

## Re-use & Decommissioning report

On the Road

2021



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## Preface



**Jacqueline Vaessen**  
General Manager  
Nexstep

**I am very proud to present to you Nexstep's fourth Re-use & Decommissioning report. The title of this report is "On the Road", with a nod to our strategic program "Road to 30%", but it also expresses that we are on the road to reach our aim of reducing decommissioning costs by 30%. As in previous years, this annual report provides insight into the oil and gas infrastructure that is forecasted to be decommissioned in the Netherlands over the coming ten years and covers what has been decommissioned so far.**

Nexstep facilitates, stimulates and illustrates the re-use and decommissioning of oil and gas infrastructure in the Netherlands. The total cost of decommissioning the infrastructure was estimated at 7 billion euro in 2017; Nexstep's aim is to reduce these costs by 30%. The "Road to 30%" is our strategic program to reach that goal. As usual in innovative programs our Road to 30% is not the highway to success, but a winding road with unexpected obstacles. Being an optimist by nature, I am happy to share that we are moving in the right direction, and we are making good progress. In last year's report, Nexstep's team leads described the content of the Road to 30% program. This year, we will update you on how we are progressing on the roadmaps. We are not there yet, but we are on the way! I read the contribution of the Young Energy Officers in this report with great enthusiasm.

The comments of our young and bright ambassadors evoked the following statement: "Without the resource and know-how of the industry, some technologies like CCUS and low-carbon hydrogen may not reach maturity, making energy transitions more difficult and expensive."

*Fatih Birol, director International Energy agency, Energy Transition Conference 2020.*

Nexstep also focuses on repurposing oil and gas infrastructure to accelerate the energy transition, looking exactly at the technologies Birol was referring to, which is very important to attract the younger generation. In this report, we included interviews with several operators in the Netherlands, focusing on decommissioning, on re-use and on the importance of producing gas from the North Sea. Times are changing, and we are seeing more interest for all three subjects, especially in Parliament, as demonstrated during the debate around the changes of the Mining Act last December. I was, of course, very proud that Nexstep was mentioned by several members of Parliament, but the biggest achievement is that there is awareness of the importance of Dutch natural gas, the opportunities for repurposing the oil and gas infrastructure and that the industry has been taking their responsibility in decommissioning infrastructure.



**“ We are moving in the right direction,  
and we are making good progress ”**

Compared to last year's report, there have been some changes in the forecasted decommissioning activity. Due to COVID-19, the historically low gas price and the issues around nitrogen deposition in the Netherlands, forecasted decommissioning of last year has been postponed.

Decommissioning does not stop at our borders; it happens everywhere in the North Sea and beyond. To give a little international perspective we have included interviews with organisations in the UK and Australia in this report. We are all facing the same challenges.

In addition, Lidewijde Ongering, the new Secretary General of the Ministry of Economic Affairs and Climate Policy shares some of her views with us.

Like last year, I am writing this preface from my not-so-temporary home office. COVID-19 has changed our lives. I expect that next year, we will be able to organise a bigger event for the launch of our annual report.

Finally, I would like to say a big thank you to all the people who put in a large amount of effort to prepare this report. I hope you will enjoy reading it.

Stay safe, stay healthy!

*Jacqueline Vaessen*  
*General Manager Nexstep*

## NEXSTEP FACTSHEET DECOMMISSIONING IN THE NETHERLANDS

status December 31, 2020

Nexstep, the National Platform for Re-use and Decommissioning, was established in October 2017 by EBN (owned by the Dutch state) and NOGEPA (representing the Dutch oil and gas E&P industry) to facilitate and stimulate the safe and efficient decommissioning of oil and gas infrastructure in the Netherlands while environmental interests are safeguarded. The aim is to reach a 30% cost reduction.

In addition, Nexstep stimulates securing crucial infrastructure for re-use or repurposing, in order to accelerate the energy transition.

**Nexstep members:** Dana Petroleum, NAM, Neptune Energy, ONE-Dyas, Petrogas, Spirit Energy, TAQA, Total E&P Nederland, Tulip Oil, Vermilion Energy, Wintershall Noordzee and EBN.

### Operational infrastructure offshore

Gas platforms	Oil platforms	Subsea installations	Wells	Pipelines (km)
114	11	18	475	3324

### Suspended infrastructure offshore

Gas platforms	Oil platforms	Subsea installations	Wells	Pipelines (km)
24	3	3	210	634

### Decommissioned infrastructure offshore

Gas platforms	Oil platforms	Subsea installations	Wells	Pipelines (km)
26	6	10	697	532

### Operational infrastructure onshore

Well locations	Processing locations	Other locations	Wells	Pipelines (km)
239	34	95	693	1622

### Suspended infrastructure onshore

Well locations	Processing locations	Other locations	Wells	Pipelines (km)
81	1	22	345	507

### Decommissioned infrastructure onshore

Well locations	Processing locations	Other locations	Wells	Pipelines (km)
37	6	19	1404	-

### Decommissioned infrastructure offshore in 2020

Gas platforms	Oil platforms	Subsea installations	Wells	Pipelines (km)
3	-	-	1	25

### Decommissioned infrastructure onshore in 2020

Well locations	Processing locations	Other locations	Wells	Pipelines (km)
-	-	-	-	-

### Offshore infrastructure forecasted to be decommissioned 2021-2030

Gas platforms	Oil platforms	Subsea installations	Wells	Pipelines (km)
88	10	18	528	2158

### Onshore infrastructure forecasted to be decommissioned 2021-2030

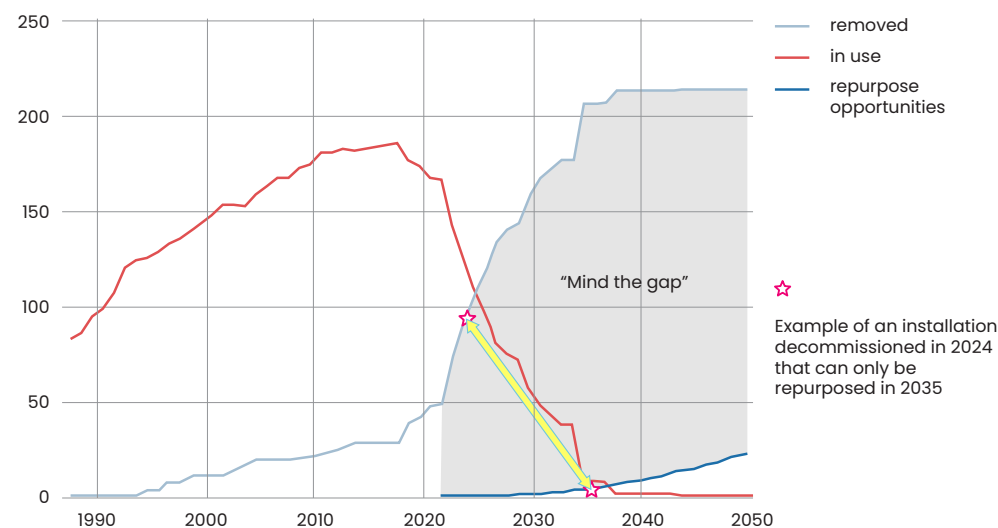
Well locations	Processing locations	Other locations	Wells	Pipelines (km)
135	10	63	472	605

## NEXSTEP FACTSHEET RE-USING / REPURPOSING OIL & GAS INFRASTRUCTURE

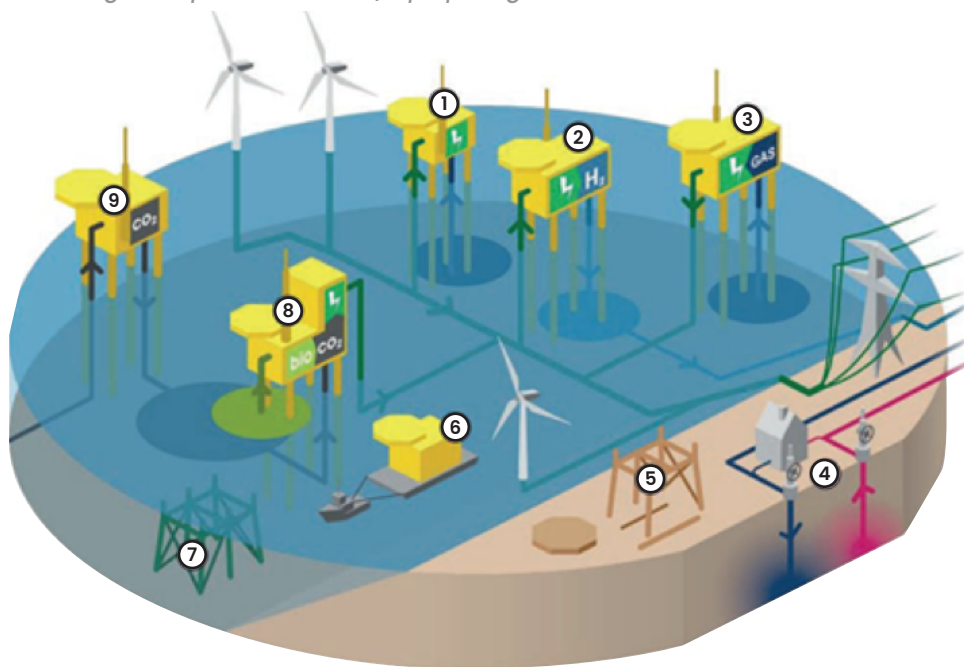
status December 31, 2020

The Netherlands is facing an ambitious challenge to meet the targets of reducing its CO<sub>2</sub> footprint and to transition towards a sustainable energy system. In some instances there will be opportunities to re-use or repurpose existing oil and gas infrastructure to accelerate the energy transition. In practice, the decommissioning of the infrastructure would be earlier than the demand for re-use or repurpose. Approximately half of the infrastructure offshore is scheduled to be decommissioned in the next decade. It is important now to determine which infrastructure can contribute to the energy transition and to ensure that this infrastructure is not decommissioned prematurely, preventing unnecessary future investments.

*The gap between decommissioning and repurposing of infrastructure:*



Investigated options for re-use/repurposing of infrastructure:



- |                                      |                           |
|--------------------------------------|---------------------------|
| 1 offshore electrification           | 6 relocation              |
| 2 production and storage of hydrogen | 7 rigs to reef            |
| 3 gas to wire                        | 8 biomass production      |
| 4 geothermal                         | 9 CO <sub>2</sub> storage |
| 5 recycling                          |                           |

Of the 34 platforms that have been removed, 15 were re-used for hydrocarbon production:

Platform	Installation year	Operator	Re-use year	Re-used for
E18-A	2009	Wintershall Noordzee B.V.	2019	D12-B
K10-C	1981	Wintershall Noordzee B.V.	1997	Q04-A
K10-V	1993	Wintershall Noordzee B.V.	2005	L05-C
K11-B	1995	Neptune Energy Netherlands B.V.	2005	G14-A
K12-A	1983	Neptune Energy Netherlands B.V.	2006	K12-K
K12-E	1986	Neptune Energy Netherlands B.V.	2005	G16a-A
K13-D	1978	Wintershall Noordzee B.V.	1987	L08-H
L10-G	1984	Neptune Energy Netherlands B.V.	1988	L10-L
L10-K	1984	Neptune Energy Netherlands B.V.	2000	L10-M
L11a-A	1990	Neptune Energy Netherlands B.V.	1999	K09ab-B
P02-NE	1996	Wintershall Noordzee B.V.	2001	Q04-B
P02-SE	1997	Wintershall Noordzee B.V.	2002	P06-D
P06-S	1997	Wintershall Noordzee B.V.	2013	Q01-D
P14-A	1993	Wintershall Noordzee B.V.	2008	E18a-A
Q01-Helder-B	1986	Petrogas E&P Netherlands B.V.	1989	Q01-Haven-A

In addition to re-using oil and gas platforms on other locations for the same purpose, infrastructure may be repurposed. It is estimated that some 10% of the infrastructure may be re-used/repurposed.

Current repurposing projects:

PosHYdon pilot	Production and transportation of green hydrogen on Neptune Energy's Q13a-A platform
Storage of CO <sub>2</sub>	Porthos, Athos and Aramis
GZI Next	NAM's repurposing of onshore gas treatment installation to new energy hub in Emmen

# 1 Decommissioning & re-use

Nexstep's fourth report presents what oil and gas infrastructure has been decommissioned between 2016 and 2020 and the forecasted decommissioning activities until 2030 in the Netherlands.

The year 2020 has shown low activity for exploration and development resulting from very low prices for oil and gas. Furthermore, the COVID-19 pandemic has put additional challenges to the industry to carry out its E&P operations, and restrictions on NOx depositions caused delays and a standstill in permitting. Meanwhile, prices have returned to more acceptable levels, and the economy is slowly recovering.

The change in investment allowance in the Netherlands from the conditional 25% to a generic 40% is expected to be retroactively effective from January 1, 2020. Through stimulation of activities which add production, the oil and gas infrastructure can be kept operational for a longer period, hence also extending the window for potential re-use or repurposing of the infrastructure.

To meet the ambitious goals of the Paris Agreement and the Dutch Climate Agreement, the Dutch government has identified CO<sub>2</sub> storage as an important intermediate instrument to meet these goals and several offshore CO<sub>2</sub> storage projects are currently being developed.

The most advanced project is Porthos with the permit application ongoing for storage of CO<sub>2</sub> in P18-A's depleted offshore gas field by partners Port of Rotterdam Authority, Gasunie and EBN. The P18-A satellite and wells have been timely secured for repurposing. For Porthos a 102 million euro CEF (Connecting Europe Facility) subsidy was granted by the European Commission. The four companies Shell, ExxonMobil, Air Liquide and Air Products, who will deliver CO<sub>2</sub> to Porthos also applied for the SDE++ subsidy scheme. Recently this was granted with a maximum up to 2 billion euros.

Repurposing oil and gas infrastructure for CO<sub>2</sub> storage and hydrogen production will further require electrification of these platforms, and it is expected that the new Energy Law will be modified to include legal provisions making the direct connection to offshore wind farms possible.

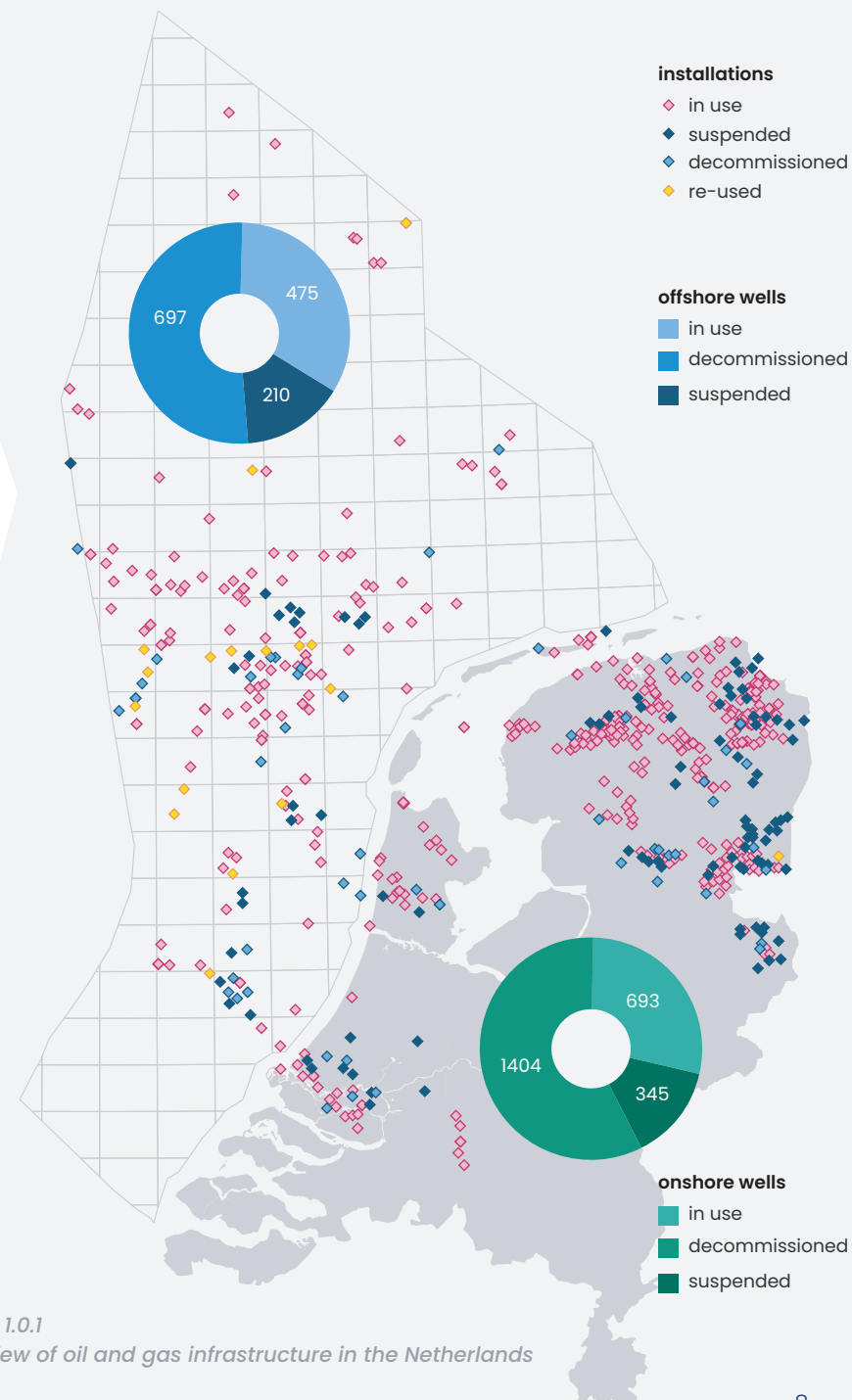


Figure 1.0.1  
Overview of oil and gas infrastructure in the Netherlands



## interview: Lidewijde Ongerling



Secretary General of the Ministry of Economic Affairs and Climate Policy

As of September 1, 2020, Lidewijde Ongerling has been the Secretary General of the Ministry of Economic Affairs and Climate Policy. In this interview we ask her how she looks at the past and the future of the oil and gas industry.

### **You are new to the Ministry, how did you become aware of Nexstep?**

"I learned about the work of Nexstep when we were discussing the changes to the Mining Act regarding the decommissioning and repurposing of oil and gas infrastructure. That's when I also realised that there were connections with my previous department, being the Ministry of Infrastructure and Water Management, with regards to pipelines offshore."

### **What surprised you most about Nexstep?**

"Although Nexstep is a relatively new organisation, the company is already well known for its approach and objectives with regards to re-use and decommissioning of oil and gas infrastructure. People are aware of Nexstep's aim to reduce the costs of decommissioning, which is important for the Dutch taxpayer, but also of its focus on repurposing oil and gas infrastructure to accelerate the energy transition. That is something Nexstep can be proud of. Since it was only a few years ago that there was hardly any thought about whether the oil and gas infrastructure could be repurposed."

### **In February 2021, the tender for the first joint campaign to decommission wells was issued to the market. What are your views on the joint campaign?**

"Although the Netherlands is a small country, we might be the first to jointly remove infrastructure with so many operators. Indeed, there are still many hurdles to overcome, but it is a breakthrough that the industry has taken this step. Hats off to all the partners that make this possible. We continue to follow these developments with great interest. After all, the Ministry Economic Affairs and Climate Policy also stands for the proper functioning of the market and the associated procurement rules."

### **Nexstep asks attention for "Mind the gap", where infrastructure is planned to be removed before there is a possibility for re-use. What is your view on that?**

"We see the importance of repurposing existing infrastructure. This can accelerate the energy transition and reduce additional investments. The amended Mining Act makes it possible to repurpose infrastructure to accelerate the energy transition. It is important that we get an overview of which infrastructure can be repurposed as soon as possible. The first examples are already emerging. The Porthos project for CO<sub>2</sub> storage in an empty gas field is progressing steadily, and the first green hydrogen production pilot will also start this year."

## “ The first to jointly remove infrastructure with so many operators ”

“These are important steps towards a CO<sub>2</sub>-neutral energy system, and I look forward to the results with great enthusiasm. And what we cannot re-use or repurpose must, of course, be decommissioned safely and efficiently.”

### **How do you see the future of the gas industry?**

“Natural gas production will remain important for the Netherlands in the coming decades, in order to meet the Dutch energy demand. Dutch natural gas provides security of supply, jobs, economic value and it produces much less CO<sub>2</sub> emissions than imported gas.

This means that we must ensure that the sector remains attractive to young people.

We must maintain the knowledge and skills of the subsurface in our country. Not only for gas extraction, but also for the energy transition. This knowledge and expertise are essential for CCS, geothermal energy and offshore hydrogen production and storage.”

### **What advice would you like to give to Nexstep?**

“As stated earlier, there is a need to gain insight into how existing infrastructure can contribute to the energy transition. Nexstep could play an important role in this. I look forward to hearing more about Nexstep’s plans and seeing Nexstep continue to share this subject with a wider audience.”

## 2 Expected decommissioning in the Netherlands 2021-2030

The E&P sector was hit hard in 2020 with rock bottom oil and gas prices in combination with the COVID-19 pandemic. An average gas price for 2020 of some 11 euro per MWh, with an absolute low of some 5 euro per MWh in June, caused some fields to be temporarily shut-in during the months that the gas price fell below the level of the operating cost.

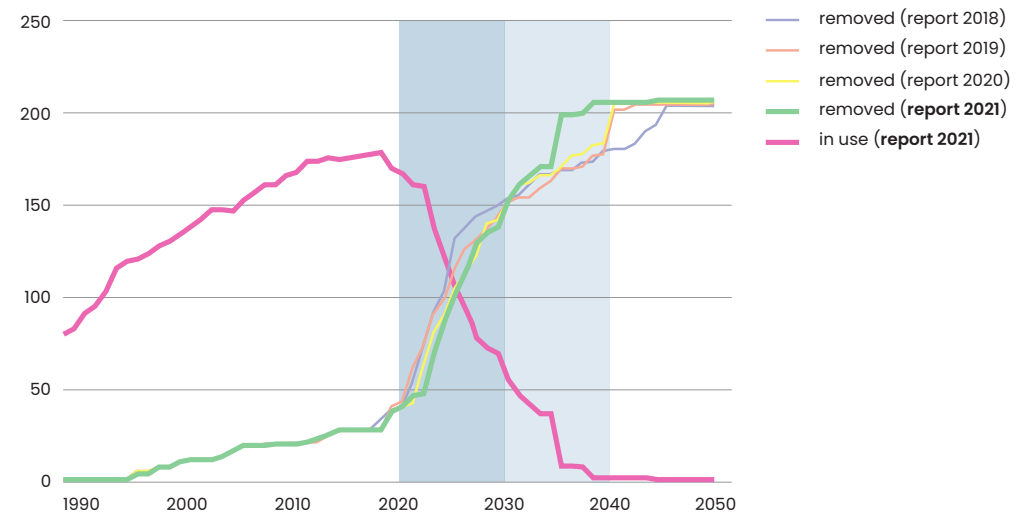
Activities for exploration and development were almost put on hold, and due to the strong decline in revenues operators reacted with reorganisations and further optimisation of their expenditures for operations.



Last year, the offshore decommissioning activity was forecasted to be very low for 2021. The expected higher activity level forecasted in last year's report for 2022 however, is now being postponed to 2023. Overall, when the forecasted decommissioning schedules of the 2018, 2019, 2020 and 2021 reports are compared, we see that the forecasted decommissioning has been delayed each year. Schedules are set up well in advance, which means that the window of operations can shift. Whether the timeframe can be met depends on several factors, and those factors could be different per offshore installation.

For onshore, the activity level in 2020 was marked with the start of a large campaign for well decommissioning associated with the end of production of the Groningen field by 2022.

Figure 2.0.1. Number of offshore installations





# Decommissioning explained: from end of production to decommissioning

Operators are typically being associated with exploration and production activities for oil and gas. However, decommissioning of the assets following the production phase is also part of the total life cycle and as such of the operators' core business, and even more so in mature areas like the North Sea. With a transition to renewable energy sources, we expect to see a turning point somewhere in the coming decades where the decommissioning activities will overshadow the exploration and production activities. This does not mean an end to exploration and production activities. Because of the favourable CO<sub>2</sub> footprint, the economic value and the importance of maintaining the knowledge and skills of the subsurface in our country, the political and other North Sea stakeholders recognise that production from Dutch assets is to be preferred as long as hydrocarbon fuels remain a necessary part of the energy mix.

To extend the economic lifetime the industry will focus on reduction of the operational expenses through collaboration or selection of another operating model. However, at some point in the life cycle the production of oil and gas will no longer be economic due to the decline in volumes.

Cessation of Production (CoP) is called when production has been stopped permanently and notified to the Ministry of Economic Affairs & Climate Policy. The operator will then need to present a conceptual decommissioning plan for the assets

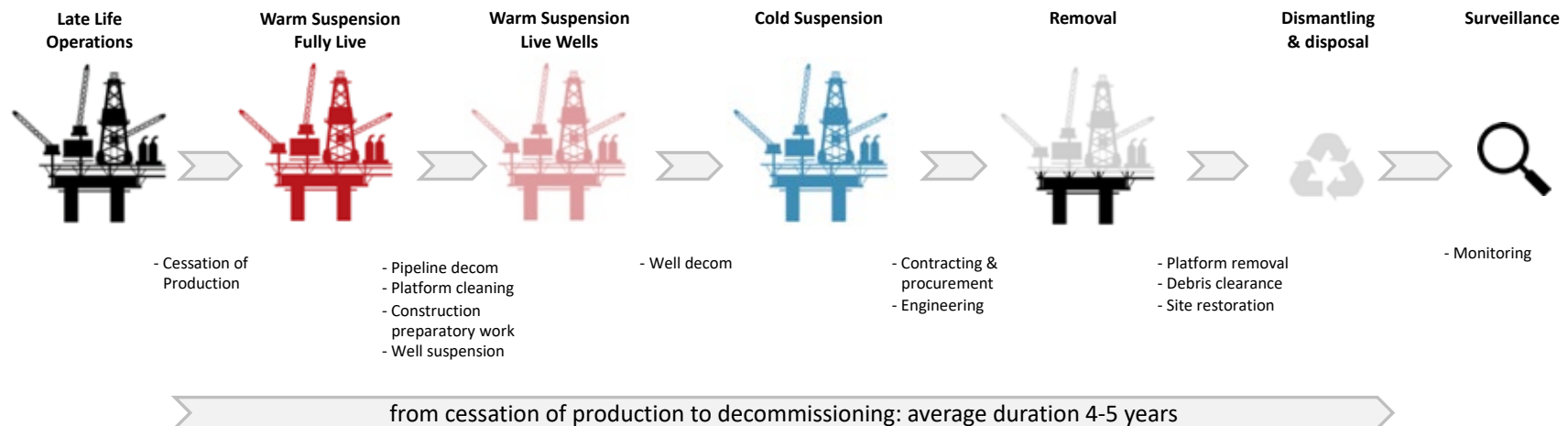
within one year after CoP. The development of an asset following successful exploration typically takes several years with development studies, drilling production wells and design and construction of the facilities. Similarly, decommissioning of the assets requires careful development of a work program to shut-in and secure the wells, take the pipelines out of service and (finally and most visibly) remove the production facilities for onshore dismantling and recycling.

Between the date of CoP and final removal of the production facilities the installation will typically be suspended in different stages:

- o Warm Suspension; in this stage the facilities are still connected to the pipeline and wells.
- o Cold Suspension; the facilities are disconnected from the pipeline and wells and the installation is cleaned and often referred to as 'hydrocarbon free'. For the power generation, typically a battery pack is used that is fed by solar panels, small wind turbines or a combination of the two.
- o Light House Mode; the platform is typically left unmanned and only minimal services are operational, such as the lighting for the platform name, the navigation aids system and the fog horn. For maintenance, platform visits are typically limited to once per year by boat with marine access instead of by helicopter. Of course, all safety systems as well as the structure integrity are kept operational, maintained and inspected.

During late-life operation and following CoP preparations are made for the final decommissioning. The decommissioning of the pipelines and wells are carefully reviewed and executed and ultimately followed by the removal of the platform. Typically, a crane vessel is used for the removal of the topside in a single lift or in several modules and finally the foundation piles of the supporting jacket are cut, and the jacket is lifted from the seabed. The location is then cleaned of debris, and the topside and jacket are transported to an onshore yard for final cleaning, dismantling and recycling/disposal. The activities between CoP and completion of the dismantling/disposal will typically take several years, depending, among others, on the complexity of the work scope, opportunities for joint execution and market conditions.

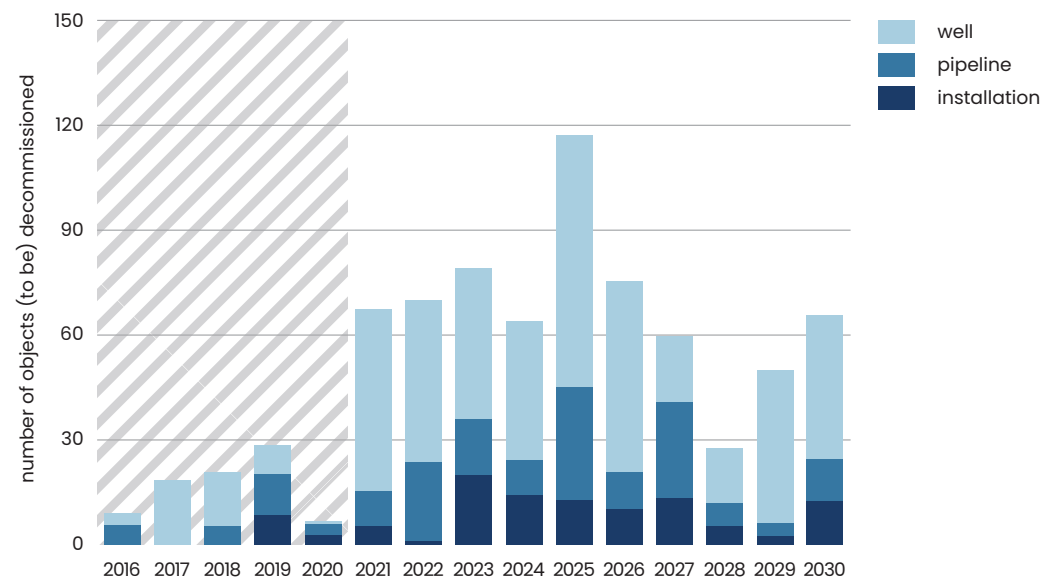
For the decommissioning of offshore pipelines, a Comparative Assessment procedure is to be followed to assess the preferred decommissioning option. In-situ pipeline decommissioning involves cleaning by pigging and flushing with sea water and chemicals which are collected in separation tanks, filtered and disposed of. When decommissioned in-situ the pipeline is disconnected, and the ends are covered with rocks/mattresses to prevent hinder to other users of the sea. The pipeline will need to be monitored on regular intervals to confirm it has been left securely.



## 2.1 Total overview offshore & onshore

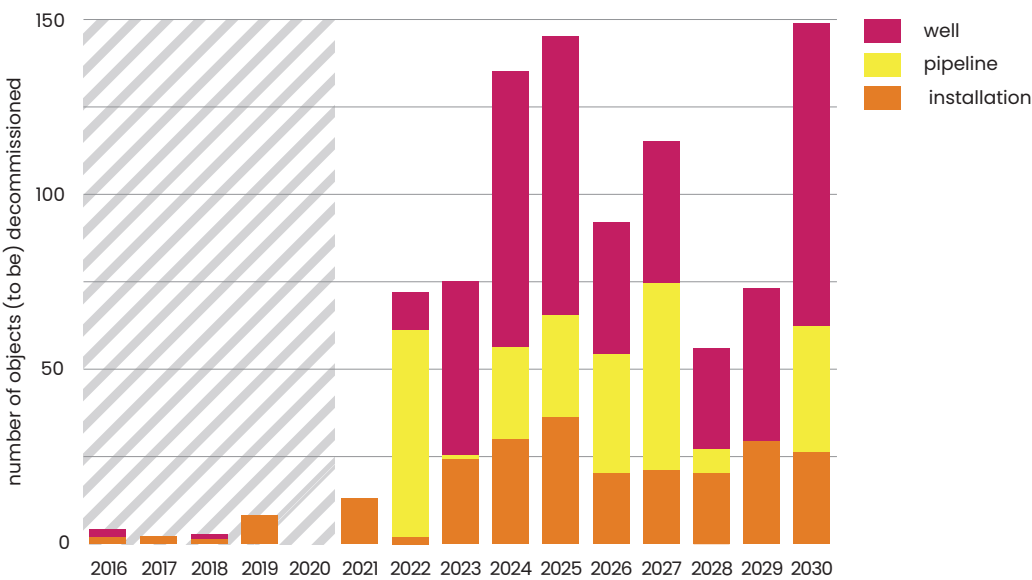
In general, we notice that decommissioning activities offshore and onshore have been deferred. Specifics are described in more detail in the individual sections further in the report. Understandably, the extraordinary situation of very low prices and the COVID-19 pandemic will be a major contributor to this delay in decommissioning activity.

Figure 2.1.1. Realised and forecasted decommissioning – offshore infrastructure



As a result of the slower pace in well decommissioning also the decommissioning of the associated processing installations and pipelines has been deferred.

Figure 2.1.2. Realised and forecasted decommissioning – onshore infrastructure





# Essay Young Energy Officers



**Dejan Zamurovic**  
Data Engineer,  
Wintershall Noordzee



**Tom Covens**  
Field Production Engineer,  
Vermilion Energy



**Twan Goense**  
Production Engineer,  
ONE-Dyas

The COVID-19-led slowdown of the economy and the resulting oil and gas price crash, led to an increase in layoffs in the oil and gas industry. Yet with an aging workforce, remaining attractive for new talent is a challenge that the industry is facing. How attractive is our industry for young people? We asked the Young Energy Officers for their opinion.



# Essay Young Energy Officers

With the rising demand for affordable sustainable energy, the energy transition has been accelerated in the Netherlands in recent years. As young professionals in the energy sector, we fully support this development and eagerly contribute to the transition with each of the oil and gas operators employing us. Unfortunately, where we regard the oil and gas sector as part of the solution through various emission-reduction programs, this sector has a stigma of being conservative or even counteractive within the energy transition. This negative perception often results in a lack of (public, political and financial) support for the operations no matter the level of sustainability and consequently, in scaring-off new talent. The oil and gas sector must ask itself: can the greying workforce deliver the energy transition to completion by 2050?

This is of course a rhetorical question, but one that has seemingly still not sunk in. The lack of new talent is a problem that is insufficiently addressed; who will propose new ways of thinking to drive the energy transition, to develop new technologies such as carbon-capture-and-storage (CCS) and hydrogen production, to maintain the knowledge and infrastructure of the sector that are applicable in new energy synergies, and to neatly phase out hydrocarbon production? As Young Energy Officers, we want to share our views on motivating new talent to contribute to the energy transition within the oil and gas sector.

## **Career development in an innovative industry**

The oil and gas industry is often perceived by outsiders as rough, blunt, conservative and finite. This could not be further from the truth. Our industry exudes state-of-the-art technology, so let's show this! Organise company visits, showcase your company or technology and its societal service at schools/universities, share your technological developments on social media; the possibilities to present your advancements to the world are endless. If more aspiring engineers would be aware of the cutting-edge technology that the sector applies and develops, they would be much more interested! Apart from that, our industry is far from being finite. New technologies let us discover new reservoirs. There are still a lot of platforms and wells ready to be decommissioned or re-used. And finally, the infrastructure and the knowledge we as an industry have about the subsurface could open new possibilities in areas like geothermal energy, CCS and hydrogen production, transport and storage.

With such depth of disciplines, and with so many possible synergies between energy domains, the oil and gas sector provides ample opportunities for innovative skill development, which is one of the primary drivers for ambitious young professionals. Showcasing this element of the industry will improve attraction but presenting development programs tailored to this end will be even more effective for both the new talent and the company.

**“ There is nothing more fun or valuable than working on something that improves your company, your country or even the world – helping create a new future ”**

### **Provide purpose**

There is nothing more fun or valuable than working on something that improves your company, your country or even the world – helping create a new future. To work within the status quo is perhaps not very attractive. Give young professionals the opportunity to actively participate in big new projects like increasing the process efficiency, lowering carbon emissions, or developing a project for renewable energy. This way, they will start the day in good spirits, because they know what they do is good for the company and society!

### **Lower the bar for relocations**

Imagine that, by following the abovementioned points, there is a large interest for your company. What follows is a more practical problem. Some people may have encountered this: you have found an interesting opportunity, but it is on the other side of the country/continent, away from friends and family. This could frighten someone, especially when you have just graduated from high school/university. Leaving your friends behind with whom you have spent the last four to six years, is difficult. In some cases, too difficult, resulting in a loss of interest in that opportunity. This is a recurring issue for companies that are far away from large cities, like oil and gas companies with offices near production areas. As

a company you can lower the bar for relocation by hiring a group of young graduates temporarily instead of one individual at a time. On the one hand, the company can observe the individuals throughout that period and eventually decide which graduate they wish to continue with. On the other hand, the group of fresh graduates can help one another with practical challenges and as a group, blending into the new community is much easier than when you are alone.

### **A new future**

Attracting young talent has become more challenging over the years. Where the industry used to have applicants by the dozen, we now see a decrease of interest from young people. We can turn the tide by evolving as an industry to attract young and innovative people and entice them professionally, personally and socially. Young graduates are necessary to ensure the existence of our industry and the energy transition. Let them feel welcome and necessary!

[www.youngenergyofficers.nl](http://www.youngenergyofficers.nl)

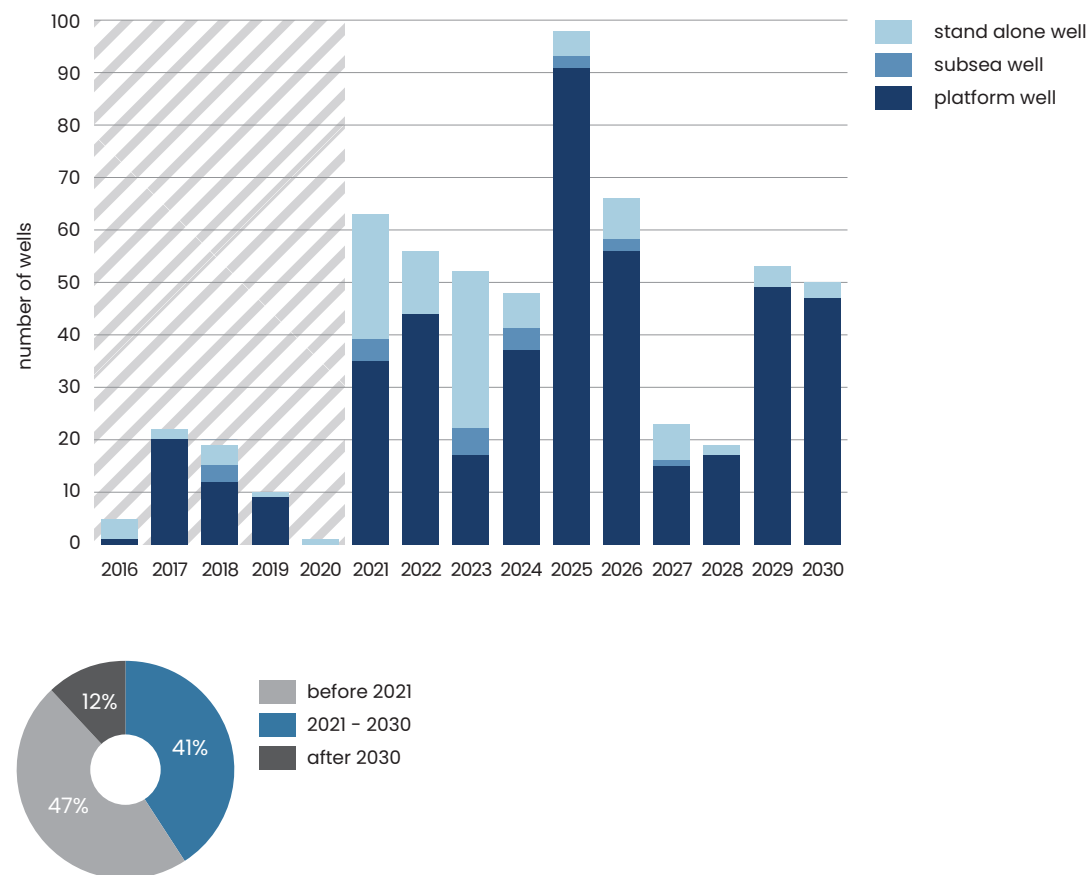
## 2.2 Offshore wells

In 2020, only a single offshore well was reported decommissioned while 22 wells were forecasted. The ruling of the Council of State on the PAS regime (Programma Aanpak Stikstof) of May 29, 2019, resulted in a standstill in permitting. No additional NOx deposition was allowed. The peak of activity of 96 wells forecasted for 2022 in last year's report has now been spread out over the next five years. A more stable activity level is believed to be beneficial for both the operators as well as for the supply chain.

Over the next decade some 50 wells are expected to be decommissioned each year. With an estimated three-week-duration per well this would equal continuous operation for three units. Some 30 wells each year are expected to require a drilling rig which would equal continuous operation for two drilling rigs.

For the coming three years, a substantial number of stand-alone wells are forecasted to be decommissioned. Nexstep has recently issued an invitation to tender to decommission a subset of these wells in a joint campaign with six Dutch operators. Execution is foreseen to be rigless (using a vessel) and will be preceded by a survey to verify the actual status of the wells. Subject wells are so-called mudline suspension wells which were drilled between 1968 and 2009.

Figure 2.2.1. Realised and forecasted decommissioning – offshore wells by well type



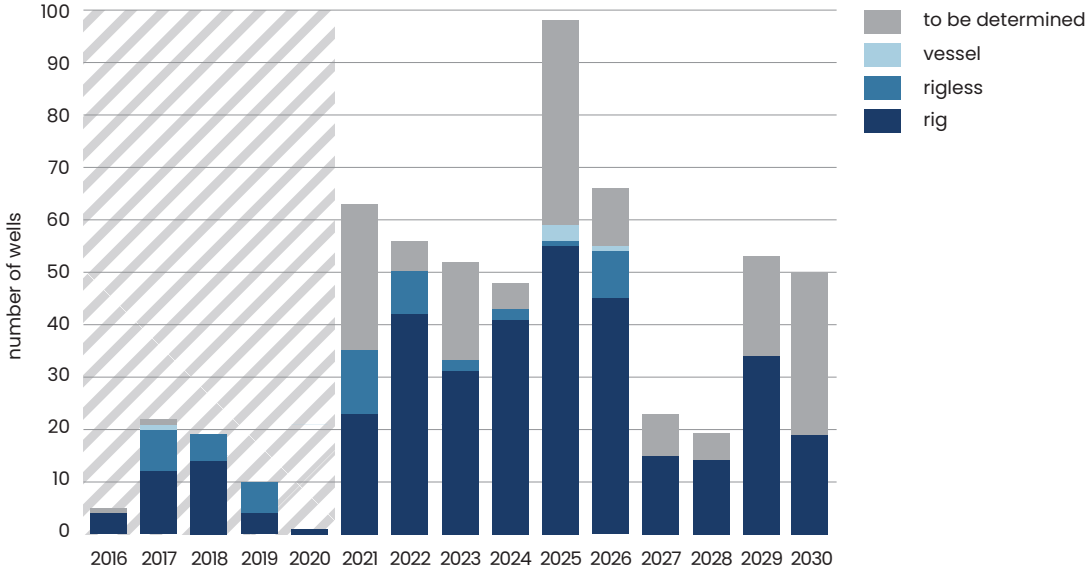


For the stand-alone wells, the actual decommissioning method has to be firmed up as no final decision has yet been taken on whether these wells will be decommissioned using a vessel-based method. It is expected that in summer a decision will be made to size and award the joint well campaign.

Also, for 2025 the decommissioning method of many wells is yet uncertain. Here the wells concerned are located on larger (main) platforms of which some wells can potentially be decommissioned with a rigless technology, e.g., by using a hydraulic unit.

Overall, the majority of wells is still expected to be decommissioned using a traditional jack-up rig. In December 2020, Nexstep jointly carried out two trials onshore using so-called Through Tubing Cementation, and this year more trials (onshore) have been scheduled and in the future also for offshore. With such rigless technology the operations could be carried out more safely, efficiently, faster, with less waste handling and at lower cost.

Figure 2.2.2. Realised and forecasted decommissioning – offshore wells by decommissioning method



## Update Road to 30% Roadmap to Rigless Well Decommissioning



**Wouter Wenting**  
Team Lead Offshore Well Design  
NAM

**In the Re-use and Decommissioning report of 2020, the team leads explained the different roadmaps of the Road to 30%. In this year's edition, we would first like to update you on the progress made for the Roadmap to Rigless Well Decommissioning and the Roadmap to Heavy Lift Standard.**

"Nexstep started investigating in 2019 how to get the Through Tubing Cementation (TTC) method implemented in the Netherlands. This technique is applied in many wells in the UK and elsewhere but is not a common technique in the Netherlands. It involves using the production tubing to easily put cement columns in the well. The major part of the tubing, like the well casings, remains in place. This technique is more efficient, safer and reduces waste and emissions. Under suitable conditions, it can be performed without a drilling rig. It will be an important contributor to the Road to 30%, while fulfilling Nexstep's HSE goals.

"In 2020, two field trials of TTC have been jointly funded by Nexstep members and performed on land by NAM. The results have been documented and shared with members and State Supervision of Mines (SSM). Well candidates have been identified for additional trials in 2021. A NOGEPA TTC Standard was prepared by the Nexstep's TTC Task Force.

"This document provides a control framework for the successful application of TTC with recommended practices. SSM has reviewed it. After incorporating their comments, it is planned to update NOGEPA's Standard 45 on Well Decommissioning. This update will also include aspects that are not related to TTC, such as additional clarifications and a paragraph on CO<sub>2</sub> storage requirements.

"The Joint Campaign for the Mud Line Suspension wells has made significant progress. Following the signing of the agreements by the participating operators, an invitation to tender was issued to the market in February 2021 and bids were received in March 2021. Meanwhile, technical proposals are being submitted to SSM for their initial review, and the bid evaluation is ongoing. It is expected to award the execution contract this summer. We expect the total campaign to last 2-3 years."

## Update Road to 30% Roadmap to Heavy Lift standard



**Folkert Kaman**  
Engineering Superintendent  
Petrogas E&P

"In the past couple of years, Nexstep organised several workshops with the service industry. From these discussions, it was concluded that the following priorities need to be addressed:

- Validated Risk Allocation Matrix • Standardised contract template • Technical dossier index
- A new approach to the pre-tender information process

"A pilot version of an online portal for heavy-lift contractors has been developed to provide insight into the forecasted timing of removal of the Dutch offshore installations for the coming five years. The portal is now in place and will be made available during the second half of this year.

"A study has also been initiated for the potential of powering platforms in so-called lighthouse mode using marine energy. Additionally, the committee has identified a number of decommissioning campaign opportunities for offshore installations. The committee will initiate a survey among the operators of these facilities to gauge interest and identify possible barriers that stand in the way of pursuing these campaign opportunities."



Joint Well Campaign coordinator  
Nexstep

It is commonly acknowledged that collaboration can lead to significant cost reduction in decommissioning. Therefore, the Nexstep Wells Committee has decided to develop a joint execution campaign to decommission Mud Line Suspension (MLS) wells in the Dutch sector of the North Sea. Dick Lont, Nexstep's Joint Well Campaign Coordinator, shares with us his views on the joint campaign.

**Why were MLS wells chosen for this first joint campaign?**

"MLS wells are stand-alone exploration or appraisal wells that have been suspended in anticipation of possible re-use as production wells. However, these wells have never been put into production and have not been connected to a pipeline or production platform. These wells are ideally suited for a first joint campaign because they are relatively simpler or easier to remove than wells that are connected to a platform. They would be easier to access with an offshore rig or service vessel and share (to a large degree) the same type of design and technology. The wells are typically partially, but not permanently decommissioned and require some work to decommission them permanently."

**How many wells are included in the campaign?**

"We made a division between likely wells and upside wells. The approximately 25 likely wells have all been technically reviewed and will form the basis of the campaign. The upside wells need more technical review work done by the operators before they can be added to the campaign. We knew that first having a technical evaluation of the wells would take a lot of time. Waiting with issuing the ITT (Invitation to Tender) until all the wells were technically ready would have led to a huge delay. Therefore, we ran the process of evaluating the bids and reviewing the upside wells in parallel. There are approximately 30 upside wells of which a large part may be added to the campaign, pending further technical work and reviews."

**Where are we in the process at the moment?**

"After a careful prequalification of bidders, a selected bidder list was compiled. After the Heads of Agreement was signed by all the operators at the end of January 2021, the ITT was issued to the selected bidders. We have evaluated the technical bids and have now started with the commercial evaluation of the bids."



**“ We definitely see benefits in collaboration, for example the excellent collaboration by the participating operators in the technical and non-technical teams ”**

**When do you expect the campaign to start?**

“We are aiming for bid award recommendation early July. Then, we need to allocate time for the operators to organise an internal review of the procedures. We expect that the contractor can start with preparations this summer.”

**When will the first wells be removed?**

“The contractor first has to start with mobilisation and do the survey work. We expect that by the time this part is finished it will be late 2021 or early 2022. To avoid inefficient campaigns due to bad weather the wells will likely be decommissioned during summer campaigns. We expect the first wells to be decommissioned in spring 2022.”

**What do you think the savings will be?**

“We know from research by, for example, the Boston Consulting Group that joint campaigns yield a cost advantage of at least 30%. The participating operators carry out their own analysis of expected savings. However, we definitely see benefits in collaboration, for example the excellent collaboration by the participating operators in the technical and non-technical teams.

“There is great sharing of learnings and use of peer reviews to improve the quality of the work. Further, the ecological scan for all the wells was completed with a 90% cost reduction by doing it together as opposed to all operators by themselves. It is a small amount in the total campaign cost, but nevertheless an encouraging result. I am confident that we will be able to reduce decommissioning costs significantly with this joint campaign approach.”

## 2.3 Offshore installations

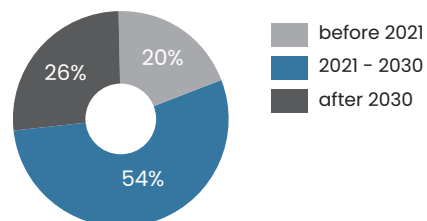
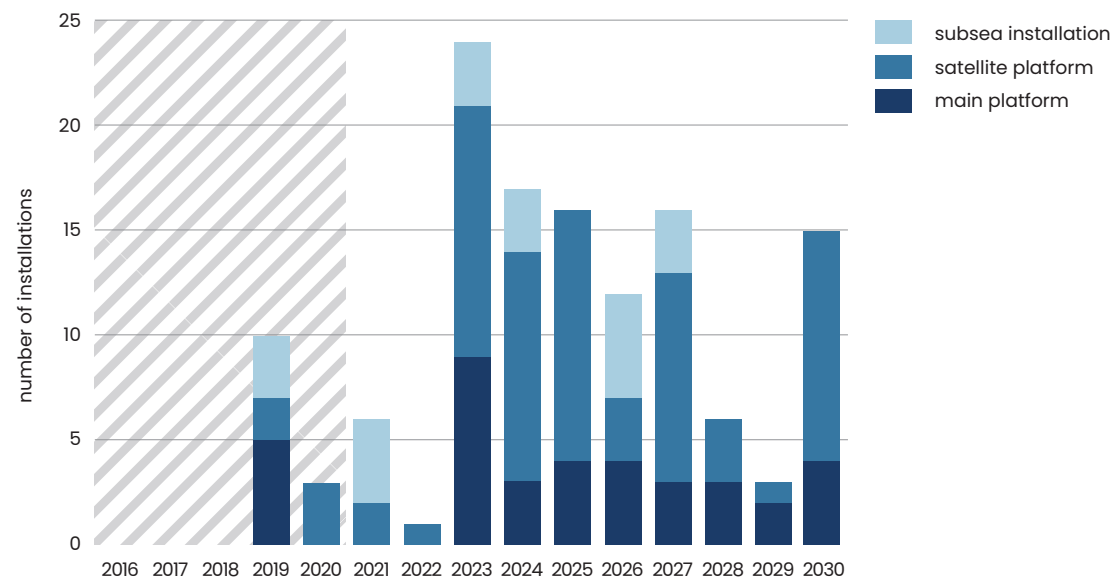
The platforms L10-C, -D and -G were removed in 2020 as the heavy-lift vessel was delayed due to another project. The original plan had been to remove them in 2019. It is foreseen that at the earliest in 2021 two other platforms will be removed, to make room for the new offshore wind farm Hollandse Kust Noord.



The latest forecast of the number of platform removals shows that the 15 platforms quoted for 2022 in last year's report are being pushed forward to 2023 and beyond.

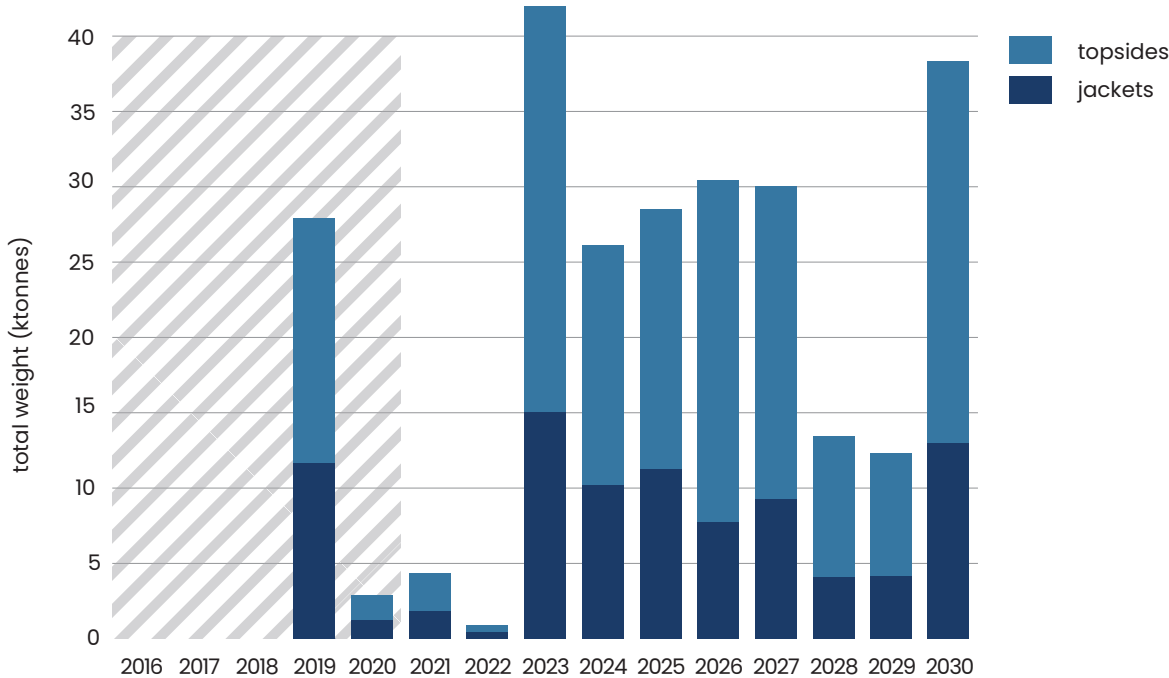
Over the next decade 98 platforms, or some 60% of the current platforms in the Dutch sector, are expected to be removed when no re-use or repurposing has been identified. For the Porthos CO<sub>2</sub> storage project the P18-A satellite and wells have been timely secured for repurposing, but for the other infrastructure the industry needs to carefully 'mind the gap' between the times of planned decommissioning and repurposing.

Figure 2.3.1. Realised and forecasted decommissioning – offshore installations by type



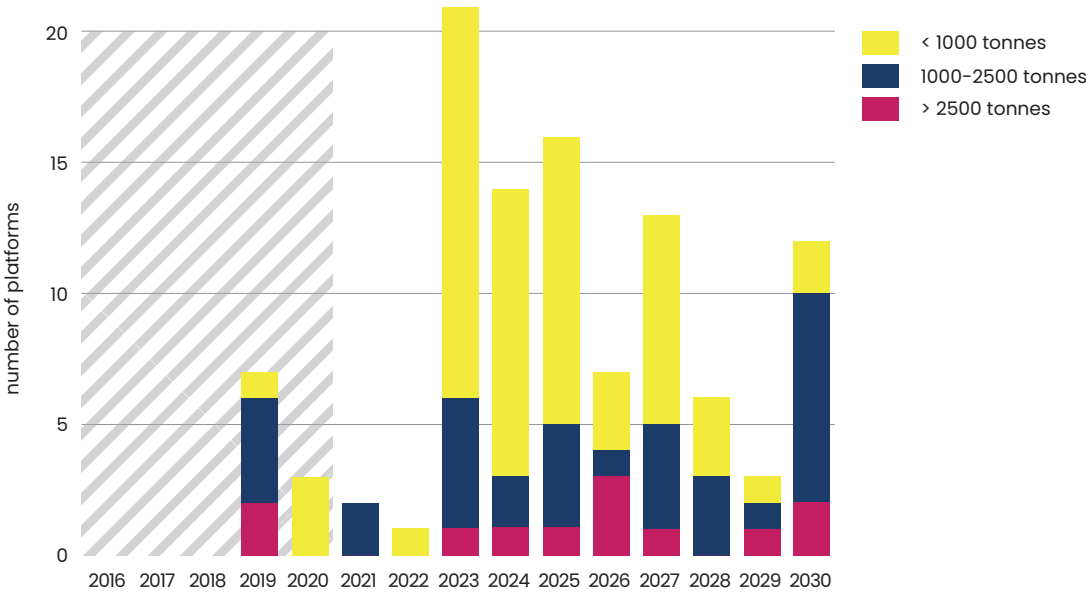
Similar to the deferment of removal of the platforms, also the forecasted tonnage of steel to be recycled onshore shifts to the right. A peak in 2023, where around 20 platforms are expected to be removed and recycled onshore, may pose a strain on the available decommissioning yards' capacity. Although recycling is not necessarily restricted to the Dutch yards, any cross-border transport of installations may require additional preparation, especially when hazardous materials are present.

Figure 2.3.2. Realised and forecasted decommissioning – offshore installations weights



Some 60% of the remaining platforms have topside modules of maximum 1,000 tonnes. Only a few platforms have modules which are relatively heavy, but still very modest for the North Sea, with a maximum of some 7,000 tonnes. Therefore, it is expected that the available crane vessel fleet for decommissioning of the Dutch platforms will be quite large, but ambitious plans do exist to also expand the number of wind farms offshore targeting the same fleet of crane vessels.

Figure 2.3.3. Realised and forecasted decommissioning – offshore installations by heaviest module weight



## interview

## Chris de Ruyter van Steveninck



CEO  
ONE-Dyas

@Marina Kemp – ONE-Dyas

**While this report is about re-use and decommissioning, gas production on the North Sea continues to play an important role over the coming decades. There will also be new developments. We ask Chris de Ruyter van Steveninck to tell us more about the N05-A gas development.**

**The N05-A platform is going to be future-proof. Could you explain what this means?**

“The Netherlands will still need natural gas in the coming decades. Dutch natural gas is preferable to imported natural gas. In addition to security of supply and economic benefits for the Netherlands, our own natural gas also has a much lower CO<sub>2</sub> footprint. With this future-proof N05-A platform, we contribute to a further reduction of the CO<sub>2</sub> footprint. The N05-A platform will be the first Dutch offshore gas platform to run entirely on wind energy from the nearby Riffgat wind farm. Electrification using wind energy means a significant reduction in emissions. The emissions from the production platform will be nil, and for the entire project we are talking about a reduction of 85%. With this innovation, we are making a serious contribution to the energy transition, and we are committed to collaborate with sustainable forms of energy.”

**Will the platform be made suitable for future re-use or repurpose?**

“The primary focus is on efficiency over the lifetime of the platform, with minimal emissions and maximum return thanks to efficient production and drilling activities, that are electrified with wind energy. The structural design takes into account possible alternative developments such as CCS and hydrogen. In this way, we can also make a valuable contribution to the energy transition at a later stage. ONE-Dyas is aware of the effects the project can have on the environment. We want to be a reliable partner and a good neighbour and ensure that our activities match the needs of the local community as closely as possible. All this in the safest and most responsible way. We consider future inlet connections and minimisation of the environmental impact. For example, we will apply the “single lifting” technique. In other words: set up and remove the entire platform in one go, so that there are fewer shipping activities on location.”



“ **The N05-A platform will be the first Dutch offshore gas platform to run entirely on wind energy** ”

**In the coming decades we will still be decommissioning infrastructure, therefore, we need young people joining the industry to make this possible. What does ONE-Dyas do to attract young people to the industry?**

“We don’t think so much in terms of decommissioning but rather in extending the lifetime of the infrastructure. A good example of this is our P11-E production satellite, which runs on solar and wind energy. We expect to re-use this platform. Making the N05-A platform unmanned to the latest state of the art is also characteristic of our way of working. This innovative way of working and the high degree of autonomy, responsibility and entrepreneurship appeals to young people, who therefore enjoy working for us. We believe that we can make a useful and necessary contribution to the energy transition and actively promote this.”

**ONE-Dyas participates in the joint campaign of Nexstep. What was the main reason to join the campaign and how do you view Nexstep’s role?**

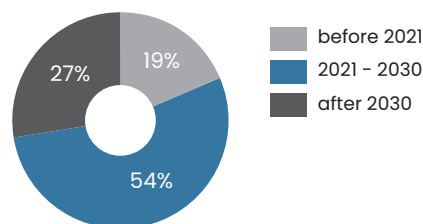
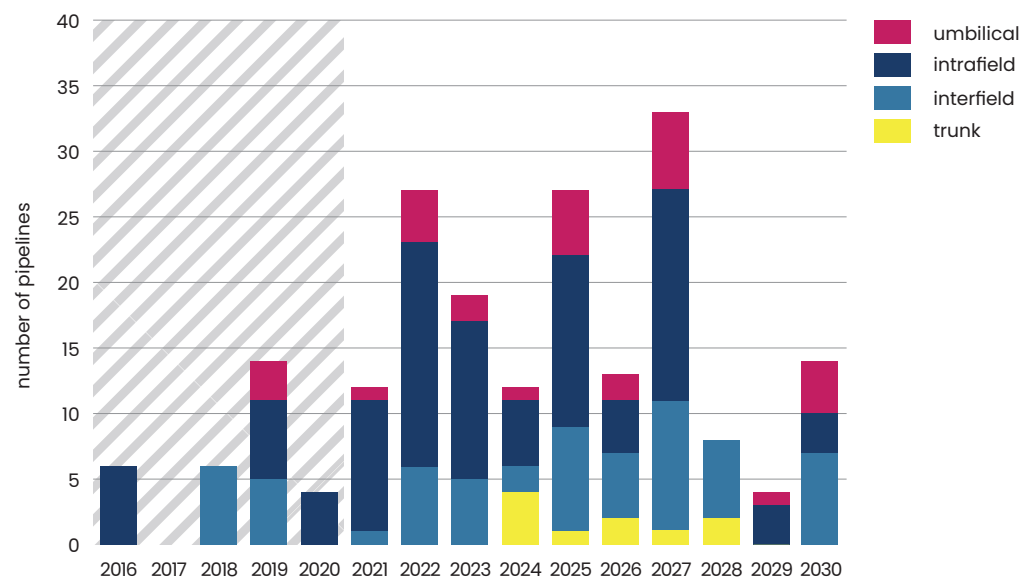
“As an operator, we are relatively small. Collaboration with stakeholders and therefore also with fellow operators is essential. Nexstep plays an active role in this, by further streamlining and strengthening the decommissioning activities in our sector.”

## 2.4 Offshore pipelines

The delay in the decommissioning of the platforms is mirrored in the decommissioning of the associated pipelines. Decommissioning of some spur lines to the major gas trunklines to shore is forecasted between 2024 and 2028. Trunklines in the Netherlands all tend to land in busy industrial areas with high CO<sub>2</sub> emissions and would be ideal to be repurposed in reversed direction to transport CO<sub>2</sub> to depleted reservoirs offshore for permanent underground storage.

When offshore pipelines are no longer used, operators need to follow a Comparative Assessment to determine the favourable method of decommissioning. The outcome may be that decommissioning can be done (partly) in-situ with thorough flushing/cleaning and securing so it will not pose any danger to other users of the sea. Following any in-situ decommissioning pipelines still need to be monitored on a regular basis. In other instances, a pipeline may need to be (partly) removed, e.g., when located in a sand extraction area.

Figure 2.4.1. Realised and forecasted decommissioning – offshore pipelines by pipeline type



## Update Road to 30% Roadmap to Value Protection Pipelines



**Hans Janssen**  
Managing Director  
NOGAT B.V.

**In the Re-use and Decommissioning report of 2020, the team leads explained the different roadmaps of the Road to 30%. We hereby provide an update on the progress made for the Roadmap to Value Protection Pipelines as well as an update on the shared learnings.**

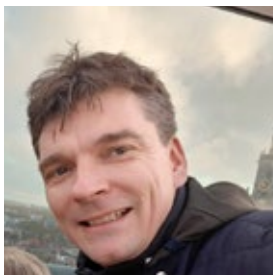
“The current Mining Act states that an offshore pipeline can be left in place, unless the Minister of Economic Affairs and Climate Policy (MEAC) determines that it must be removed.

“In any case, it is crucial for the oil and gas sector to develop a methodology to determine the decommissioning requirements for pipelines, and thereby provide MEAC with a structured solution for the new requirements under article 103 of the revision of the Mining Decree. This is also in line with the internal need for operators to obtain more clarity about the probability that their pipelines would have to be removed and whether additional provisions are required.

“The Comparative Assessment (CA) method developed by Nexstep is a structural approach to determine for each pipeline (or part thereof) whether it should be removed or can be left in place based on several criteria. The framework provides a roadmap (method) and script for the operator to answer the question if the to-be-decommissioned pipeline can be left in place or needs to be removed based on a societal cost/benefit analysis. With this framework, the sector can deal with the decommissioning of pipelines, and every operator can use this information for internal decision making for pipeline decommissioning policy in an unambiguous, traceable, comparable and transparent manner. The CA tool has been tested by operators to check its usability on assessing pipelines. The CA method was finalised in October last year and an extensive manual on how to use the method has been provided in 2020.

“Currently, discussions are being held with relevant ministries to determine whether the CA fulfils the requirements envisaged by article 103 of the Mining Decree and the preferred instrument for implementation.”

## Update shared learnings



**Radboud Bisschop**  
Front End Development Manager  
NAM

“Learning from other projects is of great value to operator staff. Nexstep captures such learnings in a concise way and makes them available to its members using the ‘Shared Learnings’ database. Most learnings originate from workshops that Nexstep organises where experiences and insights are shared. In 2020, four of such shared learning sessions were held, and at the time of writing three sessions have taken place in 2021.

“Currently, there are more than 300 valuable learnings in the database. Nexstep continues its effort to increase the number of learnings in the database and promotes the use of the database in upcoming projects.

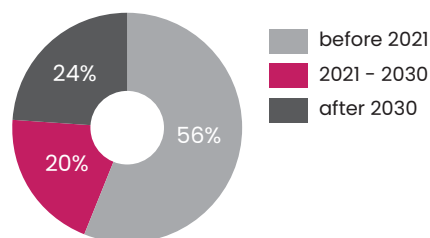
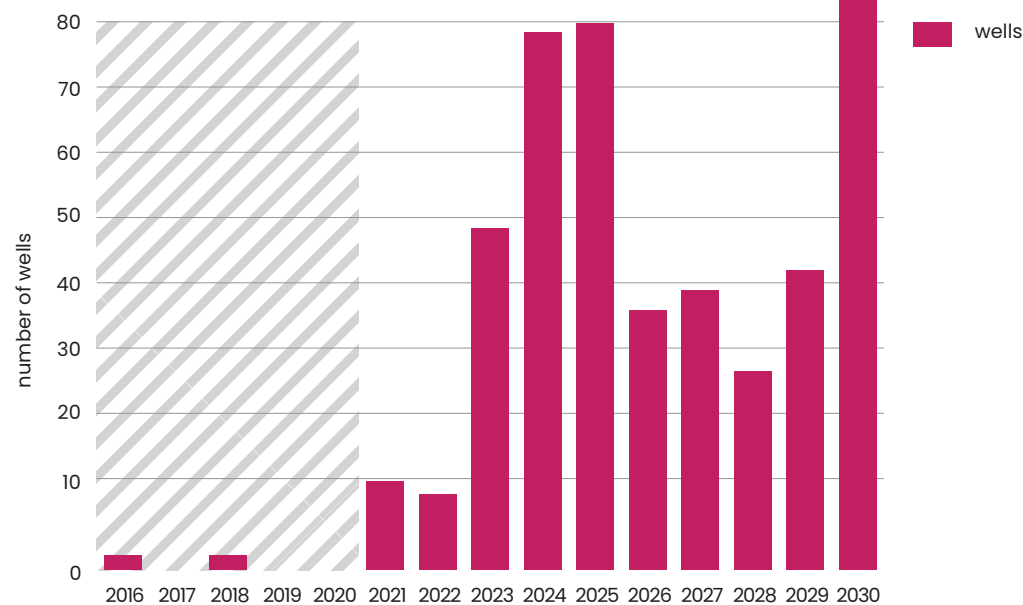
“In 2021, Nexstep launched a new initiative to promote collaboration and proactively share experiences. We are very excited that in June 2021 the first Peer Assist session took place. A group of peers from several operators gathered in workshops to review the planning and the technical approach of a particular decommissioning project. Results are promising, and other Peer Assists have been scheduled.”

## 2.5 Onshore wells

For 2020, it was forecasted that 51 onshore wells would be decommissioned. Actually, decommissioning of wells is in progress, but none are reported completed. This is probably because wells are being monitored for a minimum period of three months after isolation of the subsurface flow zones. After successful completion of this monitoring period, the environmental surface plug is installed, and the steel conductor and casings of the well are cut below ground level (with a minimum of three metres). Only then is the decommissioning of the well formally completed.

Onshore a large campaign is being executed with a specially designed work unit. This campaign includes several well clusters from the Dutch Groningen onshore natural gas field from which production will be stopped by 2022. Peak activities which are forecasted for 2024, 2025 and 2030 may be more spread out over several years to result in a more stable activity level for a longer period.

Figure 2.5.1. Realised and forecasted decommissioning – onshore wells





## interview

## Johan Atema



CEO  
NAM

Decommissioning is an important part of the life cycle of oil and gas production. In the outside world there is often the misconception that operators prefer not to decommission, because that only costs money. NAM is currently decommissioning a significant number of wells with a dedicated Plugging & Abandonment (P&A) unit. We asked Johan Atema, CEO from NAM, a couple of questions about this decommissioning project.

**The aim of the project was to decommission 62 wells (with an option for another eight wells) in three years' time. What is the progress of this project?**

"I am very pleased that we are on the right track. At the moment, we have already decommissioned 22 wells. Our ambition is indeed to decommission those 70 wells, and I expect that we will achieve this within the agreed term. So, we had a very good start."

**What is a P&A unit?**

"The P&A unit places several cement plugs at various depths in a well. The well is safely and permanently closed this way."



**“ It is also expected that we can create further interest from the local Dutch industry, thereby boosting local employment and exploring other future forms of collaboration ”**

**What is the advantage of the P&A unit compared to a conventional rig?**

“This decommissioning tower takes up less location space than for example the Synergy rig which we had under contract until recently. Due to the modular container construction, the tower can be quickly transported to new locations. The tower can be taken apart and rebuilt within 48 hours; with the Synergy rig this took seven days. The decommissioning tower is only suitable for plugging of onshore wells; it cannot be used at sea. I would like to add here that this P&A unit is a Dutch product, made by WellGear from Westerbork, a stones’s throw from our office in Assen. The development was done in close collaboration with Mammoet, Baker Hughes, and of course, the NAM expertise was used.”

**Can this P&A unit play a role when the decommissioning of the Groningen field starts?**

“Of course, and we already started with that. At our location in Uiterburen the first Groningen wells have been decommissioned. At this moment, the decommissioning tower is in Twente. After completion, it will be transported to do decommissioning work in Drenthe, and it will return to the Groningen field at the end of the year to continue to decommission wells from the Groningen field. Ultimately, we have to safely decommission 300 wells there, a formidable task where we will build up a lot of experience with large scale decommissioning of wells.”

**NAM is one of the participants in the joint campaign for decommissioning stand-alone wells offshore. What does NAM expect from this project?**

“NAM is always in favour of collaboration. The challenge is to make 1+1=3 also within Nexstep, with contractors and our colleagues in the industry. Through collaboration we can reduce costs, but also possibly optimise the potential for future re-use of infrastructure. It is also expected that we can create further interest from the local Dutch industry, thereby boosting local employment and exploring other future forms of collaboration. The first step is this campaign, that we want to focus on. If this works, the next step will be investigating future campaigns.”

**Nexstep’s “Road to Rigless Well Decommissioning” focuses on getting approval for application of Through Tubing Cementation (TTC) for well decommissioning in the Netherlands. TTC is also applied elsewhere in the world by Shell. What do you see as the big advantage of TTC?**

“TTC is part of the ‘P&A on a wire concept’ with which we can safely decommission a well with less, but more specific equipment. Next to efficiency, there are also additional benefits. Smaller equipment on site also means less chance of operational HSSE risks, but above all much less nuisance for the local community because there will no longer be a tower, and the traffic around the sites will be drastically reduced.”

**NAM made two wells available for TTC trials last year. You are also looking at new trials this year. Why do you think it is important to conduct these trials together as an industry?**

“Working together is also learning together. More trials provide more insight for all (Nexstep) parties that participate in these TTC trials. In addition, it is important that this technology provides sufficient guarantees for the State Supervision of Mines as the independent regulator for our industry. They must ultimately approve the ‘P&A on a wire concept’ so that it can also be included in the Mining regulations in the Netherlands.”

**Last year we published an article about GZI Next. Can you update us on the progress and does NAM have any additional plans for New Energy hubs?**

“The 12 MW solar park has been taken into production and two additional projects are under development: green gas (North Star project) and hydrogen where we will start with a hydrogen filling station.

“NAM’s role is mainly that of being the incubator. The mentioned GZI Next projects will be further developed by EBN, ENGIE and Shell. They will also be responsible for the investment decisions. Meanwhile, NAM has taken the initiative to start up discussions with possible consortium partners at approximately 30 other locations in Twente, Drenthe and

Groningen about how to apply the energy hub concept. NAM’s infrastructure of locations, pipelines and electricity connections can be the basis for a new sustainable energy generation.”

**What does NAM see as Nexstep’s biggest milestone and what does NAM expect for the coming years?**

“The biggest milestone is our common Decommissioning and Restoration goal: the safe and responsible decommissioning of oil and gas infrastructure in an effective and efficient manner. Working together, learning together and improving together is crucial. We have demonstrated this with our TTC project in Uiterburen and will continue to demonstrate this with other projects like PosHYdon (green hydrogen production on Neptune Energy’s platform Q13a-A) and the MLS joint campaign with five other operators.

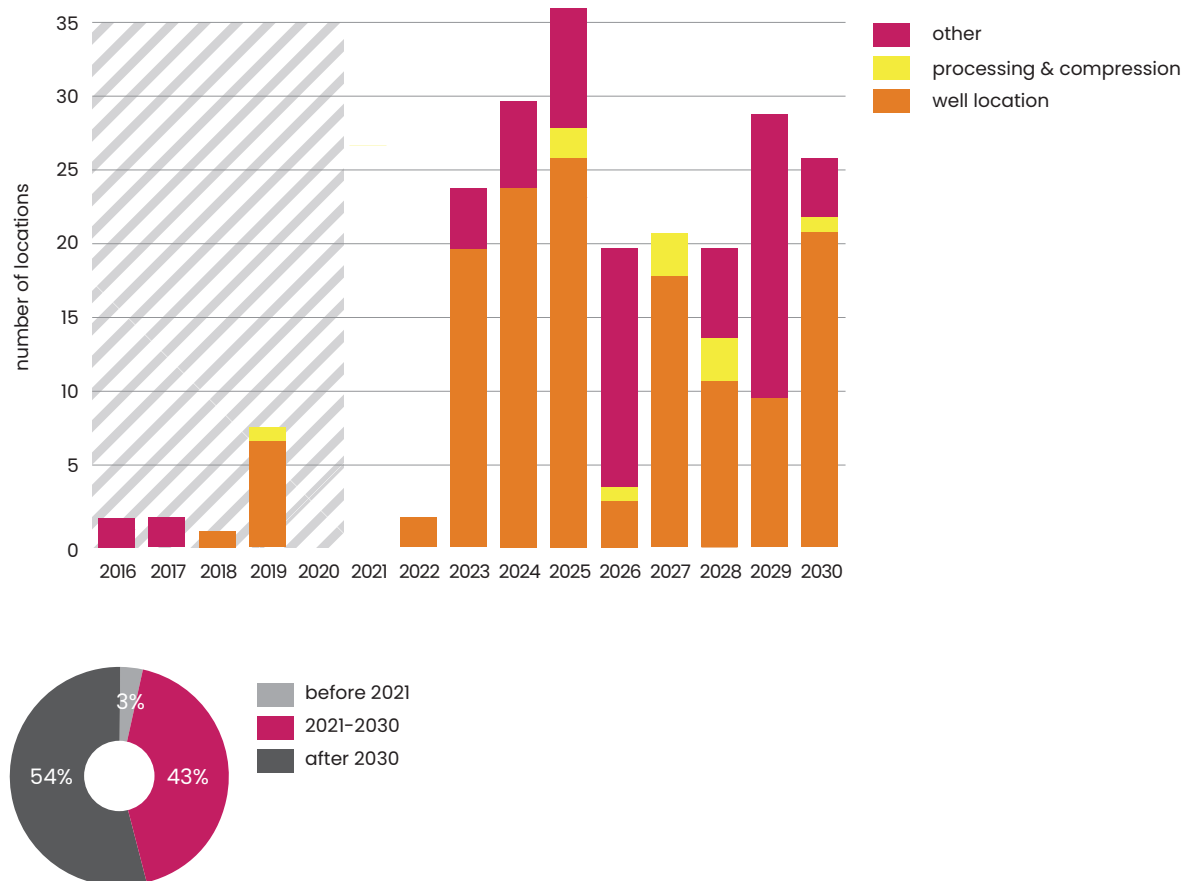
“And it will no doubt not end with these projects. Working together, learning together and reaching these important milestones together would be my call to action.”

## 2.6 Onshore locations

For the coming years high activity can be seen in the decommissioning of onshore locations. Typically, first on the decommissioning sequence are well locations and various other associated locations such as scraper locations or manifolds. Before deciding to decommission a location, the operator will assess with all stakeholders whether repurposing of the location is feasible. Such repurposing opportunities could be energy related, e.g., for the development of biogas, green gas, hydrogen, geothermal energy, or solar power generation. Other opportunities not related to energy may also be possible, but the advantage of many of the locations is that they are already connected via pipelines to the natural gas grid or via cables to the national power grid.

When repurposing is not feasible the location will be decommissioned. On well sites typically the subsurface zones in the well(s) will be isolated first using a drilling rig or workover unit. The well(s) will then be monitored to ensure that the isolation was indeed satisfactory. Following this monitoring period, the location will be brought back into the original state by removing all concrete foundations, tarmac, buildings, fences, pipework, cables etc. and, if required, cleaning of any contamination of the soil and/or ground water. The steel well conductor and casings are also cut at least three metres below ground level. The location is then returned to the owner.

Figure 2.6.1. Realised and forecasted decommissioning – onshore locations by function





## interview

## Lex de Groot



Managing Director  
Neptune Energy Netherlands

Neptune Energy has been supplying the Netherlands for over 50 years with affordable energy as the largest offshore gas producer on the Dutch continental shelf. Now it's time for a transition, as the North Sea will be pivotal for future Dutch or even northwestern Europe low carbon energy supply. The key to unlock this potential as quickly and efficiently as possible: smartly repurposing the existing extensive gas infrastructure on the North Sea. We ask Lex de Groot some questions on Neptune Energy's plans.

### **What are your views on the future of natural gas?**

"I am proud of the accomplishments of our organisation. Not only in the past, but also today, building a sustainable future in the Netherlands. We have been safely producing natural gas offshore since the 1970s. For a few decades to come, natural gas will still be an important energy source in the Netherlands during the energy transition. We can provide a significant part of the Dutch energy demand from the Dutch North Sea, with many advantages. Firstly, indigenously produced natural gas has a 30% lower CO<sub>2</sub> footprint compared to imported gas. If we want to achieve our climate goals, that makes quite a difference. I'm happy to see that finally the public opinion is starting to shift. People realise more and more that for the coming decades, natural gas is still needed, and it is best provided for domestically.

"Secondly, investing in the production of offshore gas has another big advantage. The offshore infrastructure can be repurposed for green hydrogen and the storage of CO<sub>2</sub>."





**“ The North Sea will be home to PosHYdon, the world’s first offshore green hydrogen pilot on a working production platform ”**

**What is your take on claims that the repurpose story is only to avoid decommissioning?**

“That could not be further from the truth. We see decommissioning as an important phase in the whole journey from start to finish. Last year, we safely removed three platforms that were at their end of life, and we are planning for more removals in the coming years. We take our responsibility to clean up seriously and leave the seabed the way we found it. If this can be done in a smarter – and a more cost-effective manner via a joint campaign as Nexstep now is organising, we’re all for it. That is why we are part of this campaign. But let’s be clear – if we can repurpose existing infrastructure to fast forward low carbon energy, then that’s simply the smart thing to do for us all.”

**How do you see the future of offshore hydrogen production?**

“The Dutch North Sea has the potential to truly become a ‘new energy hub’ due to the existing extensive infrastructure that connects offshore with onshore. That will give opportunities for large scale green hydrogen production. The North Sea will be home to PosHYdon, the world’s first offshore green hydrogen pilot on a working production platform. Neptune Energy’s Q13a-A platform will host the pilot, and it will be run together with all consortium partners. It’s great that we will see true energy innovation right off the coast of Scheveningen. The lessons of PosHYdon will help to unlock the full potential of the North Sea for the large-scale production of green hydrogen. Integrating the wind and gas sectors offshore will not only create a second ‘green energy’ system next to wind electricity, but since it will be using existing infrastructure, it will be faster to develop and will save a lot of money for society.”

**In addition to hydrogen production, you are also looking at the storage of CO<sub>2</sub> in empty gas fields. Can you explain a little more about your plans?**

“We announced a feasibility study on a large-scale offshore Carbon Capture and Storage (CCS) project in the Dutch North Sea with the potential to safely store 120 to 150 million tonnes of CO<sub>2</sub>. The study will assess the feasibility of injecting between 5 and 8 million tonnes of CO<sub>2</sub> annually into the depleted gas fields around the Neptune-operated L10-A, L10-B and L10-E areas. If the project is developed it will be one of the largest CCS facilities in the Dutch North Sea.

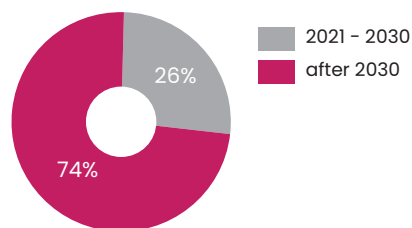
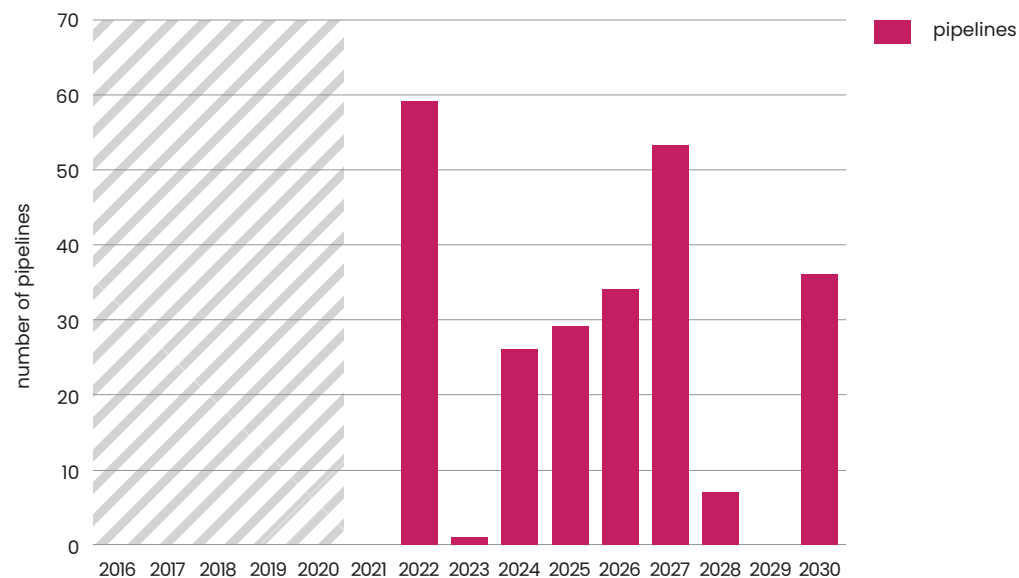
“There is growing consensus that CCS will be required at scale to meet the ambitious targets set out by the Paris Agreement. In all scenarios, CCS is part of the solution to achieve the Netherlands’ goal of reducing CO<sub>2</sub> emissions by at least 49% by 2030.

“Neptune Energy already has significant experience with CCS having carried out a 14-year project on its K12-B platform offshore the Netherlands, capturing and reinjecting CO<sub>2</sub> into the gas field. The project was carried out in partnership with TNO, the Netherlands Organisation for applied scientific research.”

## 2.7 Onshore pipelines

Decommissioning of onshore pipelines typically means that the pipelines are removed unless agreed otherwise with the involved landowners. Special cases exist where pipelines can be left in place, e.g. at crossings of large motorways, rivers and canals. With regard to the timing of decommissioning of pipelines onshore not much has changed compared to the forecast of last year's report. The potential for repurposing of pipelines will largely depend on the potential for repurposing of the locations.

Figure 2.7.1. Realised and forecasted decommissioning - onshore pipelines





Decommissioning Project Director  
National Energy Resources Australia (NERA)

As of March 2021, Nexstep has a sister organisation. Recently, we were informed that the National Energy Resources Australia (NERA) had established the Centre of Decommissioning Australia (CODA). We connected with Andrew Taylor to find out more.

#### **Why did NERA start CODA?**

“NERA is an independent not-for-profit organisation established by the Australian government in 2016. We facilitate solutions through projects, collaboration and knowledge sharing. CODA is the next step on a collaborative journey which started for NERA in 2019 with the launch of the National Decommissioning Research Initiative (NDRI). The NDRI leant on the INSITE North Sea model for inspiration.

“Following successful collaboration on marine research, we initiated a project in 2020 to quantify Australia’s offshore decommissioning workload. NERA worked with seven operators on this study, which was delivered by Advisian (Worley) and Lloyds UK.

The study showed that Australia’s decommissioning liability is estimated at USD 40.5 billion, with approximately 50% of activities due to start by 2030. It also identified that potential savings of 35% could be achieved through a variety of efficiency measures.”

#### **Which operators are involved in CODA?**

“NERA is working with Chevron Australia, Esso Australia, Santos, BHP, Woodside Energy and Vermilion Oil and Gas Australia on the development of CODA. These operators account for the majority of assets that will require decommissioning in Australia, but we expect to continue growing our partnerships to include additional operators in the near future. We are also working hard to strengthen relationships with the supply chain. Through establishing CODA, NERA has connected with a wide range of stakeholders with extensive capabilities, capacity and interest both from across Australia and internationally. These relationships are equally as important to the success of CODA.”

#### **What is the goal that CODA wants to reach?**

“CODA aims to realise a huge potential economic value for Australia, drive innovation and efficiencies and create long-term local jobs from decommissioning, recycling, or repurposing and decarbonising late-life offshore oil and gas assets.

CODA has been established to coordinate and transform Australia’s approach to life extension, re-use and decommissioning offshore oil and gas infrastructure and to maximise the value for Australia. CODA enables a more transparent, proactive and collaborative

**“ CODA has been established to coordinate and transform Australia’s approach to life extension, re-use and decommissioning offshore oil and gas infrastructure ”**

approach that will enable operators, supply chain companies, innovators and governments to pursue and accelerate opportunities to achieve:

- A 35% reduction in decommissioning costs in Australia;
- Optimal recycling and re-use of offshore infrastructure for emerging low emissions technologies to help meet industry’s net zero targets;
- Maximised opportunities for the local workforce, service and technology companies;
- The building of a domestic decommissioning industry that can then service needs across the Asia Pacific region.”

#### **Have you looked at Nexstep as an example?**

“Absolutely. We are proud to be a sister organisation to Nexstep and hope to achieve as much success with CODA as Nexstep continues to achieve. We have particularly drawn a lot of insight from the way that Nexstep is structured along the lines of key themes and goals. We are actively working with Nexstep to understand lessons learned from its establishment and how we can best position CODA for success.”

#### **What are your plans for this year?**

“To accelerate our understanding of the opportunities for Australia, and how to deliver a best practice approach to decommissioning in Australia, we released a Request for Proposals (RFP) for three early-stage CODA projects:

- Understanding opportunities for local disposal and recycling;

- A global review of decommissioning planning and execution learnings;
- Development of a decommissioning innovation and technology roadmap.

By the close of submissions, we received approximately 50 proposals from across Australia, the US and the UK.

“Beyond these projects, we will be looking at how we ensure CODA is positioned to attract and drive collaboration across industry, through how it looks, talks and walks. We will be working closely with operators and supply chain companies to ensure they are engaged and contributing to our success.

“We are also excited to continue working with our international partners throughout this year to continue to learn from like-minded organisations on how they are improving decommissioning.”

#### **Do you also consider re-use and repurpose of existing infrastructure?**

“We are actively investigating the opportunities for repurposing of offshore oil and gas infrastructure to support commercialisation of energy transition opportunities, particularly CCUS, hydrogen and offshore renewables. Australia is relatively isolated and with a large landmass, so has unique challenges. We are currently finalising an initial study on this opportunity and hope to continue investigating this issue.”

### 3 Expected offshore decommissioning costs 2021 – 2030

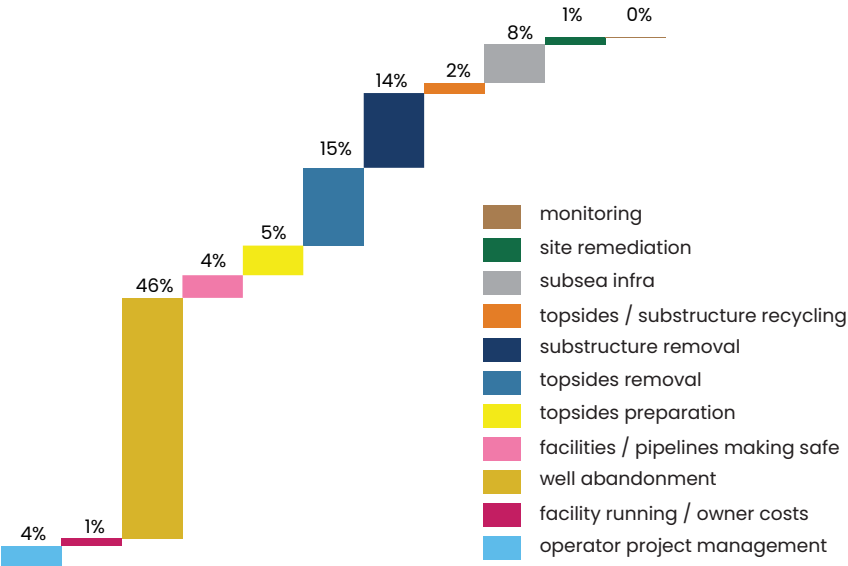
For the decommissioning cost the cost categories as determined by Oil & Gas UK have been adopted. In the future, this may also allow exchange of (anonymised) data for Southern North Sea assets in the UK and Dutch sector as the assets and environments are very much comparable. The distribution of the total forecasted offshore decommissioning cost over the various categories has, as expected, not changed from previous years; well decommissioning remains the largest cost factor followed by the removal of offshore installations.



To successfully reduce the cost of decommissioning, aiming at a reduction of 30%, operators exchange their forecasts, thus identifying potential joint decommissioning scopes. The first example being pursued at this very moment is the joint well campaign for suspended exploration wells. The learnings from this multi-operator campaign could then serve as a blueprint for other joint executions. Collaboration proves to be a lot of work and communication but is expected to pay large dividends through scaling up and realisation of a learning curve.

Operators furthermore have embraced the shared learnings sessions where dos and don'ts of executed projects are shared. Also, this year so-called peer assist events will be organised where a planned decommissioning project of an operator will be presented to other operators for their input in the design phase.

Figure 3.0.1. Total decommissioning costs of offshore infrastructure subdivided by category

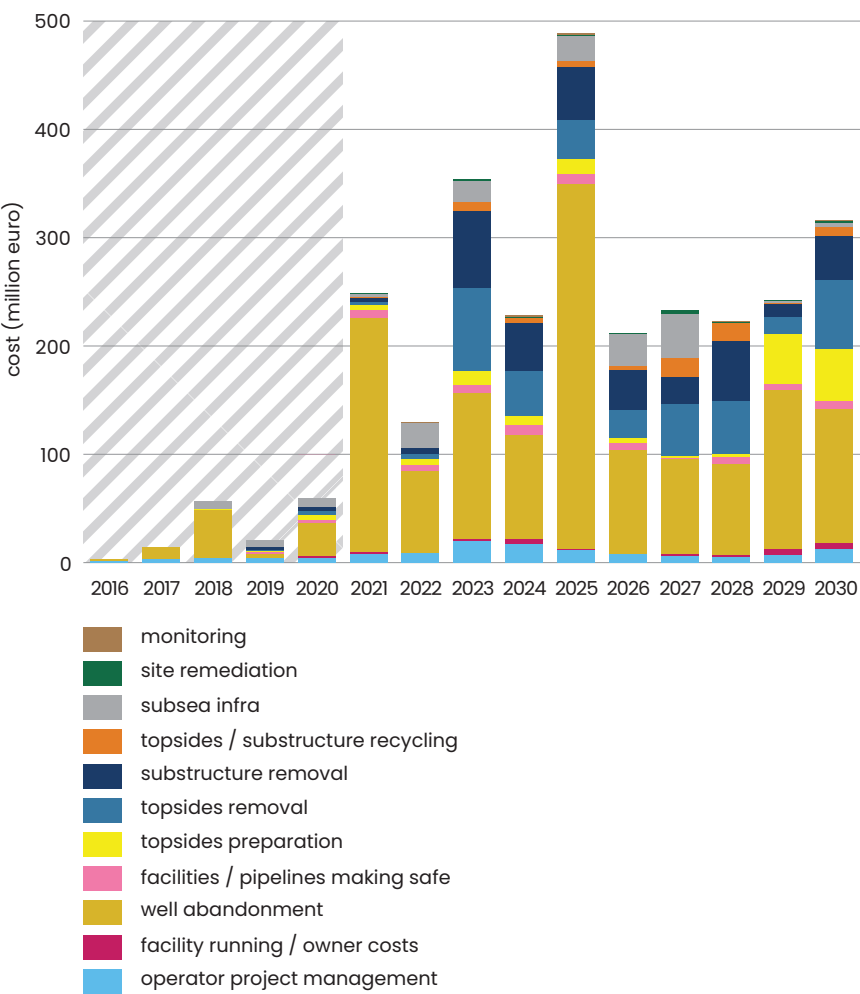




The forecasted cost for decommissioning of the offshore infrastructure for the next decade shows a shift to the future compared to previous years. The total expenditure on decommissioning for the next decade is expected to reach 2.7 billion euro with an annual spending between 130 and almost 500 million euro.

A new bill has been passed in the Dutch Senate where the Mining Act has been amended with a mandatory set of agreements for offshore production licences. Licensees will need to agree on a Decommissioning Security Agreement (DSA) to arrange the timing and form of a financial security such that the operator can charge the other licensees for the decommissioning expenditures. Licensees will arrange a Decommissioning Security Monitoring Agreement (DSMA) with EBN who is to safeguard the financial securities. By the end of 2020 in total 114 DS(M)A's have been signed for offshore licences.

Figure 3.0.2. Annual expected costs of offshore infrastructure by category





Head of Decommissioning  
OGA

In May 2021, the Oil and Gas Authority published its new Decommissioning Strategy stressing that the market could face higher decommissioning costs if action is not taken to improve commercial practices. Pauline Innes, Head of Decommissioning at the OGA, discusses what the OGA's views are on cost reduction and the repurposing of oil and gas infrastructure.

**The UK goal for cost reduction is 35%, which is even higher than the Dutch ambition of 30%. What was the reason to choose 35%?**

"When the OGA published its first Decommissioning Strategy in 2016 it set cost certainty and reduction as a main priority, highlighting the need to drive targeted cost efficiency. There was limited cost data available at that time and a wide range of uncertainty, so in order to bring focus and attention to costs, the OGA set a 35% cost reduction target. The target was based on lessons learned from other sectors, that had similar cost reduction ambitions."

**How far on the way are you in reaching the ambition of 35% cost reduction?**

"The OGA reports progress in delivering the 35% cost reduction target annually. The UKCS Decommissioning Cost Estimate 2020 showed that, comparing the same "like-for-like"

inventory as the 2017 baseline, overall cost estimates had reduced by 19%. We've set a target to achieve the 35% cost reduction target by the end of 2022, so we're half-way through the target period. The cost estimate for 2021 is currently being calculated and a report will be published in summer 2021."

**What is the biggest contributor to the cost reduction up to now?**

"The overriding driver of the cost reductions that we've achieved to date has been from improved planning for decommissioning, a key element of which is about focusing attention on cost estimates. We've supported those improvements through the production of our annual cost estimate and benchmarking reports and through direct engagement with operators to review and challenge cost estimates."

"Improved planning has also benefited from sharing learning and experiences in delivering decommissioning. "The supply chain, that delivers decommissioning, has also improved skills and capability, and we've seen good improvements in areas such as topside removals and good examples of cost efficiencies in well decommissioning."

“ **We need a cost-efficient market to meet the cost reduction** ”

**Where do you see potential for further cost reduction?**

“The OGA published an updated Decommissioning Strategy on May 10, 2021. The strategy explains that we need a cost-efficient market to meet the cost reduction target and sets out priorities which could help foster a competitive and sustainable market including:

- o **A more collaborative culture** between operators and supply chain including new procurement models.
- o **The use of campaigns:** if operators were able to align and coordinate multiple projects, the supply chain would be given greater certainty about upcoming work. Particularly in well decommissioning, scope aggregation can have great potential for cost reduction. The OGA is engaging with operators and the supply chain to facilitate the development of scope aggregation opportunities.
- o **Data transparency:** this continues to be vital for delivering cost efficient decommissioning. The OGA will continue to provide as much data as possible for infrastructure owners and the supply chain. Examples of OGA data in action include publishing the annual UKCS Decommissioning Cost Estimate Report and – in 2020 – the UKCS Decommissioning Benchmark Report, as well as ensuring all major upcoming decommissioning projects are visible to the supply chain via the enhanced Energy Pathfinder tool.”

**OGA also started a plan for re-using existing infrastructure for acceleration of the energy transition. Can you elaborate on this plan? What are your ambitions?**

“The OGA’s UKCS Energy Integration (final report), published in 2020, set out how different offshore energy systems (oil and gas, renewables, hydrogen and carbon capture and storage) could be coordinated across the UKCS for environmental and efficiency gains. The report explains that for the oil and gas industry, energy integration can help reduce production emissions, as well as accelerate the progress of CCS and hydrogen in support of net zero emissions by 2050.

“Opportunities are emerging, offering the potential to re-use or repurpose infrastructure that would previously have been destined for decommissioning.

“We want to do more to improve the understanding of such opportunities to help infrastructure owners make informed decisions on whether their late-life pathway has a decommissioning destination or a re-use/repurpose end point.”

**The title of this report is “On the Road” referring to our strategic program “Road to 30%” and to express that we are on the way towards realising our cost reduction ambition.**

**What is in your view Nexstep’s most remarkable achievement?**

“The work that Nexstep has done to coordinate six oil and gas operators in the Dutch North Sea to participate in a well decommissioning campaign is extremely impressive. We’re keen to promote campaigning in the UKCS and want to learn from the work that Nexstep has done.”

**What would you advise Nexstep as following steps to reach our cost reduction ambition?**

“We’ve found that good quality data has been invaluable in helping drive our cost reduction ambitions. The annual cost estimate report, benchmark report and operator and asset dashboards have improved visibility of data and provided a foundation for performance improvement. We’ve also found that promoting a culture of shared learning is invaluable. These are certainly areas we’d encourage anyone with an interest in cost reductions to consider.”



By courtesy of Wintershall Noordzee