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IMPACT ASSESSMENT

Accompanying the document

PROPOSAL FOR THE REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

on safety of offshore oil and gas prospection, exploration and production activities

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INTRODUCTION

The Deepwater Horizon drilling rig disaster on 20 April 2010 cost 11 lives. The massive escape of oil from the faulty well caused significant environmental, economic and social damage. The incident focused the attention of public policy makers around the world on the scale of risk in the offshore oil and gas industry. Whilst the regulatory framework and operating conditions in Europe are in general different from those in the USA, the disaster provided an impetus for examining the lessons to be learned about the nature of the oil and gas industry hazards in EU waters, the capability of industry to prevent them being realised and, if there are major incidents, the preparedness to limit and repair the consequences.

By reviewing applicable European legislation and consulting with industry and Member States' authorities[1], the Commission identified, in summer 2010, shortcomings in EU's regulatory frameworks and industry practices and started[2] preparing to reinforce the safety of offshore oil and gas activities in Europe. In October 2010 the Commission adopted a Communication "Facing the challenge of the safety of offshore oil and gas activities".[3] Following a fitness test of EU legislation to address an even similar to the Deep Horizon, it outlined areas where more coherent application of best industrial and regulatory practices throughout the EU was justified.

This Impact Assessment has been based on further research, analysis and consultations, including a formal public consultation, all of which build on the initial work of the Commission. It establishes, in **Chapter 2** the underlying drivers to shortcomings in offshore risk controls in the EU and the need for EU action to meet the safety and environmental challenges. It articulates in **Chapter 3** the general and specific objectives for the enhanced prevention of major offshore incidents. In **Chapter 4** a number of policy options progressing steadily from the current starting point to more profound reforms are set out and analysed. Each option is assessed in **Chapter 5** for its calculated environmental, economic, administrative and social impacts. This sets the scene in **Chapters 6 and 7** for the selection of a preferred option to go forward.

The suggested option implements, by means of new legislation and soft law, wide ranging reforms that level up the practices in EU Member States with offshore oil and gas activities to current best standards. It also provides for greater public transparency about the performance of the industry and the regulators. It eschews wholly new or unfamiliar approaches, and thereby avoids the risk of destabilising the currently best performing EU regimes.

While some of the underlying measures of the preferred option can be implemented without delay, others require implementing or delegated acts, with further input from Member States, to complete their implementation. For three measures, due to their complexity, it is recommended to carry out further evaluation within separate policy development. Those three are described fully in this report notwithstanding they do not form part of the integrated proposal covered by this impact assessment.

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[1] Public administration bodies involved in licensing and supervision of offshore activities in Member States.
[2] Statements of Commissioners Oettinger and Damanaki at EP plenary on 7 July 2010
[3] COM(2010) 560 final

In **Chapter 8** we suggest mechanisms for monitoring and evaluation of the proposals once implemented.

1. PROCEDURAL ISSUES AND CONSULTATIONS OF INTERESTED PARTIES

1.1. Organisation and timing

The preparation of the Impact Assessment started in late 2010, partly building on the review of the European regulatory framework launched by the Commission after the Deepwater Horizon accident and on consultations with stakeholders.

The analysis feeding into the Impact Assessment was performed internally by Commission services, partly with the use of external sources of information and expertise. The Commission's Joint Research Centre (JRC) provided important input to the document, in particular to the quantitative analyses. The Commission also made extensive use of studies from external sources, the list of which is available in *Annex IX*.

1.2. Consultation and expertise

An Inter-Service Group (ISG) was established in January 2011 by the Directorate-General for Energy (ENER) with participation from the Secretariat General, the Legal Service, the European External Action Service and DGs ECHO, EMPL, ENTR, ENV, MARE and MOVE. The ISG met 7 times between January and June 2011 for the discussions of the scope, of interim analytical results and of draft texts for individual elements of this Impact Assessment report, as well as the public consultation document published in March 2011 (more details further below). Bilateral consultations with individual DGs were undertaken in the same time period.

In addition to the internal Commission consultative process involving the above mentioned services, the Impact Assessment study drew on consultations with external experts and stakeholders who were consulted throughout the preparation of the work and provided invaluable expertise.

An on-line public consultation was carried out between 16 March and 20 May 2011 to ascertain the views of interested parties on the need for EU action in various policy fields. The consultation was based on a document outlining the key issues and containing 18 open questions. The public consultation resulted in 65 reactions and contributions from Member State authorities, industry associations, individual enterprises, NGOs and citizens concerning various aspects of offshore safety. The contributions proved to be instrumental in developing the Impact Assessment and the ensuing legislative proposal. The key results of the public consultation are summarized in Annex VII.

Apart from the on-line public consultation, stakeholders were consulted in regular meetings. National authorities involved in the regulation and supervision of offshore activities have met in four meetings hosted jointly by the Commission and the North Sea Offshore Regulatory Forum (NSOAF). The issue of offshore safety was also raised in the meetings of the Berlin Forum Indigenous Fossil Fuels Working Group[4]. In addition to the above structured dialogues, numerous meetings have taken place with experts of the International Association of Oil and Gas Producers (OGP), national industry

[4] The EU Fossil Fuels Forum (aka. Berlin Forum) is an annual stakeholder meeting convened by the Commission. Between the annual plenary sessions, working groups hold regular meetings to discuss the most topical issues identified at the plenaries.

associations, individual enterprises, NGOs and independent verification companies. These consultations provided unique access to up-to-date industrial expertise and know-how. Furthermore, the Commission has regularly attended the meetings of the Oil Spill Prevention and Response Advisory Group (OSPRAG) established in the UK.

Opinions of the Impact Assessment Board

The first opinion of the IAB was received on 8 July in response of the initial submission of the Impact Assessment on 16 June 2011. The IAB requested a resubmission of the report, with the following recommendations for improvements:

- Better define the problem and develop a full baseline scenario in the report
- Present a clear intervention logic by better structuring the content of options and choices made
- Improve the assessment of impacts
- Add stakeholder views throughout the document on key points

The impact assessment was accordingly reorganised and resubmitted on 31 August. The opinion of the IAB, was received on 23 September. It recognised that earlier recommendations had been followed to a significant extent but asked still to:

- Better justify grounds for EU action in terms of subsidiarity (see 2.5 "Need for EU action")
- Further structure the content and choice of options to facilitate the reading and to elaborate on the discarded but important options and the plans for their later implementation (see Chapter 4, throughout)
- Further improve the assessment of impacts and their comparison (see chapter 5, Chapter 6 – diagram and text box)
- Further incorporate stakeholder views (see mainly Chapter 4 – description of the options- but also throughout the report and in updated Annex VII)

The references in parentheses indicate areas of changes;

2. PROBLEM DEFINITION AND BASELINE

2.1. Nature of the problem: A need to further reduce the risks posed by offshore oil and gas operations

Offshore oil and gas operations entail risks and – as seen in the Gulf of Mexico in 2010 and elsewhere – the consequences of an accident can be catastrophic. The risks are more real than they may appear - it is a matter of public record that in the 31 years between Mexico's 1979 Ixtoc and the 2010 Deepwater Horizon disasters, there have been at least 9 other offshore disasters of a major scale[5], and a large number of lesser incidents that could have resulted in total loss of the rig or platform instead of the smaller damage or pollution that actually happened in those cases.

[5] Ixtoc 1979/Norway Alexander Kielland 1980/Canada Ocean Ranger 1982/China Glomar Java Sea 1983/UK Piper Alpha 1988/Brazil Enchova 1984 and 1988/Thailand SeaCrest (8 of the 91 dead were from the EU) 1989/Brazil P.36 2001/India Mumbai High 2005/Mexico Usumacinta 2007/Deepwater Horizon 2010. Moreover, a well head accident on the Montara platform on 21 August 2009 resulted in a fire and an uncontrolled discharge of oil and gas lasting until 3 November 2009.

Some of these happened in Europe (including Norway) or involved European operators. The risks of major offshore incidents, although reduced in the past decades in some Member States through major reforms introduced following the Alexander Kielland and Piper Alpha disasters[6] remain, also in Europe, high. This is evidenced by the persistent occurrence of tell-tale signs (precursors of potential major accidents[7] that do not materialise - 'near misses') in reports from the European offshore sector. Some reports on hazard precursors and risks in fact reveal declining industry performance in the control of major offshore risks even in jurisdictions that are considered to feature some of the most advanced safety regimes[8]. For example, Norway's recently released reflections of the state of its offshore industry conclude that the risks of major offshore incidents are higher than was previously thought[9].

At the same time, the stress test of the EU regulatory framework carried out in summer 2010 and further developed during the preparatory stages of this Impact Assessment identified a number of shortcomings in the regulatory framework for the offshore oli and gas activities in the EU. The offshore industry, including individual subsidiaries of the same company, operates to different environmental, health and safety standards in different European jurisdictions. Those standards are partly guided by local requirements and are largely determined by national legislation since existing EU law sets mainly minimum requirements covering only partially the relevant aspects of offshore activities[10].

The result of the above is that licensing, permitting, environmental protection, technical and financial capacity requirements, equipment safety standards, reporting practices and inspection regimes vary from Member State to another. This does not create a suitable, comprehensive and EU-wide coherent regulatory environment that would prioritize and indeed necessitate continuous reduction of risks of major accidents.

The differences in the regulation of offshore activities are even more marked when moving between EU regions. Whilst there are similarities in offshore hazards, the regulation of them outside the North Sea is less developed and does follow a clearly specified model[11]. Any detailed benchmarking between individual Member States, let alone amongst them at EU level, is, however, complicated by the lack of transparency,

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[6] The Piper Alpha North Sea oil production platform exploded in 1988, killing 167 people. The event was caused by failures to operate production systems safely. An earlier incident in the Norwegian North Sea resulted in 123 deaths when the Alexander Kielland platform capsized in 1980. These two incidents led to reforms of the structural resilience of offshore structures, particularly mobile units.

[7] Precursors of major hazards include hydrocarbon leaks, failures of production process safety control; loss of drilling well control; safety failure caused by invalid design change; high number of maintenance backlogs of safety critical elements.

[8] Norwegian Petroleum Safety Authority Risk Report 2010, ref http://www.ptil.no/news/rnnp-2010-major-challenges-in-important-areas-article7810-79.html; UK Key Programme 3 (installation integrity) 2007 report ref http://www.hse.gov.uk/offshore/kp3.pdf and 2009 progress report ref http://www.hse.gov.uk/offshore/kp3review.pdf

[9] Norwegian Petroleum Safety Authority Risk Report 2010, ref http://www.ptil.no/news/rnnp-2010-major-challenges-in-important-areas-article7810-79.html

[10] For example, EU legislation on the authorisation of offshore activities deals only with competition aspects of the procedures; EU directives on product safety apply to equipment on fixed installations but not mobile ones (such as was the Deepwater Horizon rig); EU legislation on the health and safety of workers introduces i.a. the risk management concept of a health and safety document, however, does not oblige the companies to submit that to competent authoritities

[11] For example, Romania and Bulgaria have seemingly less comprehensive regulatory regimes than the North Sea states.

comparable data and statistics. The industry also does not systematically share information or lessons learnt from incidents and is in complex conditions such as deep water. We develop the issue of industry and regulators performance benchmarking – both between sectors and between countries – in Annex XIII.

Moreover, the follow-up to the Deepwater Horizon in Europe or in some EU Member States has revealed that a major accident of similar or even smaller proportions could put the available emergency response capacities under a serious strain[12]. A look at EU shows that the EU Civil Protection Mechanism's Monitoring and Information Centre is available for offshore pollution events on a 24/7 basis. However, there are today no EU law requirements on issues such as sharing, placing or compatibility of response assets to deal with an event, maintenance of industry asset inventories or cross-border emergency response. The Deepwater Horizon response effort in the US was complicated precisely by similar lack of coordination of response inventories and by compatibility problems of assets (machinery, etc).

Finally, the Gulf of Mexico disaster revealed that an extreme damage to the environment, and ultimately to marine and coastal economies, raises important questions about the liability for the damage and responsibility for its remediation. The EU does have a system of provisions for the remedy of environmental damage following an accident. The analysis carried out in summer 2010[13] pointed to some scope to improve the system. For instance, the fact that EU waste law applies to oil spills by virtue of a ruling of the European Court of Justice has consequences on the responsibility of operators, so it would benefit from better visibility with guidance from the Commission. Secondly, in the framework of the Environmental Liability Directive (ELD), there is a need to ensure without any ambiguity that offshore operators are liable not only for damage caused to protected species, natural habitats and to the water damage to territorial waters, but also damage to all marine waters under the jurisdiction of Member States. The status quo, which does not address the latter, might perpetuate the possibility that some consequences of a marine accident may be internalised at least partly to the Member State, contradicting the polluter pays principle that governs ELD. Also, the current framework makes unclear whether Member States could enforce compensation from the polluter for the deployment of national contingency assets and for traditional damage in case of an emergency of extreme proportions.

Related to the above is the issue of guarantees of operators' financial strength. The operator of the license in the Deepwater Horizon case estimates the outcome costs of the incident at $40bn. Very few companies and no existing risk-pooling scheme could accommodate such a sum, which would leave the host country exposed to unwarranted public financial risk. In the EU, there is no consistent approach that would ensure that the "polluter pays" principle would be fully upheld to cover damages of a transboundary character and/or of level seen in the Gulf of Mexico. The insurance market cannot furnish an instrument that guarantees unlimited financial indemnity. Apart from the

[12] The industry itself recognizes that it still lacks equipment to contain oil spills in deep-water or other complex environments. For example, OSPRAG has been set up in the UK between industry and regulator to review and improve well control and emergency response inventories and financing (http://www.oilandgasuk.co.uk/knowledgecentre/OSPRAG.cfm); the Association of Oil and Gas Producers has similarly established a response group to develop improved response and well capping capability: http://www.ogp.org.uk/pubs/PressReleases/PR100909.pdf

[13] COM(2010) 560 final and SEC(2010) 1193 final

North Sea-based risk pooling arrangement between operating companies[14], no guarantees amongst Member States or international solutions are in place at present. The absence of an international liability regime governing offshore oil and gas accidents (revealed most recently equally by the Deepwater Horizon and Montara events, both referenced earlier) is in contrast to the maritime transport sector where a body of liability conventions and trust funds exist to facilitate compensation of victims.

As result of all the above, the EU is facing a threefold problem with respect to oil and gas activities off its shores:

First, the risk of a major offshore oil or gas accident occurring in EU waters is significant and the existing fragmented legislation and regulatory and industry practices do not provide for all achievable reductions in the risks throughout the EU.

Second, the existing regulatory framework and operating arrangements do not provide for the most effective response to all consequences of accidents in EU waters.

Third, under existing liability regimes, the responsible party (such as the polluter in case of oil spill) may not always be clearly identifiable and/or may not be able, or liable, to pay all the costs of remedy of the damage caused by its action.

2.2. The extent of the problem

Both the potential sources of major incidents and areas at risk from them are extensive in geographical terms and in the potential material and societal impacts.

Geographical extent

Over 90% of oil and over 60% of gas produced in Europe (EU and Norway) comes from offshore operations. Offshore operations (exploration and exploitation) are ongoing in the territorial waters of 11 Member States. Furthermore, some other Member States plan to commence drilling activities in the near future. In total, over 1,000 offshore installations are operating in European waters (including Norway)[15]. There are more than 6,000 wells, more than 400 of them in Italian and Spanish waters. These numbers are growing despite an overall decline in hydrocarbon production.

The national regimes in the North Sea region, while all different, are the source of the most advanced risk control practices by virtue of their goal-setting regulatory approaches. Nevertheless, even in this region the reduction of major hazard risks remains a valid concern as reports from relevant authorities reveal[16]. This is important since the majority of offshore oil and gas in Europe (EU & EEA) is produced in the Danish, Dutch, German, Norwegian and UK sections of the North and Norwegian Seas.

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[14] OPOL (The Offshore Pollution Liability Association LTD)

[15] More detailed data on European offshore activities are available in the Commission Staff Working Document accompanying the Commission Communication "Facing the challenge of the safety of offshore oil and gas activities" (http://ec.europa.eu/energy/oil/offshore/doc/sec(2010)staff_working_doc.pdf)

[16] For example, as recently as in May 2010, well control was lost on the Gullfaks C installation in Norway; according to the Norwegian Petroleum Safety Authority's report on the event issued later in 2010, only chance averted a sub-surface blowout and/or explosion. In 2003, windy weather conditions helped to avoid an explosion following a gas line rupture on the BP Forties Alpha platform in the UK North Sea.

Activities may be less intensive in the Mediterranean and Black Sea regions - most of offshore operations in this region occur in the Italian and Romanian waters while more Member States (e.g. Cyprus, Malta) are planning to commence drilling activities in the near future. However, the risks associated with the operations may be even higher there as, apart from Italy, the offshore oil and gas industry has shorter traditions and the regulatory authorities less resources in those regions. In a recent report to the French Parliament, the risks from hydrocarbon exploration and exploitation activities in the Mediterranean are underlined, as is the gap between progress of drilling technologies, on the one hand and of safety measures on the other hand. [17]Moreover, instead of goal-setting regulation, EU Member States in these regions apply more prescriptive regulatory approaches which focus more on detailed requirements and less on effective risk control[18].

Material extent

A major accident at any one of Europe's offshore installations would likely entail material and costly damage to the environment, the economy, local communities and society at large, while the lives and health of those working in the sector may be put at risk. Offshore accidents and failures of production equipment can result in significant damage and extremely high flow-rates of oil and gas. This can create challenges for the rescue of a substantial workforce isolated a great distance from land, and also for the arrest and containment of the oil or gas spill itself. As past accidents have clearly shown, coping with such situations after they have arisen requires mobilisation of massive international expertise and physical assets[19].

The direct impacts of an offshore incident on the health and safety of offshore workers are obvious from events like Deepwater Horizon and Piper Alpha. Crude oil contamination of oceans and seas can also have a detrimental impact on marine and coastal ecosystems (damage to marine waters and to protected species and natural habitats), the full extent of which can only be assessed several years after the event. And, as seen in the Gulf of Mexico, major disasters damaging such ecosystems can also directly jeopardise the health and livelihoods of coastal communities.

Finally, there can be indirect impacts on other activities linked to the sea. This includes ports, but also agriculture and power stations with sea water intake[20]. Other important indirect impacts include the potential loss of major corporate earnings and its affect on investments (pension funds, for example, suffered badly as a result of the Deepwater Horizon incident), interruptions to other offshore sectors, such as wind farm construction and operation, or maritime transport.

Societal extent

The national economies of the coastal Member States affected by the incident would be placed under pressure by a large release of oil into the seas as a result of public aversion

[17] "La pollution de la Mediterranée: état et perspective à l'horizon 2030" Office Parlementaire d'évaluation des choix scientifiques et technologiques, Juin 2011, p.44-48

[18] The presecriptive approaches have been abandoned in the North Sea region during the reforms following major accidents in the 1980s; they are now also under revision in the US following the Deepwater Horizon.

[19] More details on the costs of Deepwater Horizon rescue and clean-up in Annex I.

[20] ITOPF Handbook 2010/2011 describes these impacts based on experience from some 10 000 oil spills.

to a large scale disaster in EU waters within the time frame in which a recurrence might be anticipated (twenty years). In addition, a major incident in the EU would probably limit activity through moratoria or even lead to termination of offshore licensing[21].

The economy relating to the offshore oil industry, including its suppliers would be severely affected by such restrictions. The companies directly concerned may fail, market and public confidence may falter, and national production of oil and gas may diminish. All of these outcomes would impact negatively on state revenues. Equally, the security and affordability of oil and gas supplies could be affected. Offshore oil and gas form a significant and increasing share of total oil and gas production, so any loss of access to indigenous European reserves, or uncertainty about access, would have implications for EU's supply of oil and gas and possibly for energy markets.

2.3. Underlying drivers of the problem

The threefold problem (significant and insufficiently mitigated risks of a major accident; the insufficiency of existing provisions to ensure most effective emergency response; the incompleteness of existing liability regimes) which characterizes the present offshore oil and gas operations in Europe is the result of a confluence of factors.

The risky nature of the offshore oil and gas sector and the persistence of those risks in Europe are driven by factors related to the industry as well as to the regulation and oversight the sector is subject to. Many of the present operations in Europe take place in maturing fields - roughly half of the producing installations in the North Sea are past their predicted production life and the mobile rig fleet is ageing, with a number of mobile rigs of 70's vintage. The business models applied by operators reflect the maturing operating environment – the major players are moving on to frontier areas (e.g. deep water, high pressure zones – with higher risks associated with the potentially high rewards), disposing of their ageing, high cost platforms in more standard locations to smaller companies specialized on low yield, low capital operations. This trend may entail higher risks both on account of new operations shifting to more complex environments and on account of specialist companies having possibly less financial strength and less in-house expertise to ensure comprehensive risk mitigation and to cope fully with liabilities in case of a major incident.

These industry-wide characteristics are compounded with factors related to company-specific corporate practice. As evident from the persistent levels of legal enforcement in the high activity region of the EU (northern North Sea – where, significantly, enforcement data is accessible)[22], there is lack of evenness in compliance of individual operators with the rules and regulations applicable in respective jurisdictions. The compliance challenge can be seen as a reflection of the state of the safety culture of the industry[23] and further results in inconsistent application of best practices and techniques when dealing with broadly similar problems.

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[21] In the USA, for example, there are offshore production sites from where the sector is now banned

[22] UK offshore enforcement statistics since 2001/02 (comprising the total number of prosecutions and statutory improvement or prohibition notices) are broadly steady over the past 10 years at 49/year (2010/11 provisionally = 47). See Annex 13 for more information on benchmarking between sectors/countries.

[23] An Advisory Committee set up by UK's Health and Safety Executive (HSE) produced already in the 1990s a definition of safety culture that has been re-used extensively: 'The safety culture of an organisation is the product of individual and group values, attitudes, perceptions, competencies, and

Drivers related to the quality of the current frameworks for regulation and oversight reflect the fact that there is not a consistent approach to regulation of the oil and gas sector despite its unique mobile, global nature (including the fact that an incident in one jurisdiction can cause pollution in others). Partly because of the unique characteristics of the sector, EU instruments that are effective for safety and environment risk assessments or which drive consistent equipment standards in other sectors, do not have the same impact offshore[24]. Moreover, there is uneven technical expertise amongst regulators in the EU, who however play a crucial role in verifying that operators correctly account for the safety and long term integrity of their undertakings.

The second aspect of the identified problem, namely the suboptimal level of provisioning for effective emergency response to offshore oil and gas accidents affecting the EU, can be generally seen as driven by an overall unsatisfactory state of risk-based emergency planning by public authorities and industry. The factors that make offshore accident escalation a higher risk than necessary are inadequate risk assessment in emergency plans, lack of joined-up responsibility for response (failure to maximise the resources available), and incompatibility of physical assets and expertise of an incident.

Inconsistencies exist in emergency planning between Member States. Some do cooperate with neighbours on emergency planning, but overall the current situation does not guarantee that in a large-scale emergency the deployment of national assets, coordination by national representatives, consideration to adjoining Member States and others, and the interaction with EU marine contingency instruments (such as those handled by EMSA) will be as smooth as it could be. Besides consistency and compatibility of national resources, risk-based planning also requires transparency and sharing of information on risks and emergency plans.

Analysis of the Deepwater Horizon incident revealed shortcomings in the preparedness of the companies involved, both in the initial response and in the race to cap the well and contain the spilled oil. The recent report of the US Coastguard has been instructive that in spite of the obvious potential scale of the pollution and the challenges of ensuring a good prospect of survival of the personnel, the risk assessments and response plans were relatively modest. It is also reported that major operators in the Gulf of Mexico were prone to copy-out similar emergency response plans rather than develop site specific plans based on proper risk assessments. While the situation in EU appears different where a risk based or goal setting regime is deployed – such as the Member States in the North Sea region – the current lack of information on industry emergency response inventories puts limits to the extent to which industry emergency resources can be incorporated in national and EU emergency planning.

Finally, the uncertainty about the consistency with which the "polluter pays" principle could be applied in the EU in case of an offshore accident comparable to the Deepwater Horizon can be attributed to two main factors. First, existing EU legislation concerning environmental liability (Environmental Liability Directive 2004/35/EC) does not extend

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patterns of behaviour that determine the commitment to, and the style and proficiency of, an organisation's health and safety management.

[24] We explain further in Annex X that (i) the Drilling Extractive Industries Directive 92/91/EEC (safety risk assessment documents) cannot be amended; (ii) the Seveso 2 Directive 96/82/EC (risk assessments and joined up inspection and emergency planning for both safety and environment) is not suited to offshore application; and there is a range of equipment standards applying to fixed platforms that are not applicable to mobile ones, because they are regarded inappropriately as ships.

the obligation of remedy for water damage beyond territorial waters (12 nautical miles, i.e. about 20 km). The EU Marine Strategy Framework Directive extended in 2008 protection by EU environmental law to all marine waters under Member States jurisdiction. This inconsistent legal situation could come into question, even in case of an offshore accident of even smaller proportions than the one in the Gulf of Mexico. Second, apart from the North Sea-based risk pooling arrangement between operating companies, no guarantees amongst Member States or international solutions are in place at present to ensure that liable party(ies), once established beyond question, would be in the financial position to cover the requisite sums from its resources. The estimates of the Gulf of Mexico damages go up to $40bn; such damages in Europe would exceed the financial capacity of most operators. This is a complex driver that is given added momentum because, currently, compensation is unlikely to be available in time to prevent failure of the innocent businesses affected by the incident.

To summarize, the table below presents a synoptic overview of the hierarchy of drivers identified in the preceding text and links them to the three distinct aspects of the overall problem; more detailed description for each category and individual drivers can be found in Annex III.

Table 1

Drivers of the significant and insufficiently mitigated risks in European offshore operations

Driver category	**Underlying drivers**
Industry evolution	*Ageing infrastructure and maturing industrial environment*
	Structural shift of the industry towards diversification
	Shift to "frontier" operations and new technologies
Company-specific corporate practices	*Inconsistent use of state of the art practices and technology*
	Failures of compliance with rules and standards
	Inadequate/uneven safety culture in companies
Drivers related to the regulatory framework	*Uneven technical expertise amongst regulators*
	Suboptimal transparency and sharing of information
	Fragmented regulatory framework

Drivers of the suboptimal level of emergency preparedness

State of risk-based planning	*Inconsistencies in emergency planning between MS*
	Cross-border incompatibility of response assets
Integration of public and industry plans and assets	*Lack of information on industry emergency response inventories*
	Consistency in the quality of company emergency plans

Drivers of the inadequacy of liability provisions

Clarity and comprehensiveness of liability provisions	*Clarity and scope of EU legislation on environmental liability*
	Lack of financial security and guarantees to cover liabilities
	Inadequate compensation schemes for traditional damages, different national rules for civil liabilities

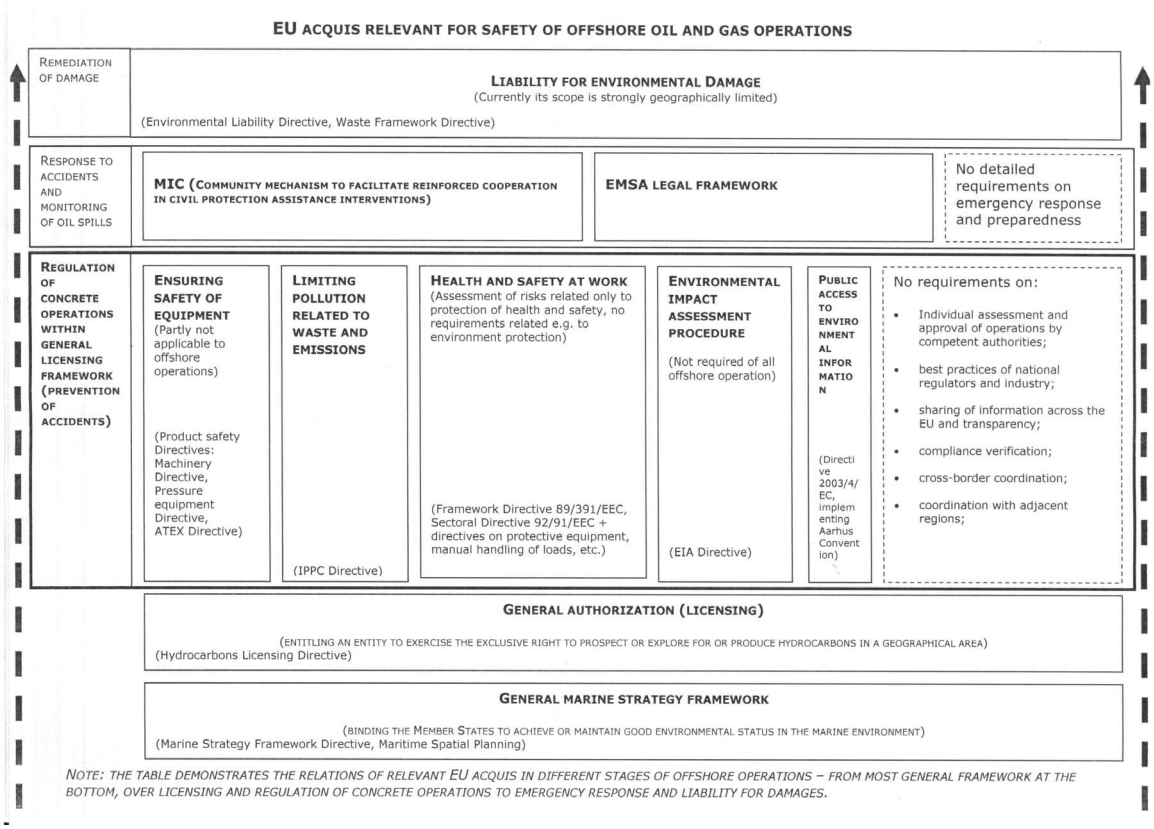
2.4. The Baseline

The baseline scenario evaluates the developments assuming that no policy change takes place at EU level.

2.4.1. Problem evolution during the development of offshore oil and gas activities in Europe and the effect of existing EU acquis

The EU has over time developed a body of legislation relevant to certain aspects of offshore oil and gas operations. This covers, at least to some extent, authorisation procedures, occupational hazards and worker safety, environmental risks and their prevention, equipment safety, liability for environmental damages, etc. A comprehensive overview of the applicable EU aquis and an analysis of its adequacy are given in Annex V. The legislation is complemented by agreed policies, such as EU's Integrated Maritime Policy (IMP) which aims at a coherent policy approach by the EU to the oceans, seas and coastal areas and provides context for specific tools for good governance of the marine space and its resources. The comprehensive picture is described in following diagram.

Diagram 1



The North Sea, together with the adjacent Norwegian Sea, has almost 50 years of experience of oil and gas operations. Building on the lessons of two unrelated offshore disasters in the 1980's in which 291 men died[25], the North Sea regulatory regimes have been reviewed and extensively revised in a number of national jurisdictions, including the UK, the Netherlands, Denmark and Norway.

[25] Alexander Kielland 1981; Piper Alpha 1988

In brief, European countries most experienced with offshore activity – including major incidents – have developed on the basis of the acquis relatively consistent regimes for controlling major hazards. These are on one hand often regarded at present as world class although on the other hand are by those countries themselves recognized as deserving of further improvements and strengthening. In the wake of the Deepwater Horizon disaster, their authorities have been conducting own reviews of the systems: for example Norway's recently released report[26] points out areas for significant improvements despite the fact that the Norwegian safety regime is generally regarded as top-level by global comparison.

Box 1: Offshore Regimes applying to North Sea

The roughly comparable model for the North Sea is as follows. An aspiring operator acquires a license to explore from the Government Ministry sponsoring the development of oil and gas reserves (the licensing authority), and he thereby is appointed an operator, for exploration only. The operator determines that he needs to drill in some specific locations and produces a well plan which he sends to the safety regulator for any comments or further requirements (the licensing authority has no role to play in this procedure). The well must be drilled by a mobile rig that has a 'major hazards report' which is acceptable to the safety regulator. This report (called a safety case in the UK) describes the major hazards the rig may encounter in the range of wells for which it is designed (e.g. water depth, subsurface pressures) and the means to control them.

Should the operator find by his drilling results that he has a commercial production field, he will send to the licensing authority a field development plan and apply for a production license. There is now much more information available to the licensing authority of the hazards and technical challenges for optimum production and minimum environmental impact to feed into the production licensing decision. Should the operator be appointed under a production license, he will now begin to produce detailed engineering plans and begin negotiations with the safety regulator and submit a 'major hazards report' (aka 'safety case' in the UK) to the safety regulator. The report will demonstrate how the identified major hazards of the production facility at its precise location will be controlled (which is different from the mobile rig major hazards report described earlier which is generic to the range of wells it may drill). The production facilities may not be operated unless the measures contained in the report are acceptable to the safety regulator. The licensing authority has, again, no part in this formal safety assessment procedure.

Where regimes differ within the North Sea region is whether the safety regulator issues a statutory acceptance of the submitted report (Norway and the UK do this, Netherlands and Denmark do not). In addition there are differences in the way environment and preparedness/response to pollution are regulated. In Netherlands this is an integrated function by a single regulator; in the UK, environment regulation is in the sponsoring Ministry, and safety regulation is structurally independent from industry sponsorship and therefore also from environment regulation.

The recent events and trends in the industry however point to the need of renewed attention to the current operation and regulatory models. The move to "frontier" operations described in the section on risk drivers is taking place in all regions in and around Europe. About one fifth of deepwater discoveries worldwide were made in European, mainly Norwegian, waters in 2009-2010[27]. This shift poses new challenges to both industry and regulators and motivates the search for improvements even in those European jurisdictions considered most advanced as regards offshore risks regulation. Offshore production also occurs in the Mediterranean, the Black and the Baltic Seas. With the exception of Italian waters, activities in these areas are relatively recent but are increasing. Some of these countries have less experience in managing offshore operations.

[26] Norwegian Petroleum Safety Authority Risk Report 2010, ref http://www.ptil.no/news/rnnp-2010-major-challenges-in-important-areas-article7810-79.html

[27] PFC Energy memo "Deep and ultra-deep discoveries continue apace", 8 November 2010

2.4.2. Impacts under the baseline scenario

The likely economic cost and the probability of offshore accidents in the EU-27 under present regulatory and technological conditions have been assessed and are presented in detail in a fully developed analysis of the baseline scenario in Annex I. The analysis covers accidents resulting in major oil spills (principally blowouts) and accidents resulting in significant losses to life and infrastructure ("major accidents").

Available statistics indicate that major offshore events – stemming from irregular situations and leading to either risks of or occurrence of damage – occur more frequently than is commonly assumed. A database of offshore blowouts and well releases includes 573 such incidents that have occurred worldwide since 1955[28]. In the UK and Norway alone, 2.3 such incidents occurred per year between 1980 and 2008 on average. A detailed analysis is provided in Section 2 of Annex I.

The analysis of past accidents (see Section 1 in Annex I) also shows that costs of offshore accidents tend to be significant even if the most serious large blowouts (which may cause economic damage of hundreds of millions to billions of euros) are excluded[29]. While the economic costs of offshore accidents depend on a number of factors (such as the type, scale, time, location and duration of the event), case histories and studies indicate that even offshore accidents not qualifying as low-probability/high-impact cases can be expected to cause economic damage in the order of tens of millions of euros and upwards.

Combining probability statistics with available cost data from past accidents allows for a theoretical estimate of an annualised average value for direct, tangible costs for offshore accidents in Europe. The analysis presented in Annex I shows that this value depends on a range on assumptions and, crucially, on the extent to which the available data on the damage from the Deepwater Horizon accident are incorporated. Being unique in its extent, that accident does impact the calculations heavily while discussions continue as to the degree to which the available data can be considered indicative of a general picture. These considerations point to the need to establish a value range rather than a singular value for the estimate of levelized average annual costs of offshore accidents in Europe. Accordingly, the analysis, presented in full detail in Annex I, results in a value range of €205 – 915 million[30].

Box 2: Estimated annual cost of offshore accidents for the Baseline scenario

[28] SINTEF Offshore Blowout Database, http://www.sintef.no/sintefcom/Technology-and-Society/Safety-Research/Projects/SINTEF-Offshore-Blowout-Database/

[29] It is relatively rare for blow-outs occurring on the scale of Norway's Ekofisk (1977), Mexico's Ixtoc (1979/80), UK's Ocean Odyssey (1988), USA's Timbalier Bay (1992) and Deepwater Horizon (2010), and Egypt's Temsah field (2004). Loss of well control resulting in small blowouts and well releases of the scale of Australia's Montara (non fatal/destructive but polluting) make up the greater proportion of incidents in the referenced (SINTEF) database

[30] Assuming a recurrence rate of 35 years for each major incident and an average economic cost range of €5 billion (clean-up only) - €30bn (full economic cost), this amounts to costs of €140 - €850 million per year. Add to this an estimated annual figure of €65 million in property losses resulting from more common less serious documented accidents. These estimates are based on detailed probability and accident statistics analyses in Annex I.

The cost of accidents in the offshore oil and gas industry is associated to the extent of undesired consequences of these accidents, namely:
- Injuries or deaths
- Damage to equipment and facilities
- Environmental pollution
- Fines due to non-compliance
- Lost work time and lost revenues due to facility down time

Indirect impacts of accidents include:
- Legal costs and lawsuits
- Effects on oil prices
- Damage to offshore industry reputation
- Effects on security of energy supply

The quantification of all direct and indirect impacts of accidents would be a complex undertaking due to the scarcity of comparable data. For this reason, this impact assessment covers only the two largest directly quantifiable categories of cost i.e. infrastructure losses and costs associated with the cleanup of oil spills. In this respect the results can be considered conservative.

The annual cost of offshore accidents is estimated by the cost of the damages caused by such accidents, annualized over their recurrence time. The calculations of recurrence time, or of the frequency with which these accidents occur, were performed based on publicly available historical data,[31] with adjustments for trends. A detailed and complete account of the calculations can be found in Annex I of the Impact Assessment.

Two main categories of accidents are distinguished:
- oil well blowouts, and
- other major accidents (e.g. releases, fires and explosions, with multiple injuries or fatalities, total loss or severe damage to offshore units and/or small size environmental pollution).

The average cost of major offshore accidents - taking into consideration case histories which indicate that this cost ranges from few tens of millions of euros up to hundreds or even exceeding 1 billion – is estimated at €50 million. Historical data from major accidents occurred in the North Sea in the years 1970-2007 indicate an aggregated rate of 2.6 major accidents per year, with a declining trend for the last years. Adjusting for this trend, the rate becomes 1.3 major accidents per year. This brings the **annualized cost of major offshore accidents at €65 million**.

The cost of an oil well blowout depends on the duration of the blowout, i.e. on the amount of oil spilt into the sea. The main cost component here is clean-up of the oil spill. The average per-tonne cost varies among different countries, ranging from €2500 for UK to €18500 for Norway. This brings the estimated average cleanup cost for an oil well blowout lasting for ca. 50 days to €5 billion. This figure is the lower bound of the blowout cost, with upper bound being the cost of the Macondo accident, which was €30 billion. Therefore the blowout cost is estimated to be in the range €5-30 billion.

The calculation of the recurrence period of an oil well blowout was based on historical data, which indicated a probability of 0.65 per year for a blowout of any type and duration to occur in European waters. This figure was adjusted to count for oil wells – taking into account the lower frequency of oil well blowouts with respect to gas wells – and for relatively large duration (i.e. for an interval with a representative duration of ca. 50 days) and resulted in a probability of 2.7×10^{-2} per year, or – in other words – a recurrence period of 35 years. [32]

[31] Sources: "Risk Assessment Data Directory – Major Accidents", Report No. 434-17, March 2010, *International Association of Oil and Gas Producers*; "Risk Assessment Data Directory – Blowout Frequencies", Report No. 434-2, March 2010, *International Association of Oil and Gas Producers*; "Blowout and Well Release Frequencies – Based on SINTEF Offshore Blowout Database, 2005", 26/06/2006, *Scandpower*.

[32] Reports commissioned by some Trade Associations suggest different interpretations regarding the Commission's data analysis on the frequency of blowouts. These interpretations were analysed but not considered fully convincing. It has been suggested that industry and regulators may want to

Annualizing the blowout cost (€5-30 billion) over the period of 35 years, we get an **annual oil well blowout cost in the range of €140-850 million**. Adding to this an annual figure of €65 million in property losses of less costly, but more common, major accidents, **the annual direct tangible cost of offshore accidents in Europe is estimated at €205-915 million**.

2.4.3. Foreseen evolution of the baseline

In the wake of the Deepwater Horizon accident, steps are and will be taken by individual Member States, international bodies and industry as a response to the lessons learned from the accident. However, there is considerable heterogeneity in the responses seen from these entities so far. The three main areas in which some evolution is anticipated are: regulatory; industry/corporate; and international agencies and associations.

2.4.3.1. Regulatory framework evolution

Some national authorities have applied an intensification of inspection effort, operational restrictions, and the development of new designs for emergency response equipment[33]. Some other Member States report that their systems are adequate and robust[34]. The most intense activity is where the regimes are already most advanced.

At the international level, there are various activities focusing on improving standards in offshore drilling (i.e. pre-production stages). This is to be expected but somewhat overlooks the risks arising from offshore production; an area where regulators in the UK and Norway have also reported concerns. International activity on some relevant issues can be observed at a regional level, such as OSPAR (the Convention for the Protection of the marine Environment of the North-East Atlantic), the North Sea Offshore Authorities Forum (NSOAF) and the USA, and at a global level, such as the International Regulators' Forum (IRF) and the G-20[35]. However, because there is no overarching authority to either drive progress towards goals, or to ensure compliance with the delivered outputs, these efforts are unlikely to bring about rapid improvements. For example, recent discussions within OSPAR show a clear preference to await EU action before developing any appropriate measures at regional level.

Member States measures for licensing of exploration and production operators will continue to be inconsistent regarding capability of applicants to control the major hazard risks and pay for the consequences thereof. For operations subsequently carried out under the authority of the license, but subject to specific regulations, MS regulatory models will continue to be widely separated and risk control measures less well regulated in some Member States. For example: no clear joint authority approach to safety and the environment in some countries compared to others; no process of 'accepting' a safety case in some countries; and continuing with a discredited *prescriptive* approach to regulation and inspection in others.

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collaborate on updating the international incident tables in the light of the Deepwater Horizon and other recent accidents

[33] E.g., the UK decided to hire new inspectors and to increase the number of offshore environmental inspections from 60 to 150 annually while Italy placed temporary limits on offshore activities in its waters.

[34] Results from the DRILLEX Questionnaire sent to OSPAR contracting parties.

[35] G-20 Global Marine Environmental Protection (GMEP) Working Group

The overarching provisions for safety and health from drilling extractive industries Directive (92/91/EEC) will continue to be silent on preventing environmental impact; emergency preparedness and response; and submission of formal hazard assessments by operators for acceptance to the competent authority. Other regulatory anomalies will persist – e.g: machinery standards that apply to fixed platforms will not apply to mobile drilling rigs; Environmental Liability Directive (ELD) 2004/35/CE will only apply for water damage inside the 20km line.

The problem of low transparency in the offshore sector and the continuing low level of public confidence as a result will not be addressed. Similarly, the heterogeneity of the regulatory organisations around the EU will not encourage operators to react in a positive way to the current inconsistent industry performance in different Member States.

2.4.3.2. Industry developments

Action by individual companies is understandably proving to be uneven: some have announced and already implemented specific measures in the wake of the Deepwater Horizon disaster, others are less proactive. Commission inquiries and consultations with industry have resulted in information and data inputs from 20 oil and gas companies active in EU waters. Whilst several of these have specified measures undertaken – for example, to increase internal compliance with procedures, verify well designs, emergency procedures and reassess the way risks are evaluated – others have simply described how their internal control systems and processes are applied, and vowed to stay vigilant, with no concrete measures for change outlined. Very few of these responses have actually yielded concrete company plans for changes to operations in the future, although these were specifically asked for by the end of 2010. Furthermore, additional follow-up exchanges between October 2010 and May 2011 with the offshore industry have yielded some quantification of measures taken to improve offshore safety practices from only 2 companies, making it extremely difficult to assess and verify which changes to operational practises the industry actually intends to implement.

Joint industry initiatives, at times in cooperation with national administrations, have been launched in certain Member States and at a global level to address some of the problems and challenges currently being faced[36]. Industry initiatives to develop capping and containment devices, described in detail in Annex XII, are certainly commendable, but the availability of operable equipment for all foreseeable emergencies is presently uncertain. Furthermore, these types of measures target first and foremost improvements in emergency response rather than accident prevention, whereas industry agrees the latter is the highest priority. For all of these initiatives, which are largely just recommendations or designs at the moment, the greatest challenge will lie in their implementation and enforcement.

Even with the actions by individual companies and industry as a whole, some issues will continue to dominate corporate agendas: how to offload ageing installations; insoluble scarcity of skills; technical challenges of new frontiers; pressure on EU cost base relative to other oil basins where the same price is paid per barrel; increasing diversification of

[36] The Global Industry Response Group (GIRG) was created within the International Association of Oil and Gas Producers (OGP) to assess current practices and consider improvements. The Oil Spill Prevention and Response Advisory Group (OSPRAG) was established by Oil & Gas UK to provide a focal point for the sector's review of the industry's practices in the UK.

companies, with smaller less capable companies acquiring licenses and/or old assets in MS regions.

Individual oil companies and drilling contractors will continue to react to the drivers to reduce costs; with continuing divestment and acquisition and contractorisation, loss of corporate memory will not be stemmed; there will continue to be inconsistent standards of well control and process safety within the same companies operating in different Member States - particularly where regimes are not risk based - and between different companies operating in the same regions.

2.4.3.3. Prospects of a global solution

Considering that most of the problem drivers identified in Annex III are not exclusive to European marine areas and that many oil and gas companies operating in the EU are active across the world, a global solution is certainly desirable. An international solution would also present the considerable advantage of a global level playing field. During the last year, efforts in various international fora have been already made or proposed to improve the safety of offshore oil and activities across the world. While these efforts are commendable, they are not without their limitations.

A framework for a global regime could be sought in the G-20, the members of which cover most major offshore basins. In June 2010, the declaration of the G-20 Toronto summit recognized the need to share best practices to prevent accidents and to protect the marine environment. For this purpose, the Global Marine Environmental Protection (GMEP) working group was set up. The discussions in this group are useful but so far have been limited to a sharing of best practices and are unlikely to result in a binding international framework in the foreseeable future.

Another forum for aiming at a global solution is the International Maritime Organization (IMO) which has already established a comprehensive legal framework in the shipping sector. Besides the rather protracted timeframe for putting the IMO framework in place (up to 10-15 years), the IMO suffers from the lack of proper means to ensure that its regulations are applied throughout the world, thus IMO regulations are not applied everywhere with the same rigour[37]

On the other hand, at the regional level, the EU is Contracting Party to the Barcelona Convention together with 21 other Mediterranean countries. The Offshore Protocol of the Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean deals with pollution concerning a wide range of exploration and exploitation activities, permit requirements, removal of abandoned or disused installations, use and removal of harmful substances, liability and compensation requirements, regional coordination, safety, contingency planning and monitoring. It entered into force only in March 2011.In parallel to the legal instrument proposed in concjunction with this Impact Assessment, the Commission proposes also to the Council that the EU accedes to the Offshore Protocol. Efforts to activate this advanced legal instrument will need to be stepped up.

[37] For this reason, following maritime accidents in the past the EU moved to adopt specific legislation to improve the safety of maritime transport (notably the three so-called maritime safety packages).

2.4.4. Effects of a "do-nothing" approach

The assessment is that any changes introduced by industry will focus on hardware and standards and guidance. These can be expected to bring down the current risks and therefore also reduce over time the incurred damages from standard operations. However, this improvement will be elective in nature and therefore patchy and suggests that the necessary significant change in safety culture and actual performance in preventing major incidents cannot be attained across EU without an overhaul of best practices requirements for operators and regulators.

The current absence of risk assessment approaches to preventive measures in some Member States, and failures of risk assessment to deliver permanent risk reduction in the North Sea means that flat-lining or increasing major hazard risks as reported by UK and Norway will not improve. At the same time, the trends in the industry, as described also in chapter 2, mean that the focus of its activities is gradually moving to operations entailing increasing risks. Hence the effect of improvements to company practices will be at least partly counterbalanced by the increase in riskiness of typical/usual operations. The same can be assumed about the efforts of public authorities at improvements of their oversight of the industry within the existing regulatory framework. Overall there is little confidence that the safety culture of industry, overall, will improve, or even level up to the current best standard.

As result of the above considerations, it can be estimated that in the baseline scenario, the range of €205–915 million presented in section 2.4.2 may remain generally representative of the future record of the sector as well if no thorough change processes are stimulated by a policy action at least partly driven at EU-level.

2.5. Need for EU action

The challenge posed by the risk of a large offshore accident requires that state of the art practices become the norm throughout the EU and its waters. Such a uniform high level of safety will elicit full public confidence and can underpin EU efforts to ensure high levels of safety, preparedness and response also beyond European borders, both in other jurisdictions and in international waters. The baseline and its analysis indicate that action is required for preventing, responding to, and coping with major offshore incidents.

We emphasise in the problem definition section of this chapter that EU has fragmented regulatory frameworks and these present an object lesson in the need for concerted action at EU level. EU law does not provide a comprehensive framework to ensure a level playing field and adequate safety and protection of the marine environment and coastal communities. A number of examples illustrate why the disparity of approach across the EU is problematic and calls for an EU legislative approach to remove the adverse effects.

i. *Product safety*. As explained throughout this report, product safety legislation does not apply to mobile installations which are classed as ships. Therefore there are inconsistent standards applying across the EU between fixed and mobile units. Further, mobile drilling units well control equipment is beyond the scope of IMO codes for such units. Therefore it is only in Member States where national law requires formal safety assessments of the major hazard risks that due consideration is given to safety critical equipment by the regulator

ii. *Safety and health document (SI 92/91/EC).* The requirement for operators to have a safety and health document is unaccompanied by a requirement for its submission and appraisal by the national regulator. Only where a risk based regime exists – in the North Sea is the formal risk assessment subject to enforcement by incorporation into the national regulatory and inspection programmes. Amending Dir 92/91/EC to more specifically create duties for prevention of offshore major hazards is not feasible as we clarify in Annex X

iii. *Environmental liability (ELD 2004)* The ELD is out of step with evolved EU policy for the common good of EU maritime space as expressed in the later Marine Strategy Framework Directive 2008/56/EC. The liability for water damage within Member states EEZ beyond the territorial seas may only be extended through legislative action at EU level. We extend the description of this problem and the challenges for EU environmental policy in Annex X

iv. *Integration of safety and environmental risk assessment and emergency response planning.* The Seveso Directive is a well proven and regarded model for integrated protection of safety and the environment resulting from industrial activity. Deepwater Horizon has brought into sharp relief the close relationship between a major safety accident and a major accident to the environment when operating offshore. Our examination of the situation in the EU is that some Member States integrate safety and environmental risk assessment to a recognisable degree, others do not. And no Member State achieves the standard of integration of regulation of environment and safety, or formal safety assessment and integrated emergency planning that is provided onshore under the Seveso 2. It is not feasible to extend the directive offshore for reasons we make clear in Annex X and therefore EU-wide legislation is required to raise the bar to onshore levels.

v. *Transparency* National reporting arrangements are notoriously problematic to compare between countries and so the relative levels of risk in different Member States is not apparent to anyone. The international data available from the industry (see Annex XII – Benchmarking) suggests Europe is relatively low down the international league table for safety incidents, and that Member States of Europe have different performance standards but at national level and higher (eg amongst NSOAF members in the North Sea) this is all but impossible to analyse. Only countries that actively compare data at considerable cost of refinement and factoring make available plausible reporting of offshore safety performance. The leading countries are the UK and Norway and both report concerns about the flat or downward trends in risk of major accident hazards. As we report in Annex XIII it is precisely because of the investment by these countries in attending to their data that they can interpret the onset of problems and target their resources accordingly. Agreement on common data formatting has eluded the best endeavours of the leading regulatory forums (NSOAF and IRF) and it is clear that EU-level action is necessary if this important goal is to be attained.

Whereas the risk of a major offshore incident is significant and can be reduced, EU action can contribute to the prevention and remedy of major incidents which could occur in the EU. This will only be achieved by effecting an EU-wide change in both the industry (e.g. applying best practices, making comprehensive risk assessments, including relating to the environment) and in the regulatory system (e.g. implementing a best

regulatory model and oversight for joined up safety and environmental protection, and achieving suitable transparency). The action ought to provide, as well, for better emergency preparedness and response, with effective emergency plans and assets in place both in industry as well as in Member States. This could also include areas bordering EU waters, where possible and appropriate. In addition, the action could ensure the availability of adequate provisions for recovery and liability, in the event that a major offshore incident would ultimately occur. These measures should therefore make provisions for environmental liability and compensation.

All this can only be achieved through determined action by the public authorities in Europe and a strong partnership between all actors involved - EU institutions, Member States, industry, NGOs and other stakeholders – in line with the principles of the EU's Integrated Maritime Policy. The Commission has in its Communication of October 2010 identified actions to be undertaken in the EU in the interest of increased offshore safety. This Communication was welcomed and endorsed by the Council[38]. The European Parliament has issued in October 2010 a resolution on EU action on offshore oil activities calling on the Commission to bring forward a comprehensive legal framework ensuring uniformly high safety standards apply across the EU and third countries and including proposals covering inter alia accident prevention, disaster response and liability[39].

The subsidiarity and proportionality questions relate to whether the Member States (and industry) alone are sufficiently positioned to address each of these issues at national level, and, if not, what EU-wide measures are necessary to achieve the objectives set.

Subsidiarity considerations

EU action has been considered only where it can achieve the policy objectives more effectively than the Member States or where actions by Member States alone may not deliver optimal improvements. This proposal uses both the environmental legal base as well as the energy one, thus the objectives of both policies need to be fulfilled.

The regulatory framework governing offshore oil and gas activities is characterised by a high degree of fragmentation along the lines of national jurisdictions. Despite these differences, the offshore regimes in the UK, the Netherlands, Denmark and Norway have in common the predominantly goal-setting regulatory approach that is considered world class. However these countries would acknowledge they are capable of improvement through making adjustments towards the composite North Sea benchmark.

In addition, offshore production occurs increasingly in the Mediterranean, the Black and the Baltic Seas. Countries in some of these marine regions have less experience in regulating offshore operations. Since Deepwater Horizon, many oil producing Member States have been reviewing their offshore systems, but, the responses vary as much as the national regulatory regimes and standards. Some have intensified inspections; others have restricted operations or developed new designs for emergency response equipment. Some others report that their systems are adequate and robust[40]. Most activity is where

[38] Reference to Council conclusions
[39] Resolution on EU action on oil exploration and extraction in Europe adopted on 07 October 2010.
[40] Results from the DRILLEX Questionnaire sent to OSPAR contracting parties.

the regimes are already most advanced, yet both the likelihood and consequences of major offshore incidents are unacceptably high throughout the EU.

Overall, a failure to take action at EU level will exacerbate the fragmentation in Europe of regimes and national policies and deprive Member States of the most suitable means to reduce risks of offshore major incidents in a reasonable time frame.

In terms of preventive measures, the desired situation is for effective and reliable practices to be applied consistently by industry. The global nature of the industry speaks in favour of extending a state-of-the-art risk control model, already practised in parts of the EU, to all EU waters. Furthermore, severe incidents in one Member State, if resulting in an oil spill, will almost inevitably impact on other Member State(s).[41] Considering the limitations of a global solution (see Section 2.4.5.), an EU-level blueprint for state-of-the-art industry practice and regulation seems the best means to achieve the desired situation. The EU's involvement could also bring a solution to hitherto insoluble difficulties of making meaningful comparisons of industry performance, and increasing the sharing of intelligence and incident data.

In terms of response, the costs and consequences are high as is the risk of a large transboundary oil spill affecting adjacent countries. Industry has put in place collaborative measures for dealing with major incident response, but does not control all of the necessary resources. Primary response would fall to the individual civil contingency measures of each Member State but these would be overwhelmed in the event of an incident of the scale of Deepwater Horizon or Piper Alpha. Encouragingly, it is considered that sharing of resources and expertise will probably be relied primarily amongst Member States. However, more formal convergence of emergency response plans, environmental sensitivity reports and industrial inventories would ensure the necessary level of compatibility and effectiveness of action in a real emergency. The EU is best placed to promote a more joined up and coherent approach through its capacity for coordination, making best use of existing EU assets, and leading on the development of common information formats and tools.

Coordination and alignment of national practices are desirable features both in prevention, response, and liability in the event of a significant incident. Increasing safety can lead the sector to minimise its harmful impacts, while continuing its growth. Maintaining a healthy and safe offshore sector contributes to energy supply security, environmental protection, jobs and economic development in the regions and to growth, in line with the principles of Europe 2020. These features are also the basis for the development of the internal market, which is a fundamental driving force of European integration in the energy area, as it is in other sectors. This market integration must not occur at the expense of lowering safety standards. In addition, as many offshore oil and gas companies are active in more than one EU jurisdictions, an alignment of regulatory practices would lead to a reduction of transaction costs. It is recognised that reduced transaction costs may not be game-changing in relative terms, but the increased efficiency of regulation could nevertheless facilitate compliance and give a valuable boost to the European safety technology market.

Being able to speak with one voice and clearly demonstrate the EU's offshore safety standards through one EU-wide regime would also improve the EU's position in

[41] Such trans-boundary spills may of course originate both in EU and non-EU marine areas.

international discussion on offshore safety improvements and on marine environment protection. The conclusions by the Council and the resolutions by the Parliament agree on the value of having the EU and its Member States play a prominent role in promoting global offshore safety awareness through international initiatives and regional cooperation. A good example is the Mediterranean region, where, adoption of an EU wide legal instrument in connection with the ratification by the EU of the Offshore Protocol, will confirm the EU's active role in the region and is likely to stimulate ratification by other Parties of the Barcelona Convention and thus facilitate and accelerate practical application of the provisions of the Protocol. A common EU model would strengthen the role of the EU in safety diplomacy efforts that aim to manage risks from adjacent regions and, globally, from mobile industry assets such as drilling rigs.

Proportionality considerations

The proportionality consideration dictates that EU action be proposed only where the EU can achieve the objective more cost effectively than the Member States (e.g. environmental liability, EU-wide practices, committees). Where administrative costs are involved (e.g. achieving increased transparency), care has to be taken to seek the most cost-effective solutions between new mechanisms and improving existing national ones. Whenever possible, the aim is to improve the implementation of existing EU legislation through non-legislative measures (e.g. guidelines, committees) and only where this is deemed insufficient, are amendments or new legislation proposed. Industry's potential for self regulation (e.g. response technology) and international options (e.g. civil liability) are also duly taken into account.

In achieving the requisite balance between the objectives and the means proposed to achieve them this analysis takes into account:

- The costs realised by the Deepwater Horizon incident are estimated by BP to be in excess of $40bn; costs of a similar event in EU waters could be similar or even higher
- Incidents of the magnitude of Deepwater Horizon occur in the offshore drilling and production industry at a frequency of decades which is high for extreme major accident hazards
- The value of the EU offshore sector is very high in terms of national economies (revenues and employment) and its contribution to security of supply
- The offshore sector generates exceptional financial return for the operating companies involved
- The public has developed an aversion to further major incidents risks, which is heightened by the recent nuclear power plant incident in Japan

In the next part, we describe the options that may be adopted to address the whole problem of offshore risk in EU waters. The cost of the options is modest in comparison to the benefits they will secure and no adverse impact is foreseen on the retail market or to SME's. We consider that the proposal comprises enabling measures that would assure the future of the industry in the EU and thereby the economic wellbeing of Member States that have offshore petroleum reserves, and the security of indigenous supply of energy in the EU more generally.

Existing EU law provisions in the area of the proposal

EU has no offshore oil and gas sector specific legislation; however there is broader EU legislation that applies to certain aspects of the offshore sector, often in a partial manner. This proposal complements the following pieces of EU legislation:

i. Environmental liability. Environmental Liability Directive (ELD) 2004/35/CE addresses liability for damages to the environment that can result from an accident or other critical events in offshore activities, with the main aim of remediation towards the innocent affected. No consideration of intent or negligence is necessary to establish liability in relation to offshore petroleum. Because the ELD preceded the Marine Strategy Framework Directive (2008/56/EC), its application regarding water damage is limited to waters within the territorial seas – 20 km from the shore. This proposal aims to update this definition of waters by the more recent one, established in the MSFD, covering also marine waters under the jurisdiction of the Member States.

   Establishing environmental liability relies on jurisprudence from the Court of Justice of the EU[42] instituting that oil spilled in the sea becomes waste under the scope of the Waste Framework Directive 2008/98/EC. Consequently, the operator is regarded as the producer or holder of waste and would, in accordance with the polluter pays principle, bear the costs of waste management. Liability extends to parent companies which are not able to abrogate liability towards subcontractors.[43]

ii. Environmental Impact Assessment: Offshore petroleum production activities (i.e. long duration installations) are in the scope of Directive 2009/31/EC on environmental impact assessments. It is, however, discretionary for some drilling operations – e.g. for transient exploration well projects such as the Deepwater Horizon in the US.

iii. Health and safety of workers at work: - Provisions containing minimum requirements for health and safety of workers across different sectors are laid down in the Framework Directive 89/391/EEC, its relevant individual Directives (e.g. Directives 89/656/EEC on personal protective equipment, 2002/44/EC on vibrations, 2003/10/EC on noise, 2009/104/EC on work equipment etc.) and the sector-specific individual Directive 92/91/EEC that applies to onshore and offshore drilling. The main aim of this legislation is the prevention of all risks for workers, both major and minor. Directive 92/91/EC contains further minimum requirements applicable to the off-shore sector as regards risk assessment, protection from fire and explosions, escape and rescue, etc. The measures in this proposal go beyond Directive 92/91/EC in requiring a) measures to include environmental assessment; and b) for the risk assessments and control measures to be incorporated into a report to be submitted to the regulator for consent; c) for well operations to be notified in advance to the regulator, and d) for a scheme of independent verification of critical risk control elements.

[42] ECJ case C-188/07 (Commune de Mesquer v Total France SA and Total International Ltd.) provides important jurisprudence. The ECJ in the abovementioned case concerning maritime transport (Erika tanker accident) came to the conclusion that oil accidentally spilled at sea following a shipwreck, mixed with water and sediment and drifting along or being washed at the coast of a Member States constitutes waste within the meaning of the Waste Framework Directive.

[43] See for instance the Van de Walle case (C-1/03) with Texaco being considered as holder of waste or Mesquer case (C-187/03) with Total being potential holder of waste.

iv. Major hazards: The Seveso Directive 96/82/EC does not apply to the offshore sector but certain aspects of it are relevant also for offshore and therefore included in this proposal. Among such relevant aspects are requirement for industry practices in major hazards risk control, joint regulation of safety and environment of major hazard sites, and emergency preparedness. Others, such as land use planning precautions are not relevant offshore. This proposal goes beyond Seveso in a) requiring consent by the regulator of the operator's major hazards report, b) in strengthening provisions for verifying technical and financial capability at licensing stages, and c) in provisions for evacuation escape and rescue of a marooned workforce.

v. Granting hydrocarbon prospection, exploration and production authorisations: Directive 94/22/EC - . This Directive introduces the requirement to use technical and financial capacity of an applicant as selection criteria in procurement process. This proposal strengthens these considerations of technical and financial capability of applicants for licenses to ensure that the environmental and safety risks of operating in the licensed area are fully taken into account in addition to the ability to exploit the licensed area for hydrocarbons. It complements also Dir 94/22/EC by introducing provisions applicable to the later stages (drilling consents, well notifications) of offshore exploitation that are outside the scope of 94/22/EC.

vi. Emergency response: The Community Civil Protection Mechanism Directive 2001/792/EC provides for support, on request, in the event of a major emergency and facilitates improved co-ordination of assistance intervention. It covers both civil protection and marine pollution and allows responding to any major disaster inside and outside the EU. To support the Directive, the Commission operates the Monitoring and Information Centre (MIC) to coordinate requests and offers for assistance from EU27, Croatia and the EEA countries. The MIC works closely with the European Maritime Safety Agency[44] (EMSA) in this regard. EMSA is foreseen to be authorised to support offshore oil and gas sector emergencies, however, lacks resources to act on the prevention. The proposal aims to complement the work of MIC by facilitating various aspects of cross border response including the governmental and industry asset inventories.

Consistency with other policies and objectives of the Union

This regulation is consistent with the Energy Strategy for 2020[45], *viz* Priority 3, the element for safe, secure and affordable energy in Europe. The second action under this priority is for the enhancement of offshore safety and security frameworks. It says: "*The safety conditions of offshore oil and gas extraction are being reviewed by the Commission in the light of the Deepwater Horizon accident, with the aim of introducing stringent measures from prevention to response and liability issues which will guarantee the highest level of protection throughout the EU and the rest of the world*." This impact assessment and regulatory proposal is pursuant to that strategy.

[44] EMSA was established in the aftermath of the Erika (1999) and Prestige (2002) tanker disasters for the purpose of ensuring a high, uniform and effective level of safety, security, prevention of pollution and response to pollution at sea, irrespective of source.

[45] SEC(2010) 1346: Energy 2020, A strategy for competitive, sustainable and secure energy.

The joint communiqué of the current and two future Presidencies of the Union also make offshore oil and gas safety a policy priority, with Denmark indicating that it expects new legislation to be adopted during its Presidency. This proposal aims to align with that timetable.

This regulation is also consistent with EU's environmental policy and its main tenets such as pollution prevention, control and the polluter pays and precautionary principles. It is fully coherent with marine environment policy, notably the goal of achieving by 2020 the Good Environmental Status of the marine environment (Marine Strategy Framework Directive 2008/56/EC, 'MSFD'). The MSFD requires to apply an ecosystem-based approach to the management of human activities, ensuring that the collective pressure of such activities is kept within levels compatible with the achievement of good environmental status. All human activities having a potential impact on the marine environment, including offshore activities, need to contribute to reducing the current pressures. The MSFD specifically requires protecting and preserving the marine environment, to prevent its deterioration, and to prevent and reduce inputs in the marine environment, with a view to phasing out pollution, so as to ensure that there are no significant impacts on or risks to marine biodiversity, marine ecosystems, human health or legitimate uses of the sea. The new legislative initiative of the EU in relation to offshore activities has the objective to reduce the occurrence of major accidents related to offshore oil and gas activities and to limit their consequences, thus increasing the protection of the marine environment and coastal economies against pollution. Therefore, it is not only compatible with, but in reality contributes directly to the goal of achieving by 2020 the Good Environmental Status of the marine environment under the MSFD.

The Environmental Liability Directive (2004) was adopted after the entry into force of the Waste Framework Directive (2000), which applies in coastal and territorial waters, but before the adoption of the Marine Strategy Framework Directive (2008), which extended environmental protection to all marine waters under sovereignty or jurisdiction of EU Member States. Deepwater Horizon illustrates a problem related to an overall fragmented legislative framework in the EU environmental framework For example in terms of geographical scope the 6th Environmental Action Plan (2002-2010), adopted by co-decision by Parliament and Council, requested a thematic strategy for the protection of European seas, having identified a gap in the common goods to be protected at EU level. This request led to a Commission proposal for MSFD adopted in 2008. To the extent that EU policy evolves in accordance with the directions by Parliament and Council, the question is now raised whether it is appropriate to adjust already existing instruments (such as the ELD) to such a gradual policy evolution, or whether it is preferable to keep them in their original form, irrespective of overall progress in policy.

The status quo would perpetuate a framework where some of the consequences of accidents on marine waters from operations are not adequately internalised (which is a major purpose of the environmental liability framework), in accordance with the polluter pays principle. Therefore this legislative proposal presents an opportunity to ensure the sector in charge of potential damage to the common goods identified in current EU law (marine waters) would take expressly enhanced responsibility. In other words, the main consequence of any geographical extension of the ELD to water damage at sea is above all a matter of prevention, which is coherent with the overall logic of intervention on this issue, and would in fact close a gap in an otherwise comprehensive consistent structure for environmental protection in the EU.

Maintaining a healthy and safe offshore sector contributes to energy supply security, environmental protection, jobs and economic development in the regions and to growth, in line with the principles of Europe 2020.

The legislative proposal is also in line with internal market considerations insofar as it brings about convergence and a certain reduction of transaction costs born by industry which currently operates under highly diverse and fragmented national jurisdictions. Firstly it aims above all to level up EU offshore regulation to the best EU practices. In terms of the industry, this is a welcome manoeuvre because the currently fragmented regulatory framework in the EU has start-up costs for operators and suppliers moving between different EU countries. And because the proposal does not aim for new regulatory systems but extends well understood best practice requirements from the North Sea (mainly) the market uncertainties that arose following Deepwater Horizon will be assuaged.

Secondly, in lowering risk of major offshore events and associated public aversion to the sector, the proposal *de facto* enhances continuity of production and, as we illustrate in the impact assessments in chapter 5 and annexes I and IV, reduces financial exposure of the EU when expressed in terms of annualised costs of the current level of risk of a major incident in the EU (up to €915m/year).

Thirdly the proposal addresses, opportunistically, unsustainable anomalies in the supply and use of equipment for offshore installations that follow from the current classification of mobile rigs as ships – which they clearly are not when stationed and engaged in drilling and/or production. This move is especially welcomed by regulators and suppliers.

3. OBJECTIVES & MEASURES

3.1. General objectives

Given the definition of the problem and its drivers identified in the preceding chapter, an EU initiative would logically follow two *general objectives* stemming from the relevant competences of the EU as described in the Treaty, in the EU acquis or in agreed European policies:

1. To prevent a major incident from occurring in EU offshore oil and gas exploitation (relating, in particular, to major accident hazards (MAH)).
2. To enable the EU to deal effectively with a major emergency, should preventive measures fail.

3.2. Specific objectives

The problem characterisation and baseline analysis presented in the preceding chapter, as well as consultation with stakeholders indicate that the general objectives set above can be met only by a comprehensive initiative which will address issues arising along the whole value chain of the sector and which will target the specific drivers underlying the identified problem.

In that spirit, the two general objectives cited above can be developed into the following set of specific objectives for EU action:

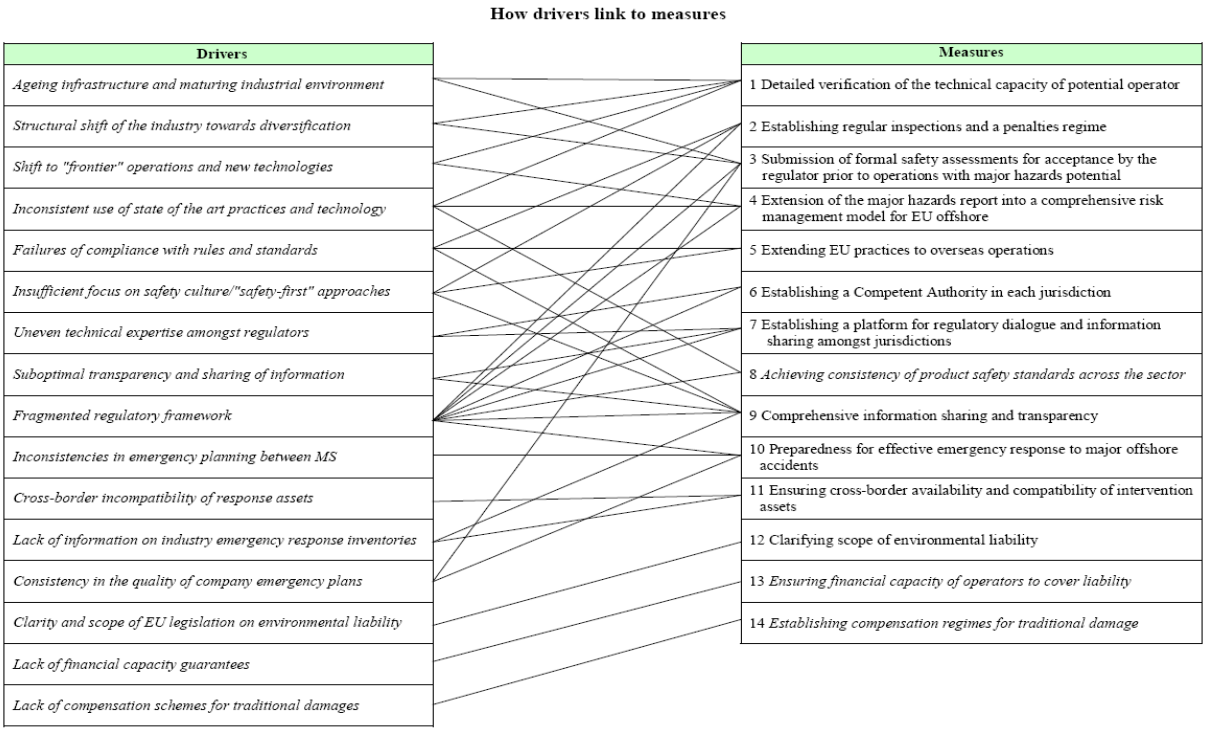
1. Ensure a consistent use of best practices for major hazards control by oil and gas industry offshore operations potentially affecting EU waters or shores;
2. Implement best regulatory practices in all European jurisdictions with offshore oil and gas activities;
3. Strengthen EU's preparedness and response capacity to deal with emergencies potentially affecting EU citizens, economy or environment;
4. Improve and clarify existing EU liability and compensation provisions.

These specific objectives build on the Commission's position taken in its Communication of October 2010 through subsequent consultations and analyses.

4. POLICY OPTIONS

To recap, the reaching the objectives identified in Chapter 3 would bring solutions to the 3-fold problem defined in Chapter 2.1. The problem itself is influenced by the drivers listed in Table 1 and described briefly in the preceding text and in more detail in Annex III. In Commission research and analysis and through consultation we identify a number of actions (14) which we refer to as measures which, if all implemented through law, would represent the highest level of ambition for dispensing with the problem of offshore major hazards prevention. However the highest level of ambition may not be justified, so policy options have been developed which assemble the measures in different combinations and means of implementation. These options are described in further detail in the following paragraphs.

Table 2: Links between problem drivers and Measures



4.1. Overview of the policy options

The options identified differ by the degree of practical change to the existing operational models of regulators and industry and by the level of policy ambition and cost on industry and Member States as follows.

Box 2: OVERVIEW OF THE POLICY OPTIONS

Option 0: The Commission taking no role in offshore safety and environmental protection ("Baseline option")

Option 1: Levelling all EU regions up to the existing North Sea practice ("North Sea basic model")

Option 1+: Option 1 combined with some improvements in existing EU law addressing inconsistencies/lack of clarity ("North Sea + model");

Option 2: Comprehensive offshore reform raising all EU (including the North Sea) up to what constitutes in current expert consensus possible best practise; ("EU best practice model")

Option 3: Complementing the comprehensive offshore reform through institutional structures/instruments at EU level ("EU Agency model")

Each policy option consists of a package of measures which, as we say above, will act upon the drivers of the problem. In the following section we describe the policy options and the package of measures they comprise. We allude to the form of implementation necessary for each option (guidance/law/etc) in the text, and summarise this in Table 3 at the end of the chapter. The detailed analysis supporting the different ways of implementing each option (in effect sub options) is in Annex XI.

4.2. Description of the policy options

4.2.1. Option 0

Option 0 is the baseline option which leaves the status quo to evolve. We describe this situation in section 2.4.3 'Foreseen evolution of the baseline' as elective and patchy and of little overall impact on the problem drivers, so justifying EU action.

From this starting point, policy options have a cumulative impact on the drivers and hence on delivery of the specific objectives. The full suite of measures is listed in Table 2. The rest of this section describes how measures may be progressively implemented to achieve higher levels of policy options.

4.2.2. Option 1

Option 1 (North Sea Basic) would aim to bring all EU Member States to the level of prevention and emergency preparedness currently in place in the North Sea region, bearing in mind that the region's risk-based regulatory framework is considered at present amongst the very best in the world. As such, Option 1 would eliminate regional differences currently present in the EU but would not remove any of the current disconformities with absolute best practice between North Sea Member States and so

would not achieve a higher common denominator in that region nor in the EU than exists today.

This option would entail the following measures which would require to be implemented through law. **Annex XI explains at length the rationale behind the legal instrument for implementing this option**. The numbering refers to the number assigned to the measures on the right hand side of Table 2 above.

(3) Submission of formal safety assessments for acceptance by the regulator prior to operations with major hazards potential

This measure reflects existing practices in some of the European jurisdictions considered as most advanced, namely in the North Sea region. It requires from any licensed operator a coherent exposition of its risk control measures, presented in a (up-to-date) major hazards report (MHR), which has already been briefly introduced and described in the text box in chapter 2. The MHR establishes the most suitable means for preventing a major incident from occurring and, if it nonetheless occurs, providing for the survival, evacuation and rescue of workers as already required under Directive 92/91/EEC, but goes further in requiring submission to and acceptance by the regulator[46]. This creates a goal-setting, as opposed to prescriptive, regulatory regime where operators are not merely following a prescribed set of instructions or requirements. They would be compelled to focus on actively preventing the occurrence of a major accident (including well control, structural integrity of installations etc.) and limit the consequences and the resulting (major) impacts for safety and health of workers; they would ideally be obliged to have such a document/report, specific to each site/installation, reviewed for suitability and adequacy by the regulatory authorities before they engage in specific exploration or production activities (e.g. drilling) which carry particular risks. Such a provision would ensure that the relationship between the operator and the expert regulator is centred around the major hazard risks and steers the operator to the use of best available practices and state-of-the-art technology in order to reduce the risks as much as reasonably possible.

Given the obvious attraction, at face value, of amending EC 92/91 we have provided a detailed explanation of the need for a separate legal instrument in Annex X, in addition to the comprehensive assessment of implementing options in Annex XI.

All respondents to the public consultation and members of the regular industry/regulator/Commission liaison meetings that have continued through the past year join with the European Parliament in supporting this measure. Many accept this measure as global best practice. Like the Parliament, many responders urge the formal risk assessment document (which many adopt as shorthand the UK 'safety case') be

[46] Acceptance of the MHR means that the regulator receives the major hazards report from the operator and undertakes a suitable level of expert verification of the report to establish whether it has objections to the measures described, which require modifications to be made and incorporated into a revised report. At the conclusion of this process the regulator will communicate the outcome of its review to the operator which will either be that the report is acceptable or that it is not. The indication of acceptability could be in the form of a statutory acceptance of the report, without which the operator may not proceed. Equally, the written indication could take the form that no further dialogue is required. In all cases the MHR, in its final form, will be a basis for targeted inspection by the regulator, during the lifetime of the MHR. This is usually about 5 years, then it needs to be reviewed by the operator who will need to show any necessary changes to the regulator. Should the installation undergo major modification, the operator reviews and where necessary revises the MHR, irrespective of the age of the current MHR.

extended to incorporate environmental impact assessment (see *Measure 4* which is implemented within Option 2) and include installation specific emergency response. Industry and regulator contributors to the Commission's analysis have been quite clear that this model should be applied universally across the EU, and that an entirely new model would destabilise the regimes in the currently best regulated Member States.

(2) Establishing regular inspections and a penalties regime

The aim behind this measure is the attainment of consistent high standards of assurance (through inspections, sanctions, etc.) that adequate controls are in place by the industry to prevent a major offshore incident in EU waters. It addresses the current concern that the thoroughness of the assessment of safety reports, site inspection and enforcement of defects varies between Member States. In addition, the attainment of consistently high standards in major incident prevention across the EU depends partly upon a consistent focus by EU regulators on the corresponding control measures. Where regulatory inspection focuses on occupational safety and health factors[47], which are more easily inspected without a concomitant interest in the more complex major hazards arrangements[48], industry focuses its attention accordingly. Finally, the detection of problems via inspection - ideally based on the submitted major hazards report – see measure (3) - would ideally be complemented by follow-up investigation by regulators where necessary and, in all justified cases, by sufficiently discouraging sanctions. A number of existing regimes can serve as best practice examples - both in EU and elsewhere (for example Norway, Australia, Canada and Brazil). This measure has been defined with input from Member States regulatory authorities in both the North Sea area and some of the other Member States keen on reinforcing their inspection capacities using the North Sea experience as inspiration.

This measure is universally supported in the public consultation, and by the Parliament's position. The great majority of responders urge a goal setting, risk based regime focusing on preventing major hazard incidents, and avoiding prescription. Public authorities, citizens and NGO's stress the importance of expertise and adequacy of funding for regulators for tackling inadequate safety culture of the industry, and believe regulators should be independent of licensing and commercial sponsorship by governments

4.2.3. Option 1+

Option 1+ (North Sea plus) begins to act also on North Sea Member States and therefore takes the level of industry and regulatory performance to above that of the current North Sea baseline. However, it does so only by reinforcing provisions already available in existing EU legislation and steering clear of proposing new legislation.

This Option would add to the measures of Option 1 the following ones (with numbering following the right hand side of Table 2)

[47] For example in the degree of automation of lifting heavy objects, washroom hygiene, wearing of suitable personal protective equipment, and prevention of slips, trips and falls from height

[48] For example in the maintenance of safety integrity levels that depend on the interaction of a number of independent factors; and in the management of change where original design intent of safety systems may be infringed. Inspection may be complex and based on a systematic audit approach.

(1) Detailed verification of the technical capacity of potential operator

For option 1+ this first layer of action that would be implemented would be pursued at EU level only through the soft-law means of guidelines to Directive 94/22/EC, reflecting the reality that the degree to which national authorities in the North Sea region give effect to the corresponding provisions of Directive 94/22/EC differs at the moment

(12) Clarifying the applicability of waste legislation in the scope of environmental liability

Oil spills qualify as waste for the purpose of EU waste law, with a range of legal consequences as to the responsibilities of operators. This important legal finding, which also applies to oil spills from offshore installations, was upheld in a landmark ruling of the European Court of Justice. Since it is not explicit in legislation, it would benefit from adequate visibility, as a matter of clarity. This clarification could be included in a Frequently Asked Questions document on Directive 2008/98/EC on waste (Waste Framework Directive), which is under preparation by DG Environment and will be published by the end of October 2011.

(10) Preparedness for effective emergency response to major offshore accidents

This part of option 1+ establishes the basis of emergency preparedness for Member States through soft-law instruments, this option in effect sets a planning template for national emergency response plans - such that plans can be shared and resources allocated on a collaborative basis between MS in the same region, but also to open up the potential for helping other regions combat extreme emergencies. This model is largely in place in the North Sea region.

(11) Ensuring cross-border availability and compatibility of intervention assets

Under option 1+ and by means of soft-law instruments, this option motivates Member States to develop interoperable assets for sharing across boundaries when it is required to lend assistance to other MS emergency responses. As a natural corollary to this measure, Member States would collate industry inventories and stimulate interoperability of industry and national assets, which then opens up the whole of the EU to transferring equipment and expertise should this be necessary to bring a major incident under control.

(5) Extending EU practices to overseas operations

The third layer of this option is in extending, formally, EU efforts overseas. This would be both in the medium of securing agreements on good practice standards e.g. with IMO, neighbouring states, and the governments of IRF countries, and in securing voluntary agreements with EU based companies to apply, as far as is feasible, the modus operandi of their EU operations to their activities outside the Union.

4.2.4. Option 2

Option 2 (EU best practice model) seeks more profound changes even to the current practices in the North Sea. It does not eschew new EU legislation and therefore can also integrate exemplary and proven practices or approaches developed in individual

jurisdictions (mainly again in the North Sea region) independently of existing EU legislation.

Lying at the heart of option 2 is a best practices model for industry and regulators that tackles industry culture, reliability of systems, and transparency. Hence, this first layer comprises an industry best practices model that would be adopted and supported by independent verification.

(4) Extension of formal safety assessments in view of creating a comprehensive risk management model for EU offshore

Under this measure, environmental risk assessments and emergency plans would be incorporated in the major hazard report (MHR). The purpose is to ensure that individual companies and the industry as a whole own and consistently follow operational models that allow them to manage the full spectrum of risks from their activities to a higher degree of control than at present.

First and foremost, this means ensuring that all operators incorporate their policy for major hazard prevention in their corporate policy statement, and makes the necessary organisational and procedural adjustments to bring this policy into effect. Setting these matters into a corporate policy statement would begin the attainment of the desirable safety culture that has been called for following the various investigations following the Deepwater Horizon disaster and reduce the likelihood of catastrophic events. In addition, the assessments carried out by authoritative regulators following the Deepwater Horizon, and by the Commission prior to publishing its 2010 Communication all conclude on the need to address key issues such as maintenance of well integrity, reliable decision making, management of major hazard activities, competency of key post holders, and risk assessment. Therefore we see this measure also establishing the priorities for collaboration by industry and regulators on key operational rules and standards which underpin the stronger safety culture.

Like the EP, the great majority of respondents either urge the integration of safety and environment risk assessment, or refer to the joined approach as self evidently obvious. Many regulators, citizens, and non-operator industry respondents identify inadequate safety culture of industry as the primary target for more stringent policy statements and associated implementing arrangements by operators, supported by rigorous targeting of major hazard risk controls and management systems by the regulator. Some (NGO's) suggest extending the application of the Seveso 2 Directive to offshore oil and gas. Scrupulous third party verification with access to the regulator by the verifier, and protection of whistle blowers are cited by some respondents as necessary indicators of improved safety culture.

The EU has since 1996 had a model – Seveso 2 - for integrating the regulation of safety and environmental protection and emergency response from major hazard industries onshore.

The priority areas for attention by the industry would include environment damage and limiting escalation within the formal risk assessment in the major hazards report, the scope of which would be extended compared to Options 1 and 1+, integrating safety and environment offshore along the Seveso model, though without bringing the sector under the scope of the Seveso legislation itself which applies to a wide range of onshore industries with different safety needs, e.g. land use planning. It is reasonable to imagine

that Seveso 2 may be applied to the offshore oil and gas sector, removing the need for a separate legal instrument. This is ultimately not a feasible option but because there is a body of support for extending Seveso 2 we provide a detailed explanatory note in Annex X (supplementing the review of the implementing measures for this option in Annex XI).

Apart from ensuring that industry applies best practices for the prevention of major accidents, it is equally important that a sound regulatory system exists in Member States. The following measures are therefore also required under policy option 2 to ensure that the industry is subject to a regulatory model that upholds the principles of state-of-the-art operations across the EU.

(6) Establishing a Competent Authority in each jurisdiction

In order to achieve appropriate balance between avoiding an incident and limiting its consequences, it is essential that a Competent Authority[49], i.e. the regulator and other authorities working in the area of oil and gas activities in a given jurisdiction, plan and execute their activities consistent with recognised best practices. This measure would ensure that Member States establish such Competent Authorities for the oversight of oil and gas activities in their area of jurisdiction, with certain minimum characteristics, which may include:

(a) Absence of perceived or actual conflicts of interest between licensing, revenue collection, and safety and environmental inspection

(b) Clarity in the role of the regulator as verifier, as distinct from the role of industry as controller of risks

(c) Clarity of the desired outcomes to be achieved by regulation using goal-setting approaches to major hazard prevention and mitigation:

In design and operation

- In construction and decommissioning
- In emergency response
- In aligning safety and environmental protection

(d) Establishment of the generic level of expertise required of the regulator, and use of expert external advisors as called for by goal-setting approaches

(e) Indemnity by industry against costs incurred by the regulator in major hazard controls verification

(f) Consistency of enforcement approaches

All respondents, like the Parliament, emphasise the critical contribution of expert, independent and adequately resourced regulators; Parliament, many regulators, non-operator industry, citizens and NGO's regard it essential to combine regulation of health, safety and the environment. Industry is wary of reforms to regulatory structures. The importance of regulatory independence from licensing and industry sponsorship by government is emphasised by some respondents, including industry. An active dialogue between regulators and third party verifiers is seen as necessary by some respondents.

[49] The term refers to legal competency for shared regulation of safety and environment, not to the attribute of being competent to do the job, by virtue of training etc

Some respondents feel an EU-level regulatory agency would be more effective in consolidating the best regulatory practices.

Supporting the inculcation and maintenance of regulatory best practices would be the setting up of a Commission-led group of regulators that would also enhance the efficacy of existing regional groups such as NSOAF.

(7) Establishing a platform for regulatory dialogue and information sharing amongst jurisdictions

The aim behind this measure is the establishment of a means for the representatives of the relevant national authorities of Member States to engage into an EU-wide regulatory dialogue. The purpose of this Group would be to assist each Member state and the Commission in resolving offshore issues, e.g. identification of best practices for major hazards prevention and emergency preparedness, and disseminating lessons learned from accident investigations. At present a similar framework exists for labour inspection services of the Member States (SLIC[50]), but for the EU regulators of the oil and gas industry, a comparable body is lacking. The proposed measure would benefit from experience gained by SLIC and by the regulators for oil and gas activities around the North Sea, combined in the NSOAF[51]. It is a measure building on the example of NSOAF and on the experience of ad-hoc EU regulatory workshops co-organized by the Commission and the NSOAF since summer 2010, which also included participation of Member States representatives from other EU offshore regions.

All respondents with some knowledge or understanding of bodies like NSOAF and IRF (including the EP) strongly support an EU-wide forum of this kind. Opinion is divided (industry – rest) whether this should be a voluntary or a formal institution. A few respondents (from NGO's, and non-operator industry) see an EU inspection agency as the right destination for this concept.

The second layer of this option develops policy for integrating environmental protection into major hazards safety regulation. In including environment within the formal risk assessment, it would now be possible under option 2 to establish within the envelope of the MHR internal emergency plans that would aim to limit the escalation of an incipient major hazards incident to the areas controlled by the installation. The internal emergency plan would be the foundation of the national emergency plan for the specific area around the particular installation. This also makes it possible to link the preparation of national emergency plans to the risk assessments performed by the operators and attain coherence between the operator who creates the risk, and the national arrangements that protect the public from such risks that is not currently attainable.

Option 2 would thus entail strengthening the effects of option 1+ by incorporating some of the environmental measures implemented through preparation of guidelines in the earlier option into law as follows.

[50] Committee of Senior Labour Inspectors - Commission Decision 95/319/EC
[51] Reference/explanation for NSOAF

(10) Preparedness for effective emergency response to major offshore accidents

The aim behind this measure is to achieve a level of emergency preparedness throughout the EU allowing the most effective response to a major offshore accident affecting any part of EU waters and shores. Standard operating procedures for such emergency situations need to be consistent across the EU and to integrate public and industry resources most effectively. The offshore industry has the global experience, the technical capacity and the financial strength to prepare robust plans and to deliver against them. However, it does not have control or ownership of all assets – both human and hardware – required to affect a total response to all possible scenarios. Much of the necessary response lies within the Member States' civil contingency inventories and mechanisms, for example in making available search and rescue helicopters. The control by Member States of response to an offshore emergency is not at question; however it can clearly be enhanced if neighbouring Member States and industry contribute to the planned organisational arrangements. Therefore, an ideal system will secure reliable cooperation from industry and other Member States, and will be capable of being thoroughly tested through exercises, including cross-border ones.

All responders expressing a view share the position of the Parliament in favour of regularising cooperation between and across industry and coastal states; with some pointing out that North Sea country already have exemplary regional arrangements. Some NGO and regulatory respondents suggested EMSA provide a core model for the oil and gas sector, others extending this idea to a specific EU emergency response group of Member States. Some industry respondents made the link between the MHR and installation specific emergency planning which becomes possible when environmental risk assessment is integrated with safety assessment.

(11) Ensuring cross-border availability and compatibility of intervention assets

This component of option 2 concerning intervention assets is complementary to the previous measure (10) i.e. focused on operating procedures and emergency planning. The aim behind this measure is twofold: (i) to ensure that industry and Member States have assets available to limits the effect of a major accident should it occur, and (ii) to ensure that Member States have the wherewithal to share assets which are compatible or interoperable, including expertise.

An important requirement for the industry assets is that they ought to be compatible for use throughout the Member States. Furthermore, the presence and deployment times of these assets ought to be known to contingency planning authorities in Member States, in order that emergency plans drawn up by Member States can take account of the relevant properties.

As the previous measure, this receives universal support from respondents to the consultation and from the Parliament's position. A number of respondents point out the importance of harmonising standards for e.g. dispersants to achieve full transboundary inventories of response assets.

(12) Clarifying fully the scope of environmental liability

Further to the proposed guidelines in the applicability of waste regulatory framework in the offshore oil and gas sectors, there is need to provide for clarifications in the scope of environmental liability for addressing damages to marine waters. The Environmental

Liability Directive was adopted in 2004 and does not address water damage for marine waters of Member States beyond territorial waters. The Marine Strategy Framework Directive 2008/56, however, adopted in 2008, laid down that all marine waters under the sovereignty or jurisdiction of Member States need to be protected. Therefore, the Commission identified a gap that exists between the "polluter pays" principle underpinning environmental EU legislation and the current geographical scope of the Environmental Liability Directive. Action could be undertaken to achieve a clear provision on environmental liability for water damage in marine waters.

The evolution of EU policy for marine environmental protection is a key factor in considering the extension of ELD as a legal option. This particular example is also an object lesson in the fragmentary EU legislation that needs to be regularised if the EU is to secure a significant reduction in risk of a major oil and gas accident in its waters. In view of the critical importance of this matter at the policy level as revealed by the ELD considerations, we have included a detailed explanation in Annex X, in addition to the explanatory text for all implementing measures in Annex XI.

Industry accepts the polluter pays principle but some respondents made the point that liability should be based on worst case scenario modelling and the availability of baseline status to reveal any pre-existing damage in the marine environment. Concern is also expressed that extending ELD could create uncertainty and duplication of liability and inadvertent capture of other sectors (shipping). NGO's and citizens are strongly in favour of extending strict liability in all EU waters. Regulators and non-operating industry give broad support to this measure, which is also strongly supported by the EP position.

Supporting best industry/regulator and environmental practices that are implemented in option 2 as described above would be a third layer that provides greater transparency than at present of industry and regulator performance. This would lead to a number of reporting requirements between industry and MS and between MS and the Commission, and general publication of EU performance and lessons learned from incidents.

(9) Comprehensive information sharing and transparency

Currently, Member States that try to share performance related data spend a great deal of time and effort in harmonising data, leading to compromises in the validity of information. The aims behind this measure, supported by stakeholders responding to the Public Consultation, would be three-fold:

(i) to encourage knowledge transfer across the industry and regulators and the sharing of 'lessons learned' to promote continuous improvement in major incident prevention
(ii) to give public access to information on the performance of both industry and regulators on the basis of which interested members of the public can either formulate queries or gain assurance that, in the EU, the industry is well run and regulated.
(iii) to ensure that the public and potentially affected countries are consulted to an appropriate degree as part of the authorisation/licensing process.

This measure reflects the Parliament's position and is broadly supported by all respondents, although operators are concerned that commercially confidential information must be protected, and operators also suggest more positive information

should be published about the industry's contribution to the economic and technological wellbeing of the EU. This measure is seen by NGO's, citizens and non operating industry members as critical to improving safety culture and aiding improved performance. Protection of whistle blowers is regarded by some respondents – NGO's and citizens (and Parliament) as an essential precursor. Many (including some non operator industry members, but not industry or regulators) see the role of a cross-EU regulator body as pivotal for effective transparency.

4.2.5. Option 3

Option 3 goes further than Option 2 not necessarily in the extent of the new operational model for the sector but rather in the degree of its consolidation and institutionalization. Where feasible and admissible from the point of view of subsidiarity and proportionality, this option seeks the creation of an EU body(ies) as the means to implement of most of the measures comprising Options 1, 1+ and 2. For example, an EU body/agency would be tasked to undertake inspections and/or investigations of major hazard incidents and oversee the performance of MS competent authorities and third party verifiers (e.g. classification societies). The option also assumes the creation of an EU intervention capacity, and helping build capacity for emergency response beyond the EU.

To summarise, this option has the effect of consolidating and institutionalising at the EU level the following delivery measures that are inherent to the other reform options:

1 (*Verification of operators technical capacity*)
2 (*Regular inspections and penalties regime*)
3 (*Submission of formal safety assessments for acceptance by the regulator*)
5 (*Extending EU practices to overseas operations*)
6 (*Establishing a competent authority*)
7 (*Establishing a platform for regulatory dialogue*)
10 (*Preparedness for emergency response*)
11 (*Cross border availability of compatible assets*)
12 (*Clarifying the scope of environmental liability*)

There are a number of EU bodies, such as EMSA in maritime safety or even in atomic energy regulation, that could be considered as blueprints or for adoption (at least partially) in lieu of the creation of a new entity. However, at least to some degree account would have to be taken of the fact that existing entities may not be entirely suitable for the nature of the offshore oil and gas industry which is essentially non-maritime[52], and has very different risk profiles to the nuclear sector. So a new design could be required.

Of the measures implemented by option 2, creating an institution under option 3 is assessed to have the most significant impact on securing more consistent safety performance by EU based operators.

(5) Extending EU practices to overseas operations

The aims behind this measure, evidenced through the public consultation and European Parliament positions as one of the most pressing for European public, are twofold. Firstly

[52] Offshore installations, when on station, are in effect land-like major industrial sites placed in a marine environment.

to give assurance inside the EU that companies headquartered here have adopted a true best practice culture such that their operations are reliably consistent worldwide. Secondly it is to demonstrate globally that EU level standards effectively reduce risks and therefore damages to economies and environments which would increase pressure everywhere to attain EU level standards for offshore operations. The measure recognises that in practice, it would be difficult to enforce binding requirements on the application of EU standards in third countries. However, by achieving recognition that the EU frameworks for offshore operations are exemplary in nature, the EU will be in better position to promote the levelling up of offshore safety requirements in other jurisdictions to the benefit of the EU itself. This could be e.g. be attained by securing agreements on good practice standards e.g. with IMO, neighbouring states and IRF members and/or securing voluntary agreements with EU based companies.

Like the Parliament, most respondents are supportive of the principle that failure to follow EU best practice overseas is an adverse trait amongst EU companies. NGO's and citizens particularly feel this should result in strong sanctions – refusal or withdrawal of licensing. Regulators are more circumspect regarding the legality of sanctions for perceived failings in another jurisdiction, and operators generally feel this ambition to be unattainable due to varying requirements of overseas regulators notwithstanding best endeavours of operators. Some respondents – NGO's, citizens and some non operating industry respondents believe an EU regulatory agency could be effective in securing more consistent international performance by operators.

4.3. Summary of options

The alignment of the policy options with each other and their suitable modes of implementation are illustrated in the table below.

Table 5

Comparison of policy options

No.	Measure	Option 0	Option 1	Option 1+	Option 2	Option 3
1	Detailed verification of the technical capacity of potential operator	0	0	G	L	EU
2	Establishing regular inspections and a penalties regime	0	L	L	L	EU
3	Submission of formal safety assessments for acceptance by the regulator	0	L	L	L	EU
4	Extension of MHR into a comprehensive risk management model	0	0	0	L	L
5	Extending EU practices to overseas operations	0	0	G	G	EU
6	Establishing a Competent Authority	0	0	0	L	EU
7	Establishing a platform for regulatory dialogue	0	0	0	L	EU
9	Comprehensive information sharing and transparency	0	0	0	L	L
10	Preparedness for effective emergency response to major offshore accidents	0	0	G	L	EU
11	Ensuring cross-border availability and compatibility of intervention assets	0	0	G	L	EU

No.	Measure	Option 0	Option 1	Option 1+	Option 2	Option 3
12	Clarifying the scope of environmental liability	0	0	G	L	L

Table legend:
0 Measure not implemented
G Measure implemented through guidelines
L Measure implemented through legislation
EU Measure (further) institutionalised at EU level (e.g. in EU body)

As analyzed in detail in Annex XI, a measure can be implemented by different means, often offering a trade-off between effectiveness and complexity/practicality. This results in differences amongst the way individual measures are to be implemented under individual options. For example, Measure 11 (*Ensuring cross-border availability of common response assets*) may be implemented through guidance in Option 1+, through new law in Option 2, or through an EU institution in Option 3. As result, each of the policy options is characterized on one hand by the set of measures retained in the option and by the preferred implementation means for each measure under that option.

There is generally a wide consensus in the stakeholder community that the measures we have identified as components of the 4 options can be both implemented by the industry and regulators and will be effective in reducing risks of major accident hazards offshore in the EU. This is evidenced *inter alia* by the similarity of the measures recommended or advocated and action plans proposed in the positions and statements of the different stakeholder groups – the reports and declarations adopted by the European Parliament, the Commission views and plans expressed in the October 2010 Communication, the recommendations of existing groups of regulators (such as NSOAF or IRF[53]) and also the recommendations and action plans issuing from the industry (OSPRAG, GIRG)[54].

4.4. Deferred options

Three of the measures (8, 13, 14 in Table 2) deal with product safety and the financial capability of operators to fully cover civil liabilities for damage. They are antidotes to the problem drivers and would complete full implementation of options which satisfy the specific objectives. But they are, as yet, insufficiently mature to be included in this impact assessment

Product safety

(8) Achieving consistency of product and equipment safety standards across the sector

The aim behind this option is to obviate a regulatory anomaly, clearly identified as unhelpful by regulators and some parts of industry – primarily on the supplier side, but also amongst oil companies - in the responses to public consultation and in bilateral discussions, . Mobile offshore drilling units (MODUs) are subject to the voluntary IMO MODU Code but only in respect of maritime equipment, while the code does not cover drilling equipment – including well control equipment such as BOP's. At the same time, MODUs are entirely exempt from EU product safety legislation, being treated a ships when in fact they are - when stationed for drilling - industrial sites based at sea. This legislation does apply to equipment used on non-mobile facilities, but the lack of specific

[53] http://www.irfoffshoresafety.com/conferences/2010conference/communique-nov-01-2010.aspx
[54] See Annex XII

harmonised standards leads to a low level of consistency and compatibility in safety critical equipment and increased cost burdens on industry working between different Member state jurisdictions. Safety deficits arise from lack of familiarity of crews operating between different jurisdictions.

There is considerable support by industry respondents (operating and non-) and regulators (NSOAF) for this measure. However, matters related to equipment used in the offshore oil and gas industry concern also the ATEX sector, alongside the Machinery and the Pressure Equipment sectors. Therefore this issue has been referred beyond this impact assessment. Following a EU Workshop in February 2011 on standards for equipment used in the offshore oil and gas industry, a draft Standardisation Mandate has been developed. The Commission is currently consulting the European Standardisation Organisations and other stakeholders informally on the Draft Mandate, before submitting it to the Directive 98/34/EC Committee. A specific discussion point on this issue will be included into the agenda of the next ATEX Working Group meeting, to be held in Brussels in January 2012.

Liability for damages

(13) Ensuring financial capacity of operators to cover environmental liability

The aim behind this part of the option for covering all liability for damages is to assess the possible mechanisms to better guarantee that, in addition to a clear liability system in the EU, operators can cover any arising liabilities, in particular in the event of a major accident. This option aims to overcome any vagueness within present provisions in relevant EU legislation (Directive 94/22/EC, Directive 2004/35/CE (ELD)) and differences in availability of information throughout different stages of offshore licensing. The assessment of the financial capacity may differ in detail for the exploration phase, where information concerning the contingent liabilities is less detailed, while for licensing at the development or production stage much detailed information will be available for a thorough assessment of risks. The assessment of the financial capacity requires assessing in any case the guarantees and financial security for liabilities to be conducted, prior to award of a license.

This policy option reflects concerns of the general public expressed through the Public Consultation as well as identified shortcomings in the present regulatory framework identified by both the Commission and the European Parliament and Council. However, there are a variety of positions on this measure, which itself is complex as liabilities range between traditional ones (civil included) and environmental. Industry broadly favours some (high) limitation on liability relative to fairness, underpinned by existing pooling arrangements, with the North Sea OPOL arrangement seen as a model and re-insuring: there is concern that smaller operators would be needlessly priced off the scene. Insurers feel their members are probably unable to provide all foreseeable cover to address an extraordinary event similar to the Deep Horizon, and in any case major oil companies have large liquid assets that would not require underwriting - particularly on a EU basis. For insurers, global instruments provide the only realistic chance of adequate funding pools to address off-shore risks. NGO's and citizens urge taking criminal powers to enforce liability; a limited reference is made to an EU inspection agency providing better assurance of responsible behaviour by liable parties.

(14) Establishing compensation regimes for traditional damage (civil liabilities)

The aim of this measure would be to ensure that EU has a comprehensive liability regime not only for environmental damage but also for traditional liabilities such as human life losses and economic losses to different sectors like fishing and tourism. The Deepwater Horizon experience revealed the extent to which such traditional liabilities may quickly come to dominate public's attention and interests following a major accident causing extensive damage not only to the environment but also to coastal communities and local economies.

There is widespread support from Parliament and from public consultation for a strict damages scheme to assure rapid payout to affected businesses/individuals. Some respondents envisage such schemes should be supported by regional cash pools (fed by operators). Operators are relatively silent. Regulators are divided whether new arrangements are needed, and some are wary of a deterrent effect on smaller operators. NGO's suggest criminal powers to enforce rapid damages payments to victims.

In respect of both these provisions, as they concern issues of a relatively high complexity in terms of national legal frameworks for civil liability but also international implications and harmonisation of their impacts, they are not pursued in this impact assessment. Instead, the Commission continues the analysis of the subject together with stakeholders, for example in the insurance sector, in supporting national regimes to examine harmonisation of civil liability provisions, and in encouraging consideration of international pooling arrangements (with IMO). Financial and administrative provisions have been made in the 2012 Commission budget to pursue further this work (studies, consultation, etc).

5. IMPACT ASSESSMENT OF POLICY OPTIONS

In this chapter, each of the policy options outlined in Chapter 4 is assessed on the basis of its most important and relevant likely impacts:

- the extent to which they mitigate the risk/costs of offshore accidents,
- regulatory and compliance costs on Member States, industry and the Commission,
- other environmental, social, economic and external impacts.

The main objective of any policy action in this field is to reduce the risk of accidents and thereby to avoid human, environmental and economic losses. Therefore, the first criterion to be evaluated will be the proposed policy's impact on mitigating the risk/costs of offshore accidents to the Member States. This is assessed by the estimated impact of the measures under each policy option on the baseline range of €205-915m annualised costs introduced in the baseline analysis in chapter 2.

Box 3: Estimation of the effectiveness of the proposed policy options in reducing the cost of major accidents

Estimating the effectiveness of the proposed policy options in reducing the probability and therefore the cost of major accidents is a difficult task and can only be made by expert opinion based on the best available information. In fact, while there are databases of accidents and incidents that have occurred, information about accidents that have been prevented is not available. Furthermore, because the proposed measures within the different options are *sui generis*, our estimates of their effectiveness are based on the best possible data we have available, always normalised to account for the size of the relevant population of oil wells and offshore activities. An account of the exact estimations for each one of the proposed options is given in Annex IV.

The followed approach can be demonstrated taking the example of Option 1. The proposed measures here – with respect to the baseline scenario – are the application of a goal setting (or objective-based) regime

and the establishment of regular inspections and penalties regime. The effectiveness of these measures is estimated by expert opinion **in light of the strong empirical evidence of the effectiveness of objective-based risk management in the offshore sector.** Indeed, the UK Health and Safety Executive's Offshore Safety Division has collated statistics on offshore accidents and ill health from 1995/96 to 2009/10. During or just before this period, several key pieces of legislation were introduced mandating the goal setting approach to offshore regulation on the UK continental shelf. The statistical data demonstrate a significant reduction in accident rates (and an increase in safety), which – according to HSE – can also be attributed to the introduction of the goal setting legislation. Furthermore, studies comparing blowout rates in Norway and in the USA have demonstrated significantly lower rates for Norway, which is also attributed to the application of the goal setting legislation. Based on this evidence, it was assumed a 50% reduction of the major offshore accidents rate.

The difference between Option 1 and the Baseline Scenario is application of the goal-setting regime in Italy and Spain - since this regime is already applied in the North Sea countries. Italy and Spain count for 408 out of 6315 wells in Europe, i.e. 6.5% of offshore activity. Taking into consideration the assumed 50% reduction of accident rate, overall offshore accident cost reduction between €7 and €30 million is estimated.

Secondly, the additional financial and administrative costs of implementing the proposed policies to Member States, the industry and the Commission will be highlighted and to the possible extent quantified. These economic costs can be roughly divided into regulatory costs (the costs incurred by public authorities in providing the oversight necessary to effectively implement the policies) and compliance costs (the costs incurred by industry). All cost elements can further be divided into one-off costs (the initial investment needed to update practices with the regulation) and running costs (the on-going operational cost).

Regarding regulatory costs, the cost to the regulator of enforcing regulations is primarily the opportunity cost of the time taken to enforce and provide support to the operators as required. This was gauged by means of two questionnaires presented to European offshore regulators in combination with calculations as per the EU Administrative Burden Calculator.

The compliance cost that industry bears can be divided into three categories following the EU Standard Cost Model as defined in Annex 10 of the Impact Assessment Guidelines.[55]

1) Administrative burdens are the costs on businesses of complying with the information obligations resulting from legislation and regulations. An example of administrative burdens in the offshore sector may be the notification of dangerous occurrences, inspections, and reading guidance material.

2) Substantive compliance costs are the costs that businesses incur in order to comply with the content obligations that legislation and regulations require of a production process or a product. In the offshore sector these include the costs of additional equipment or machinery to ensure compliance, or the costs of hiring consultants to help with compliance.

[55] http://ec.europa.eu/governance/impact/commission_guidelines/docs/ia_guidelines_annexes_en.pdf.

3) Financial costs are the result of a concrete and direct obligation to transfer a sum of money to the Government or the competent authority. An example of a financial cost in the offshore sector is the fee for notification charged by national regulators.

Each of these categories of compliance cost has been gauged by means of a questionnaire presented to industry, and supplemented with calculations as per the EU Administrative Burden Calculator.

For the purposes of calculating some administrative burdens, the opportunity cost is assumed to be equal to the wage rate of the relevant member of staff, inflated by 30%. This 30% adjustment is to reflect the true economic cost of employing that member of staff and includes employer taxes and pension contributions, as well as so-called 'overhead-costs' such as premises, telephone, heating, electricity and IT equipment.

Finally, a section for each option summarizes other relevant environmental, social, economic or external impacts associated with the option.

The impacts of all analyzed policy options have also been assessed in relation to the respect of fundamental rights as described in the EU primary law (notably in the Charter of Fundamental Rights of the European Union) and case law of the Court of Justice of the EU.

This chapter presents only the highlights of the impact analysis conducted. Annex IV provides further details on the findings and the estimates and modelling employed. This chapter does not provide a comprehensive enumeration of every possible impact but focuses on select key dimensions where the scale of the impact is most significant, where its nature is well-understood and where the combination of clear facts and dependable data allow concrete conclusions to be drawn as a basis for policy formation. The main reason for such limitation is the lack of comparable and authoritative data available to the Commission at present. Where possible, proxies or modelling were used to make up for missing hard figures.

In the following paragraphs, benefits and costs are presented for each individual policy option. As the policy options constitute a phased approach for implementation of measures, the benefits and costs will accrue with the execution of each policy option. At the end of this chapter, a table is included showing the incremental (aggregated) benefits and costs for all the policy options.

5.1. Option 0 - No EU Action

The analysis of impacts of Option 0 is in fact contained already in Chapter 2 (and the supporting Annex I) as the Baseline, as per its expected evolution, coincides in practice with Option 0. To summarize the baseline evolution, substantial material improvement to the overall level of risk control in the EU as a whole by operators and regulatory authorities is not considered likely without an EU policy stimulus. Individual Member States may implement partial measures, but probably where the level of safety is already above average. Even in those cases, however, there is no foreseeable change in the intensity of regulation and control of the major hazard aspects, including loss of well control. Transparency – at a low level in this sector compared to other major hazards sectors - will not improve, and so public confidence in the sector will not be noticeably enhanced.

Because of continuing initiatives by industry, global agencies and institutions, and Member States, there will be incremental improvements in emergency preparedness and response capability, particularly in the North Sea where the intensity of research is greatest in the EU. The effect of these efforts may however be counterbalanced by the increasing risks of operations due to the overall industry trend toward more "frontier" and complex operations undertaken by major companies, whilst the existing inventory of ageing platforms continues to be divested to smaller operators.

As a result, it can be estimated (Annex 1) that Option 0 will not result in any change to the range of €205 – 915 million of estimated levelized annual costs of damage caused in the European offshore sector and that this range remains representative of the future record of the sector as well.

5.2. Option 1

It should be noted that, because this option aims to level-up all European offshore regimes to currently existing best practice, some Member States will be more affected by it than others. The calculations presented in the annex supporting this chapter specifically address this (see Section 1 in Annex IV). By contrast, because every subsequent option proposed in this report (Options 1+, 2 and 3) is premised on the implementation of the present one, this report assumes that Member States will be equally affected by these subsequent options.

5.2.1. Impact on risk mitigation

In this option, the offshore oil and gas industry in all EU jurisdictions would be required to prepare a major hazards report (MHR) based upon the North Sea practice in the implementation of the requirement for a safety and health document in the Drilling Extractive Industries Directive 92/91/EEC. The MHR would amplify the minimum requirements of Directive 92/91/EEC towards prevention of offshore major hazards, for example marine well control, structural integrity of offshore platforms, and survival of personnel in an emergency. Current practice is the North Sea region is also for a well plan to be notified to the regulator that contains key information on well design and control measures in sufficient time for the regulator to form a competent view on the suitability of the plan and to intervene if necessary to require additional safeguards.

Option 1 measures thus go further than Directive 92/91/EEC necessarily obliges because regulators would be required to receive the report for their verification of the control measures, and be required to base their inspection and investigation regime on the MHR while introducing a system of penalties for breaches of duty. This would bring about a step change in Member States that currently do not practice a risk based regime of this intensity, for example those who use a more generic approach based on a "minimalist" interpretation of the broad framework of Directive 92/91/EEC.

The main effect of this option is to define the relationship between the duty holder and the regulator on the basis of their shared responsibilities towards risk assessment as cemented in the MHR. The option would not go beyond this point of principle but nevertheless secures some progress towards the goal of consistent risk assessment by requiring industry and regulators to adopt a goal setting regime based around the health and safety document (92/91/EEC) but going further. This induces partial improvement in the safety culture of industry. An informal grouping of EU offshore authorities is likely to form which, when combined with new information emerging via the formal risk

assessments, makes available new information for sharing and learning. Upgraded inspection and penalties also supports this trend.

Correspondingly, the range of estimated annualized cost of damage used as baseline would be affected but only as regards regions other than North Sea. Using data on the proportion of operations in the North Sea region and other parts of the EU, the reduction in the levelized costs of annual damage for the whole of Europe have been estimated to be between €6.66 and €29.7 million annually compared to the baseline scenario (details in Section 1.1 of Annex IV). These figures follow from a reduced impact on losses from an offshore incident as a result of implementation of this policy option, in areas other than the North Sea. Because the levelized annual cost is a surrogate for risk (i.e. a product of likelihood and consequence of a major incident in EU waters), the reduction in levelized costs can be used as a surrogate for reduction in risk. Therefore this option contributes a 3% reduction in baseline risk (average of risk reduction)/(average of baseline risk).

Vicarious effects and omissions of option 1

The focus on risk assessment would stimulate some elective improvement in regulatory and industry practices and equipment standards, but this would be patchy. Voluntary groupings of regional Chief Inspectors might emerge outside of the North Sea, along the NSOAF model.

This option would not address all of the best practice measures that target the full panoply of problem drivers. For example it does not mandate industry to adopt a consistent culture in the management of their major hazard operations (see option 2 below). Nor does it integrate environmental aspects into the MHR. Current levels of transparency of performance and sharing lessons learned would remain unchanged.

5.2.2. Regulatory and compliance costs

To implement these two measures (on industry and the regulator) would require legislation. It would not be practicable to introduce through voluntary means this level of requirement on industry and regulators that do not currently operate such a regime from within their own jurisdictions (i.e. the EU regions outside the North Sea). For example, responsibility for the MHR regime would need to be applied to defined entities (broadly, licensed operators and mobile rig owners) who have a duty to submit, and to comply with the measures contained in, the MHR. There would need to be a concomitant offence for non submission/compliance. Regulators would need to acquire the means to discharge their responsibilities towards the MHR and the inspection/enforcement regime that accompanies it. An enforcement model would need to be introduced to secure consistent action by regulators on operators throughout the EU.

Regulatory and compliance changes will be necessary only in regions outside the North Sea. Based on available data on the difference between the costs of administration and compliance in the goal-setting regime of the North Sea and regions with other (e.g. prescriptive) regulatory regimes, it can be estimated that Option 1 will lead to an increase of compliance costs for the industry to the tune of €35.50m per year under the present extent of operations in the individual EU offshore regions (details in Section 1.2 of Annex IV). As for administrative costs for public authorities, these are not likely to exhibit major increases as available data (see Section 1.2 of Annex IV giving details on

data collected by the Commission through questionnaires issued to regulatory authorities throughout the EU) show that administrative expenses and budgets of the regulators in the goal-setting North Sea region are not necessarily higher than in other regions. However, one-off retraining costs to the staff of prescriptive based regimes can be expected.

Since Option 1 is the one aiming at bringing other EU regions to the North Sea standard, it is the only one where it is anticipated to have a disproportionate impact on Italy and Spain with regards to North Sea countries. They are the Member States most likely to strongly benefit from the package of proposed measures in terms of improved safety.

5.2.3. Social, economic and environmental impacts

The social, economic and environmental impacts are primarily related to the reduction of probability and limitation of effects of accidents as large offshore accidents can have devastating consequences as demonstrated earlier.

However, it is important to take into account all impacts of proposed measures in given context where the urgency to prevent accidents and their consequences becomes even clearer. Strengthening of the regulatory requirements would lower the probability of the secondary impacts of accidents that threaten to negatively affect many related sectors, such as tourism or fisheries with impacts going far beyond the obvious scale of offshore oil and gas sector.

This approach would also bring additional benefits for economies outside North Sea as the goal-setting regimes typically create new business opportunities for consultancies and specialist expertise service companies who help with the preparation of major hazard report. It is worth noting that such related consultation services open opportunities for SMEs in an otherwise very complex, resource and capital demanding industry.

Though some assessments of hazards would be made in connection with health and safety of workers on the basis of existing legislation, no additional protection would be introduced for environmental aspects beyond present North Sea practices.

5.3. Option 1+

5.3.1. Impact on risk mitigation

Compared to Option 1, Option 1+ can be expected to achieve incremental improvement in technical capability verification at the licensing stage, but makes complete liability of operators for any pollution very clear, and formalises the goal of making emergency assets and plans suitable for sharing across MS borders. EU begins to secure raised standards overseas and establishes the principle of EU based companies as ambassadors in this regard. This may have some deterrent effect on operators and therefore the reduction of the levelized annual damage can be more significant that under Option 1 though not in a major way. However, due to the characteristics of the measures and the fact that implementation of the individual measures under this policy option is by guidance only, it became apparent that the benefits and the costs for each measure could not be precisely quantified. Instead, a more general approach is taken for this policy option, where the benefits and costs for the entire policy option are determined, instead of for each individual measure. As already indicated, the complete option will result in reduced losses as a result of a blow-out. In Section 2.6 of Annex IV this is further

quantified. The benefits under this policy option are estimated to be between €17.85 – €79.3m annually, compared to the baseline scenario. The cumulative effect of options 1 and 1+ together is €24.5-109.0m, which represents a reduction on the baseline (equivalent to a reduction in risk) of 12%.

Vicarious effects and omissions of option 1+

Further improvements would be induced in industry and regulatory practices by the systematic application of emergency response planning at the national level and the cross boundary sharing of plans. Elective minor improvement is envisaged at the licensing stage *vis a vis* financial risk through closer involvement with the regulator on the technical risks pertinent to the area being licensed. This measure will also assist in developing response capacity in non EU neighbour states, and in promoting EU standards worldwide.

What this measure will not achieve is a significant impact on prevention of a major incident beyond that achieved in option one. In other words option 1+ will not induce a further significant improvement to industry safety culture, environmental risk assessment, joined up inspection by safety and environment regulators, and transparency.

5.3.2. Regulatory and compliance costs

The option would firstly require the licensing authorities of MS to make certain minimum steps to determine the technical 'entry level' for applicants in the various stages of licensing which each MS practices. We generalize these as (i) initial survey (i.e. to conduct seismic and other surveys to identify potential hydrocarbon prospects); exploration (to carry out exploration drilling); and production (to establish a production facility and to produce and market oil and/or gas). This measure would complement, at the licensing stage, the risk based approach applied to the operational phases (drilling and production) and would involve formal cooperation between licensing authorities and safety and environment regulators.

The implementing measures are relatively straightforward and do not require making new law. Sharpening the requirements for scrutiny of technical capacity of applicants for licensing can be achieved by issuing guidelines on the application of Article 5 (1) (a) and (d) of Directive (94/22/EC) on hydrocarbon licensing.

Clarifying the liability faced by licensed operators could be achieved to a large extent through issuing guidelines clarifying the application of EU waste law to oil spills. However, this approach would not address the fact that the Environmental Liability Directive 200/35/EC does not address water damage in marine waters and is therefore not in line with the coverage of the Marine Strategy Framework Directive 2008/56/EC.

Striving for compatibility and interoperability of national response assets, collating industry owned inventories of equipment and similarly striving for compatibility of industry equipment with national inventories appears to be achievable through issuing guidelines. We take this view in the light of the considerable activity being taken jointly by some MS and industry on improving emergency response assets following lessons learned from the Deepwater Horizon disaster. An extension of the soft approach appears appropriate within the context of option 1+ to achieve agreement to a common template for national response plans that may be shared between MS and non EU neighbours.

Extending EU efforts overseas is not possible through legislative means. Pursuing agreements through existing channels available to the EU, eg in IMO, NSOAF and IRF can be stimulated through MS membership of these organizations. The work on compatibility of national/industry owned assets and a template for national response plans will facilitate diplomatic efforts to grow capacity in non EU neighbours. It is consistent with this generic approach to the implementing measures in option 1+ to also strive for voluntary agreements with EU based companies to wherever possible implement and display their EU operating standards when operating farther afield.

All this will represent additional administrative costs for regulators in all EU jurisdictions with offshore safety activities. However, these costs will be lower than under Option 2 which assumes more profound changes to their operations. Precise quantification of the administrative costs proved to be not possible, as already indicated in the previous section. However, based on the approach taken and elaborated in Section 2.6 of Annex IV, the additional administrative costs have been estimated at €2.53 million annually.

Implementing Option 1+ will have higher industry compliance costs than Option 1 due to the further change in operating practices. Based on this assumption, the additional compliance costs for industry under this option have been estimated to amount to €15.79 million annually (see Section 2.6 in Annex IV). Cumulative costs are estimated at €53.82m.

5.3.3. Social, economic and environmental impacts

While Option 1+ doesn't bring many significant improvements over Option 1 in terms of prevention, its benefits in the area of minimising the negative impacts of accidents can have positive impacts on social factors threatened by large scale incidents, which is how we estimate the overall decrease on baseline risk of options 1 and 1+ together is 12% compared to 3% by option 1 alone. Earlier and more effective emergency response can minimise impact on industries such as fisheries or tourism, thus greatly limiting negative social and economic impacts. Given the exposure of those industries to real or perceived consequences of pollution, lowering the risk of accidents has strong benefits on the sustainability of jobs and life of local communities.

Legal clarity on the application of EU waste law to oil spilss will help provide assurance to the offshore sector, and regulators and will overall increase the level of environmental protection. Moreover, positive impact of more efficient emergency response on environment is obvious while bringing less self-evident benefits such as better protection of wildlife. For example, many animals, especially bird species, are threatened by oil spills even when those do not reach the shore. Better emergency plans can prevent more negative effects as well as address the problems of oiled animals reach the shore long before the actual oil spill, thus limiting damage and costs of recovery.

5.4. Option 2

5.4.1. Impact on risk mitigation

This option activates, mainly, two things that lie beyond previous options. It levels EU MS up to the optimum best practices everywhere (which happens to comprise EU MS and EEA, rather than farther afield), and it introduces new practices that are relatively

modest additional costs and therefore attainable. Option 2, on the other hand, would make a robust assault on the main problem drivers described in chapter 2.

Option 2 makes an impression on all of the problem drivers by incorporating environment risk assessment and emergency planning into major hazard reports, underpinned by inspection and sanctions by the newly joined-up regulator, and by Operators that are required to adopt policies and corporate arrangements leading to an effective major hazards prevention culture. Incorporation of environment risk assessments into the major hazards report enables standard operating procedures between MS leading to significant improvement in cross border cooperation in emergencies. The enhanced sector culture renders an improvement in verifying technical capacity during licensing. The EU Offshore Authorities Group is established under EC auspices to the benefit of all MS, equally, and supported by obligatory standard reporting for the first time across any national borders. This enhances public scrutiny and transparency and facilitates EU regulatory programmes, in agreement with the Member States.

In view of the above, the levelized annual damage estimate is significantly impacted. It can be estimated that, due to significant reduction in losses due to of a major blow-out as a result of the implementation of the policy option, the levelized costs for damage are reduced by €76.9 - €343.1 million annually (for this option alone, see Section 3.1 of Annex IV). The effect of option 2 cumulatively with Options 1 and 1+, is to lower the baseline scenario by €102.7 – 454.7m (or approximately 50%).

Vicarious effects and omissions of option 2

The all encompassing regime for industry and regulators will also move EU based companies towards a more consistently high standard wherever they operate. Cooperation with non EU neighbours in incident prevention and response would be enhanced by the raised levels of risk awareness and transparency throughout the EU

This option would not provide for any form of enforcement against operators who do not uphold consistent high standards of compliance in every MS they operate, nor would it ensure an EU coordinated response to a major offshore incident that exceeds the resources of the region in which it occurs although it would increase the prospects of external aid becoming available quickly.

5.4.2. Regulatory and compliance costs

A number of legislative measures would be needed to implement the measures that comprise this option to ensure the policy benefits accrue as designed.

Firstly, attaining industry best practices is the outcome of industry demonstrating a strong safety culture across the EU. To do this, operators and MODU owners must go beyond the process of constructing major hazard reports (option 1) and incorporate their major hazards prevention policy within their top corporate policy and in their corporate organisation and procedures, supported by effective performance monitoring, analysis and reviews of effectiveness. Legal intervention needs to be available for serious neglect of these principles and therefore a legal instrument is necessary to establish clear duties that support the broad generic frameworks of the EU safety and health provisions.

Further, industry, as a whole, need to identify the priorities in good practices relating to major hazards prevention – for example relating to maintaining oil and gas within the

vessels and pipework designed for their safe handling (referred to as process safety), and human and organisational factors that encourage sound judgement and leadership, and so on.

All this will result in an increase in compliance costs for the industry higher than in case of Options 1 and 1+. Based on the analysis of available industry data, including the limited responses to specific cost questionnaires prepared by the Commission in the course of the present analysis (see Annex VIII) the increase is estimated at €70 million annually (details in Section 3.5 of Annex IV). Industry would incur these costs for extending their risk management and MHR processes to include environmental risks and to improve transparency and information sharing under this policy option.

The likely additional running costs to all the public authorities from the proposed policies have been assessed on the basis of an administrative cost survey conducted with existing competent authorities in relevant Member States. The analysis of thus collected data and information yields estimates in the region of €9.61 – 15.33 million annually, with one-off costs between €17.75 and €44.15 million (see Section 3.5 in Annex IV). Public authorities would incur the annual running costs mainly for additional resources for inspections, assessments of major hazard reports and collection and sharing of information provided by the industry. The one-off costs are mainly incurred for the establishment of Competent Authorities in Member States. The cumulative running costs for option 2, including options 1and 1+ are estimated at €133.43-139.15m annually.

5.4.3. Social, economic and environmental impacts

Option 2 brings significant benefits over earlier options in terms of environmental protection with the full coverage of marine water damage under the ELD, but also in terms of accident prevention. Including the environmental concerns in the major hazard report can help minimizing the negative impacts on the environment. Improved transparency and sharing of information can further improve quality of preventive measures as well as effectiveness of emergency response and thus limit negative social, economic and environmental impacts described for earlier options.

Moreover, resulting increased consistency of national regulatory measures could lower compliance costs of those operators active in more than one jurisdiction. Common standards and practices will also improve the functioning of the internal market and enhance competition.

Increased focus on independent verification and quality of offshore major hazard reports would also increase opportunities for secondary industries related to offshore operations that would be accessible also to SMEs.

5.5. Option 3

5.5.1. Impact on risk mitigation

Option 3 consolidates the benefits produced by option 2 and enhances the implementation of EU law and EU's effectiveness in influencing overseas standards and in the performance of EU based companies working elsewhere. It establishes an EU-wide intervention capability that is targeted on the unique characteristics of offshore oil and gas disasters. On the one hand an EU Agency offers a source of technical assistance to new or evolving national regimes, promotes regulatory coherence, strengthens

deterrence, coordination and transparency. On the other hand, it could destabilise existing mature regimes (North Sea, Italy) and lead to fewer benefits than in option 1 or 2 by introducing standards based on the lowest common denominator, creating potential for duplication, and aggravating the shortage of expert, specialist personnel.

Vicarious effects and omissions of option 3

An incremental improvement is anticipated in transparency under the auspices of an EU agency, acting on both the regulators, and the industry. Investigations into major incidents by the EU agency would introduce an element of independence that could be very effective in establishing objectivity, ensuring lessons are learned by the MS regulators, and in increasing public confidence. Increased diligence of EU companies operating outside the EU is to be expected both because of the greater consistency in corporate performance within the EU, and because of greater influence over the long term by the EU in global standards.

On the other hand if the sharing of roles and responsibilities between MS and EU regulators is not made clear, the efficacy of MS competent authorities, especially in the North Sea, could be hampered by delays in responding to events which is a risk inherent to both centralised and multi-actor intervention. The likelihood of such problems would be reduced if the role of the agency were clear and logical, as is the case with EMSA.

5.5.2. Regulatory and compliance costs

The increase in regulatory costs in Option 3 is higher compared to Option 2 particularly due to the additional costs for setting up and operating a dedicated EU body (agency). These costs can be estimated by using other EU bodies as proxies. The additional costs can be estimated at the level of €33.6 million in annual running costs and further €17.75-44.15m one-off costs for setting up the new competent authority (safety and environment) plus an non-quantified sum – €.tens of millions - for purchase of additional capital emergency response assets for the EU body (see s.4.3 of Annex IV). However, it should be also kept in mind that there would be a number of non-financial obstacles to be overcome in establishing an EU agency with powers to intervene with industry and MS. These include: the relationship between the EU agency and MS jurisdictions for criminal investigation and prosecution; cost recovery mechanisms; the relationship between MS and the agency in respect of non major hazard regulation; the relationship with licensing authorities; the handling of major hazards reports by the regulator, leading to consents; and in agreeing emergency plans.

Compliance costs for the industry would not be significantly increased compared to Option 2 so the estimates developed in that section can be equally used here. Therefore the cumulative running costs for option 3 including options 1, 1+ and 2 amount to €167.03-172.75m annually.

5.5.3. Social, economic and environmental impacts

Further improvements in prevention of accidents would bring significant benefits; however, the risk of bringing the focus away from local conditions and needs does also mean a potential threat to effectiveness of the adopted measures. A balance would need to be found between EU and national responsibilities that would ensure that applied policies take account of the specificities and needs of local communities and economic and environmental conditions.

6. CONCLUSIONS OF IMPACT ASSESSMENT ANALYSES FOR POLICY OPTIONS

Chapter 2 described the three-fold problem and its drivers. Chapter 3 described general and specific objectives for an EU initiative to remedy the problem and introduced 14 measures that would deliver the objectives by addressing the problem drivers. Three of the measures (product safety, financial capacity and civil liability) were confirmed as important but excluded from further assessment at this stage because further policy evaluation is necessary. Chapter 4 introduced four policy options beyond the do-nothing baseline option, each implementing a specific subset of the measures implemented through different means (guidelines, legislation, agency etc – described in detail in Annex XI). Chapter 5 summarised the cost/benefit impacts of the different policy options, with detailed assessments provided in Annex IV.

This chapter summarises the pros and cons of the policy options in terms of their effectiveness in meeting the objectives (Table 4) and their associated costs and benefits weighed against the baseline scenario (Table 5).

Table 6 illustrates the increasing impact in terms of **effectiveness of individual measures** identified in chapters 3 and 4 within the context of the policy options which they deliver. All options produce beneficial effects, and Option 1+ secures benefits in terms of liability and sharing compatible response assets. However Options 2 and 3 stand out clearly as the most effective overall.

Table 4

Assessed effectiveness of policy options

No.	Measure	Option 0	Option 1	Option 1+	Option 2	Option 3
4.1.1	Detailed verification of the technical capacity of potential operator					
4.1.2	Establishing regular inspections and a penalties regime					
4.1.3	Submission of formal safety assessments for acceptance by the regulator					
4.1.4	Extension of MHR into a comprehensive risk management model					
4.1.5	Extending EU practices to overseas operations					
4.1.6	Establishing a Competent Authority					
4.1.7	Establishing a platform for regulatory dialogue					
4.1.8	Comprehensive information sharing and transparency					
4.1.9	Preparedness for effective emergency response to major offshore accidents					
4.1.10	Ensuring cross-border availability and compatibility of intervention assets					
4.1.11	Clarifying the scope of environmental liability					

Table legend:

Extent to which the aim of the measure is attained:	None	Little/ patchy	Some	Mostly
Colour				

How to interpret Table 4

Option 0 does not impact on the problem drivers consistently across MS. Improvements in cross border sharing of compatible assets, and in cross border emergency planning, are anticipated as a result of ongoing industry/MS initiatives and research.

Option 1 secures some progress towards the goal of consistent risk assessment by requiring industry and regulators to adopt a goal setting regime based around the health and safety document (92/91/EC) but going further. This induces partial improvement in the safety culture of industry. An informal grouping of EU offshore authorities is likely to form which, when combined with new information emerging via the formal risk assessments, makes available new information for sharing and learning. Upgraded inspection and penalties also supports this trend.

Option 1+ achieves limited improvement in technical capability verification at the licensing stage. It clarifies some aspects of liability of operators (application of EU waste law), and formalises the goal of making emergency assets and plans suitable for sharing across MS borders. EU begins to secure raised standards overseas and establishes the principle of EU based companies as ambassadors in this regard.

Option 2 makes an impression on all of the problem drivers by incorporating environment risk assessment and emergency planning into major hazard reports, underpinned by inspection and sanctions by the newly joined-up regulator, and by Operators that are required to adopt policies and corporate arrangements leading to an effective major hazards prevention culture. Incorporation of environment risk assessments into the major hazards report enables standard operating procedures between MS leading to significant improvement in cross border cooperation in emergencies. The enhanced sector culture renders an improvement in verifying technical capacity during licensing. The EU Offshore Authorities Group is established under EC auspices to the benefit of all MS, equally, and supported by obligatory standard reporting for the first time across any national borders. This enhances public scrutiny and transparency and enables EU regulatory programmes, in agreement with MS. The scope of water damage under the Environmental Liability Directive is extended to marine waters, aligning it with the Marine Directive.

Option 3 institutionalises and cements the benefits produced by option 2 and enhances EU effectiveness in influencing overseas standards and in the performance of EU based companies working elsewhere. It establishes a major intervention capability that is targeted on the unique characteristics of offshore oil and gas disasters. The introduction of an EU Agency has a destabilising effect on existing mature regimes, especially in the North Sea and Italy leading to a reduction in the benefits accruing to option 2 in respect of MS regulatory efficacy and through that on the safety culture of the industry.

Table 5 displays the **incremental costs and benefits** after implementation of each consecutive policy option from 0 through 3. They are compared against the estimated quantifiable cost of the baseline option i.e. €205-915m of levelized, annual cost. In practice all options beyond option 1 would be implemented in combination with the previous measures and costs would be incremental – as we show in the table

The conclusions from this part of the assessment indicate that that costs and benefits increase hand in hand with the complexity of the options. The expected quantified benefits start to make a noticeable difference at Option 1+ because all offshore regions are affected by this option but mainly because of the positive (though still partial) impact it has on liability and emergency response. The benefits accruing in option 1+ are reinforced in Option 2 through new law, and by integrating EU best practices into a

single model. Option 3 does not improve on the baseline reduction in a way that can be quantified, but the increased costs of this option produce the non quantifiable benefit of greater assurance that the measures will be implemented as intended, and sustained over the long term.

We can express the benefit of each option in terms of its percentage reduction on the baseline cost, which is a surrogate for the baseline risk.[56] :.

- 0% for Option 0
- 3% for Option 1
- 12% for Option 1+
- 50% for Options 2 and 3.

[56] Formula: (average of benefit range) / (average of baseline range)

Option	Likely additional costs	Expected impact on the est baseline damage cost (€205 – 915m/year)	Non-quantifiable impacts
0	No costs anticipated	No reduction anticipated	**Benefits** (limited to North Sea area): - implementation of ongoing (partial) improvement measures; - incremental improvement in ER; **Costs**: - increased risk due to 'frontier' and complex operations.
1	Running costs: €35.50m/yr	Net reduction : €6.66 - €29.7m/year (3% baseline reduction)	**Benefits**: - reduced losses from future operations in the Mediterranean/ Black Sea from levelling up standards & best practices. **Costs**: - falls to operators in the Mediterranean and Black Sea; - one-off cost for authorities changing from prescriptive to goal-setting regime.
1+	Additional running costs: €18.32m/yr Cumulative running costs: €53.82m/yr	Additional reduction: €17.85-79.3m/yr Net redn inc option 1 €24.5 - €109.0m/yr (12% baseline redn)	**Benefits**: - increased efforts from operators via legal clarity on the application of EU waste law to oil spills; sharing of intervention assets and coordination of contingency plans - incremental improvement in technical capacity of smaller operators applying for licenses - extending EU standards overseas. **Costs**: - lost earnings by smaller companies unable to meet technical capacity requirements; loss of some offshore sector jobs - lost tax revenues to MS due to non-development of resources; - modest admin burdens for MS due to sharing of ER assets, coordinating ER plans.
2	Additional running costs: €79.61 - €85.33m/yr Cum. running costs: €133.43-139.15/yr One-off costs: €17.75 - €44.15m	Additional reduction: €78.2 – €345.7m/year Net redn inc opt 1,1+ : €102.7-454.7m/yr (50% baseline redn)	**Benefits**: - increased quality of ER plans within MHR due to approval of major hazards report (MHR); - more effective oversight by independent Competent Authorities; - greater awareness of hazard trends due to improved transparency and information sharing - polluter pays principle applies to water damage in marine waters. **Costs:** - start up costs for new legal provisions
3	Additional running costs: €33.6 million Cum. running costs: €167.03-172.75/yr One-off costs: €17.75-44.15m/yr + €10s millions capex	Consolidation of benefits realised in option 2 (remains at 50% baseline redn)	**Benefits**: - more effective emergency response/EU intervention capacity - more effective monitoring of compliance with EU law; - more consistency in assessment of license applications; - independent oversight of national regulators and 3rd party verifiers - improved application of best practices in overseas operations **Costs**: - loss of initial stability in MS; - start up costs in MS for aligning with new agency

Table 5 – summary of the impacts estimates

7. PREFERRED POLICY OPTION AND LEGAL INSTRUMENT

This chapter presents the preferred policy option and the preferred legal instrument that this impact assessment supports. The choices have been made bearing in mind the annual levelised cost of the baseline option at €205-915m, high fragmentation of the sector in the EU and the risk analysis concluding that in the remaining lifetime of its offshore sector, Europe will experience another offshore major disaster.

7.1. Preferred option

The **preferred policy option is Option 2.** i.e. a comprehensive offshore reform raising, through new law, the North Sea standard up to current best practises and providing for greater transparency of performance of industry and regulators.

This option can in the most decisive manner reduce the baseline risk of offshore incidents in EU waters (50%) – expressed both in terms of likelihood and consequence of occurrence. Importantly, it introduces the major hazard risk model enhanced with the environmental aspects – a priority element of the EU initiative. While on par with Option 3 on these two accounts, the analysis concludes that Option 2 is more affordable administratively and a more proportionate means to address the baseline problems. In fact Option 3 is politically and financially considerably more challenging to implement than Option 2 – much due the fact that it introduces a new regulatory body.

Option 1+ would be a modest choice achieving a modest impact (ca 12%) on the objectives while offering modest enforcement possibilities (largely soft law) and little resistance for change from conservative stakeholders such as notably the industry. The entry level Option 1 although administration and industry operating costs are small, the risk reduction is insufficient to justify action.

7.2. Implementing measures for Option 2

As explained briefly in Chapter 4 and in more detail in Annex XI, Option 2 comprises a comprehensive programme of reforms most of which is introduced through a legislative instrument and partly also through soft law. :

The following measures are proposed to be incorporated in the new legal instrument:

- detailed verification of operating technical capacity at the licensing stage, acting on the Directive 94/22/EC;
- establishing regular inspections and penalties regimes, with details to be established in consulting with Member States experts]
- requiring the preparation of a Major Hazard Report along the lines required under the Directive 92/91/EC, but including environment risk assessment and internal emergency planning locally (installation specific) and submission of the report for acceptance by the regulator; incorporating major hazards prevention policies at corporate board level; and establishing formal priorities for producing new guidance and standards for industry. The Commission will seek advice of Member States and industry experts on the details.
- Establishing a competent authority (CA) in each jurisdiction for joined-up regulation of major hazards regarding environment and safety, along the Seveso model. Design standards for the CA would be determined by comitology (Member States)

- Establishing a EU offshore authorities group (EUOAG). Details of remit and organisation could to be discussed with Member states experts considering models such as the SLIC Directive.
- Establishing a standard reporting system from industry to Member States, and subjective provisions for sharing information with the EU and the general public (transparency).
- Preparedness for effective cross-boundary emergency response, linking external emergency response plans (i.e. national plans) to operators internal emergency plans in the MHR. Member states to contribute through comitology in developing standard operating procedures.
- Ensuring cross border availability of compatible response assets; Member States and industry to advise on the details for inventory sharing and for progressively upgrading the degree of compatibility including in human expertise.
- Amending the scope of the Environmental Liability Directive in line with the Marine Strategy Framework Directive, in relation to water damage for marine waters (in addition to clarification of producer responsibility for waste generated by offshore exploration and production activities based on the provisions of Directive 2008/98/EC on waste, as part of a Frequently Asked Questions documents prepared for the Directive).

These measures comprise the skeleton of a proposed new legal instrument for offshore safety. It will be complemented by a soft law instrument such as guidelines to incentivise voluntary application of EU best practices by EU based major companies when operating overseas.

The following diagram (Diagram 3) is an illustration of the practical logic behind the implementation of option 2.

Firstly (green boxes) the Member States and industry establish a framework for best practice in operations and regulation, e.g. Member State licensing authority appointing licensees with appropriate technical capability and safety policy, Member State appoint competent authority(CA), Commission appoints EU offshore authorities group (EUOAG) from CA's. CA's and licensees/operators prepare policies and establish implementing arrangements. Industry/EUOAG implementation priorities for revised standards and guidance.

Secondly (orange boxes) operators and CA's undertake activities in line with policies and arrangements, including major hazard reports incorporating environment risk assessments and related installation based emergency response plans which are assessessed/consented by CA, and which form the basis of inspection sand enforcement. Member States national emergency response plans prepared in consideration of installation emergency response plans.

Finally (red boxes) CA's Member States and industry respond to events during operations – emergency response, investigation and reporting. EUOAG share lessons and experience. CA's advise Commission who publish periodic reports, supported by EUOAG.

Diagram 3

Logic model for the practical operation of option 2

1. Establishing best practices for licensing by MS, safety/environment regulator and industry

Member States consider safety policy and relevant well operations expertise at the time of awarding exploration and production licenses	Member States appoint Competent Authority (CA) and provide adequate resources to regulate offshore safety and environmental protection

EC amends ELD to extend full liability for water damage to MSCS' beyond territorial seas line

EU Offshore Authorities Group is established (by EC) comprising EUMS and EEA with offshore activity or pending activity

Operators prepare corporate safety policy for major hazard prevention and mitigation; also prepare detailed safety management systems SMS) and set up scheme for independent verification.	CA establishes policies and procedures for offshore regulation including assessment and acceptance of MHR; inspection; investigation; enforcement; research and continuous improvement

Operators and EUOAG agree and implement priorities for new/revised standards and guidance for offshore major hazards prevention

Operators and EUOAG agree and implement standard data reporting system for EU offshore oil and gas

Operators commit to upholding EU-standards to maximum allowable extent when operating outside EU

2. Securing best practices during actual operations in licensed areas

Well operators prepare well plan and submit notification document to CA >14 days before starting operations. To include internal emergency response plan	Operator or rig owner prepares relevant type of major hazards report (MHR) and submits it to CA ahead of specified time depending on type of MHR. To include internal emergency response plan
CA reviews well notification and takes any necessary measure to secure amendment or prohibit the planned well. Otherwise operator continues as planned	CA makes assessment of MHR necessary for acceptance or declines to accept. Operator proceeds accordingly to operate, withdraw or resubmit MHR

CA makes any necessary notification to countries that may be affected by the planned operation (well operation, or production)

MS to prepare new or amend existing external emergency response plans

Operators compile and submit inventories of emergency response equipment. Aim for interoperability and compatibility with other companies and the MS	MS compiles inventories of interoperable and compatible equipment and expertise and shares with adjacent MS
Operations commence. Operator complies with well plan/MHR, other applicable regulations, , his corporate policy and SMS, all applicable standards & guidance	CA implements inspection plans, investigates incidents and takes necessary enforcement action for breaches of regulatory duty

3. Emergency response, investigation, reporting and transparency

Operator reports incidents and other events and information to CA in line with common reporting format	MS routinely publishes reports on performance of the oil and gas sector

EC publishes reports of EU safety and environmental protection performance based on MS submitted reports

In the event of a major incident, operator activates internal emergency response plan, notifying MS as required and necessary	Where necessary, MS activates external emergency response plan, advising EC and neighbouring MS where necessary.

CA conducts major incident investigation and reports findings to EC

EUOAG promotes sharing of information and development of standards and guidance by the industry Supports MS in conducting x-boundary emergency exercises	EC publishes reports of x-EU performance of the offshore oil and gas sector. Supports MS in conducting x-boundary emergency exercises

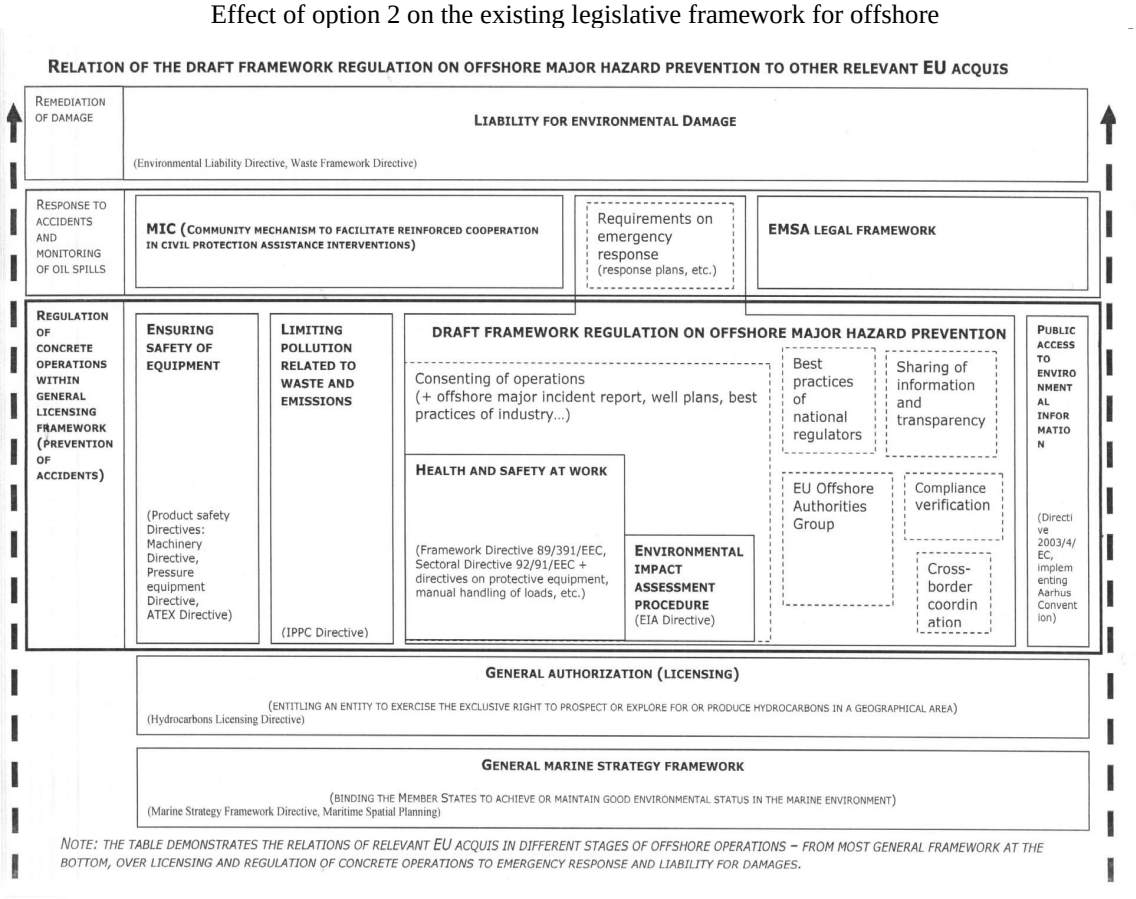
The following diagram (Diagram 4) illustrates the effect and interfaces of the proposed legal instrument with existing EU legislation relevant to oil and gas offshore activities.

The preferred policy option for the implementation of the first two categories of measures can be pursued jointly through a package of measures consisting of soft-law actions, international initiatives and a legislative proposal. The general structure of the intended legislative proposal is expressed in expressed in the flow diagram below.

This legislation will be meant to complement the existing regulatory framework. Diagram 1 used in chapter 2 for the visualization of the currently applicable legislation can be accordingly amended to provide the following contextualized picture:

Diagram 4

Effect of option 2 on the existing legislative framework for offshore



As regards the most appropriate form of the legislative proposal, a Regulation seems to bring important benefits over a Directive. A regulation seems to be an appropriate legal form also taking into account its advantages with regards to its speed of application, efficient implementation at the EU-level and clarity and consistency through direct application[57]. Given the urgency for an EU-action to establish a common minimum

[57] It is worth noting, that in comparison with other major legal acts relevant for high risk industries, one can detect certain preference for Directives, such as IPPC Directive or SEVESO II Directive. However, in contrast to broad, horizontal sectors such as chemical industry, other high risk sectors with more narrow scope, such as civil aviation, often use Regulation for their legal framework.

safety level in a precise activity field of offshore prospection, exploration and production of oil and gas, the principles laid down in a Regulation would be applicable to all actors concerned while delegated/implementing acts would be developed in areas where more detailed requirements need to be set. By obliging directly also the industry, the Regulation would also increase clarity and provide for a level playing field. The arguments for direct application are even stronger as regards emergency plans, especially in connection with potential transboundary effects of offshore accidents.

7.3. Preferred form of legal instrument

A Regulation is considered as the most appropriate legislative instrument to implement the preferred policy option. It has advantages over a Directive with regard to its speed of application, efficient implementation at the EU-level and clarity and consistency through direct application[57]. Given the need rapid EU-action to establish a common minimum safety level in a precise activity field of offshore prospection, exploration and production of oil and gas, the principles laid down in a Regulation would be applicable to all actors concerned while a delegated or implementing act could be developed to establish or maintain detailed requirements in certain areas (such as the standard reporting format.. By acting directly on the industry, the Regulation would also increase clarity and provide for a level playing field. The arguments for direct application are even stronger as regards emergency plans, especially in connection with potential transboundary effects of offshore accidents.

8. MONITORING AND EVALUATION

The proposals aimed at improved transparency and comparable reporting will allow the Commission to monitor and evaluate progress towards meeting the objectives and to compare this progress across Member States. In this context, the trends of the following safety performance indicators will be particularly informative:

- Number of major accidents (e.g. collisions, fires, well control losses) and near-misses and major causes; geographical location/ regional distribution of the accidents
- Number and volume of accidental releases of hydrocarbons
- Number of fatalities and injuries.

Of course these indicators have to be compared to the scope of operations (e.g. total hours worked, oil and gas produced, number of installations, number of wells drilled) in order to gain comparable figures across years and across Member States.

Data related to the compliance verification activities of public authorities are also important indicators. These may include information on:

- The handling of authorization requests;
- Inspections;
- Major compliance breaches;
- Sanctions.

Improved transparency will serve not only the Commission. It will also make it possible for the general public to find accessible, reliable and comparable information on the offshore activities and their regulation in various EU regions. This should help the public acceptance of offshore oil and gas activities in European waters by demonstrating that

the risks they carry to life, environment and property are appropriately managed and controlled.

In addition to reporting by Member States, regular meetings with the competent national authorities will also allow the Commission to monitor the development of offshore safety in Europe by the exchange of experience and views on matters relevant for regulation of offshore operations.