Terms of Reference expert group 2
Environmental Benefits of Waterborne Transport

In recent years intermodality has swung heavily in the favour of road distribution as the most flexible, amenable, cost efficient mode of transport due to its fast "door to door service". This has inevitably lead to marginal costs in terms of road congestion and environmental impacts.

The development of automated systems has significantly improved ports and shipping's ability to move towards seamless transportation. This push for efficiency within the shipping sector combined with the use of containers and Ro/Ro traffic has boosted the credentials of intermodal transport . This means Waterborne transport now offers a more sustainable option for transportation.

A review of impacts and savings based on industry recognised measures will highlight the benefits inherent in moving freight, goods and passengers by water. In addition to these assessments, the role of modern ports and inland waterways requires emphasis as ports have to be seen as a hub for linkage in any integrated transport system. It is considered that any study of the Environmental Benefits of Waterborne Transport should include:

Establishing Baseline Conditions

Pollution Associated with the transport industry.
The quantification of impacts to the environment for all transport modes requires to be established using up-to-date research. This will establish a baseline to allow the further assessment of environmental impacts associated exclusively with waterborne transport, and hence the relative saving over other modes of transport.
The following areas form the basis for comparison and evaluation of the different transport modes with respect their environmental impact.

a) Emissions. Overview of the impact of exhaust gases concentrating on carbon dioxide and monoxide, nitrogen, sulphur, water vapour and particulate matter.
b) Waste from the transport industry requires evaluation; such areas include oil and other hydrocarbons, waste and disposal costs of transport equipment at the end of the lifecycle.
c) Review of transport modes in outline, focusing on the split between different modes in the current freight movement statistics.
d) Review of the whole transport cycle from producer to customer.
e) Relative infrastructure requirements (e.g. channel dredging against highway maintenance etc)

Evaluating Environmental Benefits of Waterborne Transport

Direct Environmental Benefit

Descriptive account of savings using waterborne transport, statements are to be highlighted with case studies (where possible). Areas for study:

- Air quality (emissions);
- Pollution and waste savings (marine, land waste, noise etc);
- Fuel and energy efficiency calculated using industry standards (i.e. megajoules/tonne-km;
- Reduced wear and tear on landside infrastructure.
- Disturbance and threat to wildlife due to accidents and pollution.

Indirect Environmental Benefit

Descriptive account of indirect environmental savings associated with waterborne transport. Areas for study:

- Safety record (using the low incident rates associated with waterborne transport as a comparison method between other modes of transport)
- Road congestion reduction (short sea shipping and inland waterways transport)
- Timetabling benefits (speed, punctuality and delays versus programmed delivery times achievable with waterborne transport)

Inland Ports and Inland waterway connectivity

Areas for Study:

a) The role of inland waterways cannot be underestimated in the context of waterborne transport, the environmental saving associated with energy consumption and atmospheric pollution requires quantification to establish the case.
b) Barriers to inland waterways development need establishing. This point specifically relates to connectivity at interchange points, i.e. canal/river barge to ship, or ship to shore (port facilities). These barriers may also include efficiency of infrastructure (locks etc), investment requirements, attitudes to road alternatives amongst distribution managers, constraint on routes and appropriate inland ports.
c) Maintenance of navigation depths (flow regulation, dredging etc)

Seaports and Shipping

Areas for Study

a) The automated port environment presents possibilities for increased efficiency and environmental benefits relating to safety (reduction in pollution and marine related risk), fuel savings and reduced exhaust emissions for auxiliary machinery etc.
b) Port intermodality offers an efficient interchange point as cargo can be readily shifted between ships, road vehicles and rail trucks.
c) Planning of port developments in context with other transport developments, this is to include road, rail, air and seaport development assessed on an even criteria assessment basis, balancing both the positive and negative environmental effects. The impact (in general terms) on the environment can be assessed.
d) Port estates also offer the potential of added values logistics by concentration of material processing works at the ports to eliminate additional transport before and after manufacture/processing.

Task Group Composition

The results of InCom-Working groups 14 (Inland waterways vessels and pollution) and 27 (Guidelines for Environmental Impacts of Vessels) should be taken into account within the study.

It is suggested this topic is one for a task group, or an expert in the field of logistic / sustainable environmental transport rather than a full working group. Most work will involve a detailed literature review followed by consultation with major players in the transport chain; i.e. ports, freight handling companies, shipping lines, transport planner etc.