Potentials and Future of German Inland Waterways Shipping

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Summary

by

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Note: the full report (2 volumes, in German only) is available on www.planco.de or on www.elwis.de
1 Rationale and scope

1.1 Report by the Ministry of Transport, Construction and Housing on the situation of inland shipping in Germany

In December 2001, the Federal Ministry of Transport, Construction and Housing (BMVBW) presented a report on the future of German inland shipping in the context of European competition. This report stated a number of problems of this transport mode which require effective counter-action:

- Inland shipping participates only marginally in the strong growth of freight transport in Germany (as measured by transport performance - tkm), similar to railways. The targeted contribution to relieve roads has not been achieved, with the exception of rapidly growing container transport. Present forecasts indicate no change in this trend.

- Inland shipping concentrates at the Rhine corridor, and here particularly in international freight. The contribution to relieve other transport modes in inland transport is correspondingly weak.

- The German inland vessel fleet is declining since years. New constructions are scarce, and the high average age of vessels continues to increase.

- German shipping companies are loosing market shares to the advantage of mainly Dutch companies. New ship constructions for Dutch enterprises (to a lower extent also in Belgium) are in clear contrast to low levels in Germany.

- As a consequence, the number of employees in German freight transport by inland vessels is declining.

- Total revenue of German inland shipping companies stagnates, whereas cost levels are growing.

The report confirms statements made by relevant associations. The study purpose was to analyse facts and reasons for stated trends and to present an action plan towards a strengthened shipping sector.

1.2 Study scope

The study deals with two main subjects:

1. Intermodal competition:
   Which possibilities exist to change the trend for decreasing market shares of inland shipping in total freight transport?

2. Internal competition within the sector:
   Which possibilities exist to redirect the trend for decreasing market shares of German shipping companies (and of German employment) in total inland shipping?

The study focus is on freight transport. But main characteristics of the passenger transport sector have also been included.
Study scope

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Transport mode: inland waterways shipping</th>
<th>German shipping industry</th>
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</thead>
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<td></td>
<td>Past and future expected development of freight volumes and transport performance by inland vessels compared to competing modes</td>
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<td>Expenditure for infrastructure maintenance and improvement - intermodal comparison</td>
<td>Financial situation and investment activity of German enterprises</td>
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</table>

Conclusions, recommendations

| Measures to support the competitive strength of inland waterways shipping | Measures to strengthen the international competitive position of German inland shipping companies |

2 Methods

The study is based on a comprehensive statistical analysis of transport market development in the nineties (Federal Statistical Bureau, Central Rhine Commission, Danube Commission), on unpublished cost and revenue data of German and other European shipping companies, and on a wide number of interviews with respective companies and associations.

In order to assess the international competition conditions, specialised research companies were subcontracted in the Netherlands, Belgium, Slovakia, Hungary and Romania.

3 Results

3.1 The transport mode inland shipping

3.1.1 Analysis

Germany has an outstanding position in European freight shipping:

* More than 50% of all west European waterways classified as Va or higher (GMS 110 m) are in Germany;
* 50% of total west European freight shipping are registered on German waterways;
* Major parts of ship transport on other European waterways have origin or destination in Germany;
* Up to 400,000 jobs in Germany depend directly or indirectly from inland waterways transport.

Inland shipping is an innovative transport mode:

* Innovation in transport techniques:
  * Savings in vessels tare weight through modern materials
  * Vessel shapes allowing reduced energy consumption and higher flexibility in capacity utilisation
  * Motors saving energy and reducing emissions
  * Cargo handling techniques saving time and cost
  * Vessels improving the safety of dangerous cargo transport
* Improvement in living and working conditions on board
* Exploration of new markets
- Use of Information and communication technology to improve transport safety and to save costs
- International division of work in ship building
- Strong and innovative supplying industries.

The market share of inland shipping in total German freight transport is nevertheless decreasing and is expected to continue to decrease:

**Decreasing market share of inland waterways transport in total transport performance (tkm) on German inland waterways, 1995-2015**

In spite of this trend, total absolute transport performance of inland shipping is expected to grow according to the latest forecasts for German federal transport infrastructure planning:

**Growing transport performance: Development of total transport performance (tkm) by transport mode, on the territory of Germany 1995-2000 and forecast for the Federal German Transport Infrastructure Investment Plan 2015 (Integration scenario)**
In order to achieve the forecast on growing transport volumes on inland waterways (or, as would be preferred, to exceed this) a high-quality infrastructure is required (waterways, ports), as well as a competitive and innovative transport industry offering logistical service which allow a high integration of transport on ships, cargo handing in inland ports, hinterland transport to/from these ports, and other logistical services.

A major condition for the forecast has not been fully fulfilled during last years, nor will be fulfilled in the foreseeable future: The maintenance of current infrastructure qualities, further improvements by implementation of previously decided investment measures (Federal Plan 1992).

There is a growing risk, not considered in current forecasts, that inland waterways will disrupt operation due to more frequent planned maintenance measures. Waterways administration estimates that a doubling of interruption periods may occur. Furthermore, the risk is growing of additional unplanned repair leading to the interruption of waterways operation. This puts at risk one of the major competitive advantages of inland shipping: its reliability. If current spending trends continue, the periodical operational interruption of complete system parts of German waterways may occur.

For the period 2000 to 2020 the total required replacement investments have been estimated by DIW at more than € 11 bln, corresponding to € 500 mln. per year. The new Federal Transport Infrastructure Investment Plan (FTIP) expects annual replacement investments at € 440 mln. These values clearly exceed financial allocations for the period 2003 to 2005, including replacement and upgrading investments (!). For the year 2002 total available funds for replacement, maintenance and upgrading on inland and maritime waterways amounted to € 500 mln, of which only € 350 mln. for inland waterways. Further budget cuts are under discussion. If these budgets will not be changed, full maintenance will not be feasible even if no upgrading measures will be taken (which seems unrealistic considering the neglected network in east Germany and existing bottlenecks in west Germany). The economic risks of such neglect are significant.

An intermodal comparison of investment budget allocations for inland waterways demonstrates that this transport mode does not receive the funds corresponding to its importance of today or in the future.

At the same time, inland shipping has a potential for transport growth - examples:

- Growth segments in traditional markets - particularly: seaport hinterland transport:
  - Import coal via ARA ports
  - Chemical products (im- and export).
  - Scrap imports
  - Gravel and sand (also domestic transport)
  - New cars (im- and export)

- Standardised break-bulk cargo
  - Containers to and from Rhine corridor;
    - same for the canal system, on rivers Weser, Elbe and Danube (depends on the canal conditions;
    - possibly mixed vessels combining container and bulk cargo transport;
  - Continental swap bodies (potentials still unclear, further research required);
  - Pallet transport (same as before)

- River-sea shipments (esp. on the Rhine)

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1 This statement is also valid if additional funding will be available from the new road fee to be paid by trucks, which will just compensate earlier budget reductions.
Recycling materials transport

Market gains through growing hinterland transport to/from inland ports; condition: trimodal facilities in the ports

Market gains by growing ‘Loco transport’ (freight for companies located in/ close to the inland harbour); condition: renaissance of inland ports by:
- Active role in the organisation of logistical chains;
- Enhanced location of logistical and other production companies close to the harbours;
- Inland harbours with advanced equipment and high-quality hinterland infrastructure and with sufficient spare capacity.

3.1.2 Recommendations

Inland ship transport must obtain a position in practical transport policy which corresponds to the principle declarations. Recommended measures distinguish key measures and a cluster of complementary measures. They require a joint effort of different actors: federal state, the Länder, municipalities; public administrations and parliaments; the inland shipping industry, forwarders, industry, sea and inland harbours; Central Rhine Commission, Danube Commission, EU Commission.

There is a need for a changed image saying that inland shipping and its components can and shall play an important role in the future. Therefore, it is recommended to take a demonstrative decision on a comprehensive programme which shall strengthen inland shipping, with the involvement of mentioned actors. A positive example is a similar effort made successfully for German sea shipping.

The responsible federal ministry, ministries from the Länder and members of parliaments shall agree on an action programme with a long-term view, which aims at the support of inland shipping and which creates trust into the future of this industry on the side of entrepreneurs and of new trainees. This would raise the willingness to invest and to start a professional career in this sector. Only through such package the individual proposed measures will bring about the full desired effect, i.e. lead inland shipping away from long-term stagnation and competitive weakness.

Such programme requires a clarification of the relationship between nature protection and transport policy. It could then avoid losses of trust which have emerged due to intentions to put river shores and water areas of the lower Rhine under FFH rule.

Also, such programme would create conditions to contribute to the EU policy „from road to waterway“, not only on the sea side, but also on inland waterways.

A further strengthening of inland harbours will be decisive. It is recommended to revive inland harbours as locations for industry and logistics. This shall be supported by general regional planning at Länder level. The transformation of port areas into areas for urban development shall only be permitted if this will not lead to a weakening of inland ship transport. This shall also be supported by the federal government in the context of the mixed commission (Ministers Conference) on spatial development.

A widened financial support to trimodal cargo handling in inland ports shall be considered by the federal and the Länder ministries. Inland harbours shall continue their way towards organisers of integrated logistics.
## Recommended measures for the inland shipping transport mode

<table>
<thead>
<tr>
<th>Measure</th>
<th>Priority *)</th>
<th>Addresser/Actor</th>
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<tbody>
<tr>
<td></td>
<td>Federal government</td>
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<td>Min. of Transport</td>
<td>Min. of Finance</td>
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### Programmatic concretisation of the political goal to shift freight transport from roads to waterways

#### Strengthening of 'inland shipping' as transport mode

#### Objective 1: Maintain and Improve the Quality of Inland Waterways

1. Increase the budget for waterways infrastructure (Reduce imbalance as compared to railways)  
   - Priority: +++

2. Economic risk evaluation of waterways infrastructure maintenance deficits
   - Priority: +

#### Objective 2: Improve the Quality of Inland Harbours as Intermodal Nodes and as Business Locations

3. Introduce a priority principle for business locations at inland waterways  
   - Priority: +++

4. Widened public support for trimodal handling facilities in inland harbours  
   - Priority: +

5. Further development of inland ports to organisations of integrated logistical chains  
   - Priority: ++

#### Objective 3: Improvement of Operations in Inland Shipping

6. Further development and widened use of telematics  
   - Priority: +

7. Improved servicing of inland vessels in sea ports  
   - Priority: +

8. Support for innovative pilot projects in inland shipping  
   - Priority: +

9. Enhanced use of research results from other countries  
   - Priority: +

*) Priority: +++ = very high; ++ = high; + = mean

**) Addresses: black = mainly responsible; grey = contributor
3.2 German shipping enterprises

3.2.1 Analysis

The German inland shipping industry is characterised by 'Partikuliere', i.e. entrepreneurs owning only one vessel. Normally they are at the same time captains on their ship. Shared work with their wives is losing importance. This combination is still more frequent in the Netherlands, as it allows considerable savings in cash costs.

The German inland shipping sector is characterised by entrepreneurs owning just one vessel, where they are the captain as well. The activity of captain wives is losing importance in Germany. It is still more frequent in the Netherlands, where it allows considerable cost savings. Larger shipping companies have mostly given up their fleets following the market liberalisation in 1993, by giving the ships to their former employees. An exception is made for big industrial users, some of which own big vessel fleets (mostly located outside Germany in sea ports of Rotterdam or Antwerp). Investments into new vessels during the last decade were largely restricted to small enterprises (but not German ones).

Decreasing market shares

Problems of German shipping enterprises are reflected by decreasing market shares. Two mutually supporting effects may be mentioned: (a) high market share in shrinking markets (domestic transport)/low market shares in growth markets (seaport hinterland transport) and (b) reducing market shares in the individual market segments.

<table>
<thead>
<tr>
<th>Market share of German inland shipping enterprises in total freight transport by vessels to/from/within Germany 1991-2001 and trend scenario 2015</th>
</tr>
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<tbody>
<tr>
<td><img src="chart.png" alt="Market share chart" /></td>
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</tbody>
</table>

Disadvantageous structure:
- High, but decreasing market share in stagnating domestic transport; Low, slightly decreasing share in rapidly growing cross-border transport
- Positive trend only in transit
- In total, the trend for reduced market shares will accelerate if current tendencies persist
- This trend will be further accelerated if the market exit due to pension retirement continues not to be balanced by the entry of young labour

If current trends continue, the market share of German shipping companies in total transport to/from within Germany on inland vessels will continue to fall to 27% in year 2015 (1991: 39%; 2001: 31%). If the expected gap in new young entrants to the shipping industry materialises, the market share can even drop to an all-time low of 21%.

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2 less wage payments, more financial flexibility; less home trips in the weekend or even use of the vessel as the only home

3 esp. transport of coal for the iron industry, of ores and of chemicals

4 This is particularly true for the Rhine shipping. Fleets from central and eastern Europe are to a large extent not yet owned by individual entrepreneurs. These fleets are strongly outdated.
High average age of the vessel fleet

Causes for the stated losses in market shares are not to be sought in lower performance of German versus foreign entrepreneurs, e.g. from leading Dutch and Belgian enterprises. Most productivity or cost indicators for similar vessels in German resp. in foreign companies are quite similar. But German enterprises own or vessels with lower productivity, and therefore don’t dare to compete on more competitive transnational markets (concentration on less competitive domestic transport). This is also a legacy from state-guaranteed transport prices used in German domestic transport until 1993 which made it non-attractive to engage in international transport.

After the abolishment of the fixed transport price system, German major shipping companies have mostly left the market, handing the vessels to former employees who are now acting as independent ‘entrepreneurs’. Due to their age, lack of financial resources and experience, these new entrepreneurs showed little interest to take new risks with heavy investments into new ships.

Freight rates declined heavily since 1994. They have not recovered since in nominal terms, and have continued to go downwards in real terms. German enterprises have responded to this unfavourable trend by significantly increasing their capital productivity through longer working and vessel operating times.

<table>
<thead>
<tr>
<th>Productivity development of the German inland vessel fleet 1991-2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Graph showing productivity development from 1991 to 2000]</td>
</tr>
<tr>
<td>➢ The German shipping industry has reacted to increased competition:</td>
</tr>
<tr>
<td>➢ The Fleet capacity was re-duced by more than 20% during 1993-2000</td>
</tr>
<tr>
<td>➢ The productivity (transport performance per tonne of vessel capacity) rose during 1993-2000 by 28%</td>
</tr>
<tr>
<td>➢ Total transport performance rose slightly (incl. performance on by German vessels on foreign waterways)</td>
</tr>
</tbody>
</table>

Continued investment gap

A main factor contributing to the competitive weakness of the German vessel fleet is the investment gap which exists already since the eighties - initially in the expectation of market liberalisation, then as a reaction to this. This has lead to a situation where the average age of ships is growing - now more than 50 years - and where the share of modern vessels is very small.
The German vessel fleet has participated in the reduction of capacities of old vessels, but not in corresponding investments into new ships.

The Netherlands and Belgium have invested heavily into new as well as into used (but less old) vessels.

From the point of view of the German inland shipping industry, the EU measures to support structural improvement of the sector was only partly successful: by contributing to the reduction of capacities (leaving it unclear to which extent such reduction would have happened without that policy). This had a positive social effect: entrepreneurs approaching retirement age obtained better sales prices for their vessels, and thus improved the basis for their pension. But the policy was not successful as regards another aspect which is more important in the longer term: It could not avoid that competing fleets in other countries were strongly renewed, but not so in Germany.

The average age of German dry cargo vessels is 51 years, as compared to 45 years for the Dutch fleet.

The age gap has significantly increased.

High average age of employees

As a consequence of the negative market trend, the inland shipping sector suffered from a lack of new entrants into the labour market. This gap was filled by growing employment of foreign labour from central and eastern Europe.
The age structure of Dutch employees in this sector is much more favourable. A federal German government support to the wages of new trainees has had a positive effect, by raising the number of offered trainee positions. But even so, 80 new trainees in 2001 were not sufficient to replace those reaching retirement age (120 annually during coming years), even without considering the fact that some of the new entrants will trainees will never become part of the shipping industry’s labour force. Particularly in the category of entrepreneurs/ captains personnel shortages are expected soon.

This will in the first instance not negatively affect the role of inland shipping as such, but the number of jobs offered on German vessels will be seriously affected. Foreign entrepreneurs will fill the gap and gain further increased market shares. At the same time, the share of foreign captains/ entrepreneurs working in Germany will further increase. But parallel to the economic progress in central and eastern European countries, this source of personnel will dry out.

Consequence: further and accelerated decrease of German market shares

A scenario for the development of the German inland shipping sector which considers the described staff shortage, shows an accelerated decrease of market shares to then 21%. This would then also mean: reduced absolute performance.

Unequal conditions for competition with entrepreneurs from Belgium and from the Netherlands

Significant competitive disadvantages exist in comparison with Dutch and Belgian entrepreneurs. Competitors from central and eastern Europe are less strong due to over-aged fleet and missing national support schemes.

The competitive disadvantages caused by State regulations, have lead to a modernisation deficit in comparison with Belgium and the Netherlands. Harmonisation by downgrading support schemes there

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5 Annual total volume € 1.5 mln./ annual support per trainee place 25,000 €; maximum no. of funded trainees therefore: 60
would not solve the problem due to the modernisation advantage already gained.\(^6\) Losses in market shares would then continue. Only after a transition period during which the German vessel fleet would be modernised, a uniform abolition of state subsidies could be envisaged.

Main competitive disadvantages for German entrepreneurs are as follows:

\(\text{a)}\) **No tax credit for book profits resulting from selling old vessels, as existing in the Netherlands**

A nominal profit from ship sales, if re-invested into another vessel, is not immediately taxable (only pro-rate according to depreciation) in the Netherlands if used for the financing of another vessel.

\(\text{b)}\) **No lumpsum taxation as in Belgium**

In Belgium, there is no similar system as in the Netherlands. But enterprises can opt for lumpsum taxation (and do so to their majority). As this taxation is based on overly high depreciation cost, sales profits remain effectively tax-free.

\(\text{c)}\) **Limited state guarantee for loans**

In the Netherlands (up to 900.000 €) and in Belgium (up to 25% of the investment) there are state guarantees (at very low guarantee costs) for bank loans used for new investments. In Germany, such guarantee exists only for start-up enterprises and with lower upper limits (500.000 €). The modernisation in existing companies is therefore disadvantaged in Germany.

\(\text{d)}\) **Only partial subsidies for cargo handling equipment in ports**

Germany offers a quite favourable financial support for terminals for combined transport (subsidy of up to 80%). In the Netherlands, this support is limited to 50% and to a maximum total subsidy of 680.000 €. But in contrast to Germany, in the Netherlands also equipment for other general or bulk cargo can be supported. In Belgium, the support differs according to the province. In Flanders investments into quay walls and into handling equipment can be supported up to 50% of their total cost, with no limitation to combined terminals. In Wallonia, only superstructure (handling facilities) can be supported (combined and conventional handling). But there, the support is limited to 30%.

\(\text{e)}\) **Less attractive support to environment-friendly investment into existing vessels**

In Germany, there are numerous programs to obtain loans at advantageous interest rates and repayment schemes, as regards investments with positive environmental impact. No direct financial subsidies are granted, while these exist in the Netherlands\(^7\) and in Belgium (direct subsidy, reduction of taxable profit or of income tax). Although the absolute value of these support schemes is limited (reaching up to several 10.000 €), they are more attractive than the German programmes by offering an immediate cash advantage.

**Unsatisfactory financial situation of German shipping enterprises**

The financial situation of shipping enterprises has deteriorated significantly after liberalisation of freight rates on the domestic market in Germany. This is reflected in the companies’ balance sheets and their profit and loss accounts.

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\(^6\) In view of existing modernisation deficits in Germany, even a temporary competitive advantage for German entrepreneurs would be justified.

\(^7\) These support measures are normally not restricted to the shipping industry. An overview on existing programmes has been published by the (state-supported) Bureau Innovatie Binnenvaart in December 2000. It includes 32 different programmes. A translation into German was prepared by the German Federal Ministry of Transport.
In many enterprises the equity capital has been fully consumed by earlier losses. Many balance sheets exhibit even negative equity values;

Only few vessels with extraordinary good results show annual profits which allow full wage payment to owners-captains. Even there, there is no room for savings to improve the capital structure.

As a rule, the remuneration taken by owner-captains corresponds to the cash flow. Owners consider more the cash situation than the real economic situation. This corresponds to a missing equivalent to depreciation.

Therefore, owner-captain remuneration exceeds annual profits (if there are any), leading to a further capital drain.

The situation is slightly better, if depreciation for tax purposes is replaced by values which consider the more positive development of residual (sales) values of used vessels:

- Equity capital is not fully consumed on the average, but is still insufficient to fund the vessel modernisation;
- Owner-captain remuneration is not above real profits;
- But remaining profits are insufficient to build up reserves for future investments into new ships.

### 3.2.2 Recommendations

As a priority, competition conditions for German, Dutch and Belgian entrepreneurs must be harmonised. It is essential that nominal profits caused by the sale of old vessels will again, as earlier, be exempted from immediate taxation, if they are reinvested into new ships. An equally important measure is to improve the financing capacity of enterprises. This is also conditional to a successful promotion of new job entrants and young entrepreneurs.

In order to strengthen the competitiveness of German enterprises, a number of measures must be taken, some of which by enterprises themselves, by their associations, and others by the federal State.
## STRENGTHENING OF THE GERMAN INLAND SHIPPING INDUSTRY: RECOMMENDATIONS

<table>
<thead>
<tr>
<th>Measure</th>
<th>Priority **)</th>
<th>Addressee/ Actor</th>
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<tbody>
<tr>
<td>Re-introduction of tax credit for reinvested nominal profit from ship sales (§ 6b EStG)</td>
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<tr>
<td>Improvement of support to start-up entrepreneurs and its extension to existing enterprises, through preferential loans</td>
<td>+++</td>
<td>Federal States and Municipalities</td>
</tr>
<tr>
<td>Harmonisation of support programmes for investments leading to energy savings or to reduced environmental emissions</td>
<td>+</td>
<td>Min. of Economy and Labour, KfW</td>
</tr>
<tr>
<td>Safety and environmental minimum standards for vessel modernisation</td>
<td>+</td>
<td>KfW</td>
</tr>
<tr>
<td>Enhanced supply of traineeships</td>
<td>++</td>
<td>Federal States and Municipalities</td>
</tr>
<tr>
<td>Adaptation of training plans, facilitation of labour influx from other professional background, training also on foreign vessels</td>
<td>++</td>
<td>Min. of Finance</td>
</tr>
<tr>
<td>Institutional technology development support</td>
<td>+</td>
<td>Min. of Transport</td>
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<tr>
<td>Intensification of lifelong education</td>
<td>+</td>
<td>Min. of Finance</td>
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<tr>
<td>Improved market observation</td>
<td>++</td>
<td>Min. of Transport</td>
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<td>Enhanced benchmarking</td>
<td>++</td>
<td>Min. of Transport</td>
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<td>More service orientation of associations</td>
<td>+</td>
<td>Min. of Transport</td>
</tr>
<tr>
<td>Improved overview of existing support schemes</td>
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<td>Min. of Transport</td>
</tr>
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</table>

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\**) Addressees: black = mainly responsible; grey = contributor

### OBJECTIVE 4: ACCELERATED MODERNISATION OF VESSEL FLEET OF GERMAN ENTERPRISES

10. Re-introduction of tax credit for reinvested nominal profit from ship sales (§ 6b EStG)
11. Improvement of support to start-up entrepreneurs and its extension to existing enterprises, through preferential loans
12. Harmonisation of support programmes for investments leading to energy savings or to reduced environmental emissions
13. Safety and environmental minimum standards for vessel modernisation

### OBJECTIVE 5: PROMOTION OF LABOUR FORCE INFLUX

14. Enhanced supply of traineeships
15. Adaptation of training plans, facilitation of labour influx from other professional background, training also on foreign vessels

### OBJECTIVE 6: STRENGTHENING OF ENTERPRISES’ COMPETITIVENESS

16. Institutional technology development support
17. Intensification of lifelong education
18. Improved market observation
19. Enhanced benchmarking
20. More service orientation of associations
21. Improved overview of existing support schemes

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