**TG2 Workshop. Assen, NL. 23-24 June 2003**

**Final Report**

## Contents



## 1 OPENING

The participants were welcomed by the chairman**.** A list of participants is in Annex 1.
The program of the workshop is in Annex 2.

## 2 DEVELOPMENTS SINCE TG1

The chairman briefly summarized the main activities since the first TG meetings in February/March 2003. (The full report of the meeting is on the WSF website).
These were:
**1. The 2nd Wadden Sea Forum meeting, Tønder, Denmark, 24-25 April 2003**. At this meeting, amongst others, the Terms of Reference of all Thematic Groups had been adopted. The WSF-2 meeting had furthermore adopted a general definition of sustainable development as a starting point for the work of the TGs.
A final issue mentioned were letters on topical issues, sent by the meeting to the responsible ministers and the EU Commission. It concerned sustainable fishing and cartel formation, shipping safety and the planning of offshore wind parks. In the meantime the EU Commission had sent a letter of reply with regard to the case of cartel formation in shrimp fisheries.
**2. External studies**. Two external studies have been finalized in draft form. These are the study on socio-economic developments in the Wadden Sea region, carried out by Planco Consultancy, and the study into policy and management, carried out by the Oxford Brookes University.
A study into socio-economic developments in the Danish Wadden Sea region is currently being executed by COWI consultants.

As soon as the studies have been finalized they will be placed on the WSF website. The participants in the project will be informed by e-mail newsletter.
The chairman finally informed the meeting that a comparative study into sustainable development in the three countries, as **agreed** upon by the WSF-2 meeting, will be initiated soon.
**3. Trend Reports**. The consultant CIBIT and the WSF secretariat have elaborated 12 generic trends, selected on the basis of discussions at the first TG meetings. The draft trend reports are contained in a document sent to all participants in the workshop.

## 3 PRESENTATION OF THE GENERIC TRENDS

The chairman informed that the aim of this agenda item was to inform the participants about the generic trends and to give the opportunity to ask questions and make suggestions.
A trend can be defined as “a development that has been going on for some years and is expected to continue in the coming 5-10 years”. The generic trends are needed as a basis for the development of the scenarios, together with sector-specific trends and the outcome of external studies.
The main aim of the workshop was to prioritise the generic trends on the basis of their importance for the future of the Wadden Sea region.
During the presentation of the 12 generic trends the following comments were made:

1. **EU unification, expansion and regulation.** No comments
2. **Decentralization.** No comments
3. **Internationalisation/globalisation.**
4. **Economic growth.** Several suggestions were made for specifying this trend for the region i.e. in terms of industrialization, capital concentration, harbour concentration, privatisation, use-growth-demand etc.. With regard to globalisation and economic growth, the comment was made that both trends are very relevant and will cause changes because of the expected increase of transport/shipping sector and the development of harbours.
5. **Individualism (incl. Social life style).** A critical remark on growing individualisation was given, relating to the “mass” behaviour of kids.
6. **Social cohesion.** A relevant issue mentioned was the identity with the region.
7. **Living and mobility.** It was commented that energy is one of the main driving forces for living and mobility and that this fact had not been mentioned in the report.
8. **Ageing.** The causes for ageing and the question whether aging and mobility are positively related were discussed.
9. **Sustainable development.** From several sides it was questioned whether this trend could be regarded a “real” trend. The remark was made that believe in sustainability was an important aspect. The chairman suggested to include “believe” in the trend “life style”. Furthermore a critical comment was made on §9.4.2 where large chemical plants were not mentioned as a sustainable option.
10. **State of the environment.** It was commented that the nitrogen surplus (§10.2) has declined in the Wadden Sea region and that this should be specified accordingly.
11. Geo politic stability. No comments.
12. Technological Innovation. No comments.

## 4 PRESENTATION STUDY SOCIO-ECONOMY

Mr. Krüger of Planco Consultants presented the main results of the study into socio-economic developments in the German Wadden Sea region. The final version of the report is under preparation and will be finished by mid August.

# 5 SECTOR GROUPS: GENERIC TREND SCORING FOR IMPACT AND UNCERTAINTY

The prioritisation of the generic trends on the basis of the impact of the trends on the sectors was done in six sector groups, i.e. agriculture, energy, fisheries, industry/harbour, nature protection and tourism/recreation.
The results are given in the following sector reports.

## 5.1 AGRICULTURE

Participants: Keurentjes (chair), Stamp, Fromsejer, Hinrichs, Boesjes, Skrumsager, Stam, Nijboer (observer).

| Agriculture. Generic Trend impact scoring. (1=low, 5=high) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | Total | Rank |
| 1. EU unification, expansion and regulation | | | ✓✓ | ✓ | ✓✓✓ ✓✓ | 35 | **2/3** |
| 2. Decentralization | ✓✓✓ ✓✓✓ | ✓✓ | | | | 10 | **12** |
| 3. Internationalisation/globalisation | | | | ✓✓✓ | ✓✓✓ ✓✓ | 37 | **1** |
| 4. Economic growth | | ✓✓ | ✓✓✓ ✓ | ✓✓ | | 24 | **9** |
| 5. Individualism (incl. Social life style) | | ✓ | ✓✓ | ✓✓ | ✓✓✓ | 31 | **4** |
| 6. Social cohesion (incl. Ageing) | ✓✓✓ ✓✓ | ✓ | ✓✓ | | | 13 | **11** |
| 7. Living and mobility | | | ✓✓✓ ✓ | ✓✓✓ | ✓ | 29 | **5** |
| 8. Ageing | ✓✓✓ | ✓✓ | ✓✓✓ | | | 16 | **10** |
| 9. Sustainable development | | ✓✓✓ ✓ | ✓✓✓ | ✓✓ | | 25 | **7/8** |
| 10.State of the environment | | ✓ | ✓✓ | ✓✓✓ | ✓ | 25 | **7/8** |
| 11.Geo politic stability | | ✓✓ | ✓✓ | ✓✓✓ ✓ | | 26 | **6** |
| 12.Technological Innovation | | | ✓✓ | ✓ | ✓✓✓ ✓✓ | 35 | **2/3** |

| Agriculture. Generic Trend uncertainty scoring (1=low uncertainty, 5=high uncertainty) | | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | Average |
| EU | ✓✓✓ ✓✓ | ✓✓ | ✓ | | | 1.5 |
| Globalisation | ✓ | ✓✓✓✓ | ✓✓ | ✓ | | 1.9 |
| Individualisation | ✓ | ✓✓✓✓ ✓ | ✓ | ✓ | | 1.8 |
| Living and Mobility | | ✓✓ | ✓ | ✓✓✓ | ✓✓ | 2.4 |
| Environmental issues | ✓✓ | | ✓✓ | ✓✓✓ | ✓ | 2.5 |
| Technological innovation | ✓ | ✓✓✓✓ ✓ | ✓✓ | | | 2.1 |

## 5.2 ENERGY

Participants: Werner Schuhbauer (chair), Henk Krijnen, Gerd Töpken, Frank Oswald, Wim ter Horst, Joop Marquenie, Reinhard Kaib, Brigitte Nolopp, Ad Littel (observer)

First, the participants selected the 6 most important trends by placing scores from 6 (high importance) to 1 (low importance) to the list of trends. This was more an intuitive selection without discussing the arguments for the choice. The result was a ranking list of the generic trends, and the six selected trends were then discussed in more detail in order to evaluate their impact on the energy sector. As a final step the selected trends were scored for their uncertainty.

The outcome of the impact scoring is given in the table below:

| Energy, Generic Trend impact scoring | Total | Rank |
|---|---|---|
| 1. EU unification, expansion and regulation | 24 | **3** |
| 2. Decentralization | 1 | **10** |
| 3. Internationalisation/globalisation | 15 | **7** |
| 4. Economic growth | 29 | **2** |
| 5. Individualism (incl. Social life style) | 5 | **9** |
| 6. Social cohesion (incl. Ageing) | 1 | **10** |
| 7. Living and mobility | 16 | **5** |
| 8. Ageing | 0 | **12** |
| 9. Sustainable development | 17 | **4** |
| 10.State of the environment | 9 | **8** |
| 11.Geo politic stability | 16 | **6** |
| 12.Technological Innovation | 35 | **1** |

After the intuitive selecting of the six most important trends, the meeting discussed the possible impact on the energy sector. The most valuable arguments are given in the following:

**1. Technological innovation.** New techniques and methods would reshape the energy sector totally. The effects will lead to changes on:

- energy efficiency
- energy saving, energy use
- development and implementation of new energy sources
- new techniques for hydrocarbon exploration
- energy storage
- social acceptance by improvement of energy sector

**2. Economic growth.** This trend plays an important role for the energy sector because energy production and consumption are closely related to the GDP (Gross Domestic Product). Economic development is still based on the availability of energy (Production of goods, transport, travelling, mobility, public services, etc.) and therefore, the impact on the energy sector is very high.
**3. EU Regulations.** The EU unification, expansion and regulations will lead to visible changes of some parts of the energy market but in relation to the above described trends, the impact will be of minor importance. For example, regulations with regard to the “renewables” could have an influence and new markets and new supplier countries will lead to changes.
**4. Sustainable development.** After some discussion whether this could be regarded a trend, the meeting **agreed** to deal with it in the sector group.
The opinions about the impact on the energy sector were very ambivalent and the scoring differed between 1 and 4. A growing awareness of sustainability will give a certain pressure on the energy sector which will lead to changes (new emphasis, new techniques, efficiency, etc.)
**5. Living and mobility.** The impact of this trend will also have some visible changes caused by changes in households, energy consumption, insulation of houses and requirements due to used energy sources. Furthermore, the mobility of the society will influence the energy supply and new energy techniques.
**6. Geo-political stability.** The political stability will have an high impact on the energy sector and was scored with four. The market is linked to quite an extent to global stability. Energy crisis have a high

impact, particularly on the hydrocarbon market. Political decisions for an increase of energy independency will also have severe impacts.
The result of the impact scoring is given in the table below. After having discussed the possible impacts of the generic trends on the energy sector, the meeting made common decisions regarding the scores. The value of the impact of the sustainable development trend was defined as 2-3.

| Energy. Generic Trend impact scoring, common decision (1=low, 5=high) | | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| Technological Innovation | | | | | X |
| Economic growth | | | | X | |
| EU unification, expansion and regulation | | X | | | |
| Sustainable development | | X | | | |
| Living and mobility | | X | | | |
| Geo politic stability | | | | X | |

The result of the impact scoring does not exactly reflect the first intuitive ranking of the six most important generic trends. A new discussion about this fact and a revised ranking did not take place due to the time available.

Finally the selected trends were scored for uncertainty which resulted in the outcome below:

| Energy. Generic Trend uncertainty scoring, common decision (1=low uncertainty, 5=high uncertainty) | | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| Technological Innovation | | | | | X |
| Economic growth | | | X | | |
| EU unification, expansion and regulation | X | | | | |
| Sustainable development | | X | | | |
| Living and mobility | | | X | | |
| Geo politic stability | | | | | X |

The high uncertainty for technological innovation was defined due to the extent of the innovation and how fast it would happen in the different fields of the energy sector. The participants **agreed** that technological innovation would increase in any case, but the uncertainty would be, when new techniques ($H_2$-technology, ocean current and wave energy, new heating techniques for houses) would find application or how fast energy efficiency would be achieved.
The uncertainty for economic growth was defined due to the equal chances for economy to grow or to stagnate.
The EU unification and the growing influence of EU regulations was stated as very certain. Also the increase of awareness for sustainable development was defined as quite certain and scored with a 2 while the trend living and mobility was stated as more uncertain because this trend would be linked to economic growth, job availability and income.
The political stability in the future was seen as very uncertain. The differences in economy, social life, human rights and e.g. the aspiration to power could lead to high political instability in a short period of time. Consequently, the uncertainty was scored with a five.

## 5.3 FISHERIES

Participants: Van Geesbergen, de Leeuw, Gubernator, Holstein (chair), Geldorp, Loos, Mack (observer), de Jong (secretary).

The outcome of the impact scoring is given in the table below:

| Fisheries. Generic Trend impact scoring. (1=low, 5=high) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | Total | Rank |
| 1. EU unification, expansion and regulation | | | | | ✓✓✓ ✓✓✓ | 30 | **1** |
| 2. Decentralization | ✓✓✓ ✓✓✓ | | | | | 6 | |
| 3. Internationalisation/globalisation | | ✓✓ | ✓✓ | ✓✓ | | 18 | **3** |
| 4. Economic growth | ✓ | ✓ | ✓✓✓ ✓ | | | 15 | **4/5** |
| 5. Individualism (incl. Social life style) | ✓✓✓ ✓✓✓ | | | | | 6 | |
| 6. Social cohesion (incl. Ageing) | ✓ | ✓✓✓ | | ✓✓ | | 15 | **4/5** |
| 7. Living and mobility | ✓✓✓ ✓✓✓ | | | | | 6 | |
| 8. Ageing | ✓✓✓ ✓✓✓ | | | | | 6 | |
| 9. Sustainable development | ✓✓✓ ✓ | ✓ | ✓ | | | 9 | **6** |
| 10.State of the environment | ✓✓✓ ✓✓✓ | | | | | 6 | |
| 11.Geo politic stability | ✓✓✓ ✓✓✓ | | | | | 6 | |
| 12.Technological Innovation | | ✓ | ✓✓✓ | ✓✓ | | 19 | **2** |

**1. EU Regulations.** The restrictions caused by EU regulations were regarded by far the most important impacts of this generic trend. Specifically underlined were national and regional differences in the implementation of EU regulations and the inconsistencies between different regulations.
**2. Technological innovation.** New techniques and methods would have an impact on i.e. aquaculture, catch techniques, products and processing, production on land, product improvement.
**3. Globalisation.** The impact will be mainly through changes in the market. Production will hardly be influenced because there are clear limits in the Wadden Sea. The influences of the market will, however, be different for different products. An example given, was the current low price of the dollar which has caused mussels from Chile to be competitive on the market now. It was also underlined that Wadden Sea products are luxury products and that there is a limited number of consumers for these products.
There is a link with the trend economic growth.
**4/5. Economic growth.** This is necessary to keep consumers and a future for the sector. But, as stated above, there are limits to production, but also to possibilities to add value to the products. Some more specific sub-trends, related to both economic growth and globalisation were already mentioned in the plenary session and are also relevant for fisheries. It concerns the increase in the scale of companies (both producers and processing), specialisation, capital intensification and privatisation.
**4/5. Social cohesion.** The trend Ageing was included in social cohesion. The problem of finding successors and young crew was mentioned here. Also the identity of the region with fisheries was considered an important element.
**6. Sustainable development.** There was some discussion whether this could be regarded a trend but it was concluded that this was the case. It was underlined that sustainable production is a prerequisite for fishing.

Finally the selected trends were scored for uncertainty which resulted in the outcome below:

| Fisheries. Generic Trend uncertainty scoring. (1=low uncertainty, 5=high uncertainty) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | Average | Rank |
| 1. EU unification, expansion and regulation | ✓✓✓ ✓✓✓ | | | | | 1 | **6** |
| 12. Technological Innovation | | | ✓✓✓ | ✓✓✓ | | 3.5 | **2** |
| 3. Internationalisation/globalisation | ✓✓✓ ✓ | ✓✓ | | | | 1.33 | **4/5** |
| 4. Economic growth | | | | ✓✓✓ | ✓✓✓ | 4.5 | **1** |
| 6. Social cohesion (incl. Ageing) | ✓✓✓ ✓ | ✓✓ | | | | 1.33 | **4/5** |
| 9. Sustainable development | | ✓✓✓ | ✓✓✓ | | | 2.5 | **3** |

The high uncertainty for economic growth was expected, and due to the equal chances for economy, to grow or to stagnate.
Although it was acknowledged that there is little uncertainty that technological innovation will continue in future, the relatively high uncertainty scoring for technological innovation was motivated by the uncertainty about possibilities to actually use and apply new techniques. This is strongly dependent upon economic growth and the legislative framework.

### 5.4 INDUSTRY/HARBOUR

Participants: Michael Ahrens (chair), Henning Nørgaard, Jürgen Hinnendahl, Henk Doeven (for Hans Haerkens), V.C. van Vuuren (for M. Ettes), Jan Schuurman (Cebit), Charlotte Jensen (observer), Bettina Reineking (CWSS)

First, the participant selected the 6 most important trends by placing scores from 6 (high importance) to 1 (low importance) to the list of 12 generic trends. This was more an intuitive selection without discussing the arguments of the choice. The result was a ranking list of the generic trends, and the six selected trends were then discussed in more detail in order to evaluate the impact of these trends on the industry and harbour sector. As a final step the selected trends were scored for their uncertainty.

Intuitive selection / prioritisation of the Generic Trends
The outcome of the intuitive impact scoring is given in the table below:

| Ind / Har, Generic Trend impact scoring | Total | Rank |
|---|---|---|
| 1. EU unification, expansion and regulation | 19 | **5/6** |
| 2. Decentralization | 12 | |
| 3. Internationalisation/globalisation | 24 | **2** |
| 4. Economic growth | 25 | **1** |
| 5. Individualism (incl. Social life style) | 6 | |
| 6. Social cohesion | 6 | |
| 7. Living and mobility | 8 | |
| 8. Ageing | 17 | |
| 9. Sustainable development | 21 | **4** |
| 10. State of the environment | 19 | **5/6** |
| 11. Geo politic stability | 17 | |
| 12. Technological Innovation | 23 | **3** |

**Discussion, selection and prioritisation of the six most important generic trends**

After having intuitively selected the six most important trends, the meeting discussed the possible impact on the industry and harbour sector. The most valuable arguments are given in the following:

**1. EU Regulations.** The EU has already influenced the sector Ind/Har and the enlargement and further regulations of the EU will cause changes and will ask for changes (new policies) within the sector. It will lead to big changes concerning a few aspects/organizations, for example regarding the common market and the new hinterland for ports which will be needed.

**2. Internationalisation/globalisation.** In line with the globalisation (big changes are expected world wide) regarding the Ind/Har sector there will be an increase of transport and international business, as well as more specialized business and more competition.
Knowledge intensive sectors will stay in the area and the knowledge has to be kept up (products of the region, seed, food). Globalisation will possibly be followed by growth (in harbour business the foreign trade is ranked higher than the economic growth). Energy, which will be influenced by globalisation, is an important factor in the industry and harbour sector . Very big changes in almost all aspects and organizations in the industry and harbour sector are expected.

**3. Economic growth.** This trend plays an important role for the industry and harbour sector because more people need more products, more jobs are needed and therefore, the impact on the industry and harbour sector is very high. Very big changes in almost all aspects and organizations in the industry and harbour sector are expected.

**4. Sustainable development.** Despite the discussion whether sustainable development is an aim or a trend, it was stated by the participants that there will be changes on the industry and harbour sector because of sustainable development (people wish to have food/products and clean air). However, the opinions about the impact on the industry and harbour sector were very ambivalent; it was stated that a lot was already invested in and reached for sustainable development within the Ind/Har sector, that new technologies have to be developed for sustainable development as well as new that standards for sustainability have to be established for the continuation on a higher level.
The scoring, which differed between 1 and 5, is reflecting the discussion.

**5. State of the environment.** Regulations, such as EU Directives regarding environmental protection, will influence the ind/har sector. However, during the scoring it was stated that this aspect will only lead to visible changes of some parts of the sector.

**6. Technological innovation.** New techniques and methods will have a high impact on the Ind/Har sector and very big changes in almost all aspects and organizations are expected.

The result of the impact scoring is given in the table below. After having discussed the possible impacts of the generic trends on the industry/harbour sector, the meeting made common decisions regarding the scores.

| Ind/Har. Generic Trend impact scoring, common decision (1 = low, 5 = high) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | Total | Rank |
| EU unification, expansion and regulation | | | ✓✓✓✓✓ | | | 15 | **4** |
| Internationalisation/globalisation | | | | ✓✓✓✓✓ | | 20 | **1/2/3** |
| Economic growth | | | | ✓✓✓✓✓ | | 20 | **1/2/3** |
| Sustainable development | ✓ | ✓✓ | ✓ | | ✓ | 13 | **5** |
| State of the environment | | ✓✓✓✓✓ | | | | 10 | **6** |
| Technological Innovation | | | | ✓✓✓✓✓ | | 20 | **1/2/3** |

The impact scoring resulted in three generic trend with the same amount of dots. Therefore, the six selected trends were furthermore discussed and scored for uncertainty which resulted in the outcome below:

| Ind/Har. Generic Trend uncertainty scoring, (1 = low uncertainty, 5 = high uncertainty) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | Average | Rank |
| EU unification, expansion and regulation | ✓✓ | ✓✓ | ✓ | | | 1.8 | **3** |
| Internationalisation/globalisation | ✓✓✓✓✓ | | | | | 1 | **5/6** |
| Economic growth | | | ✓✓✓✓✓ | | | 3 | **1** |
| Sustainable development | ✓✓ | ✓✓✓ | | | | 1.6 | **4** |
| State of the environment | ✓ | ✓✓✓ | ✓ | | | 2 | **2** |
| Technological Innovation | ✓✓✓✓✓ | | | | | 1 | **5/6** |

The uncertainty scoring was done under time pressure without intensive discussion.

The total ranking (impact and uncertainty) of the sector group Ind/Har is as follows:

1. Economic growth
3. Internationalisation/globalisation
3. Technological Innovation
4. EU unification, expansion and regulation
5. Sustainable development
6. State of the environment

### 5.5 NATURE PROTECTION

Participants: Verheij (chair), Kuipers, Rothermund, Schulz, Tougaard, Blanner, Woudstra, Frikke, Stoop, Enemark (secretary)

The aim of the sector meeting was to make a selection of the six most important generic trends in terms of their impact on nature and environment. As a first step the participant selected the 6 most important trends on the basis of a scoring of the trends. Each of the participants indicated their preference for 6 trends.

The outcome of the impact scoring is given in the table below:

| Nature, Generic Trend impact scoring | Total | Selected |
|---|---|---|
| 1. EU unification, expansion and regulation | 8 | X |
| 2. Decentralization | 2 | |
| 3. Internationalisation/globalisation | 8 | X |
| 4. Economic growth | 10 | X |
| 5. Individualism (incl. Social life style) | 3 | |
| 6. Social cohesion (incl. Ageing) | 1 | |
| 7. Living and mobility | 6 | X |
| 8. Ageing | 2 | |
| 9. Sustainable development | 3 | |
| 10.State of the environment | 8 | X |
| 11.Geo politic stability | 2 | |
| 12.Technological Innovation | 7 | X |

The meeting henceforward discussed the impact of the selected generic trends on nature and environment. This was done on the basis of a joint discussion and assessment of trends.

| Nature. Generic Trend impact scoring, common decision (1=low, 5=high) | | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| EU unification, expansion and regulation | | | | X | |
| Globalisation | | | | X | |
| Economic growth | | | | | X |
| Living and mobility | | X | | | |
| Environmental issues | | | | | X |
| Technological innovation | | | | X | |

**1. EU unification, expansion and regulation.** The high impact was **agreed** with a score of 4-5.

**2. Globalisation.** This trend would generally have an high impact score but since this trend is very much related to the trends EU and Economic Growth is was **agreed to** give it a "low" 4.

**3. Economic growth.** This trend was considered to have a high impact.

**4. Living and mobility.** This trend was considered to have low to medium impact scoring 2-3.

**5. Environmental issues.** The meeting discussed the environmental issues with regard to climate change and biodiversity (shipping was also addressed) and **agreed** on a high impact scoring of a 5. The impact of climate change was considered high though it was estimated that the impact until 2020 would be modest.

**6. Technological innovation.** The impact was scored a "low" 4 but some participants questioned whether this trend would constitute a significant impact on nature and environment.

Finally the selected trends were scored for uncertainty which resulted in the outcome below:

| Nature. Generic Trend uncertainty scoring, common decision (1=low, 5=high) | | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| EU unification, expansion and regulation | | X | | | |
| Globalisation | X | | | | |
| Economic growth | | | | X | |
| Living and mobility | | | | X | |
| Environmental issues | | X | | | |
| Technological innovation | X | | | | |

**1. EU unification, expansion and regulation.** The uncertainty was very low though some uncertainty would remain as to whether the EU development would cause some divisions between old and new members, north and south etc.

**2. Globalisation.** This trend was considered quite certain.

**3. Economic growth.** High uncertainty of 4-5.

**4. Living and mobility.** The result of the uncertainty scoring was a "low" 4

**5. Environmental issues.** Climate change is difficult to predict. The loss of biodiversity was stated as a quite certain trend. The decrease of pollution was seen with a high degree of certainty.

**6. Technological innovation**
This trend will take place but the result could be an improvement or a deterioration.

On the basis of the results of the impact and uncertainty scoring, the participants made a ranking list of the six most important trends for nature and environment. The ranking is as follows:

1. Economic growth
2. Environmental issues
3. EU unification, expansion and regulation
4. Technological innovation
5. Globalisation
6. Living and mobility

## 5.6 TOURISM/RECREATION

Participants: Mr. Knud Hansen, DK, Mr. Ludwig Salverius, D, Mr. Steef Engelsman, NL and Mr.John Frederiksen (secretary)

The participant selected the five most important trends by intuitive selection without discussing the arguments of the choice. The prioritised trends were then discussed in more detail in order to evaluate the impact of these trends on the tourism sector. Finally the selected trends were scored for their uncertainty.

| Tourism. Generic Trend impact scoring. (1=low, 5=high) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | Total | **Rank** |
| 1. EU unification, expansion and regulation | | | | | | | |
| 2. Decentralization | | | | | | | |
| 3. Internationalisation/globalisation | | | | | | | |
| 4. Economic growth | | | | | ✓✓✓ ✓ | 20 | **1/2** |
| 5. Individualism (incl. Social life style) | | | | ✓✓✓ ✓ | | 16 | **5** |
| 6. Social cohesion (incl. Ageing) | | | | | | | |
| 7. Living and mobility | | | | ✓✓ | ✓✓ | 18 | **3/4** |
| 8. Ageing | | | | ✓✓ | ✓✓ | 18 | **3/4** |
| 9. Sustainable development | | | | | | | |
| 10.State of the environment | | | | | ✓✓✓ ✓ | 20 | **1/2** |
| 11.Geo politic stability | | | | | | | |
| 12.Technological Innovation | | | | | | | |

The participants demonstrated their unity very fast by prioritising the five generic trends as (also) the future basis for a “healthy” and diversified tourism sector in the Wadden Sea Region. The trends “Economic growth” and “Environmental issues” were in particular **agreed** upon as the axis of the scenario building exercise, mainly because of vital non-structural changes, which are to be expected within the industry in the future. Radical changes would create severe impact on the tourism industry all over the region. It was emphasised by the group, however, that environmental issues should also include intact landscapes and cultural sites and monuments. Moreover the participants were of the opinion that the EU nature and environmental legislation were part of “environmental issues” as well. Also the trends “living and mobility” “ageing/individualisation” were regarded as potentially important. Well-functioned societies and sufficient infrastructures into and within the region as well as the ability of the market to meet the different demands of the individual segments are still important.
The group **agreed** that sustainability was not a trend in itself.

The uncertainty scoring for the selected trends is given below:

| Tourism. Generic Trend uncertainty scoring (1=low, 5=high) | | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | **Average** |
| 4. Economic growth | | | ✓✓ | ✓✓ | | **3.5** |
| 5/8. Ageing/individualisation | | ✓✓✓✓ | | | | **2** |
| 7. living and mobility | | ✓✓✓✓ | | | | **2** |
| 9. Environmental issues | | | | ✓✓✓✓ | | **4** |

The group was quite certain that “ageing/individualisation” and “living and mobility” would become reality in the Wadden Sea region. The high score of uncertainty regarding “environmental issues” is mainly because that this trend consists of a variety of issues with different plausible realisation. The high uncertainty score for “Economic growth” was because stagnation and even decline of the market could not be excluded within the next two decades.

# 6 PLENARY SESSION: FINALISATION GENERIC TRENDS

The results of the impact scoring of all six sectoral groups (see agenda item 5) is presented in the table below:

| Generic Trend impact scoring. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Agri | Ener | Fish | Ind | Nat | Tour | Total | **Rank** |
| 1. EU unification, expansion and regulation | 5 | 4 | 6 | 3 | 4 | | 22 | 3 |
| 2. Decentralization | | | | | | | 0 | 12 |
| 3. Internationalisation/globalisation | 6 | | 4 | 5 | 2 | | 17 | 4 |
| 4. Economic growth | | 5 | 3 | 6 | 6 | 6 | 26 | 1 |
| 5. Individualism (incl. Social life style) | 3 | | | | | 2 | 5 | 8 |
| 6. Social cohesion (incl. Ageing) | | | 2 | | | | 2 | 10/11 |
| 7. Living and mobility | 2 | 2 | | | 1 | 4 | 9 | 6 |
| 8. Ageing | | | | | | 4 | 4 | 9 |
| 9. Sustainable development | | 3 | 1 | 2 | | | 6 | 7 |
| 10. State of the environment | 1 | | | 1 | 5 | 6 | 13 | 5 |
| 11. Geo politic stability | | 2 | | | | | 2 | 10/11 |
| 12. Technological Innovation | 4 | 6 | 5 | 5 | 3 | | 23 | 2 |

Of the four highest scoring trends the uncertainty scoring was as follows: (average per sector group; the Agriculture group had not prioritised and thus not scored Economic growth; the Tourism group had not scored uncertainty for the trends Techn. Innovation, EU and internationalisation):

| Generic Trend uncertainty scoring. | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Agri | Ener | Fish | Ind | Nat | Tour | **Average** |
| Economic growth | - | 3 | 4.5 | 3 | 4 | 3.5 | 3.6 |
| Technological Innovation | 2.1 | 5 | 3.5 | 1 | 1 | - | 2.5 |
| EU unification, expansion and regulation | 1.5 | 1 | 1 | 1.8 | 2 | - | 1.5 |
| Internationalisation/globalisation | 1.9 | 2 | 1.33 | 1 | 1 | - | 1.4 |

The arguments for the scoring were presented by the chairpersons of the sector groups (see for details the respective sector group reports).

The choice for the trend economic growth as one of the two axes was **adopted** by the meeting. The trend globalisation (global market aspects) should, however, be included in this Trend.
The plenary discussion then continued with the question which trend to choose as second axis. This discussion concentrated on the trends EU and Technological innovation.
For both of these trends there was agreement that they would continue, i.e. had a low uncertainty. However, in the discussion it became clear that the actual impact, i.e. how the trends would materialize in future, was generally felt as being quite uncertain.
With regard to technological innovation it was stated that the acceptance or not of new techniques was an important uncertainty factor. Also the economic situation would influence the possibilities to actually invest in new techniques.
The future influence of the EU was also regarded uncertain. One of the aspects mentioned, were the national and regional differences in implementation of EU rules and regulations. There was some confusion about which aspect of the EU would be dominant in the trend. It was **agreed** that it would concern the influence of the EU as a political institution. This would, indirectly, also include the EU market situation.
After extensive discussion the meeting **agreed to** select the EU trend as the second axis. However, also technological innovation would play an important role in the building of the scenarios. In two of the four future worlds low technological innovation would be used as a building block, the other two worlds would have high technological innovation as an important feature.
It was underlined that the other generic trends would also be used for the building of the scenarios.
The meeting **agreed** to mandate the secretariat to develop a first draft of the generic scenarios, on the basis of the above starting points. The drafts would be developed in close consultation with the chairs of the Thematic Groups and presented for discussion at the TG-3 meetings in September.

# 7 TGS: SECTOR SPECIFIC TRENDS

The aim of this agenda item was to identify and prioritise sector specific trends, as well as, questions for which gaps in knowledge exist and which may be covered by external studies.
The discussions were held in the regular Thematic Groups. The reports are presented below.

## 7.1 THEMATIC GROUP AGRICULTURE

Participants Mr. Frans Keurentjes (chairman), Mr. Geert Boesjes, Mr. Kristen Fromsejer, Mr. Knud Hansen, Mr. Erich Hinrichs, Mr. Kresten Skrumsager, Ms. Joan Stam, Mr. Hans Peter Stamp, Ms. Anky Woudstra, Mr. Gerrit Nijboer (observer) and Mr. John Frederiksen (secretary).

In the discussion on Specific Trends the Chairman introduced this point by emphasising that the task of the group was a first attempt to specify foreseeable trends within the agriculture sector in the

Wadden Sea Region. And in order to guide this discussion the meeting decided to use the main themes of the intriguing questions (Annex 1, TG-1):

**1. The market and consumers.** The meeting focused on the increasing impact/influence of the economic power of the manufactures on the producers and the consumers as vital for the conduction of the market mechanisms. Here price setting and advertising are important instruments.
Also the theme of individualisation was emphasised, both in terms of change in demography (composition of local populations; age and ethnic) and in local (Wadden)products as a reaction to the conventional products.
The meeting **agreed to** present a specific trend regarding this issue, and the secretary was asked to propose a precise formulation, which is:

- The manufacturers will increase their influence on the market mechanisms in the future;
- Small scale products will provide the market with local opportunities

**2. Society and agriculture.** Two issues were discussed:

- The industrialisation of the production and manufacturer sectors (increasing larger units: An increased capitalisation of the production sector in NL and D (limited companies and partnerships) was mentioned as a growing factor also as the influence on the landscape and the environment. In DK these constructions are prohibited according to national law.)
- The image of the agriculture sector in society. In all three countries the agriculture sector has been point of increased public attention and debate. In this respect it was underlined that lack of acceptance in the society would contribute to a decrease in the number of farmers resulting in poor and remote societies.

The meeting **agreed** hat industrialisation of the sector (towards larger units) and that increased public awareness of farming are important specific trends.

**3. Technology.** As the generic trend “technological innovation” would be present in all four “future worlds” in the scenario building, the meeting emphasised:
- that the application of gene-modified crops will be improved
is an important future trend within the sector.

**4. Other issues**. The climate change was regarded as a essential development factor also for the agriculture within the low laying Wadden Sea Region; as well in the relation of the expected increase in the sea level rise and the increased frequency of storminess in the North Sea Area. Here consideration about the future coastal protection measures will play a vital role for the entire society (rural areas).
The meeting **agreed** that climate changes will influence future considerations on how to manage agriculture in the low laying Wadden Sea Region

## 7.2 THEMATIC GROUP ENERGY

Participants: Werner Schuhbauer (chair), Frank Oswald, Wim ter Horst, Joop Marquenie, Reinhard Kaib, Henk Krijnen, Gerd Töpken, Brigitte Nolopp, Ad Littel (observer), Manfred Vollmer (secretary)

The process of identifying relevant specific trends for the energy sector was introduced by a short presentation about the method of scenario building.
On the basis of the first debate about specific trends on the first TG meeting in Wilhelmshaven, the participants came up with important issues which should be dealt with in the future. After having addressed quite a number of relevant subjects, the meeting focused on the 7 most important ones with the aim to analyse the trends of these issues.

The following list reflects the results of the debate in which the top 7 of the list were already ranked according to their priority.

- renewable energy
- landscape restrictions (production, cables, plants)
- fossil energy (hydrocarbons)
- wind energy
- energy storage
- energy production at home
- energy transport (how to get it to the consumers)

- o concentration of capital
- o tidal energy use
- o solar energy
- o $H_2$-technology
- o rising energy costs, restricted resources
- o plant size (centralize or decentralize)
- o bio-energy production
- o energy from waste
- o market price for $CO_2$ production
- o new business models (green energy)
- o flexibility in using resources
- o acceptance of different kinds of energy production
- o regulations for selected energy sources
- o nuclear energy

### 7.3 THEMATIC GROUP FISHERIES

Participants De Leeuw, Gubernator, Holstein (chair), Loos, Tougaard, de Jong (secretary).

The following specific trends/issues were considered important:

**1. Rules and regulations.** This issue can best be summarized as the problem of “static policies and rules for a dynamic system”. Several examples were given of inconsistent, uneconomical and non ecological rules and regulations. For Lower Saxony the problem was presented that seed mussel fishing was, according to the fisheries law, not allowed in summer. Reasons for this rule were not known. The disadvantages were that, at the start of the season (1 October), often many stocks had disappeared due to storms. Moreover, in the autumn seed mussel becomes less active and therefore does not attach optimally after seeding resulting in a large part being swept away with storms.
For the Netherlands the problem of closed areas was presented. There were no principal objections against closed areas for nature conservation purposes. The designation of such areas should, however, be based upon the presence pf high biological and ecological values.
Fishing in the Wadden Sea should be carried out according to joint fisheries plans, i.e. in consultation with all interest groups. In this respect the necessity of mutual trust between the fisheries sector and nature conservation was mentioned. The fisheries sector was aware of the necessity of restrictions, but these should be based upon reality and should respect regional differences. An important difference with the 1980s was that the sector was not growing any more and that the current situation with regard to catches was accepted as a status quo.
A final example mentioned were the current restrictions on exchanging mussel seed within the international Wadden Sea.

**2. Scale.** The current trend is an increase of the scale of the fishing industry. This concerns both production (less but bigger ships, more horsepower, fewer companies) and processing (fewer companies). Scale enlargement has been accompanied by specialisation. This development has been stimulated not only by economic forces but also by government policies. The question was asked whether this trend is irreversible. An exception was presented for the Danish Wadden Sea. Here, some local fishermen have managed to develop profitable fisheries delivering high quality products to local markets. In the Netherlands such a development would not be possible because the licensing for fishing is, generally, for one species only. This makes fishermen also more vulnerable.

For the development of profitable local and regional market structures it is necessary that fishermen are given a long term perspective and that multi-species licensing is possible. For the mussel sector local production was regarded less feasible because of the very high hygienic requirements.

**3. Sustainable fishing.** Market developments have, generally, not been in favour of sustainable development. Therefore, regulations are necessary to stimulate and/or enforce sustainable fishing practices.
The question was raised whether mussel seed fisheries was more or less sustainable than wild mussel fishing.

**4. Other Uses.** Developments in other sectors may have a substantial impact on fisheries in the Wadden Sea. Mentioned were the expansion of ports, increase of dredging activities, offshore windmill parks, all of which cause loss of fishing grounds.

**5. Trust.** It was acknowledged that currently there is some mistrust between the fisheries sector and nature protection organisations. A prerequisite for discussing sustainable fishing is, according to the fisheries sector, the acknowledgement that fisheries is possible in the Wadden Sea.

**6. Identity.** Fisheries is part of the identity of the region, although there are important regional differences. There is a tendency towards less acceptance for fisheries, i.e. tourists should not be disturbed. The identity should be maintained and where possible enhanced.

**7. Research questions.** Some questions were raised which might be answered by external research. These were an inventory of the socio-economic and cultural importance of fisheries in the German Wadden Sea region, the feasibility of a local market for fish products and the question whether mussel culture is more or less sustainable than wild mussel fishing.

### 7.4 THEMATIC GROUP INDUSTRY/HARBOUR

Participants: Mr. Michael Ahrens (chair), Mr. Henning Nørgaard, Mr. Diderick Rotermund, Mr. Martin Loos, Ms Ellen Kuipers, Mr. Frank Oswald, Ms V.C. van Vuuren, Mr. Jürgen Hinnendahl, Ms Charlotte Jensen (Observer), Jan Schuurman, Cibit, Bettina Reineking, secretary

The process of identifying relevant specific trends for the industry/harbour sector was done on the basis of a draft list of specific trends, which included the first debate about specific trends on the first TG meeting in Wilhelmshaven. The draft list was compiled by the chair and the secretary.

During the discussion, the participants came up with the following relevant specific trends:

- ·Increase of traffic of goods (see also developments of the economy in the Baltic Sea)
- ·Dredging (disposal of increasing dredged material)
- ·More safety of ships / GSP (safety)
- ·Increasing regulations
- ·Increasing cooperation (horizontal and vertical) / concentration
- ·Harbour competition in Northwest Europe
- ·Aging - how to make the area more attractive for younger people
- ·Light pollution

After a scoring of the specific trends for their impact and their uncertainty on the Wadden Sea, the participants compiled the following list of the top six of the specific trend of the industry and harbour sector:

1. Increasing traffic of goods
2. Deeper ships / dredging
3. Harbour competition (same possibilities for each port)
4. Increasing regulations
5. Aging - how to make the area more attractive to younger people
6. Cooperation – concentration

Working with the relevant information of selected specific trends, such as relevant reports / information with data, developments and perspectives of industry and ports/harbours/shipping of all Wadden Sea

regions, is necessary , which will not be covered by the outcome of the general study on economic data. Therefore, the members of the group are requested to send such material for the future work to the secretariat, taking into consideration the given geographical scope of the WSF activities. Nevertheless, a specific study regarding these aspects with guidance of the selected specific trends has to be compiled and the chair as well as the secretary have the mandate to consider further decisions regarding the study. The draft Terms of References for the specific study will be distributed to the members of the group.

## 7.5 THEMATIC GROUP POLICY/MANAGEMENT

Participants: Verheij (chair), Blanner, Frikke, Salverius, van Geesbergen, Marquenie, Mack (observer), Hebbelmann (observer), Enemark (secretary)

The draft minutes of TG PM 1 were adopted without further comments.

The meeting examined the driving forces and sector specific trends which were identified at the first meeting and included in the minutes of the meeting as a basis for the further work:

1. Climate change
2. Development of tourism and leisure time
3. Population increase/decrease - size in the coastal zone
4. Transportation system/pattern
5. Energy policy, energy costs, new energy production, valuation by people
6. Industry policy
7. Water/ecosystem quality
8. Spatial planning policy e. g. constructions in the Wadden Sea
9. Structural funding after 2006
10. Nature perception, nature valuation
11. Ecological changes
12. Shipping safety

The external study on international legal instruments, policies and management with regard to the Wadden Sea would provide a substantial input to the further work on these trends. The group should basically come up with proposals for policies for the whole Wadden Sea Region

It was also **agreed** that the sustainability discussion should be continued in the group on the basis of the list of activities to be circulated to the members and the external study to be made on the issue.

In discussing the trends all except for 5 and 6 which would be specifically dealt with in other Thematic Groups were considered essential for the further work. Of these, priority was given to

- Climate change
- Water quality/ecosystem quality
- Ecological change

It was agreed to instruct the chair secretariat to make an annotated list or work program for the work to be done on these trends with an indication of the information needed and what policies should be developed and the list should also take account of the already existing generic trend list
It as also **agreed to** consider the possibility of organizing a seminar on specific aspects of the list focused on policy and management to which also the members of the other Thematic Groups should be invited

The meeting **agreed** to the following meeting schedule:

25-26 September 2003 in Ribe (TG PM 3)
16-17 December 2003 in Schleswig-Holstein (TG PM 4)
18-19 March 2004, venue to be settled on.(TG PM 5)

# 8 PLENARY PRESENTATION SECTOR SPECIFIC TRENDS

The chairmen of the TGs presented the main results of the sector specific trend discussions (for details see reports above).
It was **agreed** that the secretariat would start collecting relevant information about these trends. The chairman explicitly asked the participants to submit information available in the sectors to the secretariat.
For some specific questions external research would be initiated.

# 9 CLOSING

The chairman thanked the participants for their involvement and contribution to the discussions.
He furthermore thanked the chairpersons of the TGs and CIBIT for their support.
Finally he expressed his particular gratitude to the NAM for providing excellent facilities for the workshop.

# ANNEX 1: TG PROGRAM

**Day One TGII**

| | | | |
|---|---|---|---|
| | | Arrival guests | |
| | | Lunch | |
| 13.00 | 10 | 1. Opening, program and announcement | |
| 13.15 | 15 | 2. What happened between TG I and TG II. Information by chair | Plenary |
| 13.30 | 120 | 3. Clarification and discussion generic trend reports<br><br>*The main aims of this session are*<br>• *to introduce and clarify the trend reports*<br>• *to discuss the trend reports.*<br>*The autors of the trend reports will present the reports by Power Point presentation. There will be ample room for questions by the participants.* | Plenary |
| 15.30 | 30 | 4. Break | |
| 16.00 | 30 | 5. Presentation study socio-economy Germany (Mr. Krüger, Planco) | Plenary |
| 16.30 | 90 | 6. Elaborating 'impact' generic trends on own sector.<br><br>• Sector groups prioritise trends (criteria: impact and ambiguity<br>• Sector groups elaborate impact with arguments (examples, future developments). Each group works on 4 to 6 trends.<br><br>The aim of this session is to discuss the impacts of the generic trends on the specific sectors and to prioritize the trends.<br>*It is proposed to form 'sector-specific' groups: 5 sector groups (incl. tourism), + 1 governmental group + 1 nature protection group*. | Sector groups |
| 18.00 | 30 | 7. Break. Secretariat/CIBIT integrate results from the sector groups(impact and uncertainty) | |
| 18.30 | 30 | 8. First presentation results sector groups by secretariat<br><br>Brief introduction to actions second day | Plenary |
| 19.00 | 30 | 9. Excursion NAM (within NAM building) | |
| 19.30 | | | |
| 20.00 | | Dinner | |

**Day Two TG II**

| | | | |
|---|---|---|---|
| 8.30 | 90 | 1. Finalisation generic trends<br>• 'Sector group' chairs present highlights emphasising on:<br>o 3-5 new insights<br>o 3-5 relations with other sectors.<br>• Presentation of integrated impact and uncertainty assessment.<br>• Checking results (is this a good and workable choice) and selecting axes.<br>• playing with the axes: make a rough first fill of 2 scenarios.<br><br>*The aim of this session is to make a definite choice on the prioritization of the generic trends and to select the two trends that will form the axes for the scenarios.* | Plenary |
| 10.00 | 30 | 2. Break | |
| 10.30 | 30 | 3. Presentation Oxford Brookes study Policy/Management | |
| 11.00 | 90 | 4. Thematic Groups: Discussion sector specific trends<br><br>• Introducing list so far<br>• Brainstorm adding missing sector specific trends.<br>• Preliminary Prioritising (a first top 7)<br><br>The aim is to have a first discussion on the specific trends for the different sectors and to prioritize the specific trends.<br><br>5. Thematic Groups. Practical arrangements (next meeting etc.) | TG |
| 12.30 | 30 | 6. Presentation results.<br>• Chairs TGs present highlights emphasising on max 3 important results with relation with other sectors.<br>• Brief introduction on follow-up and main activities for TGIII | Plenary |
| 13.00 | | 7. Closing | Plenary |
| 13.15 | | 8. Lunch and or departure | |