



## Economics of subsidies to whaling

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eftec  
73-75 Mortimer Street  
London W1W 7SQ  
tel: 44(0)2075805383  
fax: 44(0)2075805385  
[eftec@eftec.co.uk](mailto:eftec@eftec.co.uk)  
[www.eftec.co.uk](http://www.eftec.co.uk)



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Report prepared for WWF-UK and WDCS

by:

Economics for the Environment Consultancy (eftec)  
73 - 75 Mortimer St, London, W1W 7SQ  
Tel: 020 7580 5383  
Fax: 020 7580 5385  
www.eftec.co.uk

Main contributors:

Dr. Rob Tinch  
Zara Phang

Reviewer:

Dugald Tinch

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# 1. Introduction

## 1.1 Recent history of whaling

International whaling regulation under its current legal framework began in December 1946, when 15 nations signed the International Convention for the Regulation of Whaling in Washington, agreeing to "provide for the proper conservation of whale stocks and thus make possible the orderly development of the whaling industry"<sup>1</sup>.

The Parties to the Convention established the International Whaling Commission (IWC) in 1949 for the purpose of implementing the convention. In 1982, members of the IWC successfully voted to implement a pause on commercial whaling, which has been in effect from 1986.

Japan and a few other nations continued whale hunting under scientific research permits<sup>2</sup>. By 1995 only Japan continued. In recent years, total Japanese catches have been almost 1,000 whales per year, with a peak of 1243 in 2005/6. These are mostly two species of minke whale, with about 100 sei, 50 Brydes and 3 sperm whales each year. Iceland also conducted scientific whaling from 2003 to 2007, killing a total of 200 minke whales in that time period.<sup>3</sup>

Norway formally reserved its position on the moratorium by lodging an objection to the decision in 1982. It introduced a temporary ban on whaling, but began whaling commercially under its objection in 1994<sup>4</sup>. Commercial catches of minke whales by Norway under objection since 1994 have totalled 7333 whales, with 597 taken in 2007/8.<sup>5</sup>

Iceland<sup>6</sup> is also active in commercial whale hunting. It stopped commercial whaling in 1986 in recognition of the moratorium, but continued scientific whaling until 1989. It left the IWC in 1992, but rejoined in 2002 with a reservation to the moratorium decision. As stated above, Iceland resumed scientific whaling in 2003 and resumed commercial whaling under its reservation to the moratorium in 2006, killing seven fin whales and seven minke whales in 2006/7 and 37 minkes in

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<sup>1</sup> The Convention, International Whaling Commission, Retrieved May 29, 2009.  
<http://www.iwcoffice.org/commission/convention.htm>

<sup>2</sup> Catches under Permit, International Whaling Commission, Retrieved May 29, 2009.  
[http://iwcoffice.org/conservation/table\\_permit.htm](http://iwcoffice.org/conservation/table_permit.htm)

<sup>3</sup> Vísindaveiðum lokið. 4 September 2007. [www.hrefna.is](http://www.hrefna.is)

<sup>4</sup> Norwegian Minke whaling. Norway - the official site in the UK. Retrieved May 29, 2009.  
<http://www.norway.org.uk/policy/environment/whaling/whaling.htm>

<sup>5</sup> Catches under Objection, International Whaling Commission, Retrieved May 29, 2009.  
[http://iwcoffice.org/conservation/table\\_objection.htm](http://iwcoffice.org/conservation/table_objection.htm)

<sup>6</sup> [http://www.iwcoffice.org/\\_documents/\\_iceland.htm](http://www.iwcoffice.org/_documents/_iceland.htm)

2008/9.<sup>7</sup> In late January of 2009, the Fisheries Ministry announced a five-year bloc quota for 150 fin whales and at least 100 minke whales a year.<sup>8</sup>

A few other countries are permitted to hunt whales under the IWC's Aboriginal Subsistence Whaling category<sup>9</sup>: primarily Denmark (Greenland), the USA (Alaska) and the Russian Federation (natives of Chukotka), with approximately 380 whales taken annually, mostly minke (c. 180) and grey (c.130), with bowhead (c.60), and some fin (c.12).

## 1.2 Developments

Whaling by Japan, Norway and Iceland, under objection or scientific whaling programmes, kills around 1,600 great whales each year, and in some years almost 2,000. Presently the IWC is in formal discussions on its future, through the annual general meetings, focused inter-sessional meetings and a 'Small Working Group' of government representatives. These discussions, which aim to find a solution to the current impasse on whaling in the Commission include a possible package deal that would endorse a level of commercial whaling in the coastal waters of Japan, in return for reductions in some of Japan's scientific whaling; and although not specified to date, may also include Iceland and Norway, and might determine the course of global whaling for the immediate, and longer term, future.

There is anecdotal and ad hoc information to suggest that commercial (and/or scientific) whaling operations in the three countries would not be economically viable industries were it not for significant government subsidies, both direct and indirect that artificially reduce the cost of the capture, processing and marketing of whale products. Yet no comprehensive economic analysis of whaling across these countries is available. This report aims to explore such evidence as is available on recent subsidies to whaling in Norway and Japan, and to draw conclusions regarding the implications for possible commercial whaling, to inform decision-making in the IWC.

## 1.3 A note on currencies

In this report, all values are reported in US\$ at 2008 prices. Conversion from national currencies to US\$ has been carried out using Purchasing Power Parity (PPP) conversion rates from the OECD for each year; we then corrected for changes in prices over time by using the US\$ GDP deflator. For both Norway and Japan - but especially Norway - using PPP means lower dollar values are reported. For example, for 2008, the PPP conversion sets US\$ 1 equal to NOK 9.4, whereas the

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<sup>7</sup> [http://www.iwcoffice.org/conservation/table\\_objection.htm](http://www.iwcoffice.org/conservation/table_objection.htm) and [Búið að veiða 37 hrefnur af 40 dýra kvóta](http://www.hrefna.is), 5 September 2008. [www.hrefna.is](http://www.hrefna.is)

<sup>8</sup> <http://stjornartidindi.is/Advert.aspx?ID=03d0f218-3fbc-448c-82f2-fc41014d2911>

<sup>9</sup> ASW Catches, International Whaling Commission, Retrieved May 29, 2009. [http://iwcoffice.org/conservation/table\\_aboriginal.htm](http://iwcoffice.org/conservation/table_aboriginal.htm)

market exchange rate was closer to NOK 6. The difference is due to the higher general price level in Norway; in effect, we are correcting for the fact that things generally cost more in Norway: you could exchange a dollar for NOK 6, but if you want to buy the same things in Norway that a dollar would buy in the US, that would cost you NOK 9.4. If we had used market exchange rates, all the figures in this report would have been higher, by up to about 50% in the case of Norway, and a smaller increase for Japan.

## 2. The Economics of Whaling

The economic analysis of whaling is not simply a matter of comparing the value of whale meat with the costs of hunting it, though of course these are important parts of the picture. Several other factors need to be taken into consideration.

Most obviously, the biological impacts of hunting on whale stocks has implications for future hunting costs and opportunities and for conservation objectives. In addition, there are several potential externalities associated with whales or whaling - most notably, impacts on whale tourism markets, and on fisheries.

There are also several possible indirect impacts, including the possible costs of trade sanctions or boycotts, including on the tourist trade. Other indirect costs include public relations expenditures associated with promoting whaling or whale consumption, and a range of other subsidies aimed at supporting the whaling industry.

Keeping track of all the different costs and benefits over time can be made easier by using the framework of Total Economic Value (TEV).

### 2.1 Economic Value Framework

In mainstream economic theory, concepts of cost and value are based on trade-offs. Value is based on individuals' willingness to pay (WTP) for securing a gain or avoiding a loss, or their willingness to accept compensation (WTA) for foregoing a gain or tolerating a loss. Opportunity cost is a related concept that defines the economic cost of using a resource as the value of that resource in its next best use, which in turn can be defined as the willingness to pay for the resource in that next best use.

Many goods and services are traded in markets, where demand (WTP) and supply (WTA) are represented through exchange transactions. But WTP and WTA concepts also apply to non-marketed goods and services, and indeed to anything that influences individuals' welfare. Total economic value (TEV) is a framework for keeping track of different kinds of value of a good, service or resource: it covers direct use of the resource, but also indirect use, option value associated with uncertain future use, and non-use values associated with altruism, bequest, or existence value.

There is nothing in the TEV framework, or in economic theory, that requires the use of monetary units to assess value. The concept of trade-off applies between

different goods and services irrespective of the unit. But comparing different kinds of goods and services requires some common unit, and in modern societies, money is the most convenient and widely understood ‘unit of measure’ that enables a common comparison of outcomes in economic analysis.

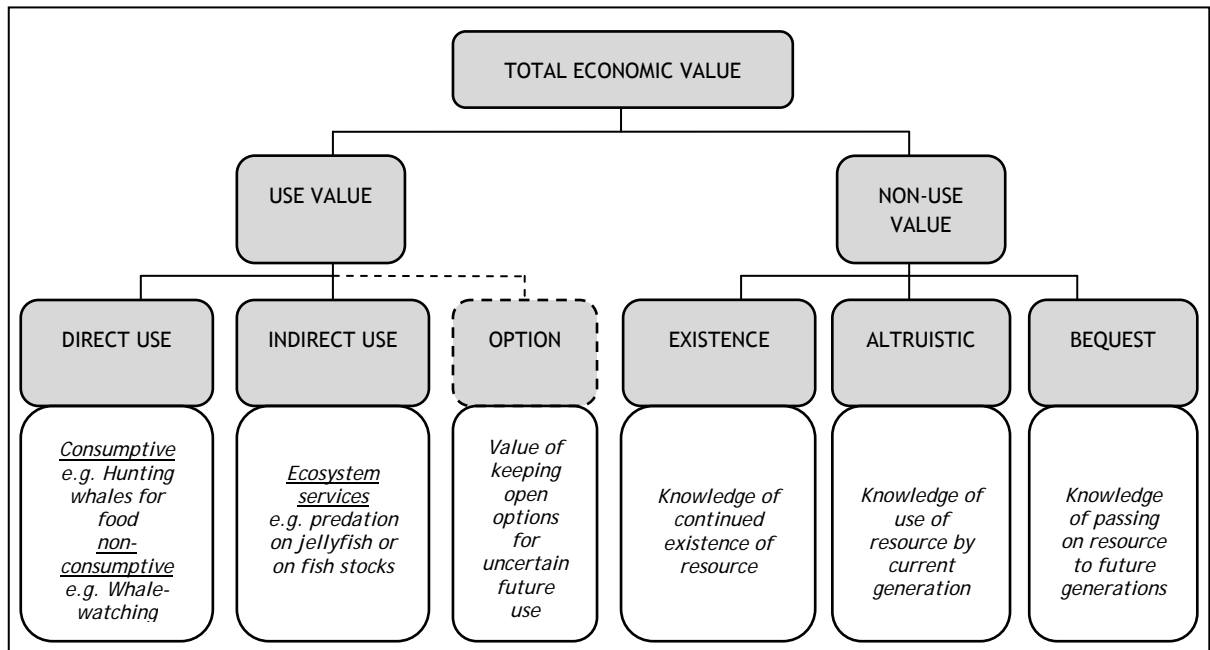


Figure 1: Total Economic Value Framework

Use values:

- *Direct use value*: hunting whales for food or other uses (consumptive use), watching whales from boats (non-consumptive use). Also adding to scientific knowledge via research, which can be consumptive (if whales killed) or non-consumptive.
- *Indirect use value*: the role of whales in other ecosystem services.
- Use values are the most often recognised, and the easiest to measure, but not necessarily the biggest, values.

Option values:

- *Option value*: the benefit of keeping open the option to use whales in the future, including selling to new markets, or through the marketing of new products, even if no such use is currently planned.
- *Quasi-option value*: of avoiding or delaying irreversible decisions, where technological and knowledge improvements can alter the optimal management of a natural resource.
- Option values only exist due to uncertainty about future preferences, technologies or resource availability. They are highly relevant to any decision that puts whale stocks at risk, but less relevant to decisions about small-scale harvesting that would not restrict long-term options.

Non-use values:

- *Altruistic value*: from knowing that contemporaries can enjoy whales.

- *Bequest value*: from the knowledge that future generations can enjoy whales.
- *Existence value*: from the knowledge that whales continue to exist, beyond any use made of them by oneself or others now or in the future.

Non-use values are associated with benefits unrelated to any *personal* use of whales. The description above uses the shorthand "whales" but we need to recognise that many different things could be valued here. Most often, discussion would focus on values associated with survival of whales generally, in healthy populations. Many people may also place a high premium placed not just on whales existing, but on whales living natural, un-hunted lives; being a source of wonder and beauty, but not food, for future generations. But the non-use category can also be applied to cultural and heritage values, and other people may hold existence and bequest values associated with a healthy whaling culture, upholding traditions, and the ability of descendants to enjoy whale meat.

Economic values are often compared in a cost-benefit analysis (CBA), which compiles future flows of costs and benefits, applies discounting to convert future values to present terms, and estimates the net present value of a policy or programme. Both market and non-market costs and benefits can be included: ideally, total economic value is assessed. Sometimes CBA is augmented by separate identification of winners and losers.

A full CBA of different options for whale management is a complex undertaking, with particular difficulties associated with the issues of winners and losers, compensation, and property rights. There is also a need for quite sophisticated modelling to assess the impact of present management on opportunities for future benefits and costs. Nevertheless the CBA and TEV frameworks can be very useful props for setting out information clearly and logically, and for directing attention towards areas of key uncertainties.

## 2.2 Bioeconomic models

Bioeconomic models are widely used in resource management to explore the implications of various features on the economically optimal management of the resource. Simple bioeconomic models provide many key insights in resource management, such as the dissipation of rents under open access<sup>10</sup>, the importance of the discount rate, the impacts of stock-dependent harvesting costs, and so on.

Though it is possible for bioeconomic models to propose complete "fishing out" of a resource under certain circumstances (notably a low intrinsic growth rate relative to the discount rate), this can not occur if there are significant non-use or option values. Generally, bioeconomic analysis of renewable resources limits attention to sustainable solutions. But there are two levels of sustainability. We take it as more or less certain that *some* level of whaling would be *ecologically* sustainable for some species, in the sense that it would be possible to harvest some number of

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<sup>10</sup> Open access: unrestricted access to the natural resource, leading to overuse sometimes referred to as the "tragedy of the commons".



whales each year without driving the population towards extinction. However it is far from obvious that this would be *economically* sustainable, once all the costs, subsidies and external impacts are taken into account.

There is a significant existing literature examining these questions. For example, Herrera and Hoagland (2006) look at trade-offs among whaling, whale-watching, fishing and international trade. With some parameter values, their models can suggest that whaling is economically rational, while with other values, commercial whaling is economically inefficient. Our objective here is to explore this area, drawing on such data as are available from operations in two main whaling nations, Norway and Japan.

### 2.3 Values associated with whales and whaling

#### 2.3.1 *Meat and other products*

In the past, whale oil was the most valuable product of commercial whaling, but was replaced with the advent of petroleum-based products. Whale meat and blubber continue to be consumed in a number of nations and became the focus of commercial whaling operations. Some species and cuts are preferred and command higher prices. Values can be difficult to determine, especially where minimum guaranteed prices interfere with the market. The evidence available for Norway and Japan is discussed further below, but the general picture is that although whale meat can command high prices in small quantities, there is very limited demand for higher quantities of whale meat; in economic terms, demand appears to be rather inelastic. New products/uses, and new markets, could arise in future, though this is uncertain. Values are hard to predict, but will generally be capped by the prices of substitute (alternative) goods.

Marine pollution has important implications for the value of whale products for human consumption. Marine mammals have substantial deposits of fat, making them susceptible to bioconcentration of lipophilic pollutants such as mercury, dioxins and PCBs. This is a particular risk for toothed whales, which are higher in the food chain than baleen whales. For example, the Chief Medical Officer of the Faroe Islands recommended in 2008 that pilot whales should no longer be used for human consumption, due to heavy contamination of both meat and blubber. However, baleen whales which are the main target of current whaling operations, are still affected.

This has a direct impact on the value of whaling products. When Norway recommenced whaling, exports of blubber were anticipated, but the transaction stalled after tests confirmed elevated levels of toxins including dioxin and PCBs. By March of 2001, the Norwegian Food Safety Organization began to caution limited consumption, and eventually recommended that pregnant and nursing women avoid

blubber altogether. This was followed in May 2003 with a similar warning recommending that pregnant and nursing women avoid whale meat as well.<sup>11</sup>

### 2.3.2 *Whale-watching and associated tourism*

In a major study of whale-watching, Hoyt (2001) reported that whale-watching trips were available in 87 countries around the world, with over 11 million participants spending US\$1.475 billion in 2000.

Hoyt reported that whale-watching tourism in Japan was expanding rapidly, with the number of whale watchers growing from 10,992 (with a total expenditure of US\$4.74 million) in 1991 to 102,785 in 1998, with a total expenditure of US\$32.98 million. In Norway, the numbers also show rapid growth in whale-watching: a total of 4,563 whale watchers in 1991 grew to 22,380 whale watchers in 1998, spending an estimated US\$12.04 million. Iceland showed rapid growth from 100 whale-watchers in 1991 to 30,330 in 1998, with a total expenditure of US\$6.47 million (almost 4% of total annual tourist receipts). Numbers have continued to grow, with over 62,000 whale-watching trips in Iceland in 2002,<sup>12</sup> and by 2008, roughly 115,000.<sup>13</sup>

Whale-based tourism is not *necessarily* inconsistent with whaling, in the sense that it is possible to watch some whales and eat other ones. However there are several reasons why the activities are likely to conflict, and may even be mutually exclusive in practice. There are two main issues: consumer attitudes, and whale/whaler behaviour.

The behaviour aspect is reported by Bjorgvinsson (cited in Herrera and Hoagland 2006) who argues that minke whales in Iceland have "become friendly" with the whale-watch boats, to the benefit of the whale-watching industry. However this approachability could be exploited by whale hunters; and this would lead to the death of "friendly" whales and presumably a reduction in the "friendliness" displayed by survivors. In 2007 the Icelandic Whale Watch Association reported that the number of minke whales being spotted by their vessels in whale watch areas had dropped significantly since whaling resumed in 2003.<sup>14</sup>

Since most whale-watchers are western tourists with western environmental values (Higham and Lusseau 2007), it seems likely that commercial whaling could have a major negative impact on whale-watching in a whaling country. Parsons and Rawles (2003) report a survey in which more than 91 percent of respondents state that they would not go whale-watching in a country that hunted whales

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<sup>11</sup> Gravide og ammende bør ikke spise hvalkjøtt. 13 May 2003. Statens Naeringsmiddeltilsynet (now Mattilsynet), see [www.mattilsynet.no](http://www.mattilsynet.no)

<sup>12</sup> [http://www.global500.org/news\\_83.html](http://www.global500.org/news_83.html)

<sup>13</sup> Fouche, G. Bankrupt Iceland pins hopes on whaling -but will it work? The Guardian. 24 February 2009.

<sup>14</sup> Fewer minke whales in whale watch areas. Iceland Review. 02.09.2007.

commercially. Rawles and Parsons (2005) report high levels of animal welfare and environmental concern among tourists engaging in whale-watching in Scotland.

Incidents such as whales being shot in front of tourist vessels<sup>15</sup> suggest that these issues could well be important. Higham and Lusseau (2007) argue that, to date, the evidence on whaling - whale-watching interactions is largely conjectural and anecdotal, and that there is a pressing need for further research in this area. We agree, however, pending such research, it does seem realistic to accept that commercial whaling would be likely to damage the whale-watching industry to some extent, and perhaps greatly. On the other hand, a nation's whaling past could be an important tourist attraction as a complement to whale-watching (e.g. museums, art, whale-watching from former whaling vessels).

### 2.3.3 *Tourism unrelated to whales*

There is also potential for costs associated with "ordinary" tourism, if general tourists avoid travelling to whaling countries. Such activism may be limited to a relatively small proportion of the population, but the total impact could nevertheless be significant.

In Norway<sup>16</sup>, there are 175,000 jobs in tourism, 7% of the workforce, and non-resident tourists spent over US\$3.3 billion in 2008.<sup>17</sup> That is 1800 times more than the total value of whale meat landings that year. So if just 1 in 1800 tourists stayed away, that could wipe out any financial benefit from whaling<sup>18</sup>. The Norwegian government has allocated US\$21 million to enhance the travel and tourism industry, expected to be a key growth area.

Tourism is also a large industry in Japan, and in 2000 the total amount of direct tourism (domestic and international) consumption was US\$178 billion, generating direct employment of 1.97 million people (2.9% of total employment). The tourism industry is expected to grow steadily and become the leading industry in Japan throughout the 21<sup>st</sup> century<sup>19</sup>. International tourism is a small part of the total, though recent data confirm that international tourism to Japan has grown substantially, with arrivals increasing from 4.8 million in 2000, to 8.3 million in 2007, while receipts increased from US\$3.4 billion to US\$9.3 billion.

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<sup>15</sup> "Eager Norwegian whalers didn't do much to boost the image of their country's tourism industry this week, when they gunned down a whale before the eyes of tourists out on a whale-watching expedition." <http://www.aftenposten.no/english/local/article1376980.ece>; "Whale-Watching Tourists Watch In Horror As Whaling Ship Harpoons & Kills Whale" <http://www.japanprobe.com/?p=2601>

<sup>16</sup> [http://www.euromonitor.com/Travel\\_and\\_Tourism\\_in\\_Norway](http://www.euromonitor.com/Travel_and_Tourism_in_Norway). Figures for 2008.

<sup>17</sup> [http://www.ssb.no/english/subjects/09/01/turismesat\\_en/tab-2009-04-27-02-en.html](http://www.ssb.no/english/subjects/09/01/turismesat_en/tab-2009-04-27-02-en.html)

<sup>18</sup> These figures are based on revenues, not profits; but it is likely that profit margins are substantially higher in tourism than in whaling, so this would strengthen the conclusion.

<sup>19</sup> OECD, 2002. National Tourism Policy Review of Japan.

#### 2.3.4 *Trade impacts and boycotts*

These tourism impacts are a special case of a more general potential for costs associated with consumer activism and/or government sanctions. For example, Bjørndal and Conrad (1997) report losses to Norwegian exporters on the order of US\$1m to 2m (2004 dollars) arising due to Norway's decision to resume commercial harvest of minke whales in 1993, although they suggest these losses are likely to be short-run. In 1989, a boycott led by Greenpeace and other groups cost the Icelandic seafood industry US\$40 million in sales of frozen whiting and canned seafood, as German and US retailers cancelled contracts<sup>20</sup>.

Formal international trade sanctions are also possible, for example by the USA under the Pelly Amendment to the Fisheries Protective Act of 1962 against countries 'certified' for undermining the effectiveness of a Multilateral Environmental Agreement. Certification under Pelly has resulted at least once in a ban on imports of another nation's products as a consequence of a policy in respect of endangered species. The United States has acknowledged that the Pelly Amendment "has been one of our most effective tools in the effort to conserve the greatest whales" and has certified Japan (1974, 2000, 2004), Iceland (2004), Norway (1986, 1993) and Russia (then USSR) (1974, 1985) for diminishing the effectiveness of the ICRW. Although undertaken rarely, and never in respect of whaling/the ICRW, the United States has imposed trade sanctions under the Pelly Amendment for diminishing the effectiveness of CITES, including against Japan in 1990 and Taiwan in 1994. However, the USSR was certified and sanctioned in 1985 under the Packwood-Magnuson Act for its whaling activities. 'Pelly sanctions' remain a possibility that whaling nations may need to take into account.

Although it is difficult to determine the full potential extent of boycotts and formal sanctions, two points are particularly notable. Firstly, the impacts are likely to be rather "all or nothing": they probably do not depend so much on the *number* of whales caught, but simply on whether or not *any* commercial whaling is taking place. Herrera and Hoagland (2006) explain that such losses can be modelled as a downward shift in demand, which may lead to a discontinuous shift to the "corner solution" in which zero commercial harvest is optimal.

Secondly, there may be significant "first mover" *disadvantage* - since activists and pressure groups have limited resources, and assuming the highest costs would arise where they focus their efforts, and especially in the short-term, the first nation to restart commercial whaling is likely to be hit the hardest.

#### 2.3.5 *Fishery competition effects*

Whales consume large quantities of various kinds of marine life, and can compete with fisheries either directly (eating the same target species) or indirectly (eating the prey of the target species); they could even help fisheries (eating predators of

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<sup>20</sup> "Greenpeace hurting Iceland canners most but frozen whitefish producers also hit." Quick Frozen Foods International, 1 April 1989

target species). Such impacts have been modelled, for example by Flaaten and Stollery (1996) who present a bioeconomic model of the cost to cod and herring fisheries of larger minke whale stocks. However Trites et al (1997) suggest that competition between humans and marine mammals is largely indirect, as the mammals prey mostly upon deep-sea squids or plankton that usually are not the targets of commercial harvesters. Kaschner and Pauly (2004) present a comprehensive review of this issue and suggest that there is little evidence for competition between marine mammals and fisheries, except for isolated, regional issues. The Barents Sea is suggested by some to be such a case, however Corkeron (2009)<sup>21</sup> demonstrates that "the best available scientific evidence provides no justification for marine mammal culls as a primary component of an ecosystem-based approach to managing the fisheries of the Barents Sea" Although there is a need for further research in this area, the balance of evidence at present seems to suggest that impacts of whales on fisheries are not significant; it is more likely that fisheries will have a negative impact on marine mammals with small, restricted ranges (Kaschner and Pauly 2004).

### 2.3.6 *Non-use values*

Perhaps the most important source of total economic value of whales lies in non-use existence and bequest values. Horan and Shortle (1999) suggest that the moratorium is inefficient unless there are "significant" non-use values; but it is entirely possible that such values do exist. Indirect evidence for non-use values comes from donations of money and time to organisations such as Greenpeace, Whale and Dolphin Conservation Society, and WWF. Indirect evidence for non-use values for whaling comes from the willingness of whaling nations' governments to subsidise whaling activity, as discussed below. Further exploration of non-use values is beyond the scope of this assessment, but research in this area could be very useful.

## 3. The case of Japan

### 3.1 Economic situation

The Japanese economy has suffered from the recent global economic recession, with Japan's GDP falling 9.1% from the first quarter in 2008 to the first quarter of 2009<sup>22</sup>. Employment fell from 64.0 million in the third quarter of 2008 to 62.7 million in the first quarter of 2009<sup>23</sup>, and the first quarter average of the Nikkei

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<sup>21</sup> Corkeron, P. Biol. Lett. 23 April 2009, vol. 5 no. 2, 204-206. See also Liseland, T. Nodvendig med hval-og selfangst? University of Bergen, 15 May 2009. [www.forskning.no](http://www.forskning.no) and Gerber et al "Should whales be culled to increase fishery yield?" Science, Vol 323. no. 5916, pp. 880-881, 13 Feb 2009.

<sup>22</sup> Quarterly National Accounts (GDP Constant Prices), OECD Statistics, Retrieved June 8, 2009. <http://webnet.oecd.org/wbos/>

<sup>23</sup> Labour Force Statistics (MEI), OECD Statistics, Retrieved June 8, 2009. <http://webnet.oecd.org/wbos/>

225 index for 2009 valued in at 60.1% of the first quarter average of the index in 2008<sup>24</sup>. International exports fell from US\$ 70.0 billion in the first quarter of 2008 to US\$ 44.7 billion, a fall of 36.2%<sup>25</sup>; fisheries exports fell 12.7% between 2008 and 2009<sup>26</sup>.

### 3.2 Value of whaling products

The Japanese government issues research whaling permits to the Institute of Cetacean Research (ICR) which carries out whaling using vessels and crew rented from the Kyodo Senpaku company (ICR is a public-service corporation and can not make, or act to make, profit). Distribution of whale products is controlled by the ICR which assigns the whales, by species and product (red meat, skin etc), to three value-based categories; products for processing (lowest value), for 'public use' (including promotions and subsidised school lunch programmes), and for commercial sale (highest value). Twice a year, the ICR sets a fixed price, with guidance from the Fisheries Agency, and releases the products for Kyodo Senpaku to sell to wholesalers, processors and local authorities.<sup>27</sup>

Products assigned to the "public" category may be sold at a discount to (1) public associations, such as town councils, or NGOs, to promote consumption of whale meat or support whaling (for example, sales in public places and department stores, and 'tasting parties'); (2) School lunch programmes (which have expanded since 2002 ) and (3) medical institutions to treat food allergies.

For the commercial sales, only six wholesalers were permitted to buy whale meat from the ICR until 2004 when restrictions were lifted<sup>28</sup>. There are reasonable data on the volumes and prices of whale meat sold in major Japanese markets. Data for the top 10 markets (covering about 65% of trade) are plotted in Figure 2, showing a log-linear demand relationship<sup>29</sup>; the 10 most recent points are highlighted. Prices

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<sup>24</sup> Historical Prices, NIKKEI 225 (^N225), Yahoo! Finance. Retrieved June 8, 2009. <http://finance.yahoo.com/q/hp?s=^N225>

<sup>25</sup> International Trade (MEI), OECD Statistics, Retrieved June 8, 2009. <http://webnet.oecd.org/wbos/>

<sup>26</sup> Monthly Information on Imports and Exports Agricultural, Forestry and Fisheries Products, International Department, Ministry of Agriculture, Forestry and Fisheries. Japan. Retrieved June 8, 2009. <http://www.maff.go.jp/toukei/geppo/geppo-e.html>

<sup>27</sup> "Policies governing the distribution of by-products from scientific and small-scale coastal whaling in Japan." Aiko Endo, *Masahiro Yamao Marine Policy 31* (2007) 169-181

<sup>28</sup> Kushiro Revitalizes: "Delicious Local Whales" - Meat Wholesale of 23 Whales Caught in Research Whaling Hokkaido Shimbun September 30<sup>th</sup>, 2004

<sup>29</sup> This is not "the" demand curve for whale in Japan, but rather a function derived from data in the top 10 markets. Assuming that a roughly constant proportion of 65% of whale meat for commercial sale goes through these markets, the shape and statistical properties of the function will represent those of the whole market.

per kg peaked at just over US\$30/kg in 1994, and have been falling since then, to US\$16.4 in 2006.<sup>30</sup>

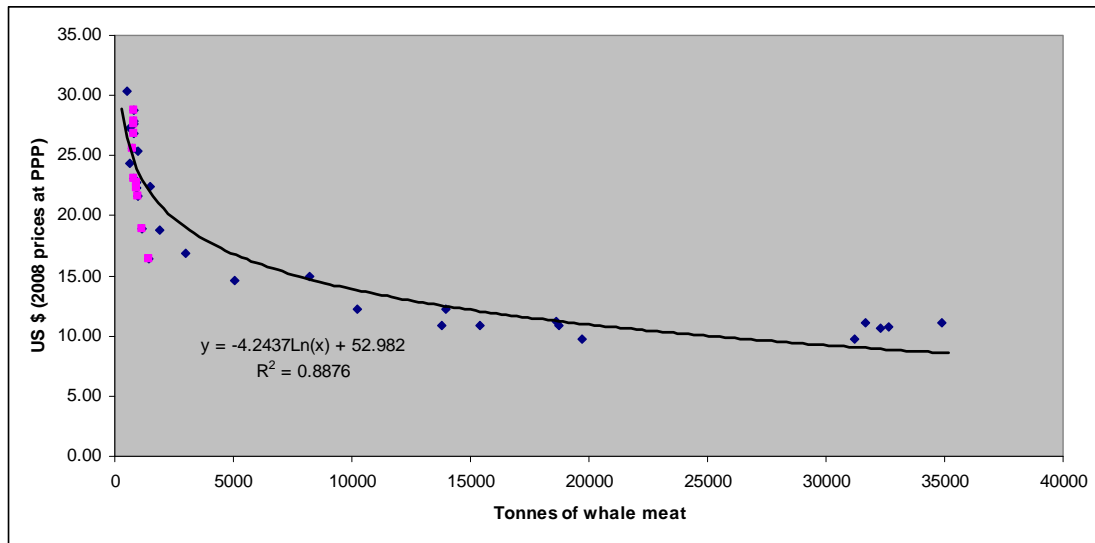


Figure 2: Price-quantity relationship from top 10 Japanese markets, 1975-2006

Despite price falls, reports of unsold whale-meat arise from 2002, but it seems the problem existed before (Junko 2006). The Yomiuri Online newspaper reported in 2006 that “the Japanese public views whale meat as an expensive luxury food, or expensive delicacy; not as daily food item. Demand continues to fall. Consumption of whale per person dropped from about 2,000 grams 40 years ago to about 50 grams in 2005”.<sup>31</sup> There has been a gradual increase in inventories (though slowed by recent events, including a fire on the factory/storage vessel, Nishin Maru, and the protest activities of Sea Shepherd and Greenpeace, which have resulted in sales of byproducts being lower than planned in recent years<sup>32</sup>). Inventories follow a regular annual pattern, since the main incoming meat is seasonal; a 12-month moving average of stocks in the main cold-stores (about 40% of total storage capacity) shows increase from around 1500 tonnes in 1997 to around 4000 tonnes in recent years. The existence of increasing levels of unsold whale meat, coupled with the sharp decline in prices, is strongly suggestive of a problem of declining demand for the product. This is supported by the announcement from Yushin, the

<sup>30</sup> Note that these prices should not be compared directly with the Norwegian fixed landings prices, as they are averages for products in wholesale markets, not landings.

<sup>31</sup> Yomiuri Online, Whale meat plentiful, demand sluggish 8 September 2006

<sup>32</sup> 2006/2007 2105t sold (1395t below planned production of 3500t); 2007/2008 1982t sold (1518t less than planned 3500t); 2008/2009 uncertain but suggestion that 2500t sold. (1000t less than planned 3500t).

restaurant owned by the organizations behind Japan's whaling program and whaling fleets, that it is closing "due to high operation costs"<sup>33</sup>

The most likely explanations for this are that people have simply lost the habit of eating whale meat and/or prefer other meats; survey data from 2002<sup>34</sup> report 86% of respondents stated that they did not eat, or had stopped eating, whale meat. A survey conducted by the Nippon Research Center in 2006 found that 95 percent of Japanese have never eaten, or very rarely eat, whale meat.<sup>35</sup> This would suggest that the potential market for whale is very limited. This is particularly the case for the research whaling that provides frozen meat, because fresh meat is preferred, but can only be sourced from coastal whaling.

In fact, Endo and Yamao (2007) note that the whaling industry in Japan had consequently been in decline for many years before the international moratorium began. They report that total amount of the edible whale products produced yearly is estimated to be around 6000 tons: approximately 4000 tons from oceanic research whaling, and 2000 tons from coastal research whaling, fisheries for small cetaceans and incidental by-catch. This supply is small compared with the 14,500 tons being landed in 1987, just before the moratorium, or the 220,000 tons that was landed at the peak of the industry in 1962. But prices are "considered relatively high by the public ... Whale products would need to be provided at a reasonable price and marketed as a daily food item in order to expand demand and consumption for whale products in the Japanese market."

There may be opportunities to develop new markets for new products. However existing efforts to stimulate demand for new products (for example whale ice cream, whale burgers, international chef competitions) have not been successful in reversing the downward trend in demand. We do not have data on the costs of these initiatives, but note that they represent another form of subsidy to whaling.

### 3.3 Costs and subsidies to whaling

Although we have little evidence on the detailed breakdown of costs of whaling, data from the Institute of Cetacean Research (ICR) Annual Reports does reveal, inter alia, the total planned receipts from sales of "by-products", the costs of "research whaling" with the Nisshin Maru, the costs of some other research, some general expenditure figures, and figures for subsidies. The discussion below draws primarily on the figures from these reports.

Planned sales are not the same as actual sales, at least for recent years, when they have been considerably less than planned. In 2006/7 planned sales were US\$58.0

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<sup>33</sup> Lee, R. Japan's flagship whale meat industry restaurant closing.  
<http://www.seriousseats.com/2008/11/japans-flagship-whale-meat-industry-restaurant-closing-yushin.html>

<sup>34</sup> from Asahi newspaper, 2002, reported in Junko 2006

<sup>35</sup> Leghros, B. Whaling: the meat of the matter. Japan Times, 22 July 2008.



million , while actual sales were US\$46.5 million. In 2007/8 planned sales were US\$64.6 million and actual sales were US\$48.8 million. Actual sales were also lower than planned in 2008/9 but the exact figure is not yet available.

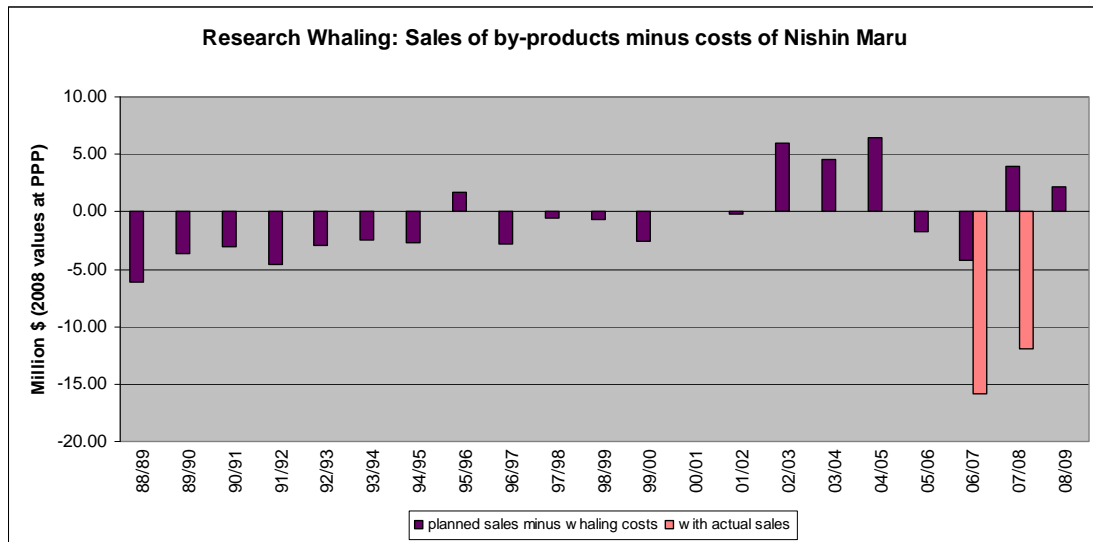


Figure 3: Japanese research whaling: by-product sales minus whaling costs, 1988/9-2008/9

Figure 3 shows that the sales of by-products have generally not been sufficient to cover the costs of whaling during the end of the 1900s. Some years in the 2000s have shown a surplus of planned sales over costs, but a very large deficit taking into account the difference between planned and actual sales in 2006/7 and 2007/8.

We do not have detailed information on the composition of these costs - they are listed simply as "Subsidized Research Whaling (Nisshin Maru)". However the available MAFF reports that give details of the cost headings for subsidy payments (for 2003, 2004 and 2007) show the main category is ship rental, with fuel and personnel also significant.

The "compliance costs", including sampling from each hunted whale for a national DNA register are not fully reported, but appear to be small in comparison to the other costs. There have also been additional security costs<sup>36</sup>, close to US\$6 million for 2007/8 and 2008/9, associated with Sea Shepherd and Greenpeace activity in Antarctica.

The ICR reports also show several additional costs - in particular the costs of "personnel and other administrative expenses" and "general project expenses". Figure 4 shows that, after taking these general costs into account, whaling is

<sup>36</sup> These extra costs are reported in the ICR accounts as "supplementary budget" (see Figure 5) and are an additional subsidy from government. But it is not clear where the expenditure is accounted for: since it may be included under the general "subsidized research whaling" heading, we have not added these costs to the figures for whaling costs, only to the figures for subsidies.

## Economics and subsidies to whaling

unambiguously loss-making (even considering planned rather than actual sales). Further costs are identified for commissioned research/sight-survey research and for coastal research whaling, deducted in the "with all costs" series.

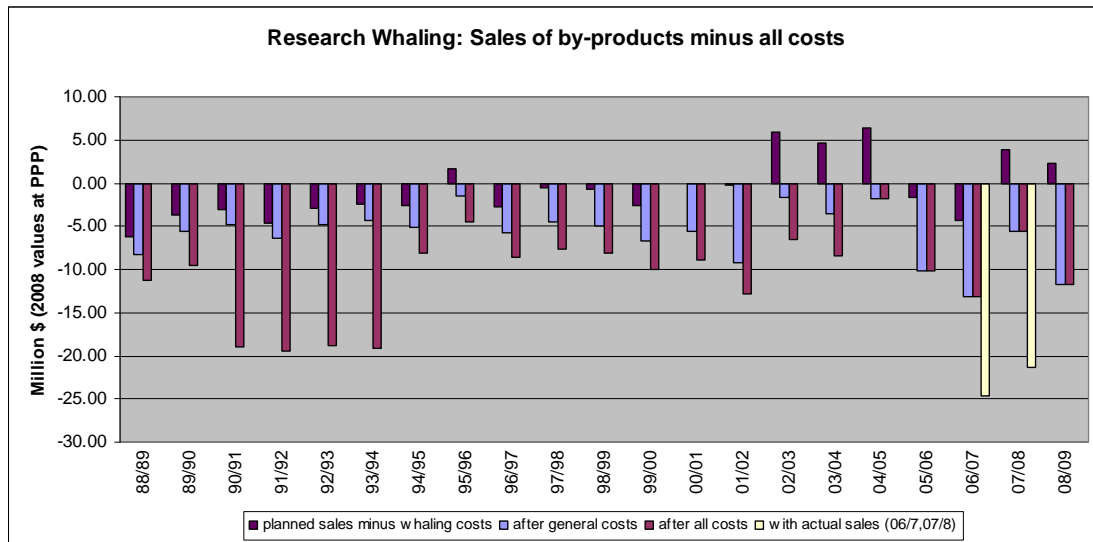


Figure 4: Japanese research whaling: sales minus all costs, 1988/9-2008/9.

Given this level of financial losses, it is clear that high subsidies are required to maintain ICR's whaling operations. These are detailed in the ICR reports, and are reproduced in the chart below.

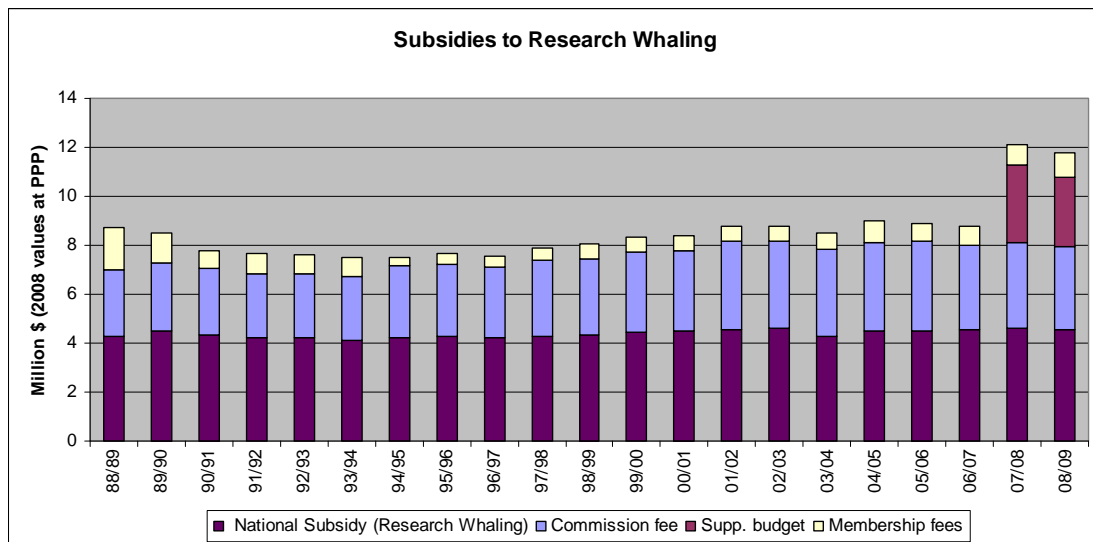


Figure 5: Japanese subsidies to whaling, 1988/9-2008/9.

The chart shows the three main sources of subsidy: the National Subsidy for the Nishin Maru research whaling, the commissioning fee for coastal research whaling, and the recent supplementary budgets for ensuring smooth operation of whaling - these are to cover the expenses associated with resisting protest actions from Sea Shepherd and Greenpeace. The chart also indicates membership fees - a less important source of income, which is not a government subsidy but rather a subsidy from individuals and the private sector.

The average value of these subsidies has been about US\$8.5 million per year over the period from 1988/9 to the present.

There are also subsidies to attending IWC meetings, including travel expenses and costs of IWC participation, though direct costs for Japan are relatively minor in comparison to the other subsidies.

Public-private initiatives by the ICR and Fisheries Agency (including the establishment of a limited liability company in 2006) to stimulate whale meat consumption have included celebrity chef promotions, initiatives with cooking schools, and catering for home delivery . The government of Japan is also reported to have supported symposia on whale-eating, produced a government brochure, entitled 'Let's Cook' , published recipes for whale products , sponsored vehicles with loudspeakers that toured cities, encouraging people to "eat delicious whales" and developed T shirts embossed with the slogan "Protect and Eat". The promotions are clearly seeking new consumers and have included development of novelty products such as ice cream and burgers and the commissioning of celebrity chefs to prepare non-traditional whale meat dishes .

Japan has one of the highest fuel subsidies in the world; in 2006, it was US\$0.25 per litre (Sumaila 2006). In August of 2008, the government announced an extensive aid package to help fishermen cope with the fuel crisis . The measures include: buying fishery products worth US\$344 million; extending US\$172 million in interest-free loans for energy-conservation measures; paying subsidies of US\$69 million for approved projects to reduce fuel consumption; and US\$56 million in aid for fishermen who suspend fishing work and fleet owners who reduce the number of their boats. These subsidies have not been considered in the figures and graphs presented above.

### 3.4 Conclusions for Japan

The figures presented above strongly suggest that commercial whaling in Japan is unlikely to be commercially viable under present conditions, and even less so if fuel prices increase. Whaling is heavily dependent on subsidies and demand appears to be weak. Of course, commercial whaling may not experience all the costs of research whaling (i.e. would not face the costs of conducting scientific research). There may be potential to develop new markets or products, though so far this has not been successful. Nevertheless, taking into account the additional risks of negative impacts on tourism, trade and the international image of Japan, it seems that a return to commercial whaling would almost certainly result in financial losses for the Japanese economy and tax-payers.

## 4. The case of Norway

### 4.1 Economic situation

Norway is overall in better economic shape than Japan, due to its large oil reserves, but is nevertheless suffering from the financial crisis. Norway's GDP fell

by 0.3% from the first quarter of 2008 to the first quarter of 2009. Norway’s stock market was hit hard by the recent global economic recession; the first quarter average for the Oslo OBX Index in 2009 was down by 43.7% compared to the index in the first quarter of 2008.<sup>37</sup> International exports fell from US\$14.6 billion in the first quarter of 2008 to US\$9.6 billion in the first quarter of 2009, a fall of 34.2%.

#### 4.2 Value of whaling products

Prior to the adoption of the commercial whaling moratorium by the IWC and the corresponding bans on international commercial trade in whale products (by CITES), Norway killed approximately 2,000 minke whales per year, and exported more than half of the products from these kills to Japan. Between its resumption of commercial whaling under its objection in 1994 and the end of 2008, Norway has killed 7,333 minke whales. Norwegian whaling quotas have risen in recent years, from 425 in 1996 to 885 in 2009, but the actual take generally falls far short (on average by 30%) of the allocated quota: only once in the past ten years (2001) has the quota actually been met.

In Norway most whales (80%) are landed and sold via the Norwegian Fishermen’s Sales Organisation, Norges Råfisklaget. This offers a minimum price guaranteed for whale meat, that has been around US\$3.20/kg for several years. Actual prices are near this level but were slightly higher recently (US\$3.35 in 2008).

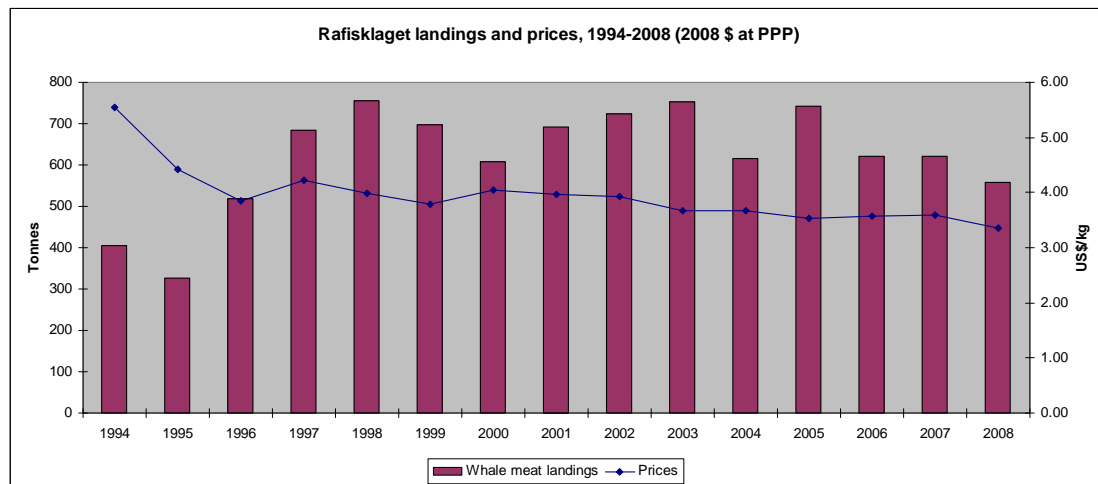


Figure 6: Norwegian whale meat landings and prices, 1994-2008.

Blubber used to be landed at some value, but in recent years the Råfisklaget guaranteed price has been well under US\$0.01/kg (just 0.01 NOK/kg). The value of blubber landed in recent years has been negligible: there is no blubber market for human consumption in Norway, and it was unable to be exported due to concerns about pollutant contamination. The value of blubber depends essentially on the export market, and this remains highly uncertain, "based on changing signals and

<sup>37</sup> Historical Prices, Oslo OBX Index (XOBX.OL), Yahoo! Finance. Retrieved June 8, 2009. <http://finance.yahoo.com/q/hp?s=XOBX.OL>

reports on possible exports of such products to the main market in Japan.<sup>38</sup> Some blubber was in fact sold in 2008, though only a small quantity of 238 kg, at a rather high price of US\$1.39 NOK per kilo.<sup>39</sup>

Although we have data for prices of (most) whale meat landed in Norway, it is not really possible to determine a demand curve for landings because the prices are largely fixed, and quantity has been relatively steady in recent years. The recent trend to lower volumes and slightly higher prices may suggest that the market size is quite limited. Harvest in recent years has been comfortably under quota: the fact that more whales could have been caught legally, but were not, could suggest that it would not have been profitable to do so, most probably because demand was not sufficient.<sup>40</sup> It could also be related to the ending of the full inspection programme (see below) which now allows additional days at sea for whaling vessels, and other moves to simplify regulations to facilitate fuller use of quota. However, the demand insufficiency argument is supported by repeated reports of "difficulties" selling whale meat and a series of associated restrictions implemented by Råfisklaget - for example, a condition implemented in 2005 that, to the extent possible, whalers should avoid killing large animals<sup>41</sup>. Restrictions in 2009<sup>42</sup> are tighter, stating that vessels under 20 meters can offload only 15 tonnes of whale meat for the entire season; larger vessels can offload 25 tonnes. If the vessel quota is exceeded the overage will be confiscated for the Råfisklaget's price regulating fund.

Against this can be set the observed trend for more whalers to act as their own buyers and wholesalers, ostensibly to get round landing restrictions. But in fact the majority (80%) of whales are still going through Norges Råfisklaget. The Råfisklaget<sup>43</sup> reported that 10 buyers were operating in their area in 2008, purchasing quantities of between 5 and 106 tonnes of whale meat: buyers that previously had purchased about 200 tonnes of whale meat a year reduced the quantity of their purchases to 100 tonnes or less. The Råfisklaget explains that sales were difficult due to the fact that there were fewer buyers, and reduced purchases; buyers had no desire to only "produce for storage".

Of course prices for selling processed product to the consumer are substantially higher. This reflects processing, storing, transport and marketing costs as well as

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<sup>38</sup> Norges Råfisklaget Arsberetning 2004

<sup>39</sup> Norges Råfisklaget Arsberetning 2008.

<sup>40</sup> There is another possible explanation for this, that the marginal costs of harvesting whales increase, but at the low levels of harvest we suspect this is a less important reason.

<sup>41</sup> Norges Råfisklaget Arsberetning 2005. p.11. Note also that smaller animals give more meat relative to blubber, and since blubber has little value at present, whalers may prefer smaller animals.

<sup>42</sup> Rundskriv 18/2009 "Regulering av hvalfangst 2009". The initial line of the circular states, "Interest for buying whale and whale products is limited and can lead to problems with sales."

<sup>43</sup> Norges Råfisklags Arsberetning for 2008 pages 31, 57.

value added. But consumption of whale meat in Norway had fallen to just 0.25kg/per capita a year by 2000.<sup>44</sup> Research commissioned by the Fishery and Aquaculture Research Fund (FHF) found that whale meat was considered old-fashioned and “political”. The study concluded that “whale meat needed a new image”, for example through improved packaging and information on preparing whale meat in more modern ways.<sup>45</sup> In 2005, the Karsten Ellingsen Company launched several new products based on whale meat, in particular the “Lofotburger” (half minke whale and half pork), aiming to market whale to a new generation of consumers.<sup>46</sup> This does not seem to have worked, and in March 2008 Ellingsen announced that it was considering stopping sales of whale meat, citing the greater profitability of salmon aquaculture and problems finding labour-time to process whale products.<sup>47</sup>

We do not have the data to carry out a detailed analysis of the processed whale meat market(s) in Norway, but it seems from consideration of the prices and volumes that margins must be rather tight. The value is limited by other products, as concluded by an FHF study<sup>48</sup> of whale meat sales, which found that “Pricing is central. Whale beef cannot compete with beef steak in price. A price of under [US\$17.66] per kg should be acceptable.” Some companies are offering small packs of whale meat near that price<sup>49</sup>, but more general prices in 2009 for fresh or frozen whale meat are around US\$10 /kilo, while “smabif” (stewing chunks) prices are US\$6.20 kilo.<sup>50</sup> Even so, whale products appear financially marginal, as evidenced by the 2008 bankruptcy of specialist whale meat providers Hopen Fisk & Sild, and by the Ellingsen case noted in the previous paragraph.

There is further evidence for low domestic demand for whale for human consumption from the discovery in early 2009 of 4,320 kg of whale meat from the Lofothval processing facility in storage at the Vom og Hundemat pet food facility in Trogstad. A second pallet of frozen Lofothval whale meat was discovered in Ytre

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<sup>44</sup> “Ostli, Jens. hvalkjøtt I den norske marked. Status og forslag til tiltak. Rapport nr. 16/1999. Fiskeriforskning.

<sup>45</sup> Ibid.

<sup>46</sup> Whale burgers raise a fuss”, Aftenposten, 28.07.2005.

<sup>47</sup> Trapper ned hvalkjøp. FiskeribladetFiskaren. 13.03.2008. “The whaling industry is in a downward spiral,” said Ulf Ellingsen, chairman of the company. and Ingen vil ha hvalkjøtt, NRK. 02.04.2008.

<sup>48</sup> Omsetning av hvalprodukter til konsum, a report by the Svein Nybo Consulting Firm for the Fisheries and Aquaculture Research Fund (FHF), 2006, p6.

<sup>49</sup> [www.isbilen.no/?id=56&title=hvalbiff](http://www.isbilen.no/?id=56&title=hvalbiff) 05/05/2009. The Isbilen company offers smaller sized 400 gram single packet servings at the equivalent of 1 kilo for 147.50 kr

<sup>50</sup> [www.olavsens.com/butikk.htm](http://www.olavsens.com/butikk.htm) 05/05/2009.

Ostfold. In both cases the Norwegian Food Safety Authority, Mattilsynet, confiscated the whale meat on human health grounds<sup>51</sup>.

Taking all the above evidence, there does not seem to be any realistic prospect of realising significantly increased revenues from whale meat in Norway, unless new customers can be secured (for example by greater international exports) or new products developed and this suggests that full quotas are unlikely to be harvested, unless significant subsidies are made available. Issues relating to exports and to subsidies are addressed further below.

### 4.2.1 Exports

Although the domestic market for whale products is limited in Norway, there are potentially export markets and this could enhance the commercial viability of Norwegian whaling. However, CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) has banned international commercial trade in the products of whale species that are protected from commercial whaling by the IWC. But the three commercial whaling nations have reservations to several of the CITES Appendix I listings<sup>52</sup>, enabling them to trade in whale meat of certain species with each other or non-parties to CITES like the Faroe Islands. Their multiple challenges to the CITES Appendix I listings, by submitting proposals to transfer certain species from CITES Appendix I to II (1997, 2000, 2002, and 2005) have been unsuccessful and it seems unlikely that it will be lifted while the IWC moratorium remains in place. The whaling nations' options for securing new export markets are, therefore, limited, for the time being at least.

In 2002, Norway resumed exports of whale meat and blubber to Iceland. The trade, between the Norwegian whaling company Myklebust Trading AS and Icelandic importer Jon Gunnarsson, was limited. In the end, two shipments of Norwegian meat were exported to Iceland in July and October of 2002. The first export was a shipment of 7,634 kg of whale meat valued at US\$59,000 (US\$7.70/kg), while the second shipment was for 16,971 kg, valued at US\$65,000 (US\$3.80/kg). Again, concerns over toxin levels in the Norwegian products were raised, and as Iceland itself resumed whaling, exports to Iceland from Norway have not resumed.

Exports of whale meat from Norway to the Faroe Islands took place throughout 2003, with shipments happening in March, April, June, July and September. The total shipments amounted to 8,345 kg at a value of approximately US\$66,500 (≈US\$8/kg). A recent shipment (April 2009) of 720 kg valued at US\$5,800 also took place (≈US\$8/kg) to the Faroe Islands. The highly publicised export of Norwegian whale meat to Japan in 2008 amounted to a total shipment of 5,195 kg at a value

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<sup>51</sup> Fant fir tonn hval, *Smaalenene*, 31.01.2009. p.11. and Klaus Fotland, Mattilsynet Senior Inspector, *pers.comm.* 24.02.2009.

<sup>52</sup> CITES Appendix I species cannot be traded internationally for primarily commercial purposes, and Appendix II listed species can be traded internationally for commercial purposes, but within strict regulations requiring determinations of sustainability and legality.

of US\$55,260 ( $\approx$ US\$10.60 NOK/kg).<sup>53</sup> It must be noted however that these are rather small quantities in the context of total whaling, and can not be taken as showing any likely high-volume export market for whaling products. In particular, although in the past Norway exported a large amount of whale products to Japan, the analysis of Japanese demand conditions presented above suggests that there must be serious doubt concerning the size of the potential export market to Japan.

### 4.2.2 *Costs*

While we have very little information on the costs of whaling in Norway, it is known that fuel and ammunition are the major running costs: each accounting for 30-40% of total costs;<sup>54</sup> the same source reports survey data of 8 whaling boats in 2007 that used 294,840 litres of diesel in off-loading 461 tons of whale meat<sup>55</sup>

Other data available show the total returns to fishing for boats engaged in whaling. There are only a small number of boats engaged in whaling in Norway: around 33 from the late 90s to mid 00s, but more recently declining to 28 (2008)<sup>56</sup> and 24 (2009)<sup>57</sup>. It seems that a small number of boats take most of the whales: assuming Rafisklaget landings of 622 tonnes in 2007 were 80% of total, then 461 tonnes landed by 8 boats<sup>58</sup> is approximately 60% of total landings in Norway. The whaling income of these vessels is quite stable (because of the fixed prices) but is only a small proportion of total vessel income, most of which comes from other fishing. Figures from 2003 and 2004 suggest such boats were loss making overall with average losses of US\$28,900 (2003) and US\$12,400 (2004). Figures from 2006<sup>59</sup> suggest profits were made<sup>60</sup>, with costs equal to between 82% (largest boats) and 90% (smallest boats) of revenues. However it is not possible to say what the role of whaling is compared to fishing in any of these figures. The most we can say is again that whaling appears to be economically marginal, with a declining trend in the number of boats participating. Costs will of course depend significantly on fuel

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<sup>53</sup> statistics from the Norwegian Statistics Bureau

<sup>54</sup> Undersøkelse om klimagassutslipp fra hvalkjøtt Høge Nord Alliansen Mars 2008

<sup>55</sup> Ibid.

<sup>56</sup> Norges Rafisklaget Arsberetning 2008.

<sup>57</sup> Hvalfangsten godt I gang. 13 May 2009. [www.kyst.no](http://www.kyst.no)

<sup>58</sup> Undersøkelse om klimagassutslipp fra hvalkjøtt Høge Nord Alliansen Mars 2008

<sup>59</sup> Tabell 27 Gjennomsnittleg driftsresultat for heilrsdrivene fartoy 8 meter største lengd, etter lengd, fylke og type fiske. [www.ssb.no](http://www.ssb.no) . Fiskeristatistikk.

<sup>60</sup> This coincides with the outfitting of a majority of vessels with the electronic data recorder and 100% inspection of the boats ended in 2006. The inspection programme also meant that vessels had fewer days at sea for hunting with about 2 months per year of inspection time available for each vessel; the season could only begin for each boat when and if an inspector was available. In addition, a crew member would be left behind by the smaller vessels so as to accommodate an inspector, causing a loss of income for that crew member Oien, Egil. *Electronic monitoring of minke whaling*. fact sheet for the High North Alliance IWC June 2005.



costs, and future increases in oil prices would impact on the commercial viability of whaling.

### 4.3 Costs and Subsidies to whaling

Whaling subsidies in Norway are not so institutionalised as in Japan, but are nevertheless significant. The main sources of subsidy that can be identified are: the research fund, the DNA testing programme, the electronic logbook, direct investment grants, making up shortfalls in the Norges Råfisklaget budget associated with whaling, costs associated with NAMMCO and IWC, and public relations expenditures associated with marine mammal management. There are also more general fisheries subsidies, which are relevant where whalers can access them, and also because most whaling boats in fact depend on other fishing for most of their income.

**Research and Development fund:** In 2004, the Norwegian Business and Industry Committee recommended that Innovasjon Norge and the Fishery and Aquaculture Research Fund (FHF) be allocated ≈US\$400,000 to set in place a series of projects designed to undertake research and development into the prospects of developing new products and marketing mechanisms for the sealing/marine mammal industry. The FHF's annual budget shows that there has been a consistent sum of 1 million NOK per year dedicated to marine mammal-related programmes since 2004: equivalent to ≈US\$124,000 in 2004, now worth ≈US\$104,000. In a description of the proposed budget for 2009 to 2011, this trend continues. Broadly speaking, this is about 5% of the value of whale meat landings.<sup>61</sup> Research projects include<sup>62</sup> for example, "Resource Management: Realising seal and whale blubber's commercial potential" (US\$64,400) and "Increasing the value of whales as a primary product" (mainly focused on whale meat and the Norwegian market, US\$22,500). Marketing funds include direct support to companies, e.g. US\$2,250 to Myklebust Trading AS in 2007, "designed to establish contacts and eventual working partnerships regarding the improvement of production related to whaling". Myklebust Trading went on to export 3.5 tons of whale meat to Japan in 2008. These funds are a subsidy to whaling and sealing, and also illustrate the problems faced in developing new markets for whale products.

**DNA testing:** Norway keeps a DNA register covering all of Norway's minke whale captures since 1997 forward. This is intended to ensure "safety and control" for

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<sup>61</sup> Although FHF funding derives from a levy on exports, there are negligible exports of whale products so this can be considered a subsidy to whaling.

<sup>62</sup> Project details from FHF project data base at [http://www.fiskerifond.no/index.php?current\\_page=prosjekter](http://www.fiskerifond.no/index.php?current_page=prosjekter) on dates 04.04.2009-16.04.2009.

exporting minke whale products.<sup>63</sup> Costs budgeted from 2001 to 2007 are almost US\$1.3 million<sup>64</sup>.

**Blubber disposal:** due to high toxin levels, and also because large amounts were not DNA tested in early years of the DNA programme, hundreds of tonnes of contaminated whale blubber have required disposal (much of it was actually used in pet food). Reported expenditure on blubber disposal includes \$513,000 in 2002<sup>65</sup>, and \$366,000 in 1999.<sup>66</sup>

**Investment grants:** Direct investment funding has been allocated to whaling industry companies. In 2007, Innovasjon Norge gave a grant of US\$11,250 to the Lofothval company in Moskenes, and US\$27,000 to whale meat buyer Gunnar Klo. Local municipal grants have also been made: Lødingen granted US\$19,200 to the Asbjørn Selsbane AS company in 2003, for developing further improvements in the distribution of whale meat.

**Norges Råfisklaget costs<sup>67</sup>:** The Norwegian Fishermen's Sales Organisation, Råfisklaget, originally charged whalers 30 ore (now ≈3 US cents), and buyers 50 ore (now ≈ 5 US cents) for each kilo of whale meat that is sold in districts that fall within the Råfisklaget's management area; the monies are used to market whale meat to Norwegian consumers. This voluntary fee has been raised slightly to 50 ore for both whalers and buyers. However, this is not sufficient to cover costs, and the Råfisklaget has regularly had to subsidise the project. In both 2004 and 2005, ≈US\$24,580 were added for marketing activities for whale meat. In 2006, the Råfisklaget added another US\$17,660 for "measures for strengthening the value chain for whale meat".

**Inspection scheme:** From 1993 to 2006, inspectors, mostly practising veterinarians, were required on all whaling vessels during a hunt. The costs of the 100% monitoring program were annually about US\$800,000<sup>68</sup> and this was paid by government subsidy. By the 2007 season, all whaling vessels were outfitted with an

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<sup>63</sup> <http://www.oecd.org/dataoecd/5/45/35535218.pdf> on 05.05.2009. and Costs for DNA in 2005 seem to have been covered by a carry-over of funds from previous years

<sup>64</sup> Kap. 1050 Diverse fiskeriformal, St.prp. nr. 1 (2003-2004) Innledning til programområde 16 Fiskerihavbruks- og kystforvaltning; Kap. 1050 Diverse fiskeriformal, St.prp. nr. 1 (2007-2008), p 120; Kap. 1050050 Diverse fiskeriformal, St.prp. nr. 1 (2008-2009), p.126.

<sup>65</sup> "Gir giftig mat til hunder", NRK. 08.05.2003; Ubrekkelig hvalspekk, NRK, 05.05.2003

<sup>66</sup> St.meld. nr. 27 (2003-2004) Norsk sjøpattedyrpolitikk 3.8.1 Produkter og nasjonal handel

<sup>67</sup> Norges Råfisklaget Arsberetning, op.cit.; Ostli, J. Okt verdiskapning med kvalen som rastoff, FHF rapport 2/2006, January 2006.; Norges Råfisklaget Arsberetning 2006,p.56 and p.59.

<sup>68</sup> Øen, Egil. *Electronic monitoring of minke whaling*. fact sheet for the High North Alliance June 2005. "The system has been useful in monitoring hunting regulations, but it has unintentionally imposed important side effects on the execution of the hunt and the hunting practice. The annual cost for the inspection scheme has been far too high for the vessels to be paid from the income from the harvest, and has been paid by the government."

electronic logbook (see below) although it is unclear whether the government still funds the occasional spot checks by inspectors.

**Electronic logbook:** An electronic logbook system was developed to replace the 100% inspection system. The costs of installation and operation are to be borne by whaling vessels.<sup>69</sup> The government provided a subsidy of ≈US\$113,000 to the development project, from 2001 to 2005.<sup>70</sup>

**Costs of IWC and NAMMCO:** the costs of Norwegian participation in NAMMCO amount to almost US\$1.4 million from 2002 to 2009, while costs of participation at IWC are almost US\$661,000 from 2002 to 2008.

**Public relations/lobbying:** the Norwegian government has spent significant sums on “actively working to inform the outside world of Norwegian resource management, and in particular the degree of [its] marine mammal management<sup>71</sup>”. From 1992 to 2008, over US\$4.9 million were allocated to these activities.<sup>72</sup> This is primarily a subsidy to whaling and sealing, and in particular a form of defensive advertising against possible impacts on tourism and trade resulting from whaling. It is also used to lobby support for the Norwegian position on whaling: in 2000, for example, at a CITES meeting at which Norway presented a proposal to remove minke whales from the list of species for which international trade is banned, several lobbying organisations, both foreign and Norwegian, received monies. More than US\$133,000 were given to the European Bureau of Conservation and Development, International Wildlife Management Consortium, African Resources Trust and the High North Alliance.<sup>73</sup> to help lobby for the Norwegian position on whaling.

In 2006, Råfisklaget whale meat promotion campaign funded a "whale-mobile" to promote whale meat on a tour of over 40 Norwegian towns and cities, offering free samples of whale meat and recipe ideas. In 2009 the whale mobile became the "salmon and whale grill-mobile".<sup>74</sup>

Whale meat is also promoted by the private sector via "Arktisk Meny", a project designed to promote “knowledge and awareness” of local and traditional ingredients. The project is funded by the North Norwegian Association of Travel

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<sup>69</sup> Forskrift om bruk av ferdskraver for elektronisk overvåking av fangst av hval. (FKD)

<sup>70</sup> Øen, op. cit. and *Ressurs og havavdelingen 2000-2006*. Fisheries and Coastal Department Faktaark, p. 169.

<sup>71</sup> St. meld. nr.27 (2003-2004), Norsk sjøpattedyrpolitikk [Norwegian marine mammal policy], chapter 7.1.2

<sup>72</sup> St. meld. nr.27 (2003-2004), op.cit.; Stortinget spørsmål 8, Jan Simonsen/Statsråd Svein Ludvigsen, 1 December 2004; St. prp. 2007-2008 and 2008-2009. “divers fiskerformal”.]

<sup>73</sup> Ellingsen, P. Brukte millioner til hval-smoring. *Dagbladet*, 24 May 2000.

<sup>74</sup> [www.hvalbiff.no](http://www.hvalbiff.no)

Companies and the Regional Council of North Norway. Around 30 businesses, restaurants and hotels, pay membership fees to participate.<sup>75</sup>

### 4.3.1 *General subsidies to fishing industry, including whaling and sealing*

Norwegian whaling also benefits from numerous grants and loans offered to the Norwegian fishing industry as a whole, both directly (where the schemes apply to whaling) and indirectly since most of the vessels involved in whaling derive most of their income from other fishing, and associated subsidies.

**Fuel tax subsidies:** The Norwegian fishing fleet is exempt from the basic tax on petrol and on diesel fuel, through the establishment of a special reimbursement scheme that allows vessels that fish in Norwegian waters to apply for rebates in line with the national fixed fuel tax amount they paid when fueling up. While Norway is not the only nation that subsidizes fuel for its fishing fleet, it has one of the highest fuel subsidy rates in the world.<sup>76</sup> The rate for reimbursement corresponds to the actual fuel tax; as of 2008, the fuel tax subsidy was US\$0.15 per litre<sup>77</sup>.

**Transportation costs:** A major Norwegian subsidy is support for transportation costs incurred by fishers. From 2001 to 2004, a total of ≈US\$16 million were spent to “reduce cost disadvantages caused by geographical or structural conditions”. The transfer of funds takes place through the various sales organizations.<sup>78</sup> In 2006, the Råfisklaget reported that grants would be used to help pay the costs of transporting of fish from the receiving plants to production plants, claiming that “these are important so that fishers can increase the possibilities of delivering their hunt”; the association put in US\$2.3 million in state monies for such costs. During 2006 alone, some US\$2.4 million in all were used to supplement fisheries transport costs in the Råfisklaget’s region; the additional expenditure was covered by using monies raised from fines related to quota overages<sup>79</sup>.

**"Financial crisis" funds:** On May 15<sup>th</sup>, 2009 Fisheries Minister Helga Pedersen announced a new US\$2 million grant to “contribute to muffling the effects of the financial crisis for fisheries and coastal industries”. A large part of this is geared towards “grants for the cost of transporting fish to the receivers”.<sup>80</sup>

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<sup>75</sup> [www.arktiskmeny.no](http://www.arktiskmeny.no)

<sup>76</sup> Album, G. Skimming the cream: Norway fuel tax subsidies. Samudra, August 2008.

<sup>77</sup> This has been reported elsewhere as US\$0.25: that is with conversion at official exchange rates, whereas the figure of US\$0.15 is at Purchasing Power Parity and takes account of the higher general price level in Norway.

<sup>78</sup> Norwegian contribution to the OECD Committee for Fisheries Project, “Fisheries Subsidies and Sustainable Development”. pp. 7-8.

<sup>79</sup> Norges Råfisklaget Arsberetning 2006, p.13.

<sup>80</sup> Pressemelding nr 39/2009, 19 millioner til foringstilskudd og markedstiltak. FKD 15.05.2009.

Freezer storage: Norway's whalers can benefit from government support to build freezer storage for fish products; such freezers allow vessels to store their catch temporarily while looking for buyers, or waiting for transportation for their products. An analysis of a list of approved storage units from Norges Råfisklag shows 26 freezer units, of which 10 received government grants. A total of ≈US\$2.66 million in grants (and another ≈US\$3.2 million in loans) to cover building of additional freezer units were paid by the government between 1999 and 2004<sup>81</sup>.

Price support: In a comprehensive review of Norwegian fisheries subsidies from 1990 to 2002, Hermansen and Flaaten stated that price support (*pristilskudd*) for fisheries had, from 1994 on, “effectively been ruled out for all but the sealing industry”.<sup>82</sup> However, in 2003, certain of the larger whaling vessels operating off Svalbard were given price supports. The boats found that they were having to lay-over for a longer than normal period of time without being able to off-load their meat, as coastal vessels had already sold their catch and glutted the market. In this case, the US\$3.67/kg *minstepriser*, or minimum guaranteed price, was dispensed with for these boats, and their meat was sold for US\$3.14/kg in order to be able to move the meat into storage. Subsequently, the whalers were able to obtain a rebate of US\$0.28/kg from the government price regulating fund.<sup>83</sup> Price supports were also used in 2005, 2006 and 2007<sup>84</sup>, but the amount is not specified.

Scientific Research support: The Research Council of Norway supports research aiming to “increase the economic output from capture fisheries in a sustainable manner (e.g. obtain more effective, yet less harmful fishing gear and better processing techniques).”<sup>85</sup> The council has supported several projects related to whaling, for example work on DNA profiling and statistical methods, but exact figures for grants on whaling are not available.

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<sup>81</sup> Hermansen, O and Flaaten, O. Government financial transfers to the fish harvesting, processing and aquaculture industries”, working paper no.01/04, Dept. of Economics and Management, University of Tromsø, March 2004

<sup>82</sup> Hermansen and Flaaten, p. 6.

<sup>83</sup>Norges Råfisklaget Arsberetning 2003. p. 52 According to Hermansen and Flaaten (2004), as of 1994, this type of direct price support to major fisheries was effectively ruled out, but still maintained “for fisheries of minor importance”. From 1999, it seems that the only support measures in this category have been to sealing and whaling. Price supports have been re-implemented for the entire industry in light of the current economic downturn.

<sup>84</sup> Naturressurser og miljø, fiske, fangst og oppdrett, Chapter 6.5 selfangst og hvalfangst, p.109. 2008 (for 2007 ref); 2007 report p.111 (for 2006 ref); 2006 report p. 120 (for 2005 ref)

<sup>85</sup> OECD, op.cit. p.26 ; see [www.forskningsradet.no](http://www.forskningsradet.no) for a list of whaling-related research projects

<sup>85</sup>Norges Råfisklaget Arsberetning 2003, p.52.

## Economics and subsidies to whaling

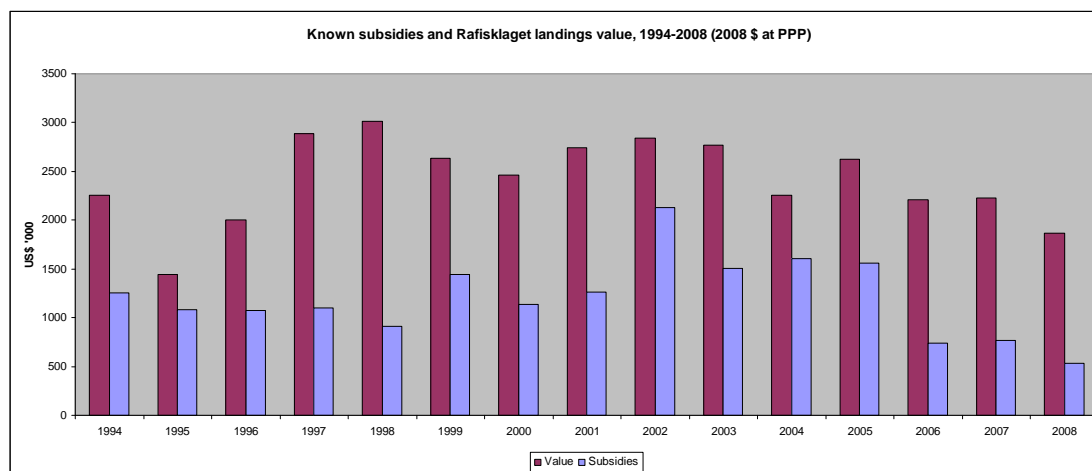


Figure 7: Norwegian whale meat landings values and *known, measured* subsidies, 1994-2008.

Adding all these known / identified subsidies together - i.e. only those subsidies identified above for which we have been able to identify financial values - Figure 7 shows that for most of the period since whaling re-started the subsidies have on average been equal to almost 50% of the gross value of whale meat landings through the Råfisklaget. The levels of subsidy have declined since 2006, due largely to the end of the 100% inspection programme. However the figures are not complete: for example we do not have DNA monitoring costs for 2008, nor concrete data on the amount spent on price supports to the whaling industry which we know exist. The figures used for direct grants to whaling industry, and the figures for Råfisklaget subsidies to whale marketing, are based on "for example" data and are considered to be similarly incomplete. The fuel tax subsidy is not included, and nor are any of the "general" subsidies to the fishing/whaling industry cited above. And there are additional costs unknown to us (for example the costs of spot-checks, used in combination with the electronic logbooks). So while it is clear that the end of the 100% inspection programme has resulted in a significant drop in subsidies to whaling, we can not assume that remaining subsidies are insignificant.

### 4.4 Conclusions for Norway

The figures presented above suggest that whaling in Norway has been strongly subsidised since 1993. Subsidies (and costs) have fallen, due to the move from inspector coverage to electronic logbooks, but remain significant. Altogether, those subsidies we have been able to identify clearly total about US\$20 million over the period 1993 to present (and, as noted above, this is only a partial accounting). Although we have no clear details of the costs of whaling, evidence from boats conducting both whaling and fishing, along with the observed reduction in the number of whaling boats, suggests that the activity is economically marginal. Problems selling all whale meat produced are widely recognised and suggest that there is very little scope for expanding harvests in a commercially viable fashion unless new export markets can be secured or new products can be developed. As in Japan, whaling receives significant subsidies, and demand appears to be weak. Whale related tourism, on the other hand, is a potentially major growth industry.

Taking into account the risks of negative impacts on whale-watching and general tourism, and on trade and the international image of Norway, suggests that a return to full commercial whaling would be very unlikely to produce benefits for the Norwegian economy and tax-payers.

## 5. Conclusions

Although the data available do not allow a full assessment or complete cost-benefit analysis of whaling, it is clear that whaling is financially marginal and at present dependent on subsidies. In both Japan and Norway, substantial funds are made available to prop up an operation which would otherwise be commercially marginal at best, and most likely loss making. This could change, if the CITES trade ban were lifted, if domestic meat markets could be expanded, or if new domestic markets could be developed for products other than meat. However these scenarios seem unlikely at present. It seems more likely that the commercial viability of whaling could be further reduced by increasing fuel prices over the coming years.

The full assessment of the economics of whaling then turns on the indirect and non-use values that have not been assessed above. Fundamentally the key division is in non-use values: between those who value whaling traditions and culture, and those who want whales protected. This is a difficult dichotomy with strong feelings on both sides, and the economic arguments presented here are not going to resolve that.

The evidence available to us is far from complete or perfect, and conclusions must therefore be tentative. However the balance of the evidence does seem to suggest that whaling is not commercially viable. Ongoing payments of substantial subsidies to the whaling industry are unlikely to be sustainable in the long run (particularly for Japan, considering the trajectory of its economy; Norway may be better able to cross-subsidise from oil for some time). As Iceland's former fisheries minister, Einar K. Guðfinsson, noted in August 2007<sup>86</sup>, "The whaling industry, like any other industry, has to obey the market. If there is no profitability, there is no foundation for resuming with the killing of whales."

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<sup>86</sup> <http://www.planetark.com/dailynewsstory.cfm/newsid/43942/newsDate/27-Aug-2007/story.htm>

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