

## **Re-use & decommissioning hand-out** Decommissioning in practice



#### Preface



## **Cooperation, knowledge sharing** and innovation

Jacqueline Vaessen General Manager Nexstep

An extensive infrastructure for the production and transportation of oil and gas has been built up in the Netherlands over the past decades. A large proportion of this infrastructure is approaching the end of its economic life. We are therefore facing a formidable task: the re-use or decommissioning of this infrastructure.

Nexstep coordinates, facilitates and accelerates the agenda for the re-use and decommissioning of oil and gas infrastructure in the Netherlands. The total cost of decommissioning wells and infrastructure was estimated at 7 billion euro in 2017. Nexstep wants to reduce these costs by 30% by:

#### • Sharing knowledge

In 2018, we organised five shared learning workshops, which resulted in more than 150 learnings being identified and stored in a database developed specially for this purpose.

Cooperation between parties

We are stimulating cooperation between operators, such as preparing a joint well decommissioning campaign. Furthermore, we encourage cooperation between the operators and the service industry to identify how to decommission offshore platforms in a smarter and more efficient manner

#### Innovation

 We are looking into new developments in the decommissioning of wells and are investigating whether we can organise a pilot program in the Netherlands.

Main condition is that the decommissioning is carried out in a safe manner and environmental interests are safeguarded.

A limited proportion of the oil and gas infrastructure could be used to accelerate the energy transition. At the end of 2018, Nexstep launched a pilot project to determine the feasibility of offshore hydrogen production. Furthermore, we made an initial estimate of onshore wells that have the potential to be converted for geothermal energy. Additionally, we mapped out the offshore platforms that have the greatest CO<sub>2</sub> storage potential. The fact remains that re-use of offshore platforms will be limited. We estimate that approximately 10% of the platforms in the Dutch part of the North Sea are suitable for re-use. Most will be decommissioned and that is what we are working on.

I would like to refer to our second Re-use & decommissioning report, in which we provide insight into the oil and gas infrastructure that will be decommissioned between 2019 and 2028. This report can be found at www.nexstep.nl

### **Key figures**

The figure below shows the expected availability of infrastructure for the re-use or decommissioning of installations in the North Sea. A large proportion of the installations will become available between 2021 and 2027. The acceleration in 2039 and 2040 is remarkable. A decommissioning campaign has been planned for that period, which involves the decommissioning of several installations either simultaneously or successively in a short period of time.

The cumulative number of installed and removed offshore installations



The second figure shows the offshore installations that are available for decommissioning or re-use. In 2019, five main platforms, five satellite platforms and three subsea installations will be removed. One satellite platform has already been removed in January 2019. Furthermore, the topside of platform E18-A was re-used for the second time (see case on the other side). The year 2019 is unique. Never before has such a large number of installations been decommissioned or re-used in a single year. More installations will be decommissioned this year than last year's forecasts for 2018 and 2019 together. This shows that the decommissioning of oil and gas infrastructure has become a reality.

Offshore installations becoming available for decommissioning



The third figure shows that offshore wells, platforms and jackets are by far the most costly to decommission. Therefore it makes sense that this is where the greatest savings can be made.

Total decommissioning costs of offshore infrastructure subdivided by activities



#### A perspective: Sandor Gaastra



subsea installation satellite platform main platform



remediation subsea infrastructure recycling of top sides / jackets jacket and fundation removal platforms preparation of top sides making safe of installations / pipelines plugging and abandonment of wells operation of the installation / costs of the owner

## Cost effective without losing a long-term perspective

As Director General Climate and Energy of the Ministry of Economic Affairs and Climate, Sandor Gaastra is an avid follower of Nexstep. He recognises that major steps have been taken in the past year and also sees a major role for Nexstep in the future. In this interview we ask Gaastra a number of questions about Nexstep's first year.

#### What is the added value of Nexstep?

"At times it is better for the government not to set boundaries," tells Sandor Gaastra. "You have to prevent companies from only doing what they have to do instead of what is wise for the entire sector and society. The added value of Nexstep is reflected in the responsibility that the sector now takes. The initiative is taken together and there is collaboration on innovation. This solidarity and the results thereof ensure greater public confidence that the sector is actually decommissioning and removing the installations and infrastructure."

#### What is striking about the past year, what goals have been achieved?

"Three aspects come to mind. Firstly, the publicity that Nexstep has received. Nexstep has promoted itself, and that has been visible. This demonstrates that the Netherlands is serious about decommissioning and, where possible, re-use. Furthermore, I'm glad to see how many lessons learned are being shared by the different operators. A major development has taken place within a year. It is now common practice to learn from each other via shared learnings and a joint database. This is really necessary to achieve the best results. Finally, I think it is good to see that Nexstep is also a joint effort of all operators with regard to the deployment of people. For that matter, it seems that Nexstep has created a collaborative team. At the same time I see opportunities in broadening the target groups; the next step is to enter into further dialogue with the service industry, with NGOs, the geothermal sector and further effort to bring attention to the general public of decommissioning and re-use."

#### In EZK's view, where are the biggest opportunities for Nexstep?

"The biggest opportunity for me is in the further development of Nexstep. It would be great if Nexstep could become a platform that relieves pressure on the operators. Actually, literally investigating the next steps. I also think about the long term. We'll still be working on gas for two to three decades, but that is definitely finite. Nexstep must also explore the following steps. In short, on the one hand the coming 10 years with decommissioning and on the other hand in the longer term towards 2050 where we need to look at re-use for new energy generation. First be cost effective and achieve the first goal without losing sight of the long-term ambition."

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Nexstep's focus has shifted more to decommissioning than to re-use. A justified choice? "Operationally it must be well planned to make it suitable for operators. You first have to persuade the operators and make it cost efficient. In addition, it is of course also a long-term investment. With the gas and oil platforms currently in the North Sea you have beautiful 'stepping stones'. It is important to keep thinking integrated. Therefore, we have to do both, but in the right order. You naturally look for the right balance."

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#### A perspective: the operators

## **Operators well prepared**

Many platforms and wells in the North Sea are nearing the end of their economic lives. The sector is faced with a major operation to decommission its infrastructure. Preparations for this have gained momentum since the founding of Nexstep. How are operators dealing with decommissioning?

All operators will have to deal with decommissioning issues in the coming years, while they also plan and implement new developments and projects. Over the next ten years, Neptune Energy expects to clean up a significant proportion of its platforms, which have an average of 4 wells. "Of course, we've been preparing for this for a few years," explains Aart Geurtsen, who is responsible for decommissioning at Neptune Energy. "The decommissioning will take place on a large scale in a relatively short period of time, which makes it possible to work efficiently. This way, we create continuity and economies of scale.



#### Optimising and weighing up

Decommissioning platforms with wells costs a lot of money, and involves a lot of work, including the removal of fluids, cleaning of pipelines, plugging wells, carrying out preparatory construction work and hiring contractors. Topsides and jackets can be removed using a heavy lift vessel. The operation ends when an installation is scrapped onshore. Due to the scale and the high costs involved, decommissioning is fundamentally about optimising the work. Timing is crucial for this, says Geurtsen "If you leave a platform standing for a while, the costs will continue. On the other hand, you don't want to decommission too early, because then you might still miss opportunities to use the infrastructure for the development of nearby gas fields. We always weigh this up carefully."

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#### Thorough preparation, flexible timing

Wintershall also has a major decommissioning task, as decommissioning manager Yvonne van den Berg demonstrates. "Decommissioning and re-using where possible is not new to us. In recent years, Wintershall has already decommissioned and re-used seven installations and completely removed another seven. We are currently working on preparing a broader decommissioning programme. In the coming years, some ten installations with associated wells and subsea installations may become available."

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#### A perspective: the service industry

## "Decommissioning? The time has come"

Decommissioning will create a lot of work for the service industry in the coming years. How do service companies see the decommissioning challenge of the coming years? "By combining projects and a flexible time frame, the sector can still reduce many costs."

Belgium's DEME is a key player in the offshore industry. In 2018, the company had 5,200 employees, more than 100 vessels and a turnover of 2.4 billion euro. "Decommissioning still accounts for a small proportion of this," says Niels van Berlaer, Business Unit Manager at DEME Offshore. "But the market is growing. We recently gained some great experience during the removal of Petrogas' Halfweg platform."

#### Intensive preparation

As a service provider, Van Berlaer sees dismantling projects as an attractive addition to the existing work "It is relatively short-term offshore work, but don't be mistaken, decommissioning is much more work than people tend to think. Preparations for these projects are more intensive than for new installations, and because each platform is different, they demand a great deal of creativity from our engineers to constantly devise the simplest removal method."

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According to Van Berlaer, all this preparatory work is intrinsic to the advanced age of most platforms. "There are many uncertainties. Anything could have changed during the decades that such platforms have been in existence. We often find that installations have changed hands and that important knowledge has been lost. Also, we frequently find that data about platforms is no longer correct due to all kinds of modifications, so engineering work is crucial in order to calculate the exact weight and determine the centre of gravity, which is essential for safe hoisting.

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#### Learning together for Nexstep

# Shared Learnings database offers a wealth of insights



Nexstep is convinced that the removal and re-use of onshore and offshore infrastructure can be more sustainable and efficient, especially if we make use of each other's knowledge and experience. The Shared Learnings team is working hard to make this possible, by means of a comprehensive database of learnings, for example, which can benefit all members.

Nexstep regularly organises shared learning events, where specialists exchange their experiences and learn from each other. The shared learnings sessions bring colleagues into contact with each other and open up opportunities for discussion and further exploration. Furthermore, they usually provide a wealth of learnings, which are added to the Shared Learnings database.

#### **Emphasis on wells**

By the end of 2018, the database already contained 152 learnings, with insights into precautionary and safety measures, hoisting, planning work, the advantages and disadvantages of certain procedures and the use of cement in well plugging, for example. "For the time being, the emphasis of the learnings is on well decommissioning," explains Jules Schoenmakers of the Shared Learnings team. "This is logical, because this is the area where most of the activities are taking place at the moment. Only when the wells are safely plugged can we decommission the pipelines and remove the platforms."

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The learnings are of great help in achieving cost reductions and the "Road to 30%" agenda. Jules Schoenmakers: "We have developed four roadmaps that can contribute to a 30% reduction in the cost of removing offshore infrastructure. One of these is the Joint Campaigns roadmap, which is based on the idea that cooperation can significantly increase the efficiency of decommissioning and improve safety. In 2019, we started working on a business case for the first joint campaign in relation to unused exploration wells."

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#### Case

## Decommissioning and re-use of E18-A

#### In 1993, the satellite platform P14-A, located 50 km off the coast of Scheveningen, started production. The platform produced around 3 billion cubic metres of gas until 2006.

In June 2008, the topsides were removed from the platform to be cleaned and prepared for re-use in Ridderkerk. The installation of the re-used topsides followed a year later, this time about 150 km northwest of Den Helder. They were re-used on platform E18-A.

In the meantime E18-A has reached the end of its economic life. The topside has been re-used again and was transported to its new location in block D12 in June this year. This is a unique milestone, as it is the second time that a topside has been re-used in the Netherlands. After the platform was installed in D12, the ship sailed back to bring the jacket of E18-A on shore in Vlissingen. There the jacket are processed for recycling.

