

Climate and the Oceans: Impacts and Mitigation Challenges for Fishing and Shipping

Brussels, 5 November 2008

Introduction

Increasing levels of man-made greenhouse gases are leading to global climate change with catastrophic long-term implications for the marine environment. Stopping the rise in temperatures requires urgent action by all industries including shipping and fishing.

Rising temperatures will affect every aspect of the natural world and have profound impacts on the marine environment. Effects will include changes to ocean circulation, changes in salinity and oxygen content, ocean acidification, changes in species (including commercial fish species) abundance, distribution and migratory routes, and of course sea-level rise. These will place substantial and in many cases unbearable additional pressures on marine ecosystems that are already heavily stressed by human activities. Economic and social activities that rely on clean and healthy seas will also be negatively affected.

The conference will address the scale of the problem and appropriate target setting and after considering the impacts of climate change on the marine environment will go on to look at the contribution made to climate change by two key maritime sectors - shipping & fishing - and the mitigation options available to them.

Seas At Risk, founded in 1986, is an independent non-governmental federation of national and international environmental organisations concerned with the protection and restoration of the marine environment. Its participant organisations are primarily nationally based, although some are international groups, and it acts principally as a technical and political platform for environment group intervention at international political and legal meetings of government.

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Conference Programme

8.30: Coffee

9.00: Welcome

Dr. Monica Verbeek (Executive Director, Seas At Risk)

9.10: *Setting the scene: the scale of the problem and reduction targets*

Katherine Watts (Climate Action Network – Europe)

9.30: Questions and comments

The impacts of climate change on the marine environment

Chaired by Dr. Monica Verbeek

9.40: *Oceanic climate change: The physical basis*

Prof. Jürgen Willebrand (IPCC / IFM-GEOMAR, University of Kiel)

10.00: *The role of ocean circulation in the global climate system*

Dr. Anna von der Heydt (Institute for Marine and Atmospheric research, Univ. of Utrecht)

10.20: Questions and comments

10.35: Coffee break

11.10: *Ocean acidification: effects on ecosystems*

Dr. Jason Hall-Spencer (School Of Biological Sciences, University of Plymouth)

11.30: *Impacts of climate change on fisheries*

Dr. Keith Brander (ICES/GLOBEC Coordinator, Danish Inst. of Aquatic Resources)

11.50: *Climate change and recreational water use*

Prof. Jan Semenza (European Centre for Disease Prevention and Control – ECDC)

12.10: Questions and comments

12.30: Lunch

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Maritime sector CO2 emissions and mitigation possibilities

Shipping and CO2 emissions

Chaired by Bill Hemmings (European Federation for Transport & Environment, Brussels).

13:30 *Scale and nature of emissions from shipping*

Dr. Øyvind Buhaug (Coordinator of the IMO GHG Study Review Group, Marintek)

13:50 *UNFCCC & IMO developments and the response of the EU*

Mark Major (European Commission, DG Environment)

14:10 *Technical and operational options for ship CO2 mitigation*

David Tongue (Marine Manager, International Chamber of Shipping)

14:30 *The role of renewables in ship CO2 mitigation*

Colin Whybrow (Greenwave)

14:50 *Market mechanisms to tackle CO2 emissions from shipping*

Jasper Faber (CE Delft)

15:10 Questions and comments

15.30: Coffee Break

Fisheries and CO2 emissions

Chaired by Dr. Keith Brander (ICES/GLOBEC Coordinator, Danish Inst. of Aquatic Resources)

16:00: *Scale and nature of emissions from fisheries*

Prof. Harald Ellingsen (Norwegian University of Science and Technology - NTNU)

16:20: *The role of subsidies for fisheries*

Luc van Hoof (IMARES)

16:40: *The use of CFP instruments to tackle climate change*

Erik Lindebo (European Commission - DG Mare)

17:00: *Experience with switching to climate friendly, low impact fishing techniques*

Rems Cramer (Dutch Fishermen's Organization, The Netherlands)

17.20: Questions and comments

17.40: *Conclusions*

Dr. Monica Verbeek (Executive Director, Seas At Risk)

18.00: Conference ends. Drinks at the conference venue.

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Abstracts

Setting the scene: the scale of the problem and reduction targets

Katherine Watts (*Climate Action Network – Europe*)

Abstract:

Last year's Fourth Assessment Report (AR4) by the Intergovernmental Panel on Climate Change underscored the urgency of action that is required to reduce emissions of greenhouse gases; climate change poses potentially catastrophic risks, which increase in severity with temperature.

For this reason, it is imperative that global average temperature increases above pre-industrial are kept as far below 2°C as possible. For this to happen, global emissions will need to peak within the next decade and decline thereafter. A delay in action will require much greater rates of emission reductions later to achieve the same stabilization, at significantly higher cost, and may make lower stabilization levels impossible to achieve: the window of opportunity to act is closing rapidly.

However, the overall message of the AR4 was a hopeful one: reducing greenhouse gas emissions to the necessary low levels is possible, affordable and can be achieved with existing technologies, with new technologies also having an important role to play in future. The real question of whether dangerous climate change can be avoided is currently one of political will.

Biography:

Katherine Watts is a policy officer at Climate Action Network-Europe (CAN-Europe), a coalition of more than 115 environmental and development non-governmental organizations throughout Europe, committed to limiting human-induced climate change to ecologically sustainable levels.

Her responsibilities include developing policies and positions on post 2012 climate policy for the Climate Action Network-International network, while being involved in advocacy at the UN Framework Convention on Climate Change negotiations and during the EU policy development processes.

Prior to this, she did an internship in DG Environment of the European Commission, and was doing post graduate research at Imperial College, London. She has an MSc in Environmental Technology from Imperial College and an MChem from the University of Oxford.

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Oceanic climate change: The physical basis

Prof. Jürgen Willebrand (*IPCC / IFM-GEOMAR, Leibniz Institute of Marine Sciences at University of Kiel*)

Abstract:

The ocean is part of the climate system, and consequently is subject to changes associated with global climate change. The talk will give a brief overview on physical climate changes in the ocean. During the last decades, the oceans have warmed, mainly in the upper kilometre. Contrasts in salinity have increased so that regions which are fresher than average have become even fresher, and saltier regions even saltier. There is some evidence for a decrease in oxygen concentrations in the main thermocline over the last decades, likely driven by a reduction in water-mass renewal. Summer sea ice has receded dramatically in the Arctic. Approximately 40% of the anthropogenic carbon emissions are taken up by the oceans, and lead to acidification of seawater. Climate projections for the 21st century suggest that the patterns of change observed during the last decades will continue in the coming decades.

Biography:

1968 Diploma in Physics; 1973 Dr.rer.nat in Oceanography; 1970 – 1976 and 1978-1980 Research Associate, Institut für Meereskunde, Universität Kiel; 1976-1978 Associate Research Scientist, Geophysical Fluid Dynamics Program, Princeton University; 1981-1983 Research Scientist, Max-Planck-Institut für Meteorologie, Hamburg; 1982 Visiting Associate professor, Department of Oceanography, University of Hawaii, USA; 1983-2007 Professor of Oceanography, University of Kiel; 1986-1987 Visiting Scholar, University of Washington, Seattle, USA; 1992-1993 and 2005-2006 Visiting professor, CSIRO Department of Oceanography, Hobart, Australia; 2001-2003 Director, Institut für Meereskunde, Universität Kiel; since 2007 Emeritus Professor of Theoretical Oceanography.

Throughout his career, Prof. Willebrand achieved the following honours: Fridtjof Nansen Medal, European Geophysical Society (2001); Fellow, American Geophysical Union (2005); Albert-Defant Medal, Deutsche Meteorologische Gesellschaft (2007).

Jürgen Willebrand's recent activities: Intergovernmental Panel for Climate Change (IPCC), Lead Author, Third Assessment Report (1998-2001); WCRP CLIVAR Scientific Steering Group, (1998-2003, co-chair, 1999-2003), Scientific Expert Panel, Hadley Centre; Met. Office, UK (chairman, 2000), Review Committee; NSERC CLIVAR Program, Montreal (2001); Guest Editor, Progress in Oceanography (2001); Intergovernmental Panel on Climate Change (IPCC), Coordinating Lead Author, Fourth Assessment Report (2004-2007).

His main research interest is the theory and numeric modelling of the ocean circulation and the ocean's role for climate and climate change.

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The role of ocean circulation in the global climate system

Dr. Anna von der Heydt (*Institute for Marine and Atmospheric research, Univ. of Utrecht*)

Abstract:

The global ocean circulation plays an important role in regulating our climate system. Because of their huge heating capacity, the oceans are able to store and redistribute heat in the climate system before it is released to the atmosphere. In particular the so-called meridional overturning circulation in the Atlantic is important for the temperate Western European climate because it transports large amounts of heat from the tropical regions to the mid and high latitudes. Changes in this part of the ocean circulation will therefore strongly affect climate in the North Atlantic area. In this presentation we will discuss examples from Earth's history that indicate dramatic climate changes associated with the meridional overturning circulation. Furthermore, internal variations of the meridional overturning circulation and their climatic effects will be discussed.

Biography:

Anna von der Heydt studied Physics at the Philipps University in Marburg, Germany. After graduating in 1999, she worked on her PhD in the Physics of Fluids Group at Twente University in the Netherlands. She worked theoretically and numerically on turbulent flows and finished her PhD in 2003 with the thesis entitled "Non-ideal turbulence". Since 2003 she is working at the Institute for Marine and Atmospheric Research at Utrecht University as Junior Lecturer. Her main research interests are ocean circulation changes that happened in Earth's history, when climate was very different from today. She also is working on understanding climate variability that is associated with the global ocean circulation.

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Ocean acidification: effects on ecosystems

Dr. Jason Hall-Spencer (*School Of Biological Sciences, University of Plymouth*)

Abstract:

The oceans absorb over 25 million tons of CO₂ every day. This has caused surface waters to become 30 per cent more acidic since wide-spread burning of fossil fuels began and we are now undergoing the fastest rate of ocean acidification the Earth has seen for at least the past 20 million years. This talk will describe a novel approach undertaken by researchers from the UK, Italy, France and Israel to document the first ecosystem-wide responses to long-term changes in ocean pH. The effects were studied on marine communities around underwater volcanic vents where carbon dioxide bubbles up like a jacuzzi, releasing of millions of litres of CO₂ per day and causing seawater acidification. The major impacts on marine life around the vents included 30% reductions in biodiversity where average pH had dropped by 0.2-0.4 units, (pH 7.8-7.9), compared with areas with normal pH for seawater (pH 8.1-8.2). This research provides the first confirmation of modelling and short-term laboratory experiments which have predicted severe reductions in the ability of marine organisms to build shells or skeletons from calcium carbonate due to the dramatic effects of CO₂ on seawater chemistry.

This study demonstrates, for the first time, what happens to marine ecosystems when key groups of species are killed due to rising CO₂ levels. This study, published in *Nature* (July 2008, Vol 454, 96-99) adds urgency to the international policy drive to reduce CO₂ emissions.

Biography:

Dr Jason Hall-Spencer is a lecturer in Marine Biology at the University of Plymouth, UK and Honorary Lecturer at Glasgow University. His main interest is conducting applied research to provide policy makers with the scientific information needed to best manage the marine environment, ranging from deep-sea benthos, fisheries, aquaculture, marine protected areas and biogenic reefs. He actively promotes marine science issues in political circles as well as at wider public meetings and is a member of the International Council for Exploration of the Seas working group on deep-water habitats, on the Royal Society Marine Advisory Panel and in 2005 won the British Association Charles Lyell Award for Science Communication. This year he is working on deep-water coral reefs in the Arctic, new fisheries closures off the UK and underwater volcanoes in the Mediterranean.

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Impacts of climate change on fisheries

Dr. Keith Brander (ICES/GLOBEC Coordinator, Danish Inst. of Aquatic Resources)

Abstract:

Fisheries have been affected by changes in temperature, salinity, pH, vertical mixing and other properties of ocean climate throughout history. However we are rapidly moving outside the ranges which occurred during historic times. At the same time the demand for fish supplies is putting excessive pressure on stocks, most of which are now fully exploited or over-exploited. An increasing fraction of the world market in fish is supplied from aquaculture, but aquaculture depends heavily on capture fisheries as the source of food for farmed fish. The evidence that fish stocks are sensitive to changes in ocean climate is unequivocal. Because we have no direct control over marine ecosystems our predictions of future regional or global fisheries production are much less precise than those for farm crops. Nevertheless, some predictions can be made with some confidence, because of particular circumstances, such as shrinkage of sea ice, bleaching of corals or decline in salinity. The kinds of question which are now being tackled are (i) what changes in ecosystem and fisheries production are likely to occur? (ii) can we identify particularly vulnerable species and marine ecosystems? (iii) can we determine and monitor for critical thresholds, beyond which radical changes in production and species composition are likely? (iv) where and when are extreme events (temperature, de-oxygenation, storm surges) likely to have the greatest impact? (v) how is the sensitivity of fisheries and marine ecosystems to climate affected by other pressures, such as pollution and heavy fishing? Tackling the old problems of overfishing, habitat alteration and eutrophication provides an effective, no-regret response to the new problems posed by climate change.

Biography:

Dr. Keith Brander has worked as a research scientist, adviser and teacher in the field of fish population dynamics and marine ecosystem management. He has been investigating the effects of climate change on fish stocks for twenty years and was lead author on fisheries for the 2007 IPCC report, sharing in the 2007 Nobel Peace Prize. He also contributed to the chapters dealing with marine ecosystems and with observed impacts.

Keith Brander worked for the UK Ministry of Agriculture, Fisheries and Food (MAFF, now DEFRA) on fisheries assessment and management and for a period as Fisheries Science Advisor. He advised the EU during the early stages of the establishment of their fisheries policy. With an interest in long term variability and monitoring, he has been a strong supporter of programmes such as the Continuous Plankton Recorder, for which he was President (of SAHFOS) for six years.

His most recent papers are on human impacts on marine ecosystems, the effects of climate change on global fish production and fisheries induced adaptive change. Earlier work included studies of multispecies fisheries, biological oceanography, productivity in marine ecosystems, plankton sampling and fish early life history. His principal field of expertise is on the population dynamics of the Atlantic cod, on which he has published over 50 papers.

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Climate change and recreational water use

Prof. Jan Semenza (*European Centre for Disease Prevention and Control – ECDC, Stockholm, Sweden*)

Abstract:

Climatic changes can pose a threat to human populations through water-borne diseases. Extreme weather events that have triggered water-borne disease outbreaks include extended periods of hot weather that can increase mean temperature of water bodies which can be favourable for microorganism reproduction cycles and algae blooms, or storm surges that can lead to overflows and contaminate surface waters or coastal ranges with sewer. Elevated temperatures during the summer of 2006 throughout the moderate climate regions of north-western Europe resulted in elevated water temperatures. Several individuals developed infections following contact with water of the Baltic and the North Sea. Altered patterns of precipitation due to global climate change can result in accelerated transit time of large volumes of surface runoff to coastal discharge sites from roadways, parking lots, and buildings associated with urbanization. In summary, climate and environmental changes pose a threat to beach-going populations in Europe and beyond.

Biography:

Professor Jan C. Semenza is a Section Head at the European Centre for Disease Prevention and Control (ECDC), a new public health agency in Europe founded in the aftermath of the SARS pandemic and at the dawn of the recurrent avian influenza outbreaks. He was a faculty member at UC Berkeley, UC Irvine, Oregon Health and Science University, and at Portland State University, teaching in the Oregon Masters Program of Public Health. He was an Epidemic Intelligence Service Officer at the Centres for Disease Control and Prevention (CDC) where he led the CDC response to the heat wave in Chicago in 1995. He has conducted a number of epidemiologic studies on the impact of climate and recreational water use.

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Scale and nature of emissions from shipping

Dr. Øyvind Buhaug (*Coordinator of the IMO GHG Study Review Group, Marintek*)

Abstract:

[...]

Biography:

Dr. Buhaug is Research Manager for Environmentally friendly Shipping, at the Norwegian Marine Technology Research Institute. Dr. Buhaug has a MSc. in Naval Architecture and a PhD in Combustion Engines and has worked on emissions and emission reductions from ships throughout his professional career. His background includes ship exhaust gas measurements in field and laboratory settings, development and testing of engine modifications for emissions reduction as well as testing of fuels and other emission reduction equipment for various clients including private companies, public authorities, European and Norwegian Research authorities. Dr. Buhaug has served as an adviser to Norwegian Authorities throughout the revision of Annex VI. Currently, Dr. Buhaug is coordinating the update of the IMO study on GHG emissions from ships.

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UNFCCC & IMO developments and the response of the EU

Mark Major (*European Commission, DG Environment*)

Abstract:

[...]

Biography:

Mark Major is a qualified Civil Engineer (Oxford Polytechnic) and also has an MBA in International Management (American Graduate School of International Management). He has been a permanent official of the European Commission since 1999 after he worked as a senior transport planner for the City of Nottingham in the UK.

Prior to taking up his current post in DG Environment where he works on Transport and Climate Change, he spent 6 years in DG Transport and Energy (dealing with freight transport policy).

Since 2005 he has been a visiting professor at the China Academy of Transportation Studies (part of the Ministry of Communications in China)

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Technical and operational options for ship CO2 mitigation

David Tongue (*Marine Manager, International Chamber of Shipping*)

Abstract:

[...]

Biography:

David Tongue has a broad experience and knowledge of the industry, including shipbuilding, ship repair, operations, management and the regulatory process, gained by an extensive career in shipping. He has started his seagoing career as an engineer cadet with B.I.S.N Co Ltd in 1968, and came ashore in 1988 with 8 years experience as Chief Engineer. His next 12 years were spent in ship management in all positions, rising from Engineer Superintendent to Technical Director/Senior Vice President. This was followed by two years in Marine Consultancy.

He is currently Marine Manager in the International Chamber of Shipping (ICS) secretariat, and as such, presents the agreed ICS Industry position in recognised International and other forums, with the greater emphasis to the International Maritime Organization (IMO) discussions in its various Committees and Sub-Committees. David follows, and is an active participant in the IMO ballast water debate and is an appointed member of the IMO GESAMP-BWWG.

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The role of renewables in ship CO2 mitigation

Colin Whybrow (*Greenwave*)

Abstract:

The presentation will explore what renewable energy sources exist and how they might be applied to mitigate the impact of CO2 from shipping. The presentation will then demonstrate more specifically how GHG emissions from shipping can be reduced significantly, affordably and practically using researched and tested technologies that work with renewable energy sources. Greenwave is a UK registered environmental charity working with the global shipping industry to find ways for it to meet its environmental obligation to reduce emissions.

Biography:

Colin Whybrow is Head of Communications for Greenwave and has been with the charity since it was founded earlier this year although the R&D programme commenced over two years ago. During his career in consultancy he has worked with many leading multinational companies as well as charities and advocacy organisations.

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Market mechanisms to tackle CO2 emissions from shipping

Jasper Faber (CE Delft)

Abstract:

An effective climate policy for shipping may comprise a number of different policy instruments. Some of these will be market based instruments, as they have proven to be generally more cost-efficient than more traditional environmental policy instrument. This presentation will focus on possible market based instruments to improve the CO2-efficiency of ships and instruments to limit or reduce CO2 emissions. In particular, the possibilities for including shipping in the EU ETS will be discussed.

Biography:

Jasper Faber, PhD, is CE Delft's co-ordinator on aviation and maritime transport. He has led and contributed to a large number of reports on policies to reduce the climate impact of shipping over the past four years. Currently, Jasper is leading a consortium that consults the EU on climate policy and another consortium that studies global policies for the German Ministry of the Environment. CE Delft is also engaged in the GHG study commissioned by IMO where it is responsible for the policy analysis. Jasper holds a degree in economic history, is married and has two children.

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Scale and nature of emissions from fisheries

Prof. Harald Ellingsen (Norwegian University of Science and Technology - NTNU)

Abstract:

Energy use is of high concern within the fisheries. The latest rise in fuel prices have, for some Norwegian fisheries, resulted in a situation where fuel costs exceed more than 30% of the value of the catch. The market profile and the amount of sea food may further be threatened if the emissions released by sea food production get too high. Several studies also identify the catching phase as the far most dominating contributor to energy use within the seafood production chain. In the presentation, energy consumption and the economics of most segments of the Norwegian fishing fleet for gadoid fish and pelagic fleet for the period 1980 to 2004 are presented. The results are compared with data for Nordic and international fisheries. Data are further compared with studies of other food chains as farmed salmon and chicken. Inverse correlations are found between the levels of fuel consumption and catches on a yearly basis; also, between fuel consumption and oil prices on a longer term basis. A long term trend towards increased energy consumption and reduced real prices is observed from the mid 1980s until 2000. This may indicate that low fuel prices do not motivate the development of energy efficient technology in the long run.

Biography:

Harald Ellingsen is a Professor in Fisheries Technology at the Department of Marine Technology at the Norwegian University of Science and Technology. Over the years, he has been involved in several projects aiming at reducing the energy consumption and the subsequent emissions from the fisheries.

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The role of subsidies for fisheries

Luc van Hoof (IMARES)

Abstract:

Subsidies and especially those used in fisheries, quite often stir a debate between advocates and critics of the instrument. Estimated at a total of 12-20 million USD worldwide, subsidies are important management tools. Subsidies in fisheries take many forms ranging from tax exemption on fuel to investments in more ecologically sustainable fishing techniques. In this presentation, the economic basics of subsidies will be discussed with a focus on their role in fisheries management. The history of subsidies on fisheries in Europe will briefly be explained and a simple bio-economic model will be used to show the effect of subsidies. The case of fuel subsidies in fisheries will be shown to illustrate the scope and the effects of subsidies.

Biography:

Van Hoof is the Executive Secretary of EFARO and is employed by the Institute for Marine Resources and Ecosystem Studies (IMARES) in the Netherlands. He holds a Masters Degree in Economics and Fisheries. He has built up experience as a fisheries economist and management consultant during 15 years in various African countries. Since 2000 he has been involved in European and Dutch fisheries research, both as head of the Fisheries Research Group of the Agricultural Economics Research Institute and as head of the Seafood and Aquaculture group of IMARES. He has been involved in several activities concerning Governance in Fisheries Management, both at the level of stakeholder involvement in the policy process as in scientific support to policy development. In addition he has been coordinating several European studies focusing on the possible developments of the European Fisheries Management System. As member of both EFARO and EAFE, STECF and observer of the NSRAC, he is well known among the stakeholders of the fisheries scientific, management and fisheries sector community.

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The use of CFP instruments to tackle climate change

Erik Lindebo (*European Commission - DG Mare*)

Abstract:

There are clear signs that climate change will be an increasingly important factor in the sustainability of marine resources. The Common Fisheries Policy (CFP) has a number of instruments at its disposal which could help combat negative impacts, but will nevertheless require further adaptation under a reformed CFP. Member State and industry initiatives can foster additional benefits in this regard. The most obvious tools available to the Community include the European Fisheries Fund and the recently adopted fuel emergency package. In terms of tackling climate change, these shall mainly focus on reducing pressures on the marine resources, but will at the same time promote more environmentally friendly (e.g. through discard policy) and less energy consuming vessels, gears and engines. Under a reformed CFP we can add further weight to an ecosystem approach and maritime integration, whereby we promote more responsible use of oceans and maritime regions through adaptive management approaches. The carbon footprint of seafood products consumed in the Community is also vital and should not be neglected. Additionally, with better knowledge of the carbon footprint of the distribution chain of seafood products we may propose ways by which we can streamline the chain and/or support new technologies, and thereby reduce emissions.

Biography:

Erik Lindebo is a fisheries economist and has for the last three years worked in the Structural Policy and Economic Analysis Unit of DG MARE. Prior to coming to the Commission he worked as a researcher on fisheries economic issues in Denmark and the United Kingdom. He is currently working with the main components of the upcoming CFP reform, in particularly focusing on fleet policies, subsidies and the use of property rights in fisheries.

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Experience with switching to climate friendly, low impact fishing techniques

Rems Cramer (*Dutch Fishermen's Organisation, The Netherlands*)

Abstract:

Rems will give a brief overview of the development of the Dutch fishing industry from 1900 till present. In this period fishing with static gear changed to methods with towed nets and fishing became more industrial.

From the late 1970's fishing with small scale static gear (gillnets) was reintroduced in Dutch coastal waters. The main gillnet target species is Sole in summer and there is some fishing for Turbot, Brill and Cod in winter.

From 2000 the popularity of gillnetting swiftly increased, mainly because of the specific advantages of the method. In this presentation advantages (low energy consumption, low carbon footprint, low impact on sea bottom, small scale, high quality fish, selective) and supposed disadvantages (by catch, ghost nets) will be explained.

A summary of the current developments will then be given. Gillnetting Sole is subject to certification according to MSC standards. To avoid uncontrolled growth of fishing capacity (length of nets, amount of vessels) in coastal waters the sector seeks suitable legislation.

Biography:

Rems Cramer (b.1953) was raised in a traditional fishing family in Noordwijk on the west coast of the Netherlands. In 1975 he obtained a bachelors degree in Shipbuilding/ Fishing Gear Technology. As a consulting engineer/ professional fisherman Rems sailed a variety of fishing vessels and has fished with many different types of fishing gear all over the world.

From 2000 he has operated as skipper/ owner of a 34 feet gillnetter working the Dutch coastal fishing grounds. Additionally Rems is a staff member of the Gillnetting Project team of the Dutch Fishermen's Organisation currently working on the sustainability of Dutch gillnetting.