

**The Thematic Network on Maritime Education,  
Training and Mobility of Seafarers (METNET):  
The Final Outcomes**

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**ABSTRACT**

METNET was a thematic network on the subject of Maritime Education and Training, and mobility of seafarers. This programme was carried out under the Fifth Framework programme of the European Community for research, technological development and demonstration and was carried out in the field of “Competitive and Sustainable Growth”.

The main objectives of METNET were to improve the quality, harmonize the contents and extend the applicability of Maritime Education and Training (MET) for ship officers in the EU. Improved MET quality is perceived to increase the competitiveness of ship officers, create more jobs for EU citizens, and make EU shipping safer, more environmentally acceptable and efficient. Harmonized MET contents will help to develop the basis for a future European ship officer, improve mobility, the mutual recognition of ship officers certificates and facilitate cooperation between MET institutions. Extended MET applicability will make the ship officer career more attractive and will meet the existing demand for national ship officers in most EU countries by an increased supply that will also ensure the provision of ex-ship officers for positions in the maritime industry ashore. Taken together, meeting of METNET objectives was one element in providing sustainable growth in competitiveness of, and mobility within, European shipping.

This paper will provide a short overview of the programme, and will concentrate on the main outcomes, in particular those related to the EU policy-making issues.

**Keywords:** Maritime education and training, maritime manpower sector, research network

**1. Introduction**

METNET was a thematic network financed by the European Commission – DG Energy and Transport between 2000 and 2003. It was part of the 5th Framework Programme and the Thematic Programme GROWTH - Promoting competitive and sustainable growth. The

objectives of GROWTH programme are to support research activities contributing to competitiveness and sustainability, particularly where these two objectives interact.

## **1.1 Reasons for METNET**

Changes in young people's attitude to seafaring have had the greatest impact on MET in the 16 countries of the METNET project. Decline of interest in seafaring has been observed in most EU countries. This issue was the main theme of the conference "Is the European Union Seafarer an Endangered Species?" in Dublin in December 1996. The Transport Commissioner at the time Mr Neil Kinnock answered the question then with "... on present trends, yes". The supply of ship officers from the EU countries in general is not meeting the demand for ship officers for EU flagged ships and for the shore-based maritime industries.

This led to an overcapacity of places at the nearly 150 MET institutions at more than 120 locations in the 16 METNET countries. MET is in the METNET countries mainly due to lack of concentration of MET resources. This has a negative impact on standards and the effectiveness of MET which can be improved by the use of modern and expensive technology such as simulators. Furthermore it hampers innovations including the extension of MET activities to research and consultancy.

The decline of interest of young people to choose a career in the maritime sector is also due to the limited applicability and competitiveness of MET in the METNET countries. First of all MET schemes differ significantly from country to country. There are countries where MET is still offered without academic degrees. The industry is often complaining that graduates are too much focused on ship operation and further knowledge is missing. However this knowledge is essential in order to enable the graduate to move to the shore based industry after having spent a certain period at sea. The lack of education creates an obstacle for MET graduates in the labour market.

Main reasons for a limited mobility of seafarers are language barriers, difficulties with tax and social security systems, recognition of certificates, and shipping companies preferences.

## **1.2 Objectives of METNET**

Whilst shortage of national ship officers in METNET countries can be alleviated by officers recruited on the international market, this approach is not a solution for shortage in the shore based maritime sector. The shore based maritime industry prefers to recruit staff who speak the national language and are familiar with national manners and customs. They are employed as pilots, surveyors, PSC officers, managers, marine insurance and other maritime enterprises, maritime administrations and at MET institutions. In many of these positions shipboard experience is essential; in some it is desirable.

METNET did not set out to resolve all the above issues. It aimed to stimulate and help improving and harmonizing MET standards for producing qualified ship officers in order to make MET in METNET countries more competitive and its graduates able to contribute to quality shipping. This was done by creation of a network between 16 MET institutions

in the METNET countries. These 16 institutions were encouraged to act as multipliers in their countries. The network was used as a discussion forum to exchange opinions and views about MET, to develop courses and to exchange staff and students.

Active participation of a large number of MET institutions was a prerequisite for the success of METNET. The outcome of the network can help to make a (temporary) seafaring career more attractive, enhance mobility, and facilitate the mobility of ship officers within the maritime industry.

### 1.3 METNET Consortium

The METNET consortium was well balanced, and comprised of 19 members from MET stakeholders (e.g. institutions, research institutes, ship owner associations, trade unions, etc). The principle contractors were:

- World Maritime University, Malmö, Sweden (Coordinator)
- The Alliance of Maritime Regional Interests in Europe (AMRIE), Brussels, Belgium
- Centro de Estudios Técnico-Marítimos (CETEMAR), Barcelona, Spain
- Southampton Institute, Southampton, UK

### 1.4 METNET Support

The network was extended to those who supervise MET, provide MET and use MET, i.e. to Maritime Administration, MET Institutions, and the Maritime Industry, respectively, through 3 Reference Groups as discussion forums for the work of METNET and as dissemination groups for METNET results.

The 3 reference groups were:

- **The Reference Group of Government Administration of MET** consists of a nationally appointed government representatives (administrators).
- **The Reference Group of MET Institutions** consisted of a nationally appointed MET representative.
- **The Reference Group of the Maritime Industry**, the Added Value Network Concerning European Shipping (ADVANCES) was used.

The ultimate aim of this approach was the setting up of a network of “sensors” in each participating country which keep the METNET partners up-to-date and help identify existing or emerging problems in MET and related subjects.

In order to support the good co-operation with the EU neighbouring areas the activities of the network was extended. Workshops with 2 Groups - **Representatives from Non EU Mediterranean MET institutions and maritime administrations** and **Representatives from Eastern Europe MET (Accession countries to the EU)** were organised, in order to integrate experiences and opinions from these groups into METNET and to exchange views.

## 2. The Outcome of METNET

The activities of METNET can be divided in a MET direct and indirect part. The indirect part dealt with problems in the MET environment, basically of interest for administrations of MET, whereas the MET direct part aims at measures for the improvement of MET. Out of the total results of METNET the following results of the MET direct part are introduced in detail in the following sections:

- 4E concept
- Design of common syllabi/curricula
- Design of courses which are needed for the extension and enrichment of MET

### 2.1 The 4E concept

METHAR, the predecessor project to METNET stated the following findings with regard to the status of MET in Europe:

- All MET institutions comply with STCW requirements,
- Some MET institutions apply vocational training,
- Others provide MET with an academic degree,
- Some MET institutions offer “sandwich”-courses
- Others provide MET in a single course,
- Most MET institutions do more than STCW requires; such as:
  - Extra subject matters direct to shipboard application,
  - Scientific foundation studies to support STCW subjects,
  - Extra subject areas directed to shore applications.

In order to structure the MET and to deal with the variety of approaches towards MET within the METNET project the **4E concept** was created. The four E’s stand for (see Fig 1):

The **Essentials** of MET have to cover the STCW subjects according to the stipulated requirements to be fulfilled prior to the issuance of the relevant certificate of competency.

**Extension** means MET comprising more detailed and more comprehensive STCW subjects. In other words STCW is not specifying in detail requirements for all subjects, such as marine environmental protection. Other subjects that are not mentioned in STCW but relevant for shipboard operations belong to extension as well, such as ship-shore information technology, freight contract, charter parties, insurance, average, salvage, safety of labour etc.

**Enrichment** means MET including subjects more relevant to occupations ashore. This considers the fact that more and more young MET graduates understand the shipboard career as a part of a longer career within the maritime industry where shipboard experience is desired. Te MET institutions can develop their own enrichment profile, such as maritime economy, maritime law or maritime technology.

**Elevation** means the upgrading of MET (postgraduate studies). This is necessary in order to foster the maritime knowledge base in Europe. Certain occupations in the industry, administration and education require specialist skills and expertise that can only be

obtained in postgraduate studies. Therefore it should be possible for a limited number of candidates to attend postgraduate courses once they have spent a sufficient time on board.

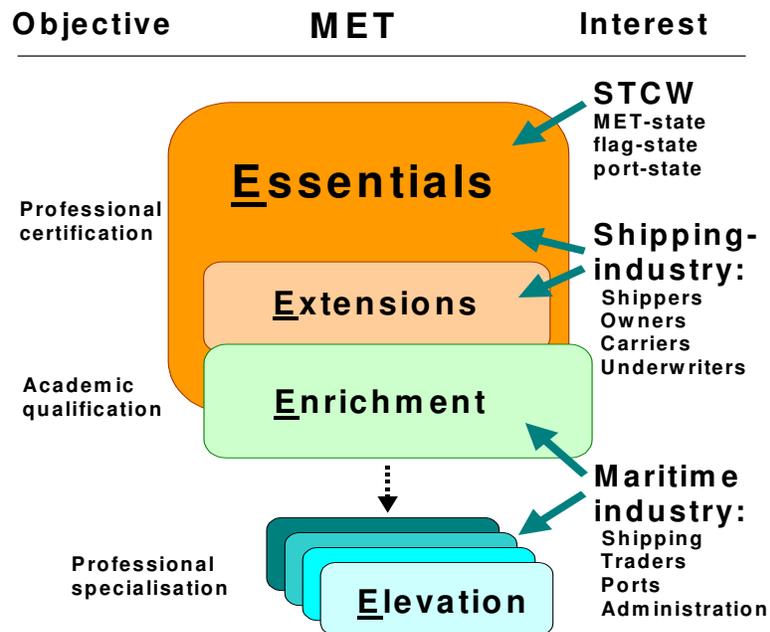


Figure 1: The 4E concept

## 2.2 Design of Common Syllabi/Curricula

The main background for the creation of common syllabi/curricula is the outcome of METHAR, which had, among others, investigated the structure of nautical MET in Europe in all relevant aspects. Remarkable differences were found with regard to the overall aim of MET (pure ship orientation or ship/shore orientation), duration, organisation (front-ended or sandwich) and technical standard of training institutions. These differences, even between institutions in the same country, would generally impair students who would decide to change their study place. The STCW requirement which was introduced during METHAR was also a driver for the recommendation that METNET should have an element of development directed to the “Design of common syllabi / curricula”.

Another important motivation for the development of such common syllabi and curricula for MET was the recognition of the necessity to raise the attractiveness of a seafaring career for young people in Europe in general. This necessity is not founded in the first place by a desirable manning of European merchant ships with European seafarers but by the more substantial need to preserve maritime professionalism in Europe for supplying the maritime industry ashore. It was agreed among METHAR participants that the attractiveness of a career, beginning at sea and eventually changing over to a qualified shore position, could be improved by a widely recognised course of studies, leading to an academic degree.

Within METNET common syllabi/curricula for deck, engineering and dual purpose MET were designed. The main feature of the agreed methodology for these tasks was the "iterative approximation" to what should be and finally was agreed among METNET countries. This approach gave all participants time and opportunity to contribute and develop an acceptable solution. The steps of the development of the common nautical syllabi included the review of the STCW Code, the consideration of the ISM Code, the possible input from other 4<sup>th</sup> FP projects and relevant IMO model courses.

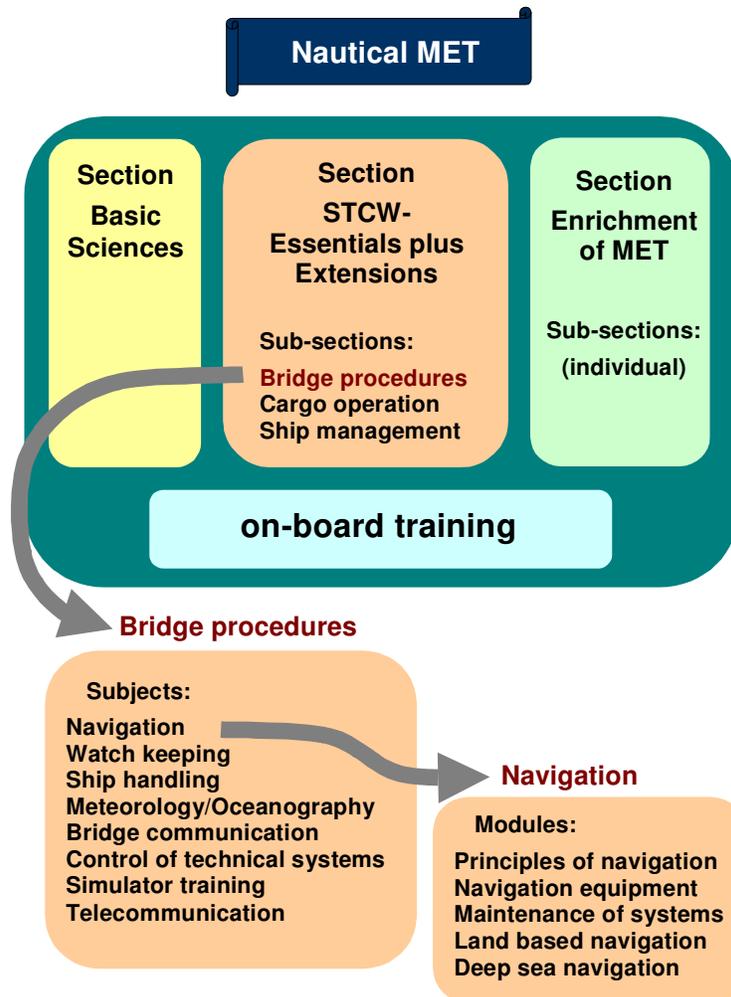
The core endeavour was the creation of a homogeneous modular system of teaching subjects. It was felt at an early stage that a mere syllabus, i.e. a plan of subject modules, would not be a convincing result unless it was embedded into the concept of a curriculum, i.e. an integrated system of aims and objectives, subject matters, teaching methods and tools, and assessment methods. Thus the syllabus was developed within a curriculum development concept. That meant however, that the other elements of the surrounding curriculum were not designed to perfection, since a complete curriculum development would require more time and should include a test phase.

The underlying "yard-stick" for the design of the curriculum and its embedded syllabus was the conception of a nautical student wishing to change the study place from one METNET country to another without meeting difficulties or losses. This included the consideration of the European Credit Transfer System (ECTS), which is under establishment through the Erasmus Programme.

It should also be noted that the "Enrichment Section" of the curriculum has not been pre-structured, because this section is best left to the arrangement and individual profile development of each MET institution.

The final reports contain all desired results. The common syllabus for nautical MET shows two sections. There is the "basic science" section with 17 modules and the core section of "STCW-essentials plus extensions" with 42 modules. The majority of module sizes corresponds to 2 credits according to ECTS.

Two difficulties appeared during this task. Although the majority of METNET countries has implemented an MET which is embedded into the national tertiary education system and therefore provides a so-called "front-ended" course of studies, there are others following the traditional "sandwich" pattern, showing separate courses for the different levels of professional certification (e.g. operational level, management level). It was decided to prepare the common syllabus for the first option, which was named "single-step" approach in the report. An adaptation to the "multi-step" option can be easily derived from this syllabus.



*Figure 2: Structure of the Nautical METNET curriculum*

The other, although minor difficulty was that MET in Europe shall still provide the "vocational" option of studies to attain the professional certificates without aiming at an academic degree. This option can, in principle, use the same METNET syllabus, but leave out the enrichment sector. However, there will be some further differences within the "basic science" section and in other elements of the curriculum. Again, it was decided to prepare the common syllabus for the advanced option with the view to have it easily adapted for the vocational course.

The remaining elements of the deck curriculum, namely "operational learning objectives", "teaching methods and tools", "evaluation and assessment methods and tools" and "elements of pre-MET qualification" have been discussed. Key issues and essentials of these important elements have been agreed and documented in the report.

The particular importance of well phrased and fine spun "operational learning objectives" for the appropriate delivery of MET and the adequate assessment of knowledge, understanding, competence and skills according to the STCW Code has been recognised. These operational learning objectives for each module should be developed in the near

future, and much support in this task can be expected from the existing IMO model courses.

### **2.3 Design of Courses which are Needed for the Extension and Enrichment of MET**

By long tradition and by inherent need of the industry a large proportion of seafarers leave the sea after some years and find an occupation ashore, preferably in the so-called maritime industry. This important process, recently identified as critical due to the increasing shortage of European seafarers, should be supported by raising the attractiveness of a seafaring career in Europe. This can be achieved by clearly describing a seafaring career as a career within the whole maritime industry, beginning with qualified ship-board service. Consequently, the MET curriculum should be expanded by elements which aim at a possible future occupation ashore and attract applicants by an "enrichment" of their general qualification.

Within METNET three exemplary courses were developed:

- Extension:
  - Marine environment protection
- Enrichment:
  - Port operations and costs
  - Shipping operations and costs

The given task was to develop courses, which shall prepare mariners for optional occupation in the maritime industry ashore and, in the marine environment protection case, create a solid background for operational tasks on board. These courses were scheduled with a nominal 2-3 weeks "full-time" duration.

The first target group of participants for this course are students who undergo an MET programme preparing for unlimited certificate of competency in the deck or/and engine specialisation which includes so-called "Extension" and "Enrichment elements". The second target group are deck or engine officers who have not received education and training in other than STCW-related subjects, but intend to enhance their overall qualification.

The methodology of developing the course included four steps:

- Analysis of essential activities within ports, regardless the status (public or private) of the active party or enterprise,
- Analysis of the extra qualification desirable for the occupation of ex-seafarers in these activities,
- Development of a draft curriculum including governing learning objectives,
- Review and amendment of this draft curriculum within workshops for lecturers that are expected to introduce these courses at their institutions.

The courses were all approved and recommended for further distribution. In the following the structure is shown for each course. An hour in these courses is a 45 minutes unit.

*Table 1: Structure of the marine environment protection course*

No.	Title of area	Hours
	<b>Core</b>	<b>40</b>
1	Marine pollution	12
2	Fate and impact of marine pollutants	14
3	Sources of marine pollution	10
4	Prevention of pollution from ships	25
	<b>Supplementary</b>	<b>20</b>
<b>Total</b>		<b>90</b>

*Table 2: Structure of the port operations and costs course*

No.	Title of area	Hours
1	Legal matters	16
2	Port administration	12
3	Port planning/development	14
4	Port conservancy	10
5	Port operation/cargo handling	24
6	Logistics / EDP	10
	Visits / field studies	4
<b>Total</b>		<b>90</b>

*Table 3: Structure of the shipping operations and costs course*

No.	Title of area	Hours
1	Transport and Trade	3
2	Maritime Operations and Economics	24
3	Sea Transport	3
4	Bulk Shipping	6
5	Charter Parties and Policies	6
6	Liner Shipping	12
7	Maritime Law and Marine Insurance	18
8	FoCs and Choice of Flag	12
9	Market for Seafaring Skills	6
<b>Total</b>		<b>90</b>

These courses can also be seen as an encouraging result of an enhanced cooperation between MET institutions that have been in touch for many years.

### **3. METNET Recommendations**

The METNET recommendations are broken down in recommendations on supply and mobility of seafarers and the quality of training.

### **3.1 Recommendations on Increasing the Recruitment (Supply) and Retention of Seafarers – A Joint Task for MET Institutions, Industry and Administration**

Appropriate and engaged efforts should be made to improve the image of the shipping industry. This objective should be pursued by the industry and through governmental and non-governmental international organisations but also on the national level. Seafaring should be promoted as part of an attractive career in the maritime sector. A European Union and national awareness and promotion campaigns should be launched. They should emphasize the advantages of a career in the maritime sector including employment prospects (career paths).

More on-board training places should be made available by ship owners/ship operators so that MET students can complete their training for a certificate of competency. This recommendation should be seen in context of possible incentives for those who provide on-board training places and, in a wider context, the provision of incentives for the flagging back of ships to a flag of a EU country.

Shipboard life should be made more attractive by providing opportunities for distance learning and by facilitating the use of modern ICT (Information and Communication Technology) for keeping in contact with family and friends ashore.

Tests should be developed for identifying the suitability of MET applicants for seafaring. Personnel that are already pre-qualified for work on merchant vessels should be offered additional training for becoming ship officers. This applies to officers on fishing vessels and in the navy as well as to ratings on merchant marine vessels. The employment of women in the maritime sector should be promoted and encouraged.

### **3.2 Recommendations on Enhancing the Quality and Employability of Seafarers – Mainly a Task for MET Institutions**

The network of MET institutions developed by METNET should be kept together on a pan-European level, the accession states should be included in it as equal partners. A core network of a senior MET representative per country from EU and accession countries should suffice to maintain a substantial part of the momentum created by METNET and should take, together with specialists from the MET institutions involved, a leading role in the exploitation of the by METNET developed courses at their own MET institution and other national MET institutions, if any.

The optimum use of national MET resources should be made a matter of priority for all stakeholders in MET, i.e. MET institutions, maritime industry, maritime and educational authorities, trade unions, professional associations, research institutes specialized in MET-relevant subjects. National authorities, which provide funds for MET, should approach the matter of MET costs in two ways:

- First, they should compare the costs per student at MET institutions with costs per student in equivalent technical ET.
- Second, a model for Europe-wide use should be developed of a cost-efficient MET institution that can, because of extended activities, serve as a centre of maritime

excellence and even make an own income. National authorities should then add costs to this model and compare the overall costs of this institution with those of present MET.

This double approach will help decide on the optimum organisation of national MET.

Special attention in the efforts to make MET as efficient and as effective as possible should be given to enabling ship officers to meet new demands on board, such as increased administration duties, small and multicultural crews and other factors influencing the performance of crews. Moreover, leadership skills should be included in updated syllabi.

Modern technology should be put to greater use in MET, and MET students should be made computer-literate and prepared for the use of modern technology onboard. The METNET developed courses for maritime lecturers, in particular “use of modern technology in teaching and assessment” should be presented and discussed in workshops with experts in the respective course subjects from MET institutions which did not participate in METNET. The same applies to other courses developed through METNET. Pan-European working groups should be formed by those who participated in the workshops of the above-mentioned courses. The members of the working groups should update the courses and play a leading role in their exploitation at their own and other national MET institutions, if any.

MET students should be made familiar with distance learning programmes during their studies. Existing distance learning programmes should be evaluated for their suitability on shipboard and new programmes developed, preferably for updating so that ship officers can use such updating programmes on board at their own pace.

More attention should be given to strengthen the development of a commitment to safety. Safety culture should be continuously promoted so that it becomes an integral and ingrained part of maritime operations. Lessons learnt from accidents should be taken into account when developing approaches to a better safety culture.

### **3.3 Recommendations on Facilitating the Mobility of Seafarers – A Task for MET Institutions and Administrations**

A European MSc degree programme for ex-seafarers with unlimited certificates and a BSc or equivalent degree should be developed that would allow them to qualify for senior positions in industry and administration. Career paths mapping should be continued in national approaches.

Ideally, there should be a 3 to 4-year test of the METNET developed common syllabi at a few MET institutions in different countries. The further development of the common syllabi as well as their test should be monitored by the pan-European group of senior MET representatives, who are to maintain the momentum of METNET, and if necessary, pursued with the support of experts in the different subjects from their MET institution. A credit system for modules of syllabi and, consequently, for entire syllabi should be introduced in line with the European Credit Transfer System.

A more frequent use and, ideally, the only use of English as teaching language at MET institutions in no-Anglophone countries should be promoted. Appropriate texts in English on maritime subjects should be compiled and be made available at a dedicated website. A qualification profile for English and Maritime English lecturers should be developed.

The exchange of lecturers and students between MET institutions should be intensified and additional subjects for cooperation identified, preferably in bilateral efforts.

The bilateral recognition of certificates of competency should be extended in order to achieve “full” coverage of all EU and accession countries. A European certificate of competency should be created. The issues of national fiscal arrangements for ship owners/operators and tax and social security payments for seafarers need to be addressed by the competent authorities with a view on enhancing mobility of seafarers within Europe. A free-to-all European Internet site is required for offering information on job opportunities for seafarers. This website should provide linkages to national websites serving the same purpose.

#### **4. Follow-up Activities to METNET**

METNET has worked on developing a positive attitude to and encourage exploitation of its products (and other findings) by involving those in the development of the courses who are expected to use them and organizing workshops with these experts for discussing and improving the courses and create support to them. This is as far as courses can be prepared for exploitation. The final step, the use of the model courses and syllabi, has to be taken by each MET institution.

Ideally, courses and syllabi should be implemented as they were produced by METNET and therefore represent the result of joint efforts by experts of leading MET institutions. Normally, a “rub-off effect” can be expected to take place, i.e. a MET institution compares the relevant parts of its programme with the model courses and syllabi prepared by METNET and adapts them to what may be seen as better in the METNET than in the own programmes. This exploitation stage has not been reached yet as it will take more time and efforts to overcome the often existing reluctance to change at MET institutions.

In brief, the value of the METNET created network lies, among others, in its role as catalyst in:

- First, the exploitation of METNET results;
- the improvement of MET in all Europe, and, specifically,
- the bringing together of West European and East European MET.

The network should, probably after two more three-year periods, be able to continue with reduced support. For the time being however the network needs continued financial support, at least for biannual meetings of the plenary and for annual meetings of groups of experts. In the context of the network, particular attention should be given to bringing MET in accession countries on par with MET in EU countries in respect of METNET by offering to them the workshops from which experts at the MET institutions in EU countries, which participated in METNET, already profited.

The following three steps are recommended for maintaining and strengthening the momentum created by METNET and to take maximum advantage from the network:

- 1- The four courses should be presented and discussed in a workshop each with experts in the respective subjects from accession countries.
- 2- The four courses should also be presented and discussed in workshops with experts from other MET institutions in Western Europe who did not participate in METNET or its Reference Group of MET institutions but have shown interest in the courses.
- 3- Members of a core network have already been identified for the 15 West European countries and the 7 East European and 2 Mediterranean accession countries. Each country is represented by a person who is in a good position to further the exploitation of METNET results on the institutional and national level. All are well qualified to take part in and actively contribute to future developments in European MET.

This core network should, coordinated by World Maritime University, meet twice a year, once at a MET institution in West Europe and once at a MET institution in East Europe. Members in the core network are responsible for national exploitation efforts of METNET results for which they will receive support from the coordinator and the other participants. The core network will also elaborate proposals on necessary activities for improving MET and the competence, competitiveness and sustainability of the European maritime skills base and act as advisory group to the Maritime Transport Coordination Platform. The core network will also be involved in the preparation of teaching programmes for Europe-wide use and other activities. The groups of experts who met at workshops for discussing the courses will be maintained for the above-mentioned courses and extended to participants from East European accession countries.

Actions 1, 2 and 3 will ensure that:

- accession countries benefit from METNET results as much as EU countries;
- MET institutions in EU countries which were not partners in METNET will profit from METNET;
- pan-European groups of experts will be formed who will keep the courses up-to-date, help with their exploitation and ensure that West and East European expertise in important subjects will be brought together and made available to all Europe;
- a second layer of experts will be established in addition to the top layer of managers at MET institutions. The network will be strengthened for promoting exploitation of METNET results and developing new projects which would bring MET further forward.