

Maritime Integrated Approach in the Mediterranean Area

CAIMANs

Cruise and passenger ship Air quality Impact
Mitigation Actions

Identification of critical end points to establish a common
transnational policy to mitigate cruise and passenger ship
air impact

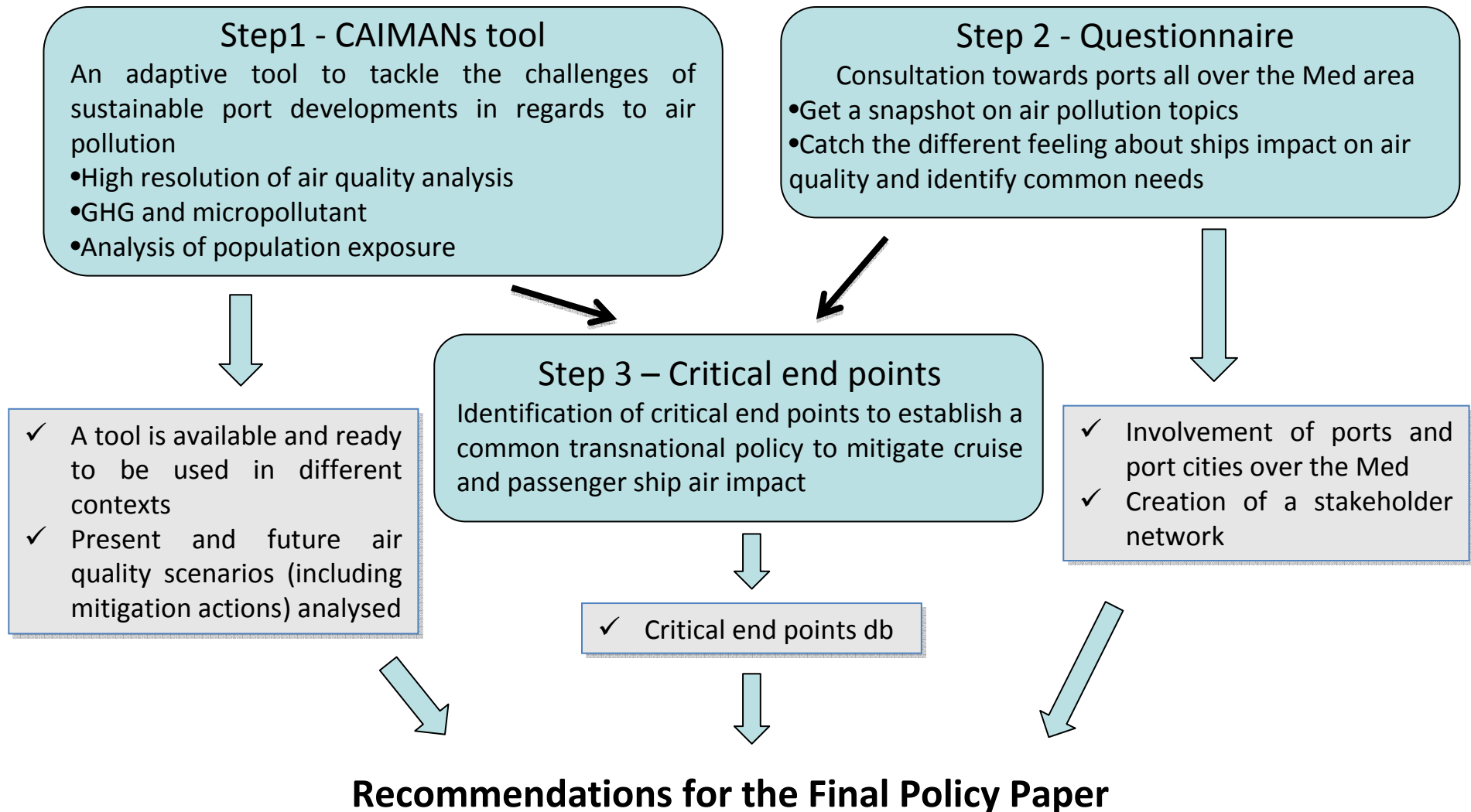
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UNIGE, AUTH, Air PACA, IDAEA

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Mediterraneo.

I risultati del progetto CAIMANs
Venezia, 12 Giugno 2015



The CAIMANs project structure



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The CAIMANs Step3 procedure

Identify critical end points considering that...

Target

The main end-user of MED-Maritime Integrated Approach Projects outcomes is the MED programme itself

Sources

- CAIMANs Step1 → Simulation analysis and scenario evaluation
- CAIMANs Step2 → Questionnaire output analysis
- Documents and report providing information at the european level (EEA report,...)
- Other MED-projects outcomes: a fruitful collaboration has been carried on with POSEIDON and SMARTPORT projects within the MED-Maritime Integrated Approach meetings



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The CAIMANs-Step3 critical end points db

A critical end points database has been defined with records organized according to:

➤ **Source**

Each record has been obtained by a critical analysis of data, obtained by the sources above mentioned

➤ **Possible role of MED Programme**

For each record we tried to discuss about the role that the MED Programme could play to fill the gap

➤ **Possible role of CAIMANs outcomes/expertise**

CAIMANs project generated a consistent amount of results that can answer to several questions and can trace the direction to follow for future developments and improvements. Moreover we shared knowledge and we created a common expertise that can be spent in different context.

➤ **Need for a transnational approach**

The criticisms identified may need for an answer at transnational level and this is a crucial point to be taken into account



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Critical end points db records

Source

CAIMANs Questionnaire

Possible role of MED Programme

Organise and manage training sessions open to local stakeholders and/or institution in charge of local emission inventory management

Possible role of CAIMANs outcomes/expertise

CAIMANs approach to the calculation of macro and micropollutants can be diffused among the Mediterranean basin through training campaign held by CAIMANs partners

Need for a transnational approach

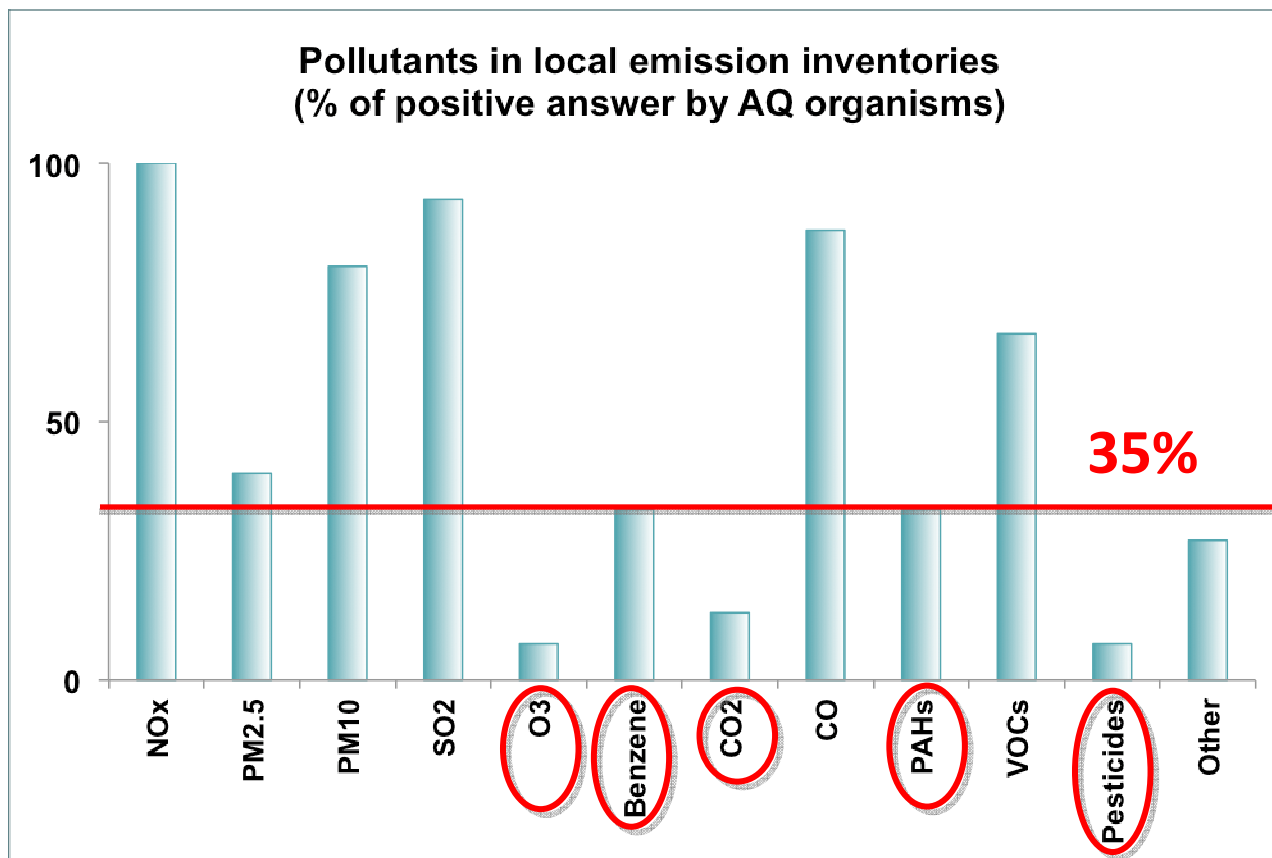
A common methodology could be defined in order to get more accurate and comparable analysis



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Critical end points db records

Missing elements in pollutant emission inventories



Critical end points db records

Source

CAIMANs Questionnaire

Possible role of MED Programme

Organise and manage training sessions open to local stakeholders

Possible role of CAIMANs outcomes/expertise

CAIMANs approach to the calculation of macro and micropollutants can be diffused among the Mediterranean basin through training campaign held by CAIMANs partners

Need for a transnational approach

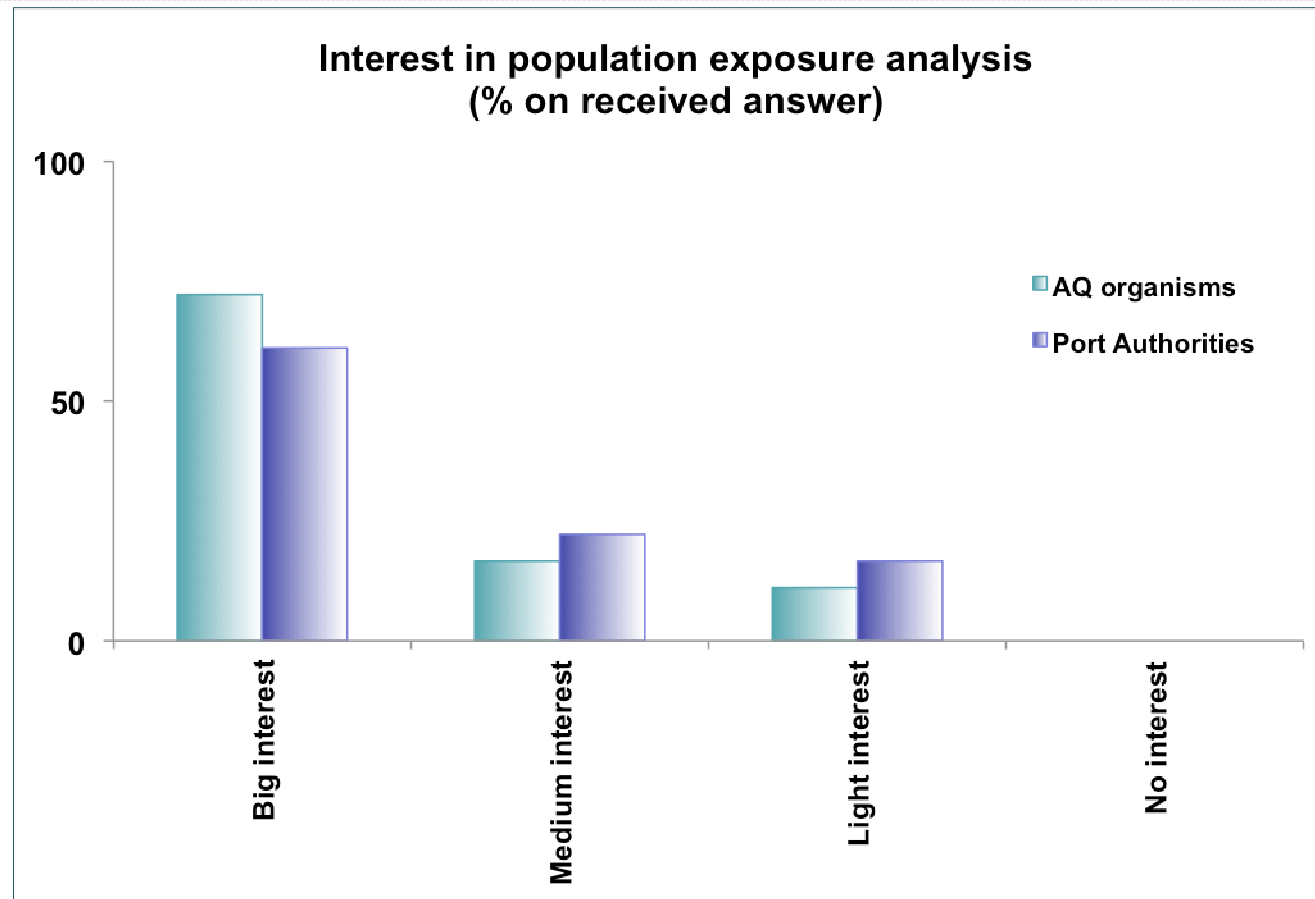
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Critical end points db records

Very high interest observed for population exposure analysis



Critical end points db records

Source

CAIMANs Questionnaire

Possible role of MED Programme

Promote the building of voluntary agreements involving the main subjects that could give a consistent contribution

Possible role of CAIMANs outcomes/expertise

CAIMANs outcomes can be analyzed to contribute in the definition of actions, methodologies and parameters to be included in voluntary agreements

Need for a transnational approach

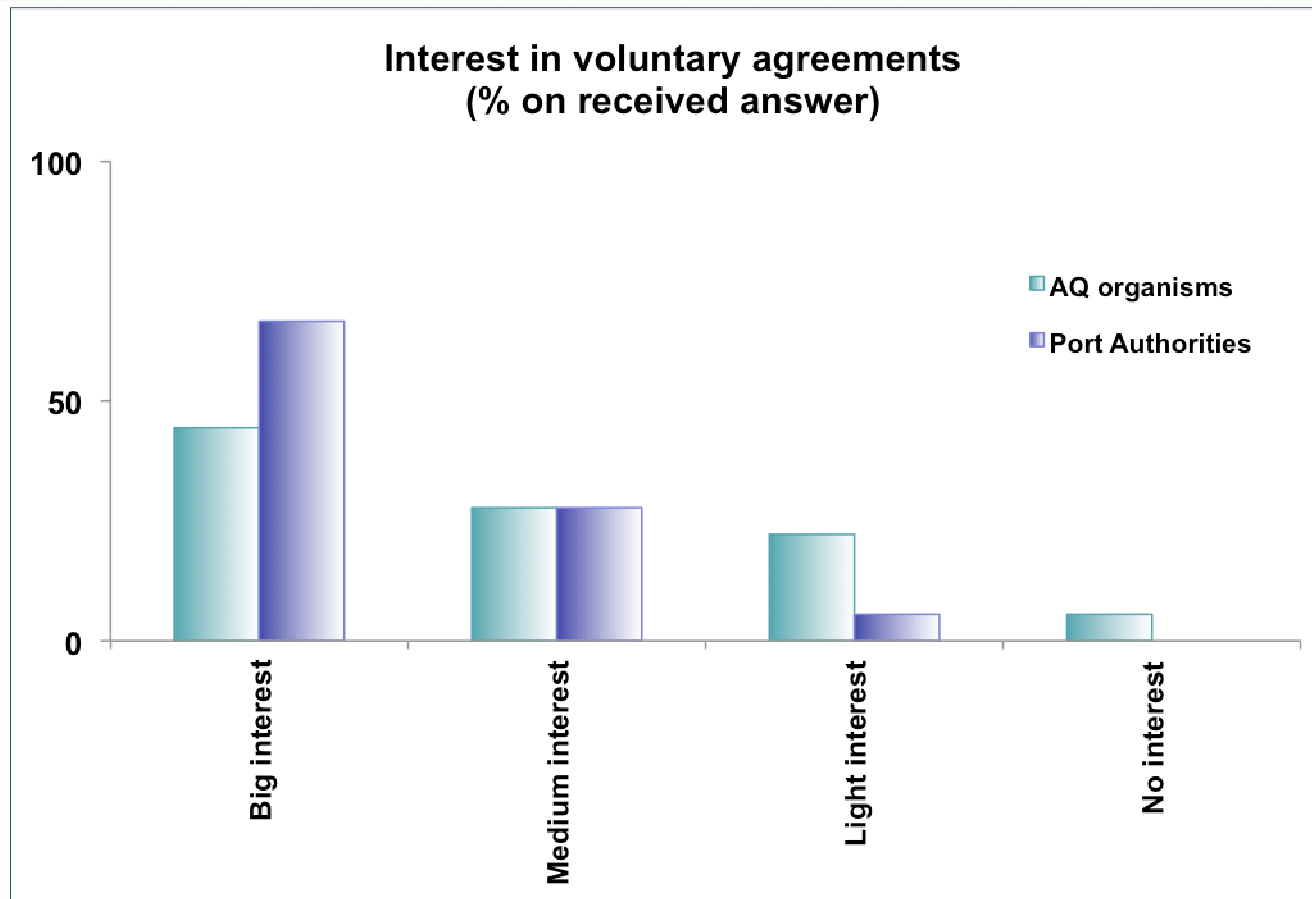
Effective voluntary agreements should involve the largest number of countries and initiatives should rise at the transnational level



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Critical end points db records

Need for voluntary agreements on air quality mitigation



Critical end points db records

Source

CAIMANs Questionnaire

Possible role of MED Programme

Consider the ship and maritime activities impact on air quality in the next programming period

Possible role of CAIMANs outcomes/expertise

CAIMANs team can guarantee a high level expertise focused on maritime activities impact on air quality and important and fruitful collaboration started with other projects. This is providing new project ideas that can be used to attract funds

Need for a transnational approach

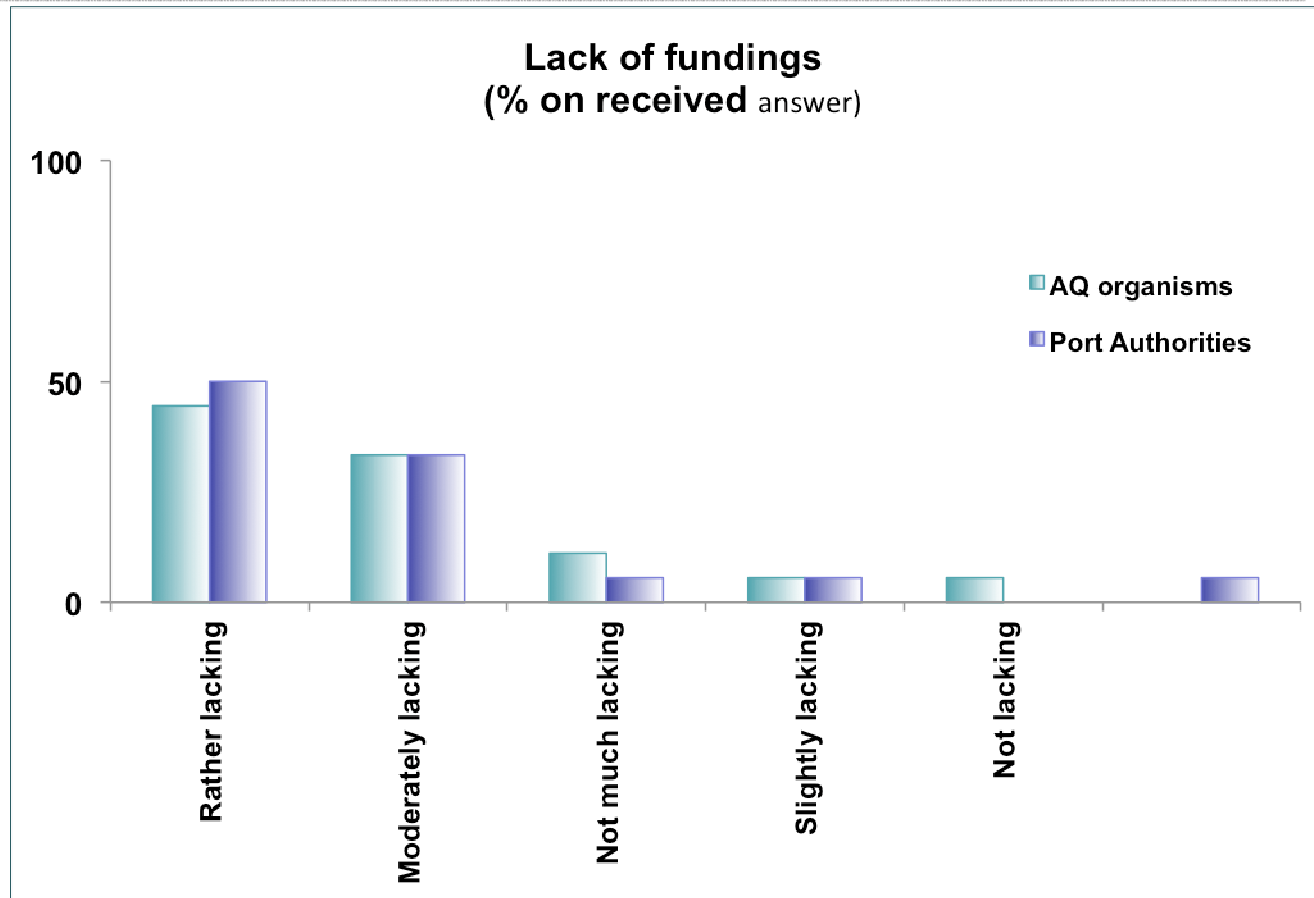
The maritime activities air pollution impact should be one the topic of international cooperation programme funding



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Critical end points db records

Lack of fundings for the implementation of projects aiming at lowering maritime air pollution impact



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Programme cofinanced by the European Regional Development Fund



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Critical end points db records

Need for a network of experts

Source

SMARTPORT project outcomes

Possible role of MED Programme

Create and manage an expert network collecting expertise among MED projects partners

Possible role of CAIMANs outcomes/expertise

Include CAIMANs representatives in the expert network

Need for a transnational approach

The network must include people from all the Mediterranean basin



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Critical end points db records

Need to integrate health and climate change effects of ship traffic change in environmental policy making

Source

EEA report 2013

Possible role of MED Programme

Important contribution making the link between scientific-technical expertise and policy makers

Possible role of CAIMANs outcomes/expertise

CAIMANs results on GHG emissions and population exposure analysis can be used to highlight the need and help in trace the direction for the integration in policy making

Need for a transnational approach

The integration should be obtained also on transnational policies and recommendations



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Critical end points db records

Climate change must be analysed considering all the relevant aspects (change in ship emission, meteorological conditions, low carbon policies,...)

Source

EEA report 2013

Possible role of MED Programme

Further analysis aimed at climate change assessment including integrated effects of ship emission change, meteorological conditions and low carbon policies effects should be promoted

Possible role of CAIMANs outcomes/expertise

CAIMANs approach can be used to assess the effects related to changes in ship traffic and should be integrated with other tools to perform climatological studies

Need for a transnational approach

Climatological issues deal with global scale evaluation and actions



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Critical end points db records

On-shore Power Supply (OPS) identified as one of the most studied mitigation actions

Source

CAIMANs Step1 outcomes

Possible role of MED Programme

OPS need to be analyzed in more details and further studies on this topic should be promoted

Possible role of CAIMANs outcomes/expertise

OPS scenarios results are available for 3 out of 5 CAIMANs cities. Different methodologies have been used and can be replicated. Moreover the comparison between them help for the identification of the most relevant aspects to be taken into account

Need for a transnational approach

OPS implies additional costs for berthing therefore it must be taken as a common measure in order to avoid economical discrepancies among ports attractiveness



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Critical end points db records

On-shore Power Supply (OPS) identified as one of the most studied mitigation actions

Scenario	Venice	Barcelona	Marseille	Thessaloniki	Genoa
LNG (Liquified Natural Gas)	✓	✓	✓	✓	✓
OPS	✓	*	*	✓	✓
Other local scenarios	✓				

** OPS for Marseille and Barcelona area studied within MED-APICE project (2010-2013)*



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MED MARITIME
INTEGRATED PROJECTS
CAIMANs

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Critical end points db records

Development of air quality simulation models need to be carried on and included in an European Monitoring Reporting Verification system (MRV)

Source

EEA report 2013 + CAIMANs Questionnaire

Possible role of MED Programme

Results obtained within CAIMANs can be used by MED Programme to disseminate results and recommend methodologies for the MRV definition

Possible role of CAIMANs outcomes/expertise

The CAIMANs Step1 methodology includes a common tool for the emissions calculation and provide high resolution simulations with different codes and parametrization. Step1 results can significantly contribute to the definition of a toolbox for a European MRV system

Need for a transnational approach

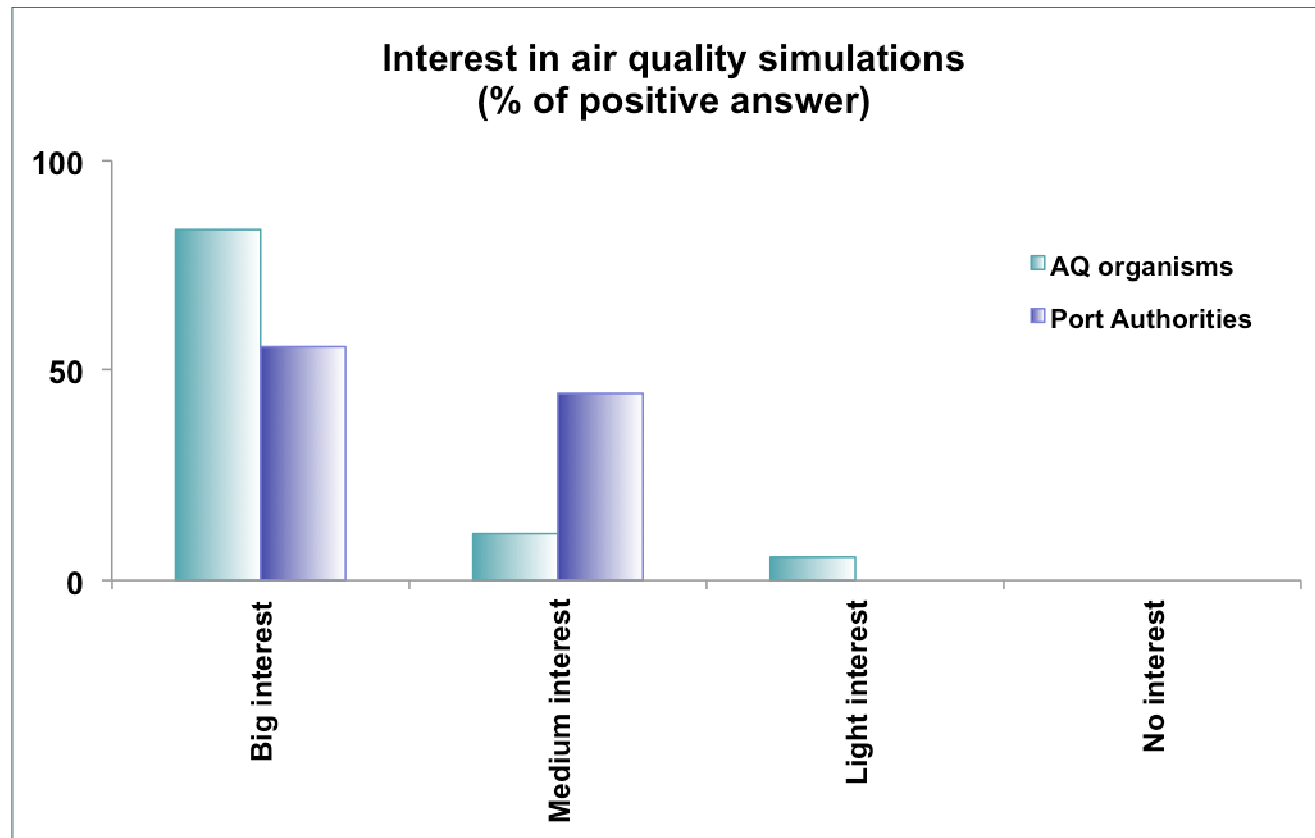
Air quality modeling studies have to be performed from the continental to the regional scale with special care to harmonization aspects



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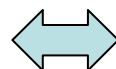
Critical end points db records

Development of air quality simulation models need to be carried on and included in an European Monitoring Reporting Verification system (MRV)



Critical end points db records – correlated records

Few measurements data for the identification of ship contribution to air quality



Missing elements in pollutants monitoring networks

Source

EEA report 2013

CAIMANs Questionnaire

Possible role of MED Programme

The improvement of measurements and monitoring network as well as the definition of Common Gold Standards should be the subject of further studies and realized in future projects

Possible role of CAIMANs outcomes/expertise

CAIMANs tool can be used to define an effective monitoring strategy aiming at the assessment of ship emissions impact on air quality

Need for a transnational approach

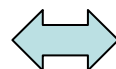
The sharing of methodologies must be considered as a crucial aspect of improving the observation based knowledge and the definition of Mediterranean Common Gold Standard would push forward the extension of monitored pollutants list



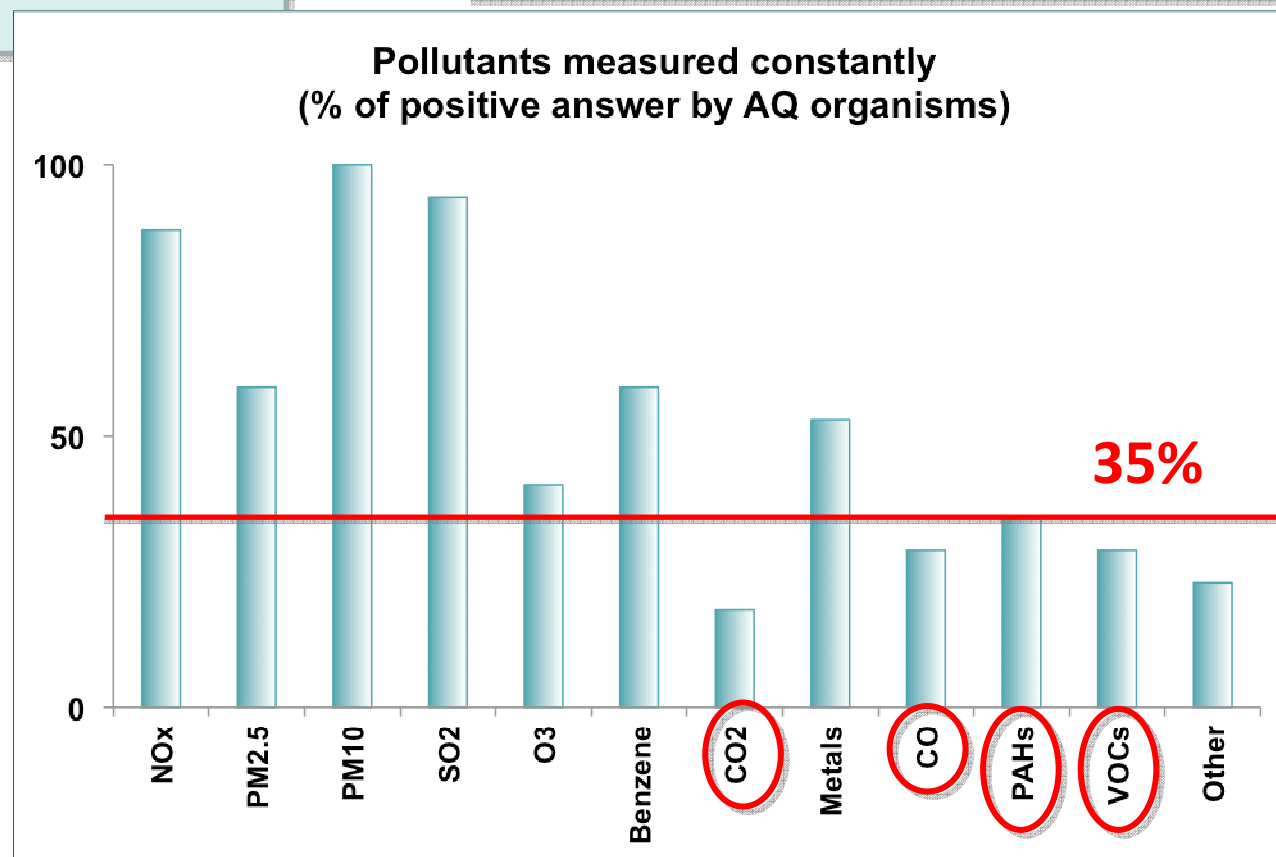
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Critical end points db records – correlated records

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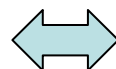
Missing elements in pollutants monitoring networks



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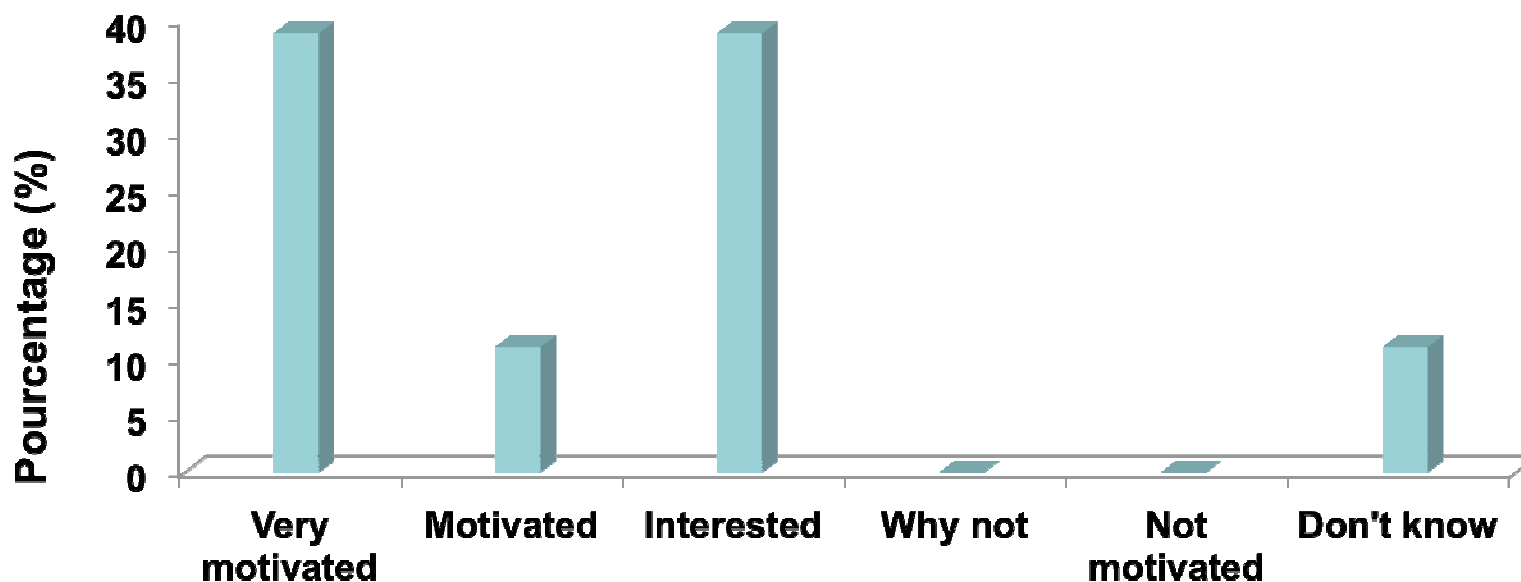
Critical end points db records – correlated records

Few measurements data for the identification of ship contribution to air quality



Missing elements in pollutants monitoring networks

Port authorities interest in AQ monitoring and control



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Conclusions

- ✓ A critical end points database has been created, defining record parameters according to the source, the role of MED-Programme, the role of CAIMANs project/team and the transnational aspect
- ✓ 11 records have been identified on the basis of CAIMANs outputs (air quality simulation and questionnaire),
- ✓ Correlations were found between remarks extracted by different documents and frameworks and correlated records have been identified
- ✓ Main messages to be disseminated and hints for future project and studies were thus suggested for the Final Policy Paper of MED-Maritime Integrated Approach projects



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Policy Paper – CAIMANs main messages

- The mitigation of air pollution from passenger ships needs complementary and integrated policies and planning, from international to national and local levels
- European and international policies on fuels, engine technologies and ship emission abatement, by acting on a wider domain, could be very effective. On the other hand, planning strategies on local scale (e.g. displacement of ship terminals or maneuvering routes) could be more effective to reduce population exposure
- Considering the current European air quality limits, the hourly NO₂ concentrations induced by passenger ships emissions appear to be the main concern
- The shift to a passenger ship fleet with engines fueled by Liquefied Natural Gas (LNG) is a very effective air quality mitigation scenario for the foreseen growing emissions in maritime touristic traffic



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Policy Paper - CAIMANs hints for further cooperation projects

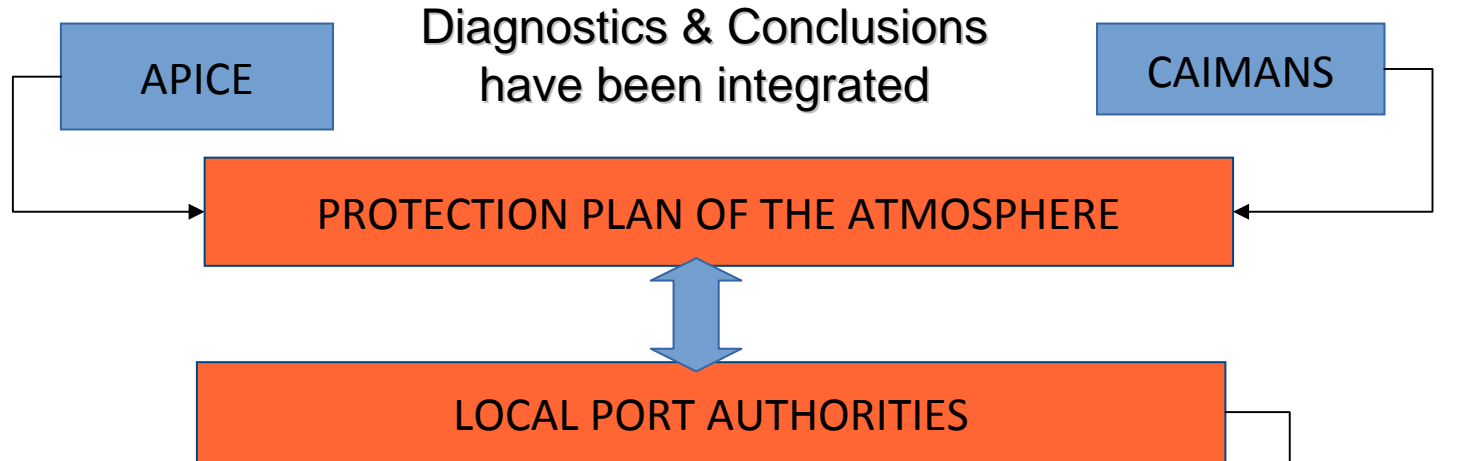
- Future cooperation projects on governance level, aiming at mitigating air pollution due to maritime transport, should promote, strengthen and enhance networking between Ports, Local Environmental Authorities and Scientific Institutions.
- In Mediterranean harbour areas high population density often coexists with industrial sites: need for technical projects and initiatives that address the monitoring and management of the environmental risks in an integrated perspective.
- Focusing on air pollution, European funding could enhance and promote the development of integrated monitoring networks. These networks would use harbour activity information, territorial data, and air quality measurements, and through the use of modelling tools would allow a better air quality assessment both in space and in time.



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...we got results!!!

2010 2013 2014 2015



JUNE 2015

3 SHIPS CONNECTED VIA OPS IN THE PORT OF MARSEILLE

Costs for Port Authority 1.5 M€
Costs for "La Meridionale" 2.9 M€



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Q : Do you want to participate to a EU project aiming to mitigate maritime emissions?

Answers from both ports & AQ org.

org.



Thanks For Your Attention!

CAIMANS Cruise and passenger ship Air quality Impact Mitigation ActioNs

Lead Partner: Environmental Protection Agency of Veneto Region ARPAV – Padoa (IT) www.arpa.veneto.it
University of Genoa, Department of Physics (IT) www.labfisa.ge.infn.it
Aristotle University of Thessaloniki (GR) <http://lap.physics.auth.gr>
AIR PACA – Air quality observatory (FR) <http://airpaca.org/>
Spanish Research Council - IDAEA (ES) <http://www.idaea.csic.es/>



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