EUROPEAN COMMISSION

DIRECTORATE-GENERAL
JOINT RESEARCH CENTRE

Report of the STTP Waterborne Transport Stakeholders' Hearing

Participants:

Stakeholders: G. Pauli (CCNR), R. Luken, L. Benedetti (CESA), T. Hacksteiner, K. Tachi (EBU), H. De Meester (ECSA), P. Lancellotti (EMEC), P. Sansoglou (EuDA), D. Arbyn Navugimana (FEPI), K. De Schepper (INE), R. Skjong (Waterborne/DNV)

Chairs: C. Pipitsoulis (DG MOVE), S. Gouvras (DG INFSO), P Crawley (DG-RTD) (*replacing D. Ramaekers-Jorgensen*)

Rapporteurs: A. Miola, B. Ciuffo

Venue: Brussels, March 03rd, 2011

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1. SCOPE OF THE WORKSHOP

The European Commission is currently developing a Strategic Transport Technology Plan (STTP). The adoption of the STTP is foreseen for mid-2011 and it will play a main role in the definition of the Commission's future transport research and innovation priorities. The aim of the STTP is to match the most appropriate policy instruments to the needs of different technologies at different stages of the development and deployment cycle. It will address the entire innovation chain, from basic research to market uptake. The STTP will facilitate coordination of European and national public and private efforts and help achieve greater leverage through flagship EU instruments.

The STTP will include roadmaps for a set of leading edge technological solutions, including the supporting organizational, financial and governance frameworks, which are necessary for a future competitive and clean European transport system. The availability of appropriate research coordination structures has been identified as a potential critical issue for the transition to such a transport system.

The involvement of the stakeholder community is crucial to reach a shared European vision on the role of transport technologies as a follow-up to the White Paper and to produce a credible and widely supported STTP. At the same time, the process of preparing the STTP will help to identity the measures needed from the different stakeholders to attain their goals, and will exploit synergies across them.

2. SETTING THE CONTEXT

A presentation on the STTP provided the stakeholders with insights on: rationale, objectives, structure, preparatory phase and indicative planning as well as expectations

from stakeholders' hearings. It was emphasised that the term 'technology area' within the STTP is a comprehensive set of methods, practices and technologies with a shared focus of application.

Discussion during the workshop has been structured in accordance with a previously circulated questionnaire in: (1) Transport Vision and Activities: current status, development perspectives and expected impacts in first block; (2) competitive solutions; (3) achieving the Vision, essentially focussing on: barriers, shortcomings, funding and organisational requirements; (4) specific Questions Waterborne Transport.

The discussion therefore centred on how technology areas are expected to help the European Commission achieve its transport policy and transport research policy objectives, on the one hand, and how the European Commission can optimise resource use by investing in properly selected and prioritised technology areas via properly designed governance and funding schemes.

Stakeholders' advice is one of the inputs to the scientific process leading to the STTP Communication, as work is now focussed on identifying key technology areas in the ITS domain. Other input was requested by Mid March. It was made clear that an internet consultation will open soon for 8 weeks and stakeholders are also welcome to give their opinions either through the internet consultation or by sending emails to move-sttp@ec.europa.eu. The Commission will take into consideration any input received in time.

3. SUMMARY OF MAIN DISCUSSION POINTS

3.1. Transport Vision and Activities

- Current role of Research Technological Development & Innovation (RTDI) in the sector

    RTDI in waterborne transportation sector is very active. Ships generations evolve very rapidly (every 3-4 years). Waterborne transport[1] plays, indeed, a central role in the globalized market and ships manufacturers constantly try to move towards more profitable technologies in order to achieve higher market shares. As a result, today's ships are more and more complex systems, with many subsystems co-existing and working together. ICT are called to support the management of this complexity.

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[1] Waterborne transport includes maritime transport and inland navigation. The two sectors have specific technological and operational characteristics.

- Identified existing RTDI goals

  Research Technological Development and Innovation on waterborne transport is focused on one hand on producing more efficient (in order to abate the continuously increasing operational costs) and less pollutant (to reduce the pressure on the environment that is becoming heavier and heavier) ships and, on the other hand, on increasing safety and security of the whole waterborne transportation sector. Furthermore, more and more attention is attracted by the transport infrastructures, in particular for in regards with the energy supply of vessels and the intelligent management of the whole transportation system.

- Emerging demands and changing operational scenarios

  The waterborne transportation sector is growing fast at present (especially the maritime transport) and is also expected to have great potential for further development in the future (especially inland waterways). In particular, maritime transportation will more and more call for the use of super large container ships which in turn poses a problem on harbour capacities (both from an infrastructural point of view – i.e. the possibility for this type of vessels to enter ports – and from an operational point of view in order to reduce the operations of cargo loading and unloading). In addition the increasing use of inland navigation will ask for infrastructures able to rapidly connect this transportation system to other modes. Finally, the application of e-maritime technologies will contribute to operational change (less people involved in the vessel governance to reduce the impact of human behaviours/errors on ships' operation).

- Key technology themes

  Key technological issues in which the sector will focus will thus be: i) increase vessels efficiency, ii) use of alternative (less pollutant/more energy efficient) fuels and energy sources (e.g. LNG, electricity, fuel cells, wind, nuclear power), iii) development of new/improved energy/fuel supply systems (e.g. shore-side electricity for vessels at berth, LNG bunkering systems, etc.), iv) application of emissions removal technologies and their adaptation to ships' technologies, v) use of ICT to improve the integration among the different sub-system co-existing within a ship, v) use of ITS technologies to increase the sector efficiency, safety and security and to improve the connection of waterborne sector with the other transport modes in a more integrated logistic supply chain (in particular for inland navigation).

3.2. Achieving the Vision

- Approaches to RTDI Development

    Since waterborne transport is managed by private companies, innovation is
    driven by the necessity to be competitive in a globalized market and to meet
    regulatory requirements efficiently. However, this makes the sector more
    inertial to adopt innovations without a direct profit implication. The role of
    policy makers will be of primary importance. Suitable incentives schemes in the
    direction of the most important policy goals as well as the clear and well
    defined rules and regulatory frameworks will be necessary to help to stimulate
    innovation. In this light, an important role is expected to be played by SMEs,
    in particular for what concerns the demonstration/implementation phase of the
    new technologies.

- Identified innovation barriers/challenges

    Several challenges have to be faced in order to innovate in the waterborne
    transportation system. Among them it is important highlighting the following:
    i) the sector changes very slowly. If it is true that new technological solutions
    are frequently available (every 3-4 years), the long ship life (25-30 years and
    even more for inland navigation) can make the adoption of new technologies
    very slow (retrofitting of existing vessels with new solutions is sometimes
    unfeasible from a practical and/or economical point of view). However, it may
    be possible in other situations, e.g. double hulls, stabilisation of roro ferries and
    after treatments for exhaust gases. ii) Shipping companies and manufacturers
    usually hardly invest in technologies without a direct profit implication or a
    regulatory requirement; iii) the regulation is often controlled at global level via
    the IMO rather than within direct EU jurisdiction.

- Contribution to EU policy objectives

    The waterborne sector has a relevant role within the EU socio-economic and
    environmental system. Indeed, maritime transport accounts for about 40% of
    EU transport volumes and is constantly growing. In addition, more and more
    attention is focused on the role which the inland navigation is increasingly
    playing. For this reason, achieving a sustainable development for Europe
    requires urgent actions on the waterborne transportation system as well. As an
    example, the Europe 2020 strategy, which calls for the 20% carbon emissions
    reduction by 2020 (among the other things) from all the sectors, will be hardly
    reached if such a reduction is not achieved also in the waterborne transport. In
    addition, strengthening the inland navigation sector may contribute to attract
    transport demand from other, more polluting, land-based modes, with
    consequent environmental impacts.

- International/Global dimension

  Maritime transport accounts for about 90% of the volume of international trade and is one of the main actors in our globalized economy. Although it is more efficient than the other transportation modes, the externalities that it produces both at a global and local levels are not negligible (e.g. waterborne transport is responsible for about 4% of total greenhouse gas emissions, 5% of the total tropospheric sulphate burden). Furthermore, the foreseen development of the sector together with its inertia to rapid changes and improvements compared to other transport modes will raise its share to the total anthropogenic emissions in the near future. Technological innovation in this sector will therefore have global dimensions (as shown also by the attention that the International Maritime Organization is dedicating to this issue).

- Recommended actions at EU level

  The main recommendation is to clearly point out, at a European level, the objectives to be reached. It is then necessary to define and to implement a strict regulatory framework. The work carried out so far for increasing the sector safety and security (e.g. the introduction of the SeaSafeNet monitoring systems for all vessels around Europe) and for promoting inland navigation while further reducing its pressure on the environment (see e.g. PLATINA project) should continue and should be strengthened.

4. SECTOR-SPECIFIC/ADDITIONAL POINTS

There are some additional sector specific technological constraints to innovation in the shipping industry: i) propulsion accounts for a remarkable share of the ship energy consumption (from 60% in cruise vessels to 90% for freight carriers). Considering the power and performance demands of large modern vessels, several orders of magnitude (and with the possible exception of bio fuels), changes in emissions will not occur using foreseeable technology or without extreme changes of propulsion systems, e.g. towards nuclear power (with the consequent costs and acceptability issues) or renewables (with consequent lower powers & implications for the type of shipping, cost, transported volumes and speeds; ii) alternative energy sources such as electricity, wind and fuel cells may yield less power and will only marginally support the vessels propulsion systems due to the high power required (this in particular for maritime navigation); iii) LNG may be a cleaner alternative for certain applications, but it requires three times more space than oil and there are storage, fueling and "offgassing" issues. This calls for innovation in the bunkering technologies and on board storage to be efficient and cost effective.

5. **BESIDES THE EXPLORATION OF ALTERNATIVE PROPULSION SYSTEMS, A RANGE OF ISSUES AND TECHNOLOGIES COULD BE EXPLORED: AUTOMATIC NAVIGATION SYSTEMS, LONG RANGE WATER LEVEL FORECASTS AND INTEGRATED DECISION SUPPORT SYSTEM FOR SKIPPERS (RIS + SHIP + CARGO), HULL OPTIMISATION, NEW MATERIALS AND ENERGY MANAGEMENT PLANS. CONCLUSIONS AND NEXT STEPS**

The waterborne transportation sector is important for society, transporting more than 90 % of goods and inland navigation provides an efficient alternative to road. The waterborne sector has the potential to reduce further its impact on the environment and to contribute to sustainable development by means of technological innovations. Research on new solutions will be directly supported by private companies when they can drive the company's competitiveness. Policy actions should pay particular attention to ensure that any regulatory framework is compatible with existing or foreseen technologies arising from research.

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APPENDIX 1

Stakeholder hearing
Waterborne Transport

Thursday, 03 March 2011, 09.30 – 12.<u>40</u>
Meeting Room SDME 2F

- DRAFT AGENDA -

Chairpersons: *C. Pipitsoulis*, DG MOVE
 S. Gouvras, DG INFSO
 P Crawley (DG-RTD) (*replacing D. Ramaekers-Jorgensen*)

09.30 – 09.40 Welcome and introduction of the participants
 (*All*)

09.40 – 10.00 Objectives of the STTP, purpose of the hearings
 (*R. Juriado,* DG MOVE)

10.00 – 11.30 General questions (Part 1 of questionnaire)
 (*All*)

11.30 – 11.45 Coffee break

11.45 – 12:20 ITS specific questions (Part 2 of questionnaire)
 (*All*)

12.20 – 12.30 Open floor for further stakeholder interventions
 (*All*)

12.30 – 12.40 Summary
 (*chairs*)

APPENDIX 2

Waterborne questionnaire

1. INTRODUCTION

These questions are designed to facilitate the stakeholder hearings. We would appreciate, if you could send us your answers to the questions 1 week before the next meeting. Please answer them in the way you consider most appropriate to convey your key messages. It would be helpful, if you could identify to which mode/technology area your answer relates to. To help answering the questions some suggestions are given regarding what could be explained under each question.

2. GENERAL QUESTIONS

2.1. Transport Vision and Activities

2.1.1. Current state of play within transport?

Indicate: market readiness/penetration of the different technologies within the activity area for each mode or cross-modal issues; on-going or planned public, public-private or private initiatives relevant for the STTP; type and scale of initiatives at which level - International/EU/MS/Regions

2.1.2. Likely evolution of transport?

Indicate: major trends in the transport sector (technology and actors); evolution of transport needs (volume and quality); likelihood of structural changes as a result of new business models, globalisation, competition; influence of the market structure on future market potential; possible effects of legislation etc

2.1.3. Key technology penetration targets (2020, 2030, and 2050)? What are the main assumptions underlying these estimates? What are the main barriers to overcome to achieve them?

Indicate: main constraints and showstoppers, risks, needs for technological breakthroughs, resource/feedstock availability, consequences for the current infrastructure, etc

2.1.4. If these targets are met, what will be the contribution to EU policy goals in the field of transport?

Indicate: Contribution to (1) achieving low-carbon transport (reducing CO_2 emissions and dependency on imported oil), (2) achieving seamless mobility in a Single European

Transport Area (establishment of a seamless European TEN-T network that is intelligent, efficient, and green, single European 'transport ticket' for passengers and freight), (3) competitiveness and innovation (e.g. future market sizes for a given technology, European share of new market, additional jobs, export revenues), (4) other policy goals (such as reduction of congestions, local/urban pollution, noise reduction, damage to cultural heritage, etc.)

2.1.5. Contribution to the overall ('well to wheel') energy efficiency?

Indicate: Effects on energy efficiency in electricity and fuels supply, as well as in use; evolution over time and depending on market penetration, etc

2.1.6. Are there any interactions with other community policies and initiatives?

Indicate: Potential contribution of the technology to other EU policies; need for measures and initiatives in other policy areas to support the market penetration of the technologies

2.1.7. Which are the main competing or synergetic technologies within the activity area? (in relation to the indicated market penetration targets)

2.2. Achieving the Vision

2.2.1. Is your vision achievable under a 'business as usual' scenario?

Indicate: Current support programmes and policy measures and their expected impact

2.2.2. Are there barriers to innovation? Is there a need for change in the innovation system?

Indicate: For the mode in question any weaknesses in the current system

2.2.3. Does the considered mode/sector already benefit from or plan to set-up initiatives to bridge the gap between the current state of technology and a cost-effective market entry? What would be the critical mass (e.g. investment) needed for such initiatives? What new approaches could be considered to accelerate innovation?

Indicate: i.e. how could the STTP help the sector; which actions of it would be most effective; what impact could be expected with respect to 'business as usual (i.e. No STTP)?

2.2.4. What actions need to be carried out at European level? What actions would be better implemented at national and or regional level? Is

there a need, or a potential benefit, to integrate or to better coordinate action carried out at different levels?

> *2.2.5. International Dimension - Is there a potential for international cooperation? What type of cooperation?*

Indicate*:* Major initiatives in other countries; assessment of specific opportunities for international cooperation

3. SECTOR/ISSUE SPECIFIC QUESTIONS

Waterborne transport (covering maritime and inland waterways):

In your view:

1. What are the conditions/limitations to achieve seamless transport for passengers and freight in the European transportation services including the waterborne leg?

2. How could ITS (Intelligent Transport Systems) such as eMaritime, and/or eFreight services assist in achieving the strategic, tactical and operational goals in waterborne transport? What types of hurdles need to be addressed (research, investments, role of shore based organisations, existing regulations/legislation, maturity of technology, human factors/change management)?

3. How do you envisage innovation and the use of advanced information technologies in bridging the fragmentation in the maritime transport sector?

4. Are new vessel designs and materials in ship building and the use of cleaner fuels and/or scrubbers for greener shipping strategic/vital solutions for the European shipping?

APPENDIX 3

List of respondees

- EBU (European Barge Union)

- ECSA (European Community Shipowners' Association)

- EMEC (European Marine Equipment Council)

- ESO (European Skippers' Organisation)

- EuDA (European Dredging Association)

- INE (Inland Navigation Europe)

- WATERBORNE (EU Technology Platform)