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Platform decommissioning: Socio-Economic impacts

NO9805444

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Introduction

(1) The **object** of this paper is to evaluate **the socio-economic effects** of the decommissioning of **steel jacket platforms** in the North Sea and in the North East Atlantic in the period up to 2020 in their entirety. The paper focuses on two different decommissioning options, namely **total** and **partial** removal of installations. Partial removal applies only to installations in water deeper than 75 m; all other installations, i.e. those in waters shallower than 75 m, have to be **totally** removed and brought onshore for disposal.

(2) The following **areas** are analyzed:

- **costs** of the different decommissioning options
- effects of the different options on **employment**
- **fiscal aspects** of the different options
- aspects of **recycling** onshore

(3) Currently some 6000 to 6500 platforms are in operation worldwide, of which between 416 and 438 in the North Sea and North East Atlantic. Because of the need to withstand the harsh geographical conditions in the North Sea and North East Atlantic, some of these oil and gas installations are relatively large and exceptionally heavy. The platforms stand in water up to 300 m deep and some weigh as much as 1 million tonnes, partly because of the great depth of some of the oil and gas deposits and partly because of the inclement weather (storms, heavy seas) prevailing in these areas. In view of the different conditions at the various production locations and the rapid technological development in this field in recent decades, the oil and gas installations differ substantially from type to type.

About 25 platforms in the North Sea and North East Atlantic have a concrete gravity base structure; their mainly reinforced concrete structures weighing as much as 1 million tonnes generally do not lend themselves to total removal. Because it is assumed that only their topsides can be brought and disposed of or recycled onshore, gravity platforms are excluded from this study.

(4) By far the greatest percentage of installations are **steel jacket platforms** (80% - 90%), which have a steel substructure fixed to the seabed. The paper deals exclusively with these platforms, and the assumption is made that the substructures consist almost entirely of steel and do not contain any problematic or toxic substances.

Total removal of these platforms is technically feasible, even though no large steel jacket platforms has been totally removed to date. Removal experience around the world is limited exclusively to small installations standing in shallow water. Consequently, substantial uncertainty still exists with regard to the effects of both decommissioning options. Not surprisingly, therefore, some of the estimates and forecasts in the literature differ greatly, e.g. regarding the costs involved. Where great differences are found, this analysis is based on our own estimates derived from that data.

(5) A number of possible **Options** exist for decommissioning disused oil and gas platforms. This paper analyzes only two of them: **total removal** und **partial removal**. In either case the topsides are brought onshore in their entirety and reused or recycled to the greatest possible extent. So the two options differ only in respect of the substructures, which are either recycled onshore or disposed of in deep water where they stand. The latter procedure can be done in one of two ways: either the structure is toppled or cut apart and the sections emplaced on the seabed next to the original location. But this paper does not distinguish between these two possibilities.

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	Total Removal	Partial Removal
Topsides	Taken to shore for recycling or reuse	Taken to shore for recycling or reuse
Substructures	Entire removal to shore for recycling	Toppling or emplacement in situ

(6) The decommissioning of oil and gas platforms is regulated by a framework of national and international statutes. One basic requirement, for example, is that all installations standing in less than 75 meters of water have to be totally removed. For larger installations, the IMO Guidelines include the possibility of dismantling platforms only down to a water depth of 55 meters. Of the installations in the North Sea and North East Atlantic, **335** are so-called small platforms) which must be totally removed. On average, the cost of doing so is US$ 8 million per platform. Taken together, these platforms can be characterized as follows:

335 Small Steel Jacket Platforms
• Water depth < 75 m
• Average weight per platform: Topsides 1 500 t Substructures 900 t
• Average cost of total removal per platform: US$ 8 million
• All small platforms will be totally removed

The large steel jacket platforms stand in water depths ranging from 75 m to just under 190 m. On average, they are heavier by far than the small platforms. Consequently, the average cost of total removal of these large platforms is much higher, namely US$ 100 million per platform.

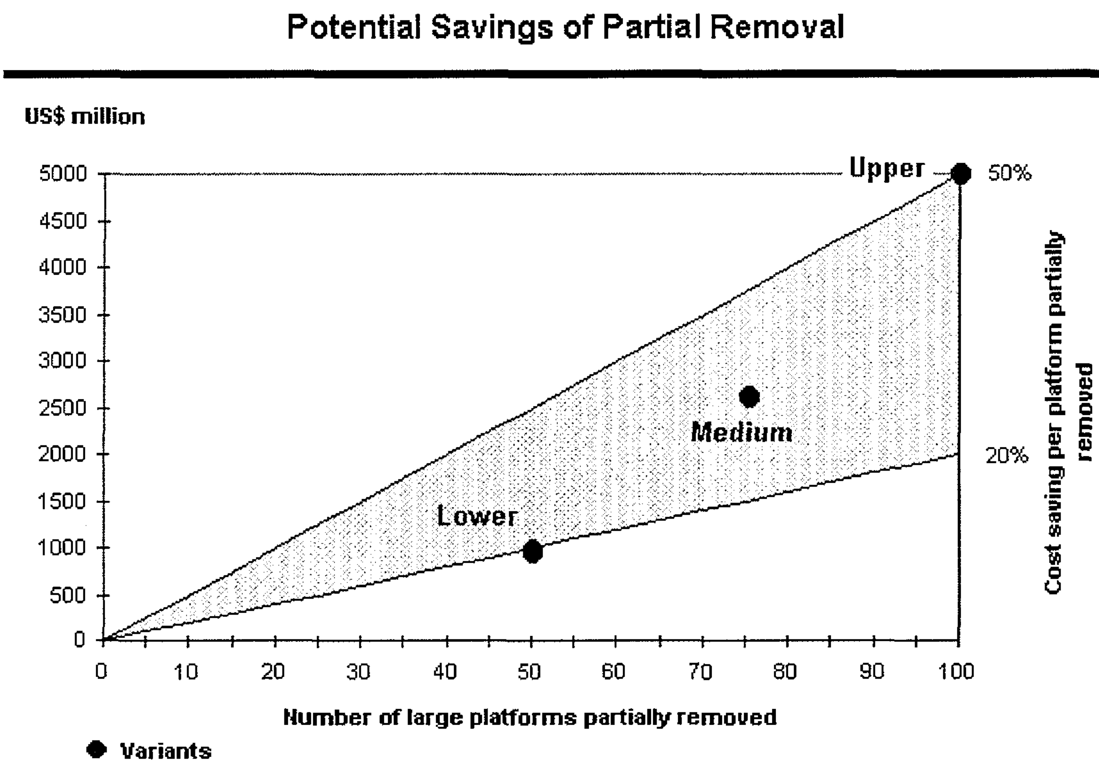
100 Large Steel Jacket Platforms
• Water depth > 75 m
• Average weight per platform: Topsides 15 000 t Substructures 11 000 t
• Average cost of total removal per platform: US$ 100 million
• Number of platforms totally or partially removed depends on the option chosen

(7) In the case of **Option 1**: **Total Removal, all platforms are totally removed onshore** and recycled there. This applies to all small and all large platforms.

In the case of **Option 2**: **Partial Removal**, the IMO Guidelines are followed, i.e. all small platforms and all topsides are totally removed. Only the **substructures of the large platforms can possibly be disposed of in situ in deep water.** Since a great deal of work is required to remove substructures and haul them onshore, partial removal offers substantial cost savings; estimates of these savings in the literature differ very widely, however. In an EU study,) for example, partial removal offers savings on the order of 20% if all large platforms are removed only partially as allowed by the IMO Guidelines. A study by Brindley) estimates that about 10% of total decommissioning cost could be saved, but in this case it is not clear how many of the large platforms would be only partially removed. According to the ODCP, on the other hand, 50% of the cost of decommissioning of the large platforms could be saved by employing partial removal. This works out to savings of about 39% on the decommissioning costs of all platforms.

According to the IMO Guidelines, platforms standing in water more than 75 meters deep **can** be removed only partially. The decision on whether to do so is made by the responsible national authorities, who so far have evaluated each case on its merits to reach a decision. So it is not known how many of the platforms that might be removed partially will in fact be allowed to be partial removed.

(8) For these reasons, three **variants** were investigated for Option 2: (Partial Removal), that cover a broad spectrum of the different possibilities. These variants are presented in the following graph. The blue sector indicates the range of possible savings estimated for partial removal. The estimated total savings depend on the one hand on the number of platforms that are partially removed, and on the other on the estimated average savings per platform. The variants cover a large portion of the spectrum. The **lower variant** assumes that only 50 platforms are partially removed, while the **upper variant** assumes that 100 platforms are disposed of this way. The average estimated savings range from 20% (lower variant) to 50% (upper variant).



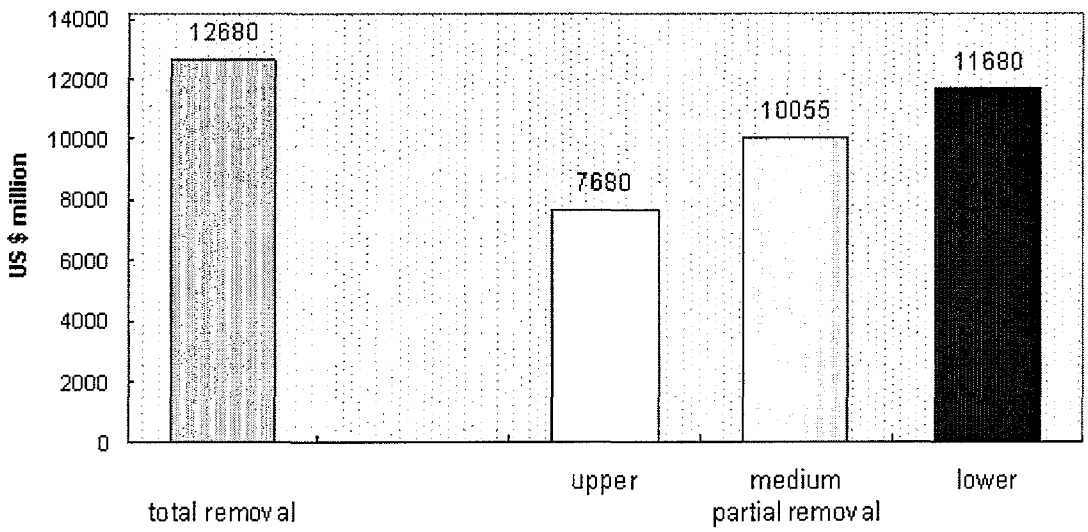
(9) The following summary lists the assumptions underlying the various options and variants.

Option of Decommissioning
• **Overall Guidelines:** all 335 small steel jacket platforms will be totally removed all topsides of the 100 large steel jacket platforms will be totally removed
• **Option 1: Total Removal:** total removal of all substructures
• **Option 2: Partial Removal - 3 variants for structures of large platforms:** **Upper:** - number of partially removed platforms: 100 - average cost saving for platforms partially removed: 50 % **Medium:** - number of partially removed platforms: 75 - average cost saving for platforms partially removed: 35 % **Lower:** - number of partially removed platforms: 50 - average cost saving for platforms partially removed: 20 %

Decommissioning costs

(1) Based on the assumptions made for the average decommissioning costs for large and small platforms, the **Total Removal** option yields aggregate costs of decommissioning cumulated up to the year 2020 of US$ 12.7 billion (in 1996 prices). For the **Partial Removal** option, the comparable figure for the **Upper** variant is US$ 7.7 billion, for the **Medium** variant US$ 10.1 billion, and for the **Lower** variant US$ 11.7 billion. Under these assumptions, partial removal offers savings ranging from US$ 1 billion to US$ 5 billion up to the year 2020.

Total Costs of Decommissioning until 2020



(2) Of interest in addition to the aggregate cumulative cost up to 2020 is the average annual cost of decommissioning. The **annual costs** can be analyzed on the basis of the forecast useful life of the individual platforms. The number of shutdowns each year varies sharply between 1998 and 2020. The highest number of platforms is expected to be taken out of service in 2008, making the total decommissioning cost for that year US$ 900 million under the Total Removal option. At the other end of

the scale is the year 2017, with a comparable decommissioning cost figure of only US$ 140 million. Thus the span between the maximum and minimum average annual cost, US$ 760 million, is relatively high. On the other hand, it can be assumed that the actual maximum number of platforms decommissioned will be somewhat lower if the peaks lead to bottlenecks in the decommissioning process.

Annual Cost of Decommissioning for Total Removal	
• Maximum figure	US$ 900 million
• Minimum figure	US$ 140 million
• Average cost per year	US$ 550 million

(3) On average, about US$ 550 million (calculated in today's prices) will have to be spent **annually** up to the year 2020 (Total Removal). By comparison, the average annual cost in the case of Partial Removal is expected to lie between US$ 330 million and US$ 510 million. The lowest cost would accrue in the case of the Upper variant, which assumes that all large platforms would be only partially removed onshore with an average saving of 50%. The highest cost under Partial Removal would accrue in the case of the Lower variant, which assumes that only 50 of the 100 large platforms would be partially removed with an average cost saving of 20%. As mentioned above, the names assigned to the variants (Upper, Medium, Lower) refer to the assumed number of platforms to be partially removed, not the level of the possible savings.

(4) Of particular interest are the cost differences between the two options. The cost savings made possible by Partial Removal range between 8% and 39%, depending on the variant. This would make the average annual costs for partial removal between US$ 45 million and US$ 220 million lower than in the case of Total Removal.

Savings of Partial Removal in Percent and Annual Average		
• Upper Variant	39%	US$ 220 million
• Medium Variant	21%	US$ 115 million
• Lower Variant	8%	US$ 45 million

(5) **Conclusion**: The option Partial Removal offers possible cumulative savings up to the year 2020 of at least US$ 1 billion and at most US$ 5 billion.

Context-comparisons:

- **Context-comparison 1:**
  In monetary terms, the annual revenue of oil production in Great Britain and Norway together is about US$ 33.5 billion (1995). The annual "savings" offered by Partial Removal constitute about 0.1 to 0.6% of this figure.
- **Context-comparison 2:**
  In relation to the 1995 price of crude oil, the additional costs for the total removal option compared to the partial removal option would increase the oil price about 0.01 to 0.07 cents/liter of oil.
- **Context-comparison 3:**
  Savings from partial removal could finance an additional oil-production to fill up 35 to 170 million cars per year or ¾ billion to 3 ¾ billion cars over 20 years.
- **Context-comparison 4:**
  Annual savings from partial removal could finance the development of one average size oil field every 2-3 years.

Employment effects

(1) We assume that the Total Removal option would require an average total workforce of about 3100 people to carry out all decommissioning activities. This figure was estimated on the basis of the data arrived at by Brindley) and the EU study. It should be borne in mind that, especially in the case of the number of people directly involved in decommissioning, the estimate is rendered rather uncertain by the fact that no experience at all has yet been gained in the removal of large platforms. This paper, of course, focuses on the different socio-economic effects of the various decommissioning options - such as the difference in the numbers employed for Partial Removal versus Total Removal. The difference does depend directly on the size of the workforce assumed for Total Removal but the overall differences are rather modest as shown below. This would not change even if a larger workforce were assumed.

First of all, it is necessary to distinguish between the direct and indirect employment effects of decommissioning. Direct effects arise from the actual work done to decommission the platforms, such as hoisting with heavy lift vessels. Indirect effects arise on the one hand for example from the increased demand for additional welding equipment and on the other hand from the income expenditures of the additional employees. The additional demand increases the number of jobs in the apropriate sectors.

(2) If one considers first the average number **employed directly** year for year, the figure varies between 800 and 5100 people because of the varying number of platforms coming up for decommissioning each year. This range might well be reduced somewhat, however, if the fluctuations in platforms being taken out of service each year are smaller and when the fact is considered that the work could well take longer than one year.

Direct Employment for Total Removal	
• Maximum number	5100 employees
• Minimum number	800 employees
• Average number per year	3100 employees

(4) The incremental increase in the number employed directly occurs mainly in the areas of metalworking (welders, fitters, about 47% of those additional employed) and maritime transport services (about 28% of those additional employed). New jobs are also created in the service sectors of engineering (about 17% of those additional employed) and logistics und catering (about 8% of those additional employed).

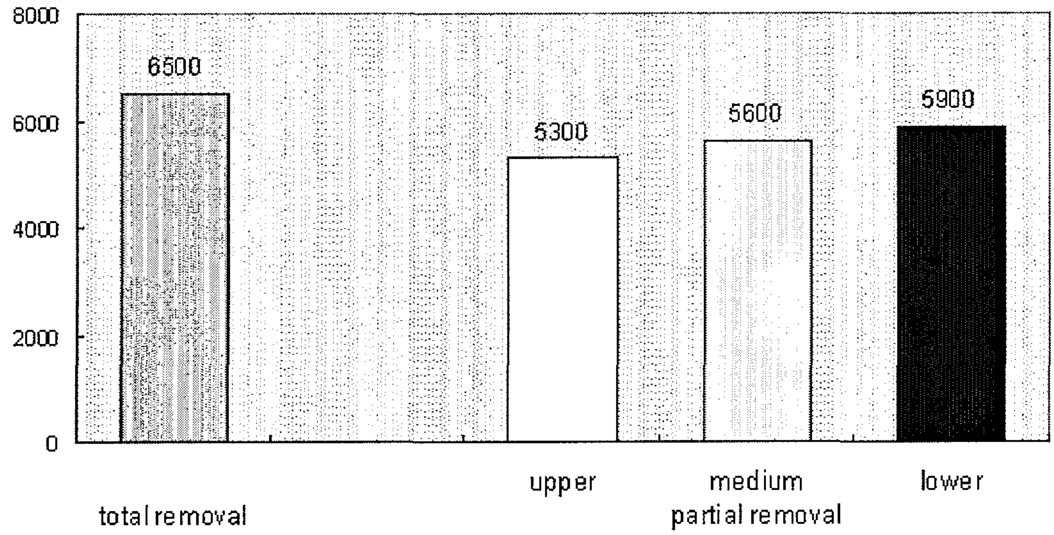
(5) The direct employment will be created in relation of the involvement of the various countries and regions, namely in Scotland, the north of England and southwest Norway (Stavanger), i.e. the regions already heavily involved in the offshore industry. In addition, a country like the Netherlands will continue and probably increase carrying out decommissioning activities thanks to its large ports with good infrastructure.

(6) Besides those employed directly, decommissioning activities will also create **indirect employment** in the countries bordering on the North Sea. For one thing, the work will trigger a certain amount of intermediate demand.) For another, all of the new jobs created will increase the level of disposable income and consumption, which in turn will have a positive effect on employment.)

Taking the direct and indirect effects together, Total Removal will create about 6500 new jobs in total. In the case of Partial Removal, the figure is between 5300 and 5900 new jobs. This assumes that the work done on the substructures in the case of Partial Removal will require only about 60% of those employed. This takes into account the fact that the upper parts of the substructures will need to be removed or at least have to be toppled, which also requires labour. For all other work involved for the topsides and the small platforms, the number of people required is the same as for Total Removal.

(7) The following graph depicts the annually average direct and indirect employment effects of the different disposal options. As it shows, the differences between the options are not very great.

Direct and Indirect Employment



As can be seen, the new employment created by Partial Removal runs between 9% and 19% less than in the case of Total Removal. The annual average of those working is between 600 and 1200 employees fewer.

Differences of Partial Removal in Percent and Annual Average		
• Upper Variant	19%	1200 employees
• Medium Variant	14%	900 employees
• Lower Variant	9%	600 employees

(8) **Conclusion:** The total number of new jobs created by the Total Removal option is about 6500 in average per year. Compared to the Partial Removal Option between 600 and 1200 jobs would be creates additional in the Total Removal Option.

- **Context-comparison**
  Compared with the average level of unemployment in the three countries of Great Britain, Norway and the Netherlands together, the difference between the employment effects of the two decommissioning options amounts to only about 0.02 to 0.04 % of the **total** number unemployed in these countries.

Fiscal effects

(1) The financial burdens of decommissioning the oil and gas platforms are borne not only by the oil and gas industry, but also by the national budgets of the producing countries. Both Norway and the UK, which happen to be the largest producers, are affected this way. In Norway the government has to bear a certain rate of the decommissioning costs. This rate is as high as the average tax rate over the life of the oil or gas field, where the platform is located.

In the United Kingdom the exploration firms are taxed on their earnings from oil and gas production. But because they can deduct the costs of decommissioning from their taxable earnings, the UK loses tax revenue equivalent to between 50% and 70% of the decommissioning costs. In the following analysis it is assumed that the taxpayers in the producer countries bear **50% of the decommissioning costs** on the average.

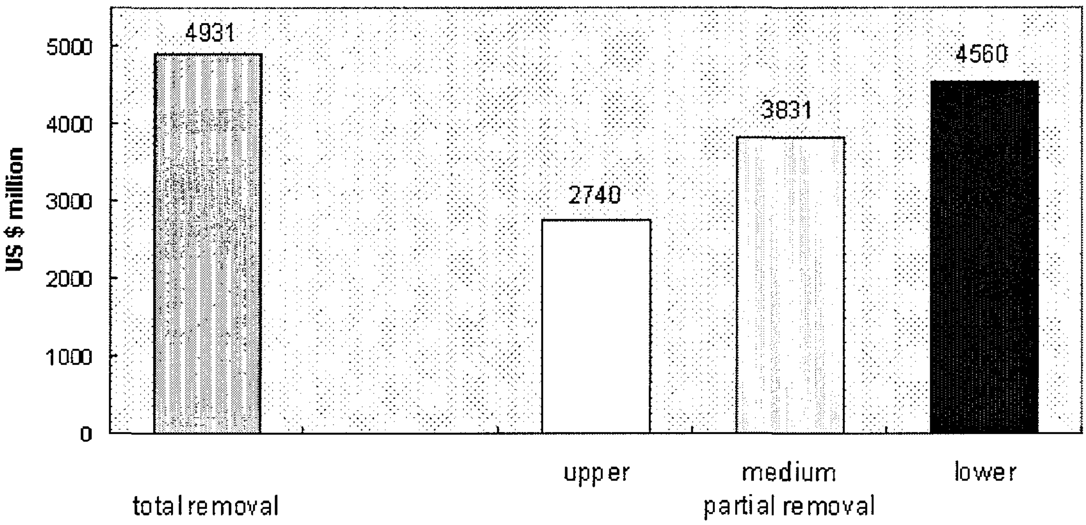
(2) On the other hand, the countries also take in **tax revenue** from the decommissioning activities. Those filling the jobs created pay income tax, and the companies working on decommissioning have various taxes to pay (including corporate income tax). The following assumptions are made with regard to **tax revenue** generated by decommissioning activities:)

- The average annual taxable income of those filling the new jobs is US$ 40,000, and the income tax rate is 20%.
- The average operating surplus of the turnover from decommissioning activities is 5%, which is subject to 33% tax.

(3) **The net burden borne by national budgets** cannot be pinned down for the individual countries bordering on the North Sea. Precise figures would depend on where the decommissioning activities are located and where the companies doing the work are domiciled, and these things are not yet known. Presumably the financial burdens will occur mainly in Norway and the United Kingdom, and it is conceivable that a large portion of the tax revenue will be generated in the Netherlands, because of the decommissioning work being carried out there.

(4) A detailed compilation of the financial burdens on countries and the tax revenues generated by the two options and three variants is included in the full report. For the Total Removal option, net government expenditure (i.e., less tax revenue) adds up to about US$ 4.9 billion by the year 2020. For Partial Removal, the net expenditure figure is within a range from US$ 2.7 billion and US$ 4.6 billion. Consequently, the difference between Partial Removal and Total Removal is between US$ 0.4 billion and US$ 2.2 billion.

Net Government Expenditure



(5) It is also worthwhile looking at the average annual government expenditure. The range of annual net government expenditure figures of the oil and gas producing countries for decommissioning is between US$ 60 million and US$ 350 million for the Total Removal option. However, the maximum annual expenditure could be lower if the maximum number of platforms to be decommissioned each year turns out to be lower than has been assumed here.

Annual Net Government Expenditure for Total Removal	
• Maximum figure	US$ 350 million
• Minimum figure	US$ 60 million
• Average Expenditure per Year	US$ 215 million

(6) The average annual government expenditure required for the decommissioning of platforms is about US$ 215 million, assuming that all installations are totally removed and disposed onshore (Total Removal). For the Partial Removal option, the average annual expenditure ranges between US$ 120 million and US$ 200 million. Hence the possible annual savings for the taxpayers offered by the latter option runs from 8% - 44% or US$ 15 - 95 million.

Savings of Partial Removal in Percent and Annual Average		
• Upper Variant	44%	US$ 95 million
• Medium Variant	22%	US$ 50 million
• Lower Variant	8%	US$ 15 million

(7) **Conclusion:** If the Total Removal option is assumed, the taxpayer will have to pay additional at least US$ 400 million and at most US$ 2200 million for decommissioning up to the year 2020. This means that the taxpayer will have to pay additional between US$ 15 million and US$ 95 million every year (in the average) until 2020.

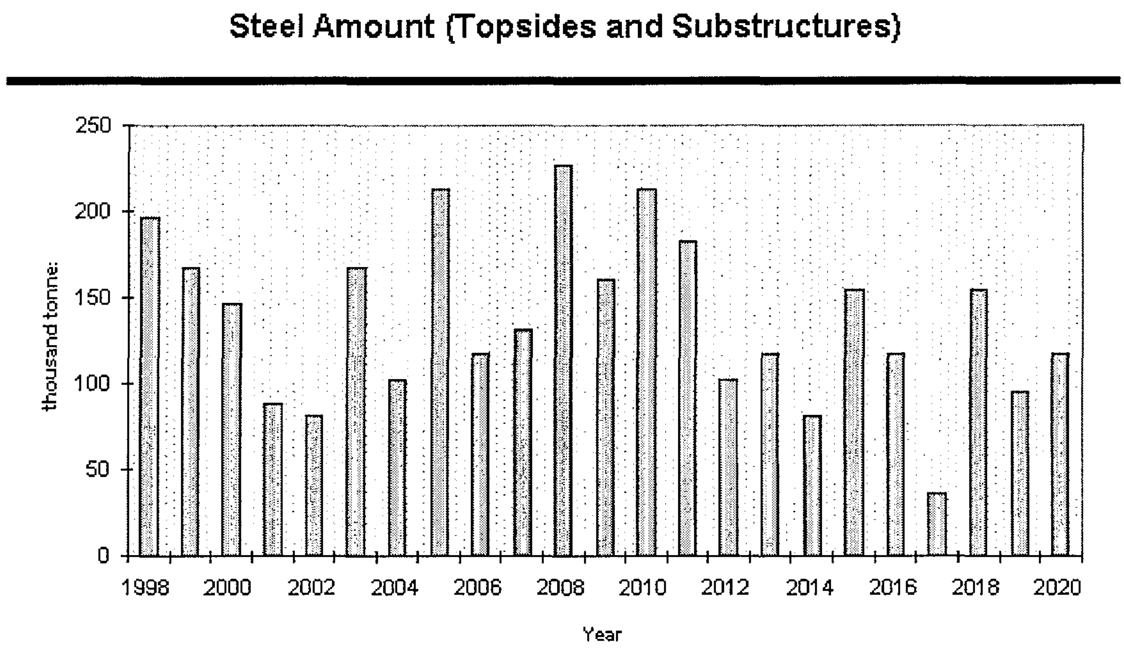
Context-comparisons:

- **Context-comparison 1:**
  If one were to finance the difference in net incremental government expenditure between the two decommissioning options with a poll tax levied on the populations of Great Britain and Norway, it would come to about US$ 0.25 to US$ 1.50 per capita.
- **Context-comparison 2:**
  If the differences between the costs of the two decommissioning options are set in relation to the annual government consumption expenditure of these two countries, the differences make up between 0.01 and 0.4 % of government consumption expenditure.
- **Context-comparison 3:**
  With the amount of government expenditure saved each year, one could build between 10 and 50 wind-power generators (rated 500 kW) to supply between 3,000 and 15,000 households with electricity.

Recycling

(1) This paper concentrates exclusively on the **recycling of steel**, because steel is virtually the only material obtained. All other materials - practically all of which are found on the topsides - have to be recycled or disposed of onshore no matter which of the two options is chosen, and therefore do not affect the comparison.

Year by year, the quantity of steel obtained fluctuates corresponding to the expected decommissioning schedule. According to the ODCP, about 3.2 million tonnes of steel will accrue up to the year 2020. On average, this works out to about 140,000 tonnes per year. The largest quantity that will have to be recycled in a single year is 230,000 tonnes in 2008.



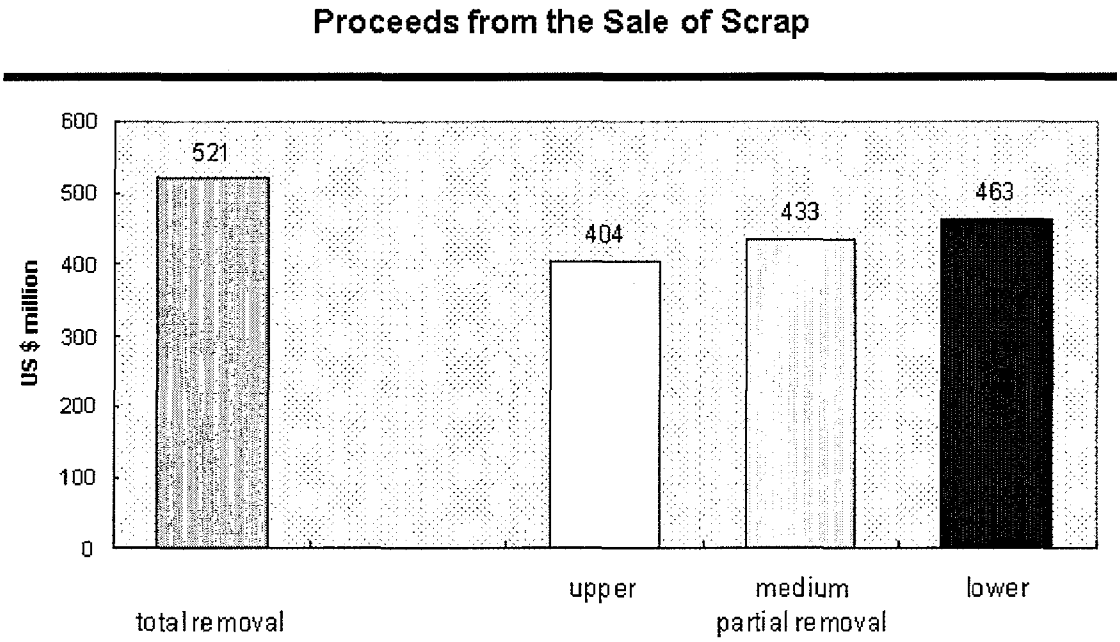
(2) In the case of **Partial Removal** only part of the substructures will be hauled ashore, which makes the quantity of steel obtained less than that for Total Removal. In view of the fact that the structural steelwork becomes broader and heavier with increasing water depth, and because some of the substructures will be toppled, the following **assumption** was made: in the case of Partial Removal, 66% (by weight) of the substructures are disposed of in situ. In other words, the quantity of steel obtained for recycling from the substructures of the platforms only partially removed is reduced by 66%. The small platforms and the topsides of the large platforms are totally recycled onshore, however, just as in the case of Total Removal.

Consequently, the amount of steel obtained for recycling under Partial Removal is between 11% and 23% less than that obtained under Total Removal. Partial Removal therefore yields between 360,000 and 710,000 tonnes of steel less for recycling up to the year 2020. On average, between 15,000 and 30,000 tonnes less steel sold to the scrap market each year.

Differences of Partial Removal in Percent and Annual Average		
• Upper Variant	23%	30,000 tonnes
• Medium Variant	17%	22,000 tonnes
• Lower Variant	11%	15,000 tonnes

(3) Compared with total scrap consumption in Europe, the amount of steel generated annually by the decommissioning of platforms is insignificant. For instance, about 7.5 million tonnes of scrap was consumed in the United Kingdom alone in 1995. Scrap consumption is expected to keep on rising in the years to come, because steelworks using electric furnaces - which melt a much higher proportion of scrap to produce new steel than do oxygen converters - are on the increase. So the scrap generated by decommissioning will easily be absorbed by the market and will have no effect on scrap prices, which are currently about US$ 180/t according to Eurostat.

(4) Assuming that about 90% of the steel can be recycled, the proceeds obtainable from the sale of scrap up to the year 2020 will come to about US$ 520 million for the Total Removal option. Because Partial Removal would generate less scrap, its proceeds from scrap sales would range between US$ 400 million and US$ 460 million.



The yearly proceeds from scrap sales fluctuate between US$ 6 and 37 million in the case of Total Removal, with the average lying at about US$ 23 million.

(5) In the case of Total Removal the revenues from scrap selling are annually something like US$ 3 to 5 million higher than in the Partial Removal option. The additional total revenue until 2020 comes to between US$ 60 million and US$ 120 million. Stated as a percentage, the difference between Partial and Total Removal is between 11% and 23% depending on the variant.

Differences of Partial Removal in Percent and Annual Average		
• Upper Variant	23%	US$ 5 million
• Medium Variant	17%	US$ 4 million
• Lower Variant	11%	US$ 3 million

(6) **Conclusion:** If the Total Removal option is chosen, the annually additional steel amount would be at least 15 thousand tonnes and at most 30 thousand tonnes.

• Context-comparison
Compared with the annual steel scrap consumption of the Netherlands, the smallest country bordering on the North Sea and one that could benefit from scrap recycling, the difference between the amounts of scrap generated by the decommissioning options represents some 1 to 3%. But because the recycled scrap would be divided between four countries (Great Britain, Norway, the Netherlands, Germany), the percentage figures for these countries would be 0.07 to 0.13 % of the total scrap market of all four countries.

Energy Costs

(1) It is one of the aims of this study to present the key activities that determine the energy costs of decommissioning and to discuss their significance for the two decommissioning options. Studies that have already been carried out on this subject) have shown that for a methodologically sound and comparable energy balance, it is essential that all relevant energy consumptions are considered to the same extent and documented in a comprehensive way.

(2) With respect to different existing approaches the following energy costs need to be taken into account:

Direct Energy Costs
• Dismantling activities offshore (vessels, cranes, tugs, etc.)
• Transport to shore (tugs)
• Dismantling activities and transport onshore
• Recycling of retrieved material

Indirect Energy Costs
• Manufacture of material to replace "lost" recyclable materials (incl. ore production and transport)

While **direct energy costs cover activities directly involved in the process of decommissioning**, **indirect energy costs represent opportunity costs** caused by the fact that not all possibly recyclable material (steel structure) is removed under the partial removal option. It is argued that this amount would need to be replaced by new steel. These are externalised costs, meaning that they are not borne by the oil industry or the operator. The amount of steel in question may appear negligible when compared to total steel production in the European Community. However a consistent and complete energy balance on decommissioning options requires this amount to be taken into account.

(3) There is of course a certain proportion of recovered material not suitable for recycling that also needs to be replaced, which is true for both options. The energy costs listed above can also be categorised into **three main sets of activities**:

- **Recovery** (dismantling off- and onshore, transport to shore),
- **Recycling** (including transport) and
- **Replacement/new manufacture** of "lost" material.

With regard to the differences in the studies mentioned above, the overall energy costs were not quantified. An analysis of these studies shows a wide variety of boundary conditions, degree of detail and relevant activities that are taken into account (e.g. assumptions on fuel consumption for various vessels, average transport distances to shore, specific energy uses for metal production and recycling). In consequence, the available data on energy uses does not permit any reliable assessment of the total energy costs for the decommissioning of all steel platforms.

(4) Keeping these aspects in mind, the following key findings on energy costs are generally valid for the two decommissioning options:

Results
• **In many cases energy saved by total removal and recycling may be marginal compared to partial removal.** • **For some large deepwater steel substructures, even when taking indirect energy costs fully into account, total energy costs for total removal may still exceed total energy costs for partial reneval.** • **In many cases the net difference in energy consumption and consequently in energy costs does not appear to be the decisive factor for one option or the other.**

It is evident that for the recovery of material, total removal of a steel substructure results in higher energy consumption compared to partial removal. Consequently there is more material to recycle for the total removal option which will again lead to a higher energy use. So partial removal uses less energy for recovery and reycling than total removal. Yet for most cases this "gained energy" is compensated by the energy used for new manufacture of material (incl. transport etc.) that is "lost" due to partial removal.

(5) **Conclusion:** The energy consumption is often not a clear cut argument for or against one option or the other. This is especially true for large steel structures in deep water where the difference in total energy costs may be marginal for the two decommissioning options.

Final Conclusions

Main results are:

- **Costs of Decommissioning**

  – total costs for total removal: 12.7 billion US $

  – possible savings from partial removal: 8 % to 39 %.

- **Impacts on Employment**

  – annual average of **direct employment** in case of total removal is about 3100 additional workers

  – annual average of additional **indirect employment** is about 3400 workers

  – with partial removal employment is between 9 % and 18 % lower

- **Fiscal Effect**

  – net government expenditure for total removal is about 4.9 billion US $

  – the savings resulting from partial removal are between 8 % and 45 %

- **Recycling**

  – return from scrap selling is ca. 0.5 billion US $ (total removal) and about 11 % to 22 % lower in case of partial removal option

Direct employment	(man years)		
Total Removal		3100	
Partial Removal	2500	to	2800
Difference	300	to	600
Indirect employment	(man years)		
Total Removal		3400	
Partial Removal	2800	to	3100
Difference	300	to	600
Annual net government expenditure	(US$ million/year)		
Total Removal		215	
Partial Removal	120	to	200
Difference	15	to	95
Annual steel quantity	(thousand tonnes)		
Total Removal		140	
Partial Removal	110	to	125
Difference	15	to	30

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executive summary

Platform decommissioning: Socio-Economic impacts

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(1) The **object** of this **report** is to evaluate **the socio-economic effects** of the decommissioning of **steel jacket platforms** in the North Sea and in the North East Atlantic in the period up to 2020 in their entirety and to consider the various discussion arguments in the light of the study's results. The study focuses on two different decommissioning options, namely **total** and **partial** removal of installations. Partial removal applies only to installations in water deeper than 75 m; all other installations, i.e. those in waters shallower than 75 m, have to be **totally** removed and brought onshore for disposal.

(2) The **report** covers the following **study areas**:

- costs of the different decommissioning options
- effects of the different options on employment
- fiscal aspects of the different options
- aspects of recycling onshore
- environmental impact of the different options.

(3) **Main results** are:

- **Costs of Decommissioning**

  – total costs for total removal: 12.7 billion US $

  – possible savings from partial removal: 8 % to 39 %.

- **Impacts on Employment**

  – annual average of **direct employment** in case of total removal is about 3100 additional workers

  – annual average of additional **indirect employment** is about 3400 workers

  – with partial removal employment is between 9 % and 18 % lower

- **Fiscal Effect**

  – net government expenditure for total removal is about 4.9 billion US $

  – the savings resulting from partial removal are between 8 % and 45 %

- **Recycling**

  – return from scrap selling is ca. 0.5 billion US $ (total removal) and about 11 % to 22 % lower in case of partial removal option