al.* (2001), were set aside as the main survey aim was to allow the authors to target methodological problems and test the levels of comprehension of questions and completeness of answers; as pilot research it is appropriate to obtain values of σ that could be used to determine the minimum sample size (Kitchenham and Pfleeger, 2002) in further surveys of stage one implementation of S.A.V.E among more island and coastal communities.

5. Conclusions

The result of the analysis of the survey data is encouraging for advancing the concept of the creation of a network like S.A.V.E on a local basis with the view to link them in larger regional networks; however, further analysis is needed to back the arguments presented in this paper with regard to the optimal response in the course of an evolving marine incident. As mentioned, some of the results also point to the need for the creation of such a network in order to have a tool for averting conflicts at action point.

Surveys such as the one presented in this paper will be a necessary first stage in all areas where S.A.V.E type networks would be set-up eventually. The experience and the statistical properties of this pilot survey can be used to define appropriate sample sizes in the future. Ideally two sample surveys targeting the maritime/fishing or tourist cluster of the population should be designed on the basis of a uniform questionnaire. Such surveys should use as distribution points cluster venues (fishermen's clubs, seafarer unions etc.). They should also try to -at least- identify the emerging implicit social benefits from networks of this type; this will not be a trivial task. A much enhanced version of the questionnaire with more specific questions will be necessary for the identification of the conditions necessary for the potential actions for a S.A.V.E network to be effective. Securing robust results will also require a larger sample from a significant number of coastal or island locations to allow for more advanced statistical techniques to be used.

The survey data may have been related in this pilot research only to residents of one Greek island with a strong link to shipping, but any such information network could alternatively be designed to take advantage of fishing or tourist coastal communities. Although taking the first survey on the world known for its shipping connections island of Chios may seem as introducing a bias, it was important for the authors to gauge the response in such an area. Shipping, fishing or tourism are significant activities among European island and coastal populations. The latter can be transformed - through networks like S.A.V.E - from uncoordinated passive receivers of information they possibly distrust, to members of a larger governance structure as has been observed in the case of post-accident population involvement in cleanup operations (Hur, 2012). It is extremely hopeful that among the questionnaire respondents over a third opted for a course of action in the case of an incident evolving, which, allows for devising an incident management strategy including all options. The survey results, however, revealed that training is essential. A detailed close examination of the individual questionnaires revealed that even as a marginal case among seafarer respondents, the resort to politicians with the demand to just take the vessel in distress away remains a plausible, quasi-automatic course of action.

Fishing communities are aware of sea perils and the concept of safe haven and extremely sensitive to the outcome of an incident. Though more training may be required in their case, they can become managers of information which, with them in the position of amplifiers, may well serve better the interests of the community by being received without distrust. Similarly, tourist managers and employees in coastal and island areas can form the base for setting-up networked communities with physical headquarters which could serve at times of marine emergencies in general.

The role of such community mechanisms can well exceed its initial mission and justify any costs incurred to set it up. By its sheer formation, an information relay network regarding marine incidents in coastal and island areas, relates more strongly the local population to maritime activities and to the environment. An important issue for further research remains this of its governance as the self-governance route may be the only form of governance which would match the character of the network.

The experience from setting-up such a type of voluntary networks may inform theory and practice in terms of communication strategies in normal and distress conditions but also in terms of extending the network to support both environmental as well as shipping awareness.

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ANNEX: Survey questionnaire

Put a cross or X in the box next to your answer
A. GENERAL INFORMATION (DO NOT WRITE YOUR NAME)
1. YOU ARE:

a. Seafarer (active or not) □
b. Non-seafarer □
c. Member of the wider shipping family (shipping executive-relative of seafarer) □
AGE: UNDER 18 □
OVER 18 □
OVER 65 □
2. YOU ARE RESIDENT OF
Hora □
Vrontado □
Kardamyla □
Notiohora (Mastihohoria-Masticvillages) □
Other.... □
B. SPECIAL QUESTIONS
(Not at all =1 A little =2 Enough =3 Much =4 Very much =5)
PUT A CROSS OR AN X IN THE BOX NEXT TO YOUR ANSWER
3. How much informed are the residents in your community on the proper management of a potential shipping accident in the area?
Not at all □ A little □ Enough □ Much □ Very much □
4. How much do you think you could help in properly informing the rest of the residents in the case of a shipping accident?
Not at all □ A little □ Enough □ Much □ Very much □
5. In the case of a marine accident you would trust information:
a. From the national authorities in the capital
Not at all □ A little □ Enough □ Much □ Very much □
b. From seafarers in your area
Not at all □ A little □ Enough □ Much □ Very much □
c. From *specially trained* seafarers in your area
Not at all □ A little □ Enough □ Much □ Very much □
6. Do you believe that the creation of a local network of information on shipping accidents involving possible marine pollution from oil, would help to reduce problems in the management of the emergency?
Not at all □ A little □ Enough □ Much □ Very much □
7. Do you know how to use a computer and the Internet?
Not at all □ A little □ Enough □ Much □ Very much □
8. Are you willing to become trained in computer use and become a member of a local information network in case there is a shipping accident?
Not at all □ A little □ Enough □ Much □ Very much □
9. Which would you think your reaction would be learning that a ship requests a port of refuge in your area while facing problems involving a grave danger for marine pollution from oil?
a. You will demand that it is driven away from the area fast □
b. You will take no action □
c. You will try to convince fellow residents that the ship should be given refuge if necessary□
d. You will turn to local politicians in order to stop it from approaching the area □
10. Did you witness, either as a seafarer or a resident, a shipping accident in the past involving oil leakage or the potential for pollution from one?
YES □
NO □

(If you replied YES how was the general population informed on the accident?)

_____

_____

(IN WHAT AREA DID THE ACCIDENT TAKE PLACE).....

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