

## **JOINT LETTER OF INTENT**

### **PARTIES:**

1. **The State of the Netherlands**, represented by the Minister of Economic Affairs and Climate Policy, and the State Secretary of Infrastructure and Water Management and for administrative matters: **the Minister of Economic Affairs and Climate Policy, and the State Secretary of Infrastructure and Water Management** in their capacity as administrative body (bestuursorgaan), hereafter referred to as "**the State**".
2. **Nobian Industrial Chemicals B.V.**, with its registered office in Amersfoort and its office address at Van Asch van Wijckstraat 53 in Amersfoort (3811 LP), represented by its CEO Michael Koenig, hereafter also referred to as "**Nobian**".

The State and Nobian are hereafter jointly also referred to as "**Parties**".

## **GENERAL CONSIDERATIONS**

### Legal and policy framework for CO<sub>2</sub> reduction

1. Parties acknowledge that additional efforts for reduction of CO<sub>2</sub>, are required to achieve the goals in the Paris Agreement, in the European Climate Law, in the Dutch Climate Law (*Klimaatwet*) and in the Dutch Coalition Agreement (*Coalitieakkoord*);
2. In the Dutch Coalition Agreement as presented on December 15, 2021, CO<sub>2</sub> reduction targets are increased to at least 55% in 2030 (versus 1990), while the Dutch government aims for 60% CO<sub>2</sub> reduction, for Climate Neutrality in 2050 and for establishing a green economy that is climate neutral, fossil free and circular;
3. For the industry, the Dutch Coalition Agreement aims to increase the ambition within the framework of obligations under the European 'Fit-for-55' package. In the letter regarding sustainability of the industry of April 5, 2022<sup>1</sup> the Minister of Economic Affairs and Climate Policy expressed the intention to develop and implement fundamentally new sustainable technologies with the largest industrial emitter group, while at the same time agreeing on a program for faster and more ambitious additional CO<sub>2</sub> reduction;
4. The State aims to facilitate the climate transition of the industry in the Netherlands with among others a tailor-made approach for the 10-20 largest industrial emitters;
5. The aim of the tailor-made approach is to support these companies, based on mutual efforts, in achieving additional and accelerated CO<sub>2</sub> reduction and having a sustainable future in the Netherlands, and where possible, contribute to meeting other sustainability challenges in the Netherlands, also in the long term;
6. If needed, the State, as stipulated in the Dutch Climate Plan and Climate Policy Programme, intends to support among others Nobian in its endeavours to contribute to additional CO<sub>2</sub> reduction, while taking into account European principles regarding state aid and a level playing field on the internal market. In doing so, the State aims for a level playing field both within Europe and globally.

### Tailor-Made Approach Sustainable Industry (*Maatwerk aanpak Verduurzaming Industrie*)

7. With the tailor-made approach the State intends to structure the discussions with the 10-20 largest industrial emitters along the following lines:
  - i. discussions will be held to see whether parties can come to an expression of principles ("EoP"), in which they express their intention to further discuss the possibilities for additional reduction of CO<sub>2</sub> emissions and reduction of impact on the local environment by these emitters and the possibilities for the State to assist therewith;
  - ii. after conclusion of the EoP, parties will discuss and define the specific measures that could be taken and agree on those in a draft joint letter of intent ("JLoI");
  - iii. a draft JLoI will be submitted to the advisory committee "Maatwerkafspraken Verduurzaming Industrie" for an expert advice to the Minister of Economic Affairs and Climate Policy with respect to, among others feasibility, cost-effectiveness and level of ambition;
  - iv. if a final JLoI has been agreed upon and signed, parties intend to implement and elaborate their agreements in tailor-made agreements.

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<sup>1</sup> Letter to parliament, April 5, 2022 (Kamerstukken II 2021/22, 29826, nr. 135).

## **SPECIFIC CONSIDERATIONS**

### Introduction Nobian

8. Nobian is the EU's largest producer of high-purity vacuum salt at a quality level required for strategic chemical and industrial production and value chains, and a European leader in the production of essential chemicals, also providing contributions towards the sustainable energy transition;
9. Parties acknowledge that salt mining based in the Netherlands is essential for the production of important materials contributing to the chemical industries, industrial and consumer product base in the Netherlands and Europe, and that it is therefore of great importance for the Dutch and European economy and society as a whole;
10. Parties acknowledge that by producing high-purity salt, various chlor-alkali products and hydrogen, Nobian provides indispensable products for the manufacturing of essential materials for daily life, and which are also needed for the transition to a sustainable economy, including PVC, Polyurethane, poly carbonate, aluminium, paper, and epoxy, applications of which include, among others, insulation materials, battery materials, windmill blades and magnets, solar cells, cleaning and water purification materials, as well as chlorine for the pharmaceuticals sector including for the production of medicines;<sup>2</sup>
11. Nobian has committed itself to play an important role in sustainability, the energy transition and the circular economy, actively pursuing these commitments through the (co-) development of innovative projects in, for example, the reduction of carbon emissions and the usage of natural gas, water electrolysis for hydrogen production, underground storage of hydrogen, recycling of heat, water and raw materials, and stabilising the Dutch electricity network by operating at flexible production levels;
12. Parties acknowledge that Nobian as a knowledge partner actively contributes to the development of green initiatives through, among others, (i) active participation in the setup and implementation of growth fund proposals, such as GroenvermogenNL, CircularPlasticsNL and FutureCarbonNL, (ii) conducting joint research projects with Dutch universities and knowledge institutes, (iii) developing and strengthening academic competencies and capacity at Dutch universities, particularly in the area of electrochemistry and energy technology, (iv) providing its expertise in sustainable development schemes, (v) co-developing green hydrogen projects and water electrolysis technology through its joint venture company HyCC, and (vi) co-developing projects with other partners for large-scale underground renewable energy storage in salt caverns in the North of the Netherlands;
13. Nobian's principal office and legal seat are based in the Netherlands, as are a large part of its research and technology activities, and the Nobian group intends to maintain operations in the Netherlands, Germany and Denmark;
14. Parties pronounce that Nobian can play an important role in the energy- and sustainability transition in the Netherlands;

### Policy of Nobian regarding CO<sub>2</sub> reduction

15. Nobian aspires to become one of the most sustainable chemical companies in Europe, and to this effect has set the initial goal to become climate neutral by the year 2040, 10 years ahead of the target under the Paris Agreement, building on credentials of past performance, including a 40% reduction in its carbon dioxide emissions in the period between 1990 and 2020, 35% renewable energy use, a platinum rating from EcoVadis, participation in the Carbon Disclosure Project (CDP), and commitment to the Science Based Target initiative (SBTi);
16. Nobian aims to reduce its impact on the environment and endeavours to address the full Environmental, Social and Governance (ESG) agenda as laid down in Nobian's

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<sup>2</sup> Salt Impact Study, Roland Berger, July 2022.

audited Sustainability Report, including targets on diversity, process and people safety;

17. Nobian emphasises its responsibility to (i) reduce Greenhouse Gas Emissions by working towards its objective of Climate Neutrality by 2040 (subject to its ambition to accelerate the objective of Climate Neutrality as a result of the tailor-made approach) and (ii) contribute to the national 2030 CO<sub>2</sub> reduction target laid down in the Dutch Coalition Agreement and Dutch Climate Law;
18. Parties acknowledge that for the regional market for high-purity salt, solution mining in the Netherlands is the option with the lowest CO<sub>2</sub> footprint, whereby local production and regional distribution of salt limits the need for salt imports, reduces its CO<sub>2</sub> footprint and enhances the economic and competitive position of users;
19. Parties acknowledge that the innovations required to achieve Nobian's objective of Climate Neutrality in 2040 will create the opportunity to simultaneously decrease emissions other than CO<sub>2</sub> (including NO<sub>x</sub>), and increase circularity and external safety;

#### Living environment

20. Parties acknowledge the EU Zero Pollution ambition, in which environmental quality is progressively improved towards 2050 to levels no longer considered harmful to human health and natural ecosystems, and subsequent national emission reduction and health gain ambitions as formulated in the Clean Air Agreement (in Dutch: *Schone Lucht Akkoord*), the National Water Programme (in Dutch: *Nationaal Water Programma*), the National Environmental Policy Framework (in Dutch: *Nationaal Milieubeleidskader*), the National Government wide programme Netherlands Circular towards 2050 (in Dutch: *Rijksbreed programma circulaire economie*), and the State policy regarding substances of very high concern (in Dutch: *zeer zorgwekkende stoffen*, "ZZS") that includes the legal obligation to prevent and minimise the emissions thereof and inform the authorities on achieved reduction and next steps every 5 years;
21. Parties acknowledge the Clean Air Agreement goal of 50% health gains in 2030 relative to 2016, by decreasing emissions of air pollutants, notably NO<sub>x</sub>, ammonia and fine particulate matter, which among others should be realized by decreasing industrial air emissions to levels comparable to the lower end of the Best Available Techniques (BAT) Associated Emission Level bandwidth;
22. Parties acknowledge that the Dutch Coalition Agreement aims to decrease reactive nitrogen emissions in order to reduce the deposition thereof in Natura 2000 nature areas, and that each sector, including the industrial sector, is expected to contribute fairly to the necessary reduction of reactive nitrogen emissions;
23. The State has laid down more detailed policy goals regarding sustainable energy, circular economy, sustainable mobility, strategic and green industry in several policy briefs;
24. Parties are aligned in their interests in building a clean, climate neutral and circular economy by 2050, and intend to cooperate within their capacities to achieve an accelerated and significant additional reduction of CO<sub>2</sub> emissions as well as a reduction of the use of natural gas and reduction of other emissions to air and water, among which NO<sub>x</sub>;

#### Infrastructure and renewable electricity

25. Parties acknowledge that timely realisation of energy-infrastructure and sufficient availability of renewable electricity is in their joint interest and crucial for the success of industrial decarbonisation projects;
26. The State has developed a national and regional infrastructure programme (*Cluster Energie Strategieën "CES" and Meerjarenprogramma Infrastructuur en Klimaat "MIEK"*) to (i) take stock of all infrastructural needs for the industry, including for Nobian, and (ii) to enable acceleration of infrastructural projects where desirable and possible;

27. Nobian's production processes are energy intensive and currently require substantial amounts of steam, natural gas and electricity, as a result of which Nobian has recently made investments in projects including (i) participation in offshore wind projects, (ii) further electrification of its production processes as well as more efficient utilisation of energy and heat used in its own production processes and (iii) participation in projects in cooperation with other companies, operating in the same chemical clusters as Nobian;
28. as part of this JLoI Nobian expresses the ambition to electrify a significant part of its salt production, which will result in a net increase in electricity demand, whereby Parties acknowledge that access to new renewable power generation is essential to achieve zero Scope 2 CO<sub>2</sub> emissions;
29. Nobian operates an electricity production plant (Delesto 2) unrelated to its production processes, within the scope of Nobian's power sector CO<sub>2</sub> emissions and for which Nobian will develop a separate decarbonisation plan. This plant does not have industrial CO<sub>2</sub> emissions pertaining to the tailor-made agreements;
30. Nobian will continue to implement the best possible application of residual heat from its existing and new installations in line with the Energy Efficiency Directive (Directive 2012/27/EU) and in anticipation to the forthcoming new Heat Act, and Nobian is prepared to engage with local authorities and stakeholders at their request to provide insight in its residual heat potential for sustainable district heating plans;

#### Energy storage in salt caverns

31. Nobian works, together with partners, on the development of a first series of salt caverns for energy storage in the Zuidwending area in the Province of Groningen as an element of the sustainable energy infrastructure of the Netherlands and Europe;
32. Parties acknowledge that storage in salt caverns is among the options investigated in the National Roadmap for Energy Storage ('Routekaart Energieopslag') a promising storage method for large-scale energy storage, and that Nobian, with its knowledge and existing operations in the Netherlands, has the ability to contribute to the realisation of additional salt caverns for energy storage in the North of the Netherlands;
33. Parties acknowledge that developing salt caverns for energy storage is a multi-year process, from preparation to commissioning, requiring timely investment and permit decisions;
34. Parties acknowledge that sufficient post-saturation capacity in existing caverns is required to achieve the intended storage capacity by 2030 and any additional storage capacity in a timely manner;
35. Parties acknowledge the importance of converting the brine resulting from the development of salt caverns for energy storage into vacuum salt, thereby ensuring that the salt can be converted in essential raw materials;
36. Parties acknowledge that by implementing the energy efficiency project in Nobian's Delfzijl plant as contemplated by this JLoI, the processing of brine necessary for the development of salt caverns for renewable energy storage can be conducted in a sustainable and environmentally friendly manner;
37. Parties acknowledge that Nobian, as part of its regular operations, will regularly plan and develop new salt caverns;

#### Engagement with local community

38. Nobian pursues an open dialogue with civil society, local communities, local and regional authorities and the State, and aims for optimal transparency regarding its transition plans and the associated environmental risks, including risks from mining, spills and air and water emissions;
39. Nobian aims to maintain and improve its active dialogue with citizens and other stakeholders in the areas where it conducts its mining and production activities, and

for that purpose has introduced various local initiatives to engage with stakeholders and to support communities;

40. Parties acknowledge that early alignment, effective prioritisation, planning and cooperation between the State, the relevant (local) governmental authorities, the relevant public institutions and Nobian are important for effectively conducting permitting processes to obtain the relevant permits;
41. the State acknowledges that accelerating Nobian's path toward Climate Neutrality is only warranted so long as the continuity of Nobian is sufficiently ensured, in particular through the timely obtainment of salt mining permits (including environmental permits) in the Netherlands;

#### Financial

42. Parties acknowledge that investment in the technologies required to achieve sustainability targets carry a significant market risk as the development of the gas, electricity and CO<sub>2</sub> emission prices (influenced by emission trading scheme and carbon taxation), which largely drives the project return, are challenging to predict and significantly influenced by geopolitical developments and governmental policies; and
43. the required investments for Nobian's current ambition to achieve Climate Neutrality in 2040 are planned over a period of 17 years, since, as a result of its annual revenues and the investments required to sustain its operations and regulatory compliance, it is not economically viable for Nobian to significantly invest to accelerate its already ambitious targets without additional State support as a result of the tailor-made approach.

#### Documentation entered into between the Parties and path to and tailor-made agreements

44. On 12 December 2022 the Parties signed the EoP (as defined in Article 1 of this JLoI and attached hereto as Annex I), in which they have outlined the considerations, the scope of a potential agreement, targets related to the different Projects (as defined in Article 1) and the constraints that need to be removed to meet the targets.
45. Parties wish to conclude this JLoI in accordance with the terms and conditions set out below.

## **PARTIES HAVE AGREED AS FOLLOWS:**

### **Article 1 – Definitions**

1. The following terms, if capitalized as indicated, shall have the following meanings:
  - a. **Advisory Committee:** the advisory committee “Maatwerkafspraken Verduurzaming Industrie” established on 21 February 2023 as mentioned in the letter informing Parliament on the progress of the tailor-made approach<sup>3</sup>;
  - b. **CO<sub>2</sub>:** all Greenhouse Gases, in CO<sub>2</sub> equivalent terms, unless stated otherwise;
  - c. **CHP:** combined heat and power plant;
  - d. **Climate Neutrality:** net-zero greenhouse gas emissions in scope 1 and 2 (as applicable) in CO<sub>2</sub> equivalent terms;
  - e. **Climate Policy Programme:** the governmental policy program (*beleidsprogramma Klimaat*) dated 2 June 2022 on the main features of the climate policy until 2030 aimed at the realisation of the objectives of the Dutch Climate Law;
  - f. **CPD:** Chemie Park Delfzijl at which Nobian salt production is located and where Nobian is the main utility supplier;
  - g. **Dutch Climate Agreement:** the agreement dated 28 June 2019 between the government, Dutch companies and other interested parties for the reduction of greenhouse gases as part of the Dutch climate policy, also known as the “Klimaatakkoord”;
  - h. **Dutch Climate Law:** the law enacted on 2 March 2022, also known as the “Klimaatwet”;
  - i. **Dutch Climate Plan:** the Climate Plan 2021-2030, published on 1 April 2020, also known as “Klimaatplan 2021-2030”;
  - j. **Dutch Coalition Agreement:** the coalition agreement (Coalitieakkoord) of the cabinet Rutte IV, dated 15 December 2021;
  - k. **Dutch CO<sub>2</sub> Levy:** the national levy on industrial CO<sub>2</sub> emissions, governed by the ‘Wet belastingen op milieugrondslag’ chapter VIB;
  - l. **E-flexing:** support stabilizing the Dutch electricity transmission system;
  - m. **EoP:** the expression of principles between the Parties signed on 12 December 2022;
  - n. **European Climate Law:** European climate law for Europe’s economy and society to become climate-neutral by 2050 that was published in the Official Journal on 9 July 2021 and entered into force on 29 July 2021;
  - o. **Greenhouse Gases:** gases listed in Annex II to Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the European Union;
  - p. **Greenhouse Gas Emissions:** the emissions of Greenhouse Gases;
  - q. **Industrial Emissions Directive:** Directive 2010/75/EU of the European Parliament and the Council on industrial emissions;
  - r. **JLoI:** this joint letter of intent and the annexes hereto;
  - s. **MWI:** municipal waste incinerator;
  - t. **Nobian:** Nobian Industrial Chemicals B.V., aforementioned;
  - u. **Nobian’s Strategic Sustainability Plan:** has the meaning ascribed thereto in Article 5;
  - v. **NOx:** the collective term for the nitrogen oxides NO en NO<sub>2</sub>.
  - w. **Paris Agreement:** the international treaty on climate change adopted at COP 21 in Paris on 12 December 2015 and entered into force on 4 November 2016;
  - x. **Parties:** the Parties to this JLoI;
  - y. **Permits:** any permits, licenses, exemptions, consents or other formal authorisations that Nobian requires from the State, (local) governmental organisation or other competent authorities for the realisation of the Projects, and **Permit** means any of them for one or more individual Projects;
  - z. **Portfolio Projects:** The projects as set out in Article 7.5 and Annex VI;

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<sup>3</sup> Kamerbrief *Voortgang Maatwerkafspraken*, d.d. 27 February 2023, Tweede Kamer, vergaderjaar 2022–2023, 29 826, nr. 173

- aa. **Projects:** the projects listed in table 6.1 in Article 6, as further specified in Article 7, and each individually referred to as a **Project**;
- bb. **Process water:** non-drinkable water used in relation to industrial processes and facilities;
- cc. **RCR:** the Dutch governmental coordination scheme for the central coordination by the government of decisions including spatial planning, permitting procedures, exemptions, and any other authorizations in relation to projects and programs deemed in the national interest also known as the "*Rijkscoördinatierегeling*";
- dd. **SDE++:** the aid scheme 'Stimulation of sustainable energy production and climate transition' through which the Minister of Economic Affairs and Climate Policy can subsidize the unprofitable component of a project during the operational period of that project;
- ee. **Site:** means each of Nobian Industrial Chemicals B.V.'s production sites in the Netherlands being Delfzijl, Hengelo and Rotterdam, collectively referred to as **Sites**;
- ff. **State:** the State of the Netherlands, aforementioned; and
- gg. **Tailor-made agreement:** each legally binding project agreement to be entered into in respect of a Project as contemplated by this JLoI, collectively referred to as **tailor-made agreements**.

## **Article 2. Path to final JLoI and tailor-made agreements**

1. This JLoI was concluded in two phases as described herein.
2. In Phase I the JLoI was drawn up in draft form (*concept*). In Phase I the State also conducted a financial, legal and technical due diligence investigation on Nobian's Strategic Sustainability Plan as mentioned in Article 5 and on Nobian's business case as mentioned in Article 6. If needed, a second opinion could be performed on any of these points after signing the JLoI and before signing of the tailor-made agreements. The draft JLoI was then subsequently submitted to the Advisory Committee.
3. The Advisory Committee rendered a non-binding advice to the Minister of Economic Affairs and Climate Policy with respect to among others feasibility, cost-effectiveness and level of ambition of the intended tailor-made agreements.
4. The Advisory Committee may further advise the Minister of Economic Affairs and Climate Policy on her request.
5. In Phase II – after receipt of the advice of the Advisory Committee – the Minister of Economic Affairs and Climate Policy concluded whether or not the JLoI could be finalised and signed.
6. After the advice of the Advisory Committee the following options existed:
  - a. the JLoI is finalised and signed by all Parties; or
  - b. Parties resume the negotiations and amend the JLoI, after which the JLoI is signed by all Parties; or
  - c. the Parties terminate the negotiations about the JLoI.
7. Parties decided that after some amendments to the JLoI, the JLoI could be finalised and signed.
8. Parties acknowledge that until the JLoI is duly signed, the JLoI is not concluded nor binding and Parties are entitled to terminate the negotiations at any time for any reason, in which case the terminating Party is not liable for any damages or compensation of costs towards (any of) the other Parties.
9. The obligations of the State under this JLoI are subject to the condition precedent of compliance with the applicable state aid framework and if necessary the approval of the EC.
10. After agreeing and signing the JLoI, Parties will continue their discussions and intend ultimately by Q1 2024 (i) to reach agreement on the tailor-made agreements for the Delfzijl and Rotterdam Projects and (ii) to reach agreement on the tailor-made agreement or on the approach leading towards the tailor-made agreements for the Hengelo Project. These dates are related to Nobian's stage gate process as described in Annex III. For the Projects 'Energy Storage' and 'Portfolio Project' project no tailor-made agreements will be entered into as no financial support is requested from the State in respect of these Projects. Nevertheless, the efforts and arrangements under

Articles 7.4 and 7.5 in respect of these Projects shall be binding between the Parties (Nobian and the State) in accordance with this JLoI.

11. After agreeing and signing the JLoI the signed JLoI and the advice of the Advisory Committee will be made public by the State.

### **Article 3 – Aim**

The primary aim of this JLoI is to come to tailor-made agreements to be entered into between the Parties in respect of Projects (i) through (iii) as set out in Article 4, and to lay down binding intentions and efforts for Projects (iv) and (v) in this JLoI. The aim of the Projects is to contribute to the following joint objectives (which will be specified in more detail in the remainder of this JLoI):

- a. more and faster investments in Nobian’s sustainability projects in the Netherlands;
- b. an acceleration of Nobian’s CO<sub>2</sub> targets;
- c. a reduction and eventual end of the use of natural gas by Nobian;
- d. a reduction and eventual end of NO<sub>x</sub> emissions by Nobian;
- e. a reduction of fresh water consumption by Nobian;
- f. enabling Nobian to contribute to the realisation of the energy transition and renewable hydrogen market; and
- g. other climate and societal benefits.

### **Article 4 – Scope of JLoI and the intended tailor-made agreements**

1. In the EoP, Nobian and the State identified five Projects in connection with all Sites in the Netherlands. These Projects form the scope of this JLoI and the intended tailor-made agreements and are set out in Article 6 and in detail in Article 7. The three Projects identified in the EoP for the tailor-made agreements are: (i) Delfzijl, (ii) Hengelo and (iii) Rotterdam. For the Projects (iv) Energy Storage and (v) Portfolio Projects non-financial support (e.g., in field of permitting and other efforts) by the State is requested under the umbrella of this JLoI. Since all Projects contribute directly or indirectly to the aims mentioned under Article 2 paragraphs a through f, Parties agree to work together on realising each of the Projects.
2. Focus of the tailor-made agreements is on all Nobian’s production-related activities in the Netherlands. In short, the activities in scope are:
  - a. Province of Groningen: salt mining in the Heiligerlee and Zuidwending salt domes, with subsequent salt and chlor-alkali production in Delfzijl. On the Delfzijl site, Nobian is also responsible for providing energy and utilities to other parties on the Chemie Park Delfzijl (**CPD**) (e.g. Teijin Aramid, Delamine);<sup>4</sup>
  - b. Province of Overijssel: salt mining in the surroundings of Hengelo, and subsequent salt production in Hengelo. Part of the salt production is based on self-generated steam in Nobian’s CHP; and
  - c. Province of Zuid-Holland: production of chlor-alkali in the Botlek chlorine cluster, based on high purity vacuum salt produced at Nobian’s salt production locations.
3. Beyond the Parties, other relevant stakeholders for the Projects need to be involved directly or indirectly. One or more of these stakeholders may co-sign on one or more of the tailor-made agreements. The relevant stakeholders are, without limitation:
  - a. local communities and municipalities in the vicinity of Nobian’s operations (production locations Delfzijl, Hengelo, Rotterdam, and brine fields in the Twente area and the North of the Netherlands);
  - b. Twence, as current steam supplier to Nobian in Hengelo and with the potential to increase steam delivery to Nobian’s salt production in Hengelo;
  - c. EEW and BGR/Eneco, as current steam supplier to Nobian in Delfzijl;
  - d. chemical companies co-located and partially integrated with Nobian’s production processes, such as partners in the chlorine cluster in Rotterdam, an on-site specialty salt producer in Hengelo and various site partners on the CPD;

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<sup>4</sup> Nobian’s standalone power plant (CCGT, Delesto 2) is excluded from the scope of the tailor-made agreements. Yet Delesto 1 Combined Heat and Power plant (CHP) is included.

- e. partners developing energy storage caverns together with Nobian in the Zuidwending area, i.e. HyStock (Gasunie subsidiary for the realisation of hydrogen storage) and Corre Energy (for the realisation of compressed air storage);
  - f. grid operators responsible for the electrical grid and connections to Nobian's locations (Transmission System Operator (TenneT) and Distribution System Operators);
  - g. water-related companies such as water utilities Waterbedrijf Groningen and Northwater; and
  - h. regional port companies such as Groningen Seaport and Havenbedrijf Rotterdam;
  - i. permitting, supervising and advising bodies as listed in Articles 7.1 – 7.3 below such as EZK (SodM), ODG, RWS, Province of Groningen, Province of Overijssel, Province of Zuid-Holland and DCMR.
- 4.1 In order to prevent a "waterbed effect", CO<sub>2</sub> dispensation rights under the Dutch CO<sub>2</sub> Levy linked to the intended CO<sub>2</sub> reduction projects to be realised by Nobian under the tailor-made approach must not be used to compensate a shortage of dispensation rights of any other industrial installation or for any other purpose (except for carry back<sup>5</sup>). Therefore, Nobian warrants (garandeert) with respect to each Nobian industrial installation that any surplus of CO<sub>2</sub> dispensation rights under the Dutch CO<sub>2</sub> Levy that may result from the tailor-made approach (i.e. Project 1, 2 and 3) are not used (with exception of use for carry back) and/or transferred inside or outside Nobian, and that it will take all necessary action to ensure this. An exact calculation (method) will be included in the relevant tailor-made agreement(s) between the State and Nobian.
- 4.2 In case of any breach of Article 4.4.1 Nobian shall be in default and shall forfeit to the State without further notice of default a penalty equal to 110% of the amount as referred to in section 71p subsection 1. under a. in conjunction with subsection 2. of the Dutch Environmental Taxes Act (Wet belastingen op milieugrondslag) for each concerning CO<sub>2</sub> dispensation right, without prejudice to the right of the State to claim any damages suffered as a result of a breach of Article 4.4.1 or to claim performance, in addition to the penalty thus forfeited. The State and Nobian agree that the aforementioned amount is a reasonable penalty amount, in light of the purpose of this provision mentioned in Article 4.4.1.
- 4.3 This provision (4.4.1 – 4.4.3) will be included in each tailor-made agreement between the State and Nobian.

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<sup>5</sup> Article 71q Dutch Environmental Taxes Act (*Wet belastingen op de milieugrondslag*)

### Article 5 – Nobian’s Strategic Sustainability Plan

Nobian launched its “Grow Greener Together” public strategic sustainability plan in 2021 aiming to become carbon neutral in 2040 (hereinafter: **Nobian’s Strategic Sustainability Plan**). The Projects outlined under Article 6 are integral part of this plan.

Nobian’s Strategic Sustainability Plan and progress made in the context thereof is published in Nobian’s annual sustainability report which can be found at “[Sustainability \(nobian.com\)](https://www.nobian.com/sustainability)”. Below a description of the key elements of the Nobian’s Strategic Sustainability Plan in relation to the Projects is provided.

#### Greenhouse Gas Emissions reduction

Nobian’s aim is to achieve Climate Neutrality in scope 1 and 2 emissions by 2040 and to have reduced our scope 3 emissions with at least 50% by that time. More than 90% of Nobian’s current scope 1 company emissions are generated in the Netherlands. The intermediate and renewable energy targets are listed in Table 5.1 below.

CO <sub>2</sub> reduction	<ul style="list-style-type: none"><li>▪ Scope 1 and 2 reduction: 25% by 2025, 50% by 2030 and 100% by 2040 compared to 2020</li><li>▪ Scope 3 reduction: 2% by 2025, 20% by 2030 and 50% by 2040</li><li>▪ Carbon neutral in Scope 1 and 2 by 2040</li></ul>
Renewable energy	<ul style="list-style-type: none"><li>▪ 50% share of renewable energy by 2025</li><li>▪ 66% share of renewable energy by 2030</li><li>▪ 100% renewable energy by 2040</li></ul>

**Table 5.1: Climate targets Nobian**

Figure 5.2 provides a high level overview what Nobian has already done and achieved with respect to Greenhouse Gas Emissions reduction and renewable energy initiatives and what the plans are to achieve climate neutrality in 2040.

Since 1990 Nobian has already reduced its Greenhouse Gas Emissions with 55% and increased its renewable energy share to 35% over the same period. Aim of this JLoI and the intended tailor-made agreements is to accelerate the Projects to achieve Climate Neutrality in scope 1 in 2030 in the Netherlands.

To reduce the emissions related to Nobian’s Delesto 2 electricity power plant (CO<sub>2</sub>-emissions from power sector), Nobian will develop a decarbonisation plan in parallel to the tailor-made agreements.

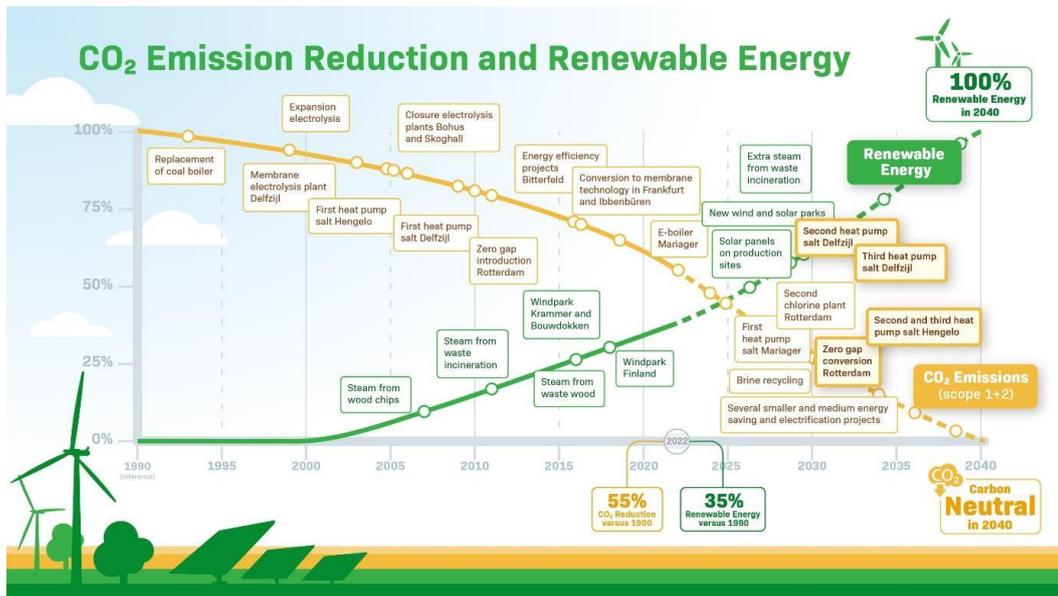


Figure 5.2: CO<sub>2</sub> reduction and renewable energy projects

A more detailed view on the contribution of the Projects in scope of this JLoI to accelerate reaching Greenhouse Gas Emissions reduction targets is set out in Table 6.1, with further detail in Article 7.

#### Sustainability reporting and independent assurance

Nobian's sustainability report and ESG data complies with the Sustainability Accounting Standards Board (SASB)<sup>6</sup> and are independently assured by DNV<sup>7</sup>. Next to this Nobian participates in three internationally recognized standards:

- Nobian's sustainability management system and performance are validated via EcoVadis.<sup>8</sup> In 2022 after first submission, Nobian reached a platinum rating placing it in the top 1% best rated companies. In 2023 Nobian prolonged the platinum rating.
- Nobian has also committed to the Science Based Targets initiative (SBTi)<sup>9</sup> where it will have its climate targets scientifically evaluated in 2023.
- Nobian has joined the Carbon Disclosure Program (CDP)<sup>10</sup> to report in detail progress in its climate ambitions and water management.

To calculate and report on the environmental footprint of our products, Nobian performs Life Cycle Assessments (LCAs) in accordance with ISO 14021 on almost its complete range of products<sup>11</sup>. In addition, all certified low carbon footprint products will be independently reviewed to obtain Environmental Product Declarations (EPD®).

<sup>6</sup> <https://www.sasb.org/>

<sup>7</sup> <https://www.dnv.com/assurance>

<sup>8</sup> <https://ecovadis.com/>

<sup>9</sup> <https://sciencebasedtargets.org/>

<sup>10</sup> <https://www.cdp.net>

<sup>11</sup> For more details in this topic reference is made to Article 4.2 of Nobian's sustainability report.

## Article 6 – Summary of Nobian’s Projects

### 6.1 Overview

This JLoI concerns five Projects with the potential to reduce in total the emission of more than 600 kton CO<sub>2</sub> per year and more than 440 ton NO<sub>x</sub> per year in the Netherlands by 2030. Table 6.1 shows the summary of benefits for society including and beyond CO<sub>2</sub> and NO<sub>x</sub>, key milestones towards project realisation, related financials of Nobian and required financial support by State, critical prerequisites and risks.

	1 Delfzijl	2 Hengelo	3 Rotterdam	4 Energy Storage	5 Portfolio Projects
<b>Description</b>	Electrification of <b>salt production</b> based on proven 'heat pump technology'	Electrification of <b>salt production</b> based on proven 'heat pump technology'	Modernization of <b>chlor-alkali production</b> based on zero-gap electrolysis	<b>Energy storage caverns in Zuidwending</b>	Portfolio of smaller <b>energy efficiency</b> measures at Delfzijl and Rotterdam
<b>Annual benefits for society</b>					
<b>CO<sub>2</sub></b> (scope 1)	295 kt ↓ Remaining: ~ 0	245 kt ↓ Remaining: ~ 0			100 kt ↓ Remaining: ~20 kt
	Total 540 kt ↓ of which Industrial: 280 kt				
<b>NO<sub>x</sub></b>	205 ton ↓ Remaining: ~ 0	195 ton ↓ Remaining: ~ 0			40 ton ↓ Remaining: ~10 ton
<b>Natural gas</b>	165 mln m <sup>3</sup> ↓	135 mln m <sup>3</sup> ↓			50 mln m <sup>3</sup> ↓
<b>Electricity</b>			135 GWh ↓		
<b>Water</b>	Fresh water: 1 mln m <sup>3</sup> water ↓ Waddenzee: ~ 70 MW heat ↓	Twente kanaal: ~ 0,7 mln m <sup>3</sup> water ↓ < 25 MW heat ↓	Fresh water: ~0,1 mln m <sup>3</sup> water ↓ Harbour < 10-15 MW ↓		
<b>E-flex</b> (capacity new assets)	7 MW	7 MW	25 MW	<b>Compressed Air Caverns</b> could serve as batteries and help avoid curtailment of renewables / store energy for periods of lower renewable availability ( <b>2</b> caverns provide 320MW for 3-4 days)	
<b>Other</b>		Explore intermediate step to increase steam usage of MWI (Twence)	Freeing up significant E-grid capacity allows other parties to execute CO <sub>2</sub> /NO <sub>x</sub> reduction projects	<b>4 hydrogen caverns</b> to support the set-up of the hydrogen network (incl. ambition to realize 3-4 GW electrolysis capacity). The 4 caverns can store 1 TWh hydrogen. Additionally, 4-5 new caverns planned in Zuidwending area that will be suitable for energy storage over time (subject to permitting, providing additional optionality)	
<b>Key Milestones</b>					
<b>Cond. FID</b> Costs: -20%/+30%	Q4 – 2023 Binding Agreement	Q4 – 2023 Agreed approach to Binding Agreement	Q4 – 2023 Binding Agreement	Key actions agreed in this JLoI	Phased No Binding Agreement required
<b>FID</b> Costs: -10%/+10%	Q4 - 2024	Q4 - 2026	Q4 - 2024		phased
<b>Operational</b>	2027 - 2028	2029 - 2030	2027 - 2029	2025 – 2030 4 caverns for H2 and 2 for Compressed Air	2023 - 2030

Financials				
<b>Total Capex</b>	540 mln € -30%/+50%		Together with partners, > 500 mln €	Up to 20 mln € /yr
<b>Investment by Nobian</b>	400 - 600 mln € for projects 1,2,3 and 5			
<b>Financial support request from State</b>	190 - 290 mln €		No support requested	No support requested via Maatwerk
<b>Support/CO<sub>2</sub> reduction</b>	30 - 45 €/ton CO <sub>2</sub> reduction <sup>12</sup>			
Permits				
<b>Expected critical Permits and key authority</b>	Impact of changed due to 'omgevingswet' on processing of permit requests related to Maatwerk agreement			
	ODG - Environment & RWS - water	EZK/SodM - Environment RWS - water	DCMR - Environment RWS - water	EZK and relevant advisors for mining activities (e.g. SodM); local municipalities for above-the-ground installations
<b>Salt Permits</b>	Streamlined permit process (RCR, local stakeholder participation)			

**Table 6.1:** Climate and energy transition projects with potential for a binding agreement.

<sup>12</sup> For calculation see article 6.3.3

## 6.2 Overview of climate, environmental and other impacts

Specific climate related targets of CO<sub>2</sub> reduction, electricity consumption and steam are:

- a. Scope 1 CO<sub>2</sub> emissions: acceleration of the scope 1 CO<sub>2</sub> emission reduction at the Sites by more than 600 kton per year (compared to reference year 2020), with the ambition to reach close to zero<sup>13</sup> CO<sub>2</sub> emissions in 2030, being 10 years earlier than the current Nobian ambition of 2040. Approximately 280 kton of this emission reduction qualifies as reduction of industrial emissions<sup>14</sup>. Approximately 220 kton of this industrial emission reduction is in addition to the targets set by Dutch Climate Tax for 2030.
- b. Scope 2 CO<sub>2</sub> emissions: Nobian strives for zero scope 2 emissions with Projects 1 and 2 under the condition of sufficient availability of renewable electricity at economically viable costs.
- c. Scope 3 CO<sub>2</sub> emissions: There will be no transfer from scope 1 and 2 emissions to scope 3. And Projects will lead to a reduction of scope 3 emissions in category 'fuel and energy related'.
- d. NO<sub>x</sub> emissions: reduction of about 440 tons (compared to reference year 2020), bringing emissions close to zero in 2030.
- e. Natural gas: reduction of the consumption at the Sites from approximately 350 million m<sup>3</sup> /year today to almost zero by 2030.
- f. Electricity consumption: achieve electricity savings of 135 GWh per year at Nobian's electrolysis plant at its Rotterdam Site by 2030, to free up 15-20MW on the power grid.
- g. Steam use: achieve more efficient use of steam from existing external biomass and waste incineration at the Hengelo Site.
- h. Water: make approximately 1 million m<sup>3</sup> per year high-quality process water available at the Delfzijl Site, reduction of residual heat load into Waddenzee of about 65 – 85 MW. In Hengelo fresh water intake reduction of 0.6 – 0.8 million m<sup>3</sup> per year and a reduction of residual heat load into Twente Kanaal of up to 25 MW. Rotterdam fresh water intake reduction of 0.1 million m<sup>3</sup> per year and a reduction of residual heat load into harbour (sea) of up to 15 MW.

### *E-flexing capabilities*

Nobian, with its electricity-intensive Sites in Rotterdam and Delfzijl, has developed the ability to help stabilise the electricity grid through operating its production plants in a flexible way by ramping down when there is a shortage of electricity on the grid and ramping up when there is sufficient or surplus energy supply on the grid<sup>15</sup>. The relevant enhancements are:

- for the Delfzijl and Hengelo Sites each 7 MW capacity is added for flexibility<sup>16</sup>; and
- for the Rotterdam Site 25 MW additional capacity for flexibility.<sup>17</sup>

As the Projects do not increase production capacity, the capacity available for E-flexing also depends on the maximum production capacity of a plant considering contractual obligations to customers.

### *Schematic overview reduction CO<sub>2</sub> scope 1 and industrial emissions*

Figures 6.1 and 6.2 below provide graphs to visualise the potential impact of the Projects on reduction scope 1 and industrial CO<sub>2</sub> emissions respectively. Figure 6.1 shows the original ambition of Nobian to reduce the total scope 1 CO<sub>2</sub> and natural gas consumption as well as the acceleration of this ambition as a result of realising the Projects. Figure 6.2

<sup>13</sup> Nobian currently estimates that approximately 20 kton CO<sub>2</sub> (scope 1) cannot be mitigated before 2030.

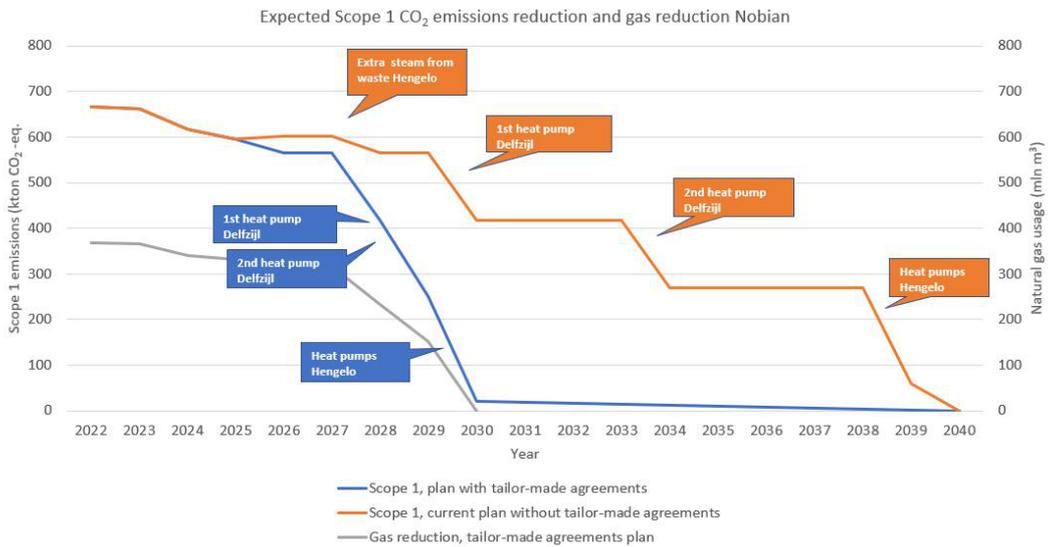
<sup>14</sup> Since Nobian works with 'Warmte-kracht koppelingen' that also generate electricity, about 50% of its emissions counts for the industry table and 50% for the electricity table.

<sup>15</sup> Transmission System Operator (TSO) TenneT uses a combination of products to ensure the stability of the Dutch electricity transmission system. Currently Nobian is using a combination of mFRR (manual Frequency Restoration Reserve [Emergency Power]) and aFRR (automatic Frequency Restoration Reserve [Reserve Power]) to support the system. As a result of Project 1, 2 and 3 this technical capability will be enhanced.

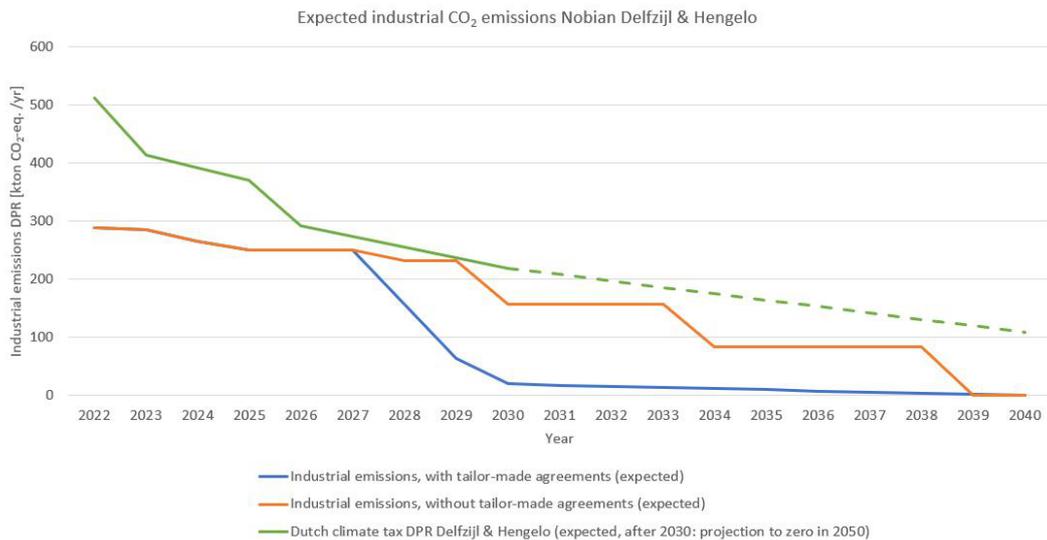
<sup>16</sup> to act on mFRR (mainly) and aFRR markets

<sup>17</sup> to act on mFRR and aFRR markets,

provides an overview of the expected industrial CO<sub>2</sub> emitted over time and the acceleration of the reduction of these emissions that realising the Projects at the Delfzijl and Hengelo Sites are expected to have.



**Figure 6.1:** Ambition of the acceleration of climate targets and gas reduction as a result of tailor-made agreements. The line for the Dutch climate tax is calculated as: number of dispensation allowances (DPR) under the Dutch climate tax + emissions associated with electricity production.



**Figure 6.2:** Acceleration of industrial emission reduction as a result of tailor-made agreements.

## 6.3 Financials and key elements of the agreement

### 6.3.1 Introduction

Financial support is only required for the Projects in Delfzijl, Hengelo and Rotterdam (i.e. Project 1, 2 and 3):

- Delfzijl and Hengelo: replacing installations running on natural gas-based steam (and equivalent CO<sub>2</sub>) with installations running on electricity (MVR technology)
- Rotterdam: 24 electrolysers replaced with electrolysers using less electricity

Nobian prepared a financial model to assess the business cases for the individual Projects, and the resulting financial support. Important to stress is that these business cases need to provide gains purely based on the 'efficiency savings' (e.g., lower energy use, lower CO<sub>2</sub> emissions, lower maintenance cost), as none of the Projects leads to a capacity expansion.

#### *Key parameters of the financial model: Project 1 and 2 (Salt plants Delfzijl and Hengelo)*

In the current setup natural gas is burned in Nobian's CHP plants, which produces steam and electricity (see also Articles 7.1-7.2). Nobian uses the steam in the salt production process, and the generated electricity is either used at the Site, or is sold to the grid. In the future set-up, Nobian's salt production process is electrified, and the business case is based on the following key elements:

- a. Energy and CO<sub>2</sub> efficiency: improved energy efficiency and lower CO<sub>2</sub> emissions
- b. Electricity income: stopping the CHPs results in loss of income on generated electricity
- c. Other: impact e.g. on maintenance cost, grid connection cost, energy taxes, reduced steam portfolio optimization opportunities.

No production loss is expected during construction and change-over, so no costs are foreseen in the business case model.

#### *Key parameters: Project 3 (Rotterdam)*

The new technology in Rotterdam will significantly increase efficiency compared to the current setup of 24 electrolysers (ELOs). Key driver in the Rotterdam business case is the electricity saving of approximately 135 GWh annually. Other benefits for the Project include 'new-for-old' assets (less maintenance costs) and reduction of labour costs. The business case model also includes the effect of production loss during construction.

#### *Key financial risks beyond Nobian control:*

The acceleration of the sustainability ambition of Nobian by 10 years introduces the following risks:

- a. Geo-political/-economic developments: recent events such as Covid 19, the war in Ukraine and the resulting energy crises have significantly disrupted the European chemical sector (e.g., energy prices, lower demand due to higher import, high inflation on wages and materials, etc.). Furthermore, in Europe several European and national climate policies were announced, with (to-date) unclarity on the exact workings of these policies and the resulting impact on the European chemical sector. Given these uncertainties, Nobian would at this moment not be prepared for large investment decisions without State support.
- b. Electricity, Gas and CO<sub>2</sub> prices: as energy curves are a key driver in the business case, deviations and volatility have significant impact on the business case (pre-FID, but also in the years after). These are largely influenced by governmental policies (EU/NL) and geopolitical developments.
- c. Permits: timelines for the Projects are realistic from a technical point of view. However, based on recent experience, Nobian assesses the permit timelines as ambitious and partly depending on factors outside control of Nobian. Delays in obtaining the relevant permits will impact the business case of the individual Projects.
- d. Capex costs and resources: with various companies starting to execute their decarbonisation agenda, there is a risk of increasing scarcity of skilled labour,

manufacturing facilities for large heat pumps, and materials. This can impact both the timelines and the (capex) costs of the Projects.

The aforementioned risks can have a substantial impact on the business case – more details are provided in Annex VIII. *For business confidential reasons, this Annex will not be published.*

### 6.3.2 Investment and financial support from State

#### *Total investment*

As shown in table 6.1, the investment requirement for Project 1, 2 and 3 is approximately 540 million Euro (with a -30% / +50% accuracy at this stage of the Projects). The required investment will become more accurate in the next phases of the Projects (Q4 2023 -20% /+30% and in Q4 2024 -10% /+10%). Nobian will, subject to the conditions as mentioned in this JLoI, use reasonable efforts to execute the Projects and to provide for the financing of the Projects as much as possible. Nobian will only apply for financial support from the State for the remaining funding gap.

#### *Financial support from State*

Nobian has shared a detailed financial model with the State. This model is prepared by Nobian in close cooperation with a third party. The model, and the assumptions made therein, were validated by financial experts from EZK/ RVO. The Advisory Committee has also received the financial model. *For business confidential reasons, the financial model will not be published.*

Based on the financial model the Parties agree that Nobian requires financial support to realise the Projects 1 through 3. Based on the current insights and available forecast financial (capex) support in the range of 190-290 million Euro would be needed to remove the remaining funding gap. This range will be further finetuned as the Parties work towards the tailor-made agreements (planned for Q4 2023), with refinements expected on updated capex estimates, updated energy and CO<sub>2</sub> curves, etc. The State shall use reasonable efforts (*redelijke inspanningen*) to get the remaining funding gap of these Projects financed, subject to the conditions as mentioned in this JLoI.

With regard to the remaining funding gap, the State will – as soon as reasonably possible and with the cooperation of Nobian if required – look into the options through which Nobian can be financially supported. These options could be any existing or new generic national or European financial instrument or tailor-made funding. The following applies:

1. In the event that funding through an existing or new financial generic instrument is used/chosen, such funding can and will only be provided and executed under the condition that there is a legal basis for such funding, and the funding complies with the systematics and conditions (e.g. scope, application formats, deadlines and subsidy decision) of that instrument;
2. In the event that tailor-made funding is used/chosen, such can and will only be provided and executed under the condition that there is a legal basis for providing such tailor-made funding, and the tailor-made funding complies with the regulations of the European state aid rules and the national regulations applicable to such tailor-made funding;
3. Any chosen option will need to comply with all applicable rules and regulations at the time of the decision, such as the applicable budget rules and procedures; and
4. In the case of tailor-made funding, arrangements can be made to avoid overcompensation of Nobian by the State for the relevant Projects. This can be as formulated as a settlement of financial results during the life of the Project in case the funding gap is smaller than anticipated.

### 6.3.3 Benefits for society

The expected required financial support of 190-290 million Euro for the three Projects can be placed in the following perspective:

- a. Total reduction of more than 600 kton CO<sub>2</sub> of which the reduction of 280 kton *industrial* emissions accounts for ca. 1% of the (recently increased) Dutch climate target for industrial emissions.
- b. The additional (compared to the Dutch CO<sub>2</sub> levy) reduction of 220 kton CO<sub>2</sub> *industrial* emissions accounts for 6-7% for the (recently increased) reduction target of the tailor-made approach.
- c. The reduction of 260 kton accounts for ca. 1% of the Dutch reduction target of the electricity sector.
- d. The required subsidy translates in ca. 30 - 45 Euro per ton of avoided CO<sub>2</sub> emissions based on calculation method similar to SDE++<sup>18</sup>. Required subsidy translates to ca. 50 - 85 Euro per ton avoided CO<sub>2</sub> emissions when comparing with Nobian's original ambition.<sup>19</sup>
- e. Gas consumption will reduce with ca. 350 million m<sup>3</sup> natural gas per year. This is equivalent to ca. 1% of total gas consumption in the Netherlands<sup>20</sup> and the gas consumption of ca. 250,000 households, which could only be achieved after investing in large scale insulation, electrification and/or heat pumps.
- f. NO<sub>x</sub> emissions will reduce with ca. 440 ton per year. This is the equivalent of ca. 1,5% of the total Dutch industrial NO<sub>x</sub> reduction target.
- g. In the Botlek area, the reduced electricity consumption of Nobian (ca. 135 GWh, or ca. 15-20MW, equivalent to the consumption of ca. 50,000 households) frees up capacity on the locally congested electricity grid. The free capacity can be leveraged by other companies to further electrify.
- h. The E-flex capacity realized with this program which is 12% of aFRR capacity<sup>21</sup> currently available in Netherlands.
- i. Key enabler for the Energy Transition by developing caverns in the Zuidwending area for storage of Energy (Hydrogen and Compressed Air).

### 6.3.4 Next steps

After signing this JLoI, but before entering into tailor-made agreements, Parties will further align on the exact subsidy mechanism and the associated conditions for the relevant Projects. Among others, the following needs to be further agreed upon:

- a. the structure of the subsidy or financing (also in line with relevant guidelines on state aid) as well as the guarantees to be provided for the proper fulfilment of Nobian's obligations in respect of that subsidy and/or financing
- b. an appropriate mechanism to avoid 'over-subsidisation' in line with state aid regulation
- c. a mechanism to deal with unforeseen 'black swan' events<sup>22</sup>
- d. 'freezing' of figures and forecasts (and which are included in this scope) in the business case and government policies in place at a moment (conditional) investment decisions are made
- e. a mechanism to deal with (financial) risk and balance 'start saving CO<sub>2</sub> as soon as possible' versus having '100% clarity that permits are granted'. This can easily make a difference of 1 - 2 years
- f. a mechanism to handle other risks, such as, but not limited to:
  - o failure to achieve the targeted CO<sub>2</sub> savings
  - o delayed Projects
  - o status of other Projects in case one of them cannot go through, e.g., due to not obtaining permits

<sup>18</sup> 190 - 290 million euro divided by 12 years of 540 kton reduction

<sup>19</sup> 190 - 290 million euro divided by 3.6 million kton reduction comparing Nobian ambition with Maatwerk plan (this discards regular financial support as well as other societal benefits)

<sup>20</sup> [Gasverbruik Nederland in 2022 laagste in 50 jaar \(cbs.nl\)](https://www.cbs.nl/en-gb/indicatoren/192101-gasverbruik-nederland-in-2022-laaqste-in-50-jaar)

<sup>21</sup> In 2022, the total capacity in Netherlands of aFRR was approximately 325 MW (up / down) and of mFRR was approximately 950 MW (up / down). Nobian could offer approximately 12% on the aFRR market or alternatively this capacity could be made available on the mFRR market.

<sup>22</sup> For instance, what if natural gas prices drop and are uncoupled from the electricity price? This means CHP plants (current setup) are significantly cheaper, resulting in a very poor project return.

## **Article 7 – Project details, efforts and actions of the Parties and Provinces**

### **7.1 Project 1: Delfzijl – electrification of two salt production plants based on heat pump technology (MVR)**

#### 7.1.1 Description of the project and timeline

##### *Introduction*

Nobian's largest salt plant, situated on its Delfzijl Site, is an integral part of a key chlor-alkali value chain in Western Europe. Its annual capacity is 2.7 million ton of high purity vacuum salt, which is produced from brine in three steam powered Multi Effect Evaporation (MEE) and one electrically powered Mechanical Vapor Recompression (MVR), which was installed in 2010. In these units, water is evaporated creating a salt slurry, which is further dried in various process steps by which the dry salt is finally produced. Of the total production volume approximately 85% is produced in the MEE and 15% in the MVR. The brine for the Delfzijl Site is obtained via solution mining in the nearby salt deposits in Heiligerlee and Zuidwending. More technical details and background on MVR technology can be found in Annex IV.

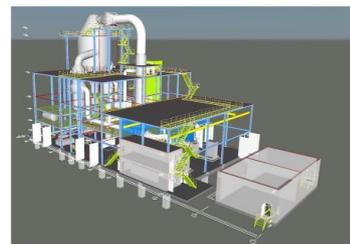
Nobian's salt production in Delfzijl employs approximately 100 people (direct). Salt produced in Delfzijl is partly used by Nobian's electrolyser plant at Chemie Park Delfzijl (CPD) to produce caustic soda, chlorine and hydrogen. These products are subsequently used at the CPD by companies including Delamine, Nouryon, Teijin Aramid, Lubrizol and others to produce various products. Total employment at CPD is approximately 1200 people. Salt not used in the CPD is shipped to Nobian's chlor-alkali site in Rotterdam, and to other customers.

In the MEE units, the required heat to evaporate the water is obtained from steam. This steam is partly produced by Nobian's gas fuelled "Delesto 1" Combined Heat and Power (CHP) plant, and partly sourced from nearby third-party waste- and biomass incinerators outside the CPD. In the current set-up of utilizing own produced steam, external steam and electricity, Nobian has the ability to produce in a cost-efficient way due to the flexibility using different sources with specific market dynamics and prices.

The salt plant of Nobian in Delfzijl also plays a vital role in realizing the ambition of creating energy storage in caverns in the North of the Netherlands: brine coming from these to-be-developed caverns will be processed in Delfzijl. For more information on energy storage in caverns reference is made to Article 7.4.

##### *Technical description*

The Project concerns the replacement of two (of the three) steam driven MEE plants for salt production by two electricity-driven MVR plants. As a consequence, a significant amount of energy will be saved, since MVRs are more energy-efficient than MEEs. Furthermore, the shift from steam to electrical power will result in substantially lower steam demand for salt production, enabling ramping down or even completely shutting down the Delesto 1 CHP plant. The third MEE plant will continue to run on steam from external sources with a low carbon footprint (EEW-waste and BGR/Eneco-biomass). MVR is a proven technology. Nobian has already two (smaller) MVRs running on its Delfzijl and Hengelo Sites. The 2 new 750 kt/yr (final dimension to be defined in study phase) salt MVRs will be among the largest salt MVR installations in Europe to date. In line with the renewable energy targets of Nobian, these MVRs are currently targeted to run on 66% renewable electricity by 2030, and 100% by 2040.



### *E-flex capability*

The design of the MVRs will support E-flexing capabilities for mFRR (mainly) and potentially aFRR of approximately 7 MW (see also article 6.2).

### *Timeline*

Nobian follows a proven and stage-gated project management methodology (more details in Annex III). It is anticipated that a tailor-made agreement is agreed between Nobian and the State in Stage 2, which means that conditional FID can be taken. Engineering and construction of the two MVRs will be done simultaneously.

It is critical for Nobian to have sufficient certainty on the future of salt mining in North of the Netherlands (Heiligerlee, Zuidwending and Zuiderveen as stated in the permits section 7.1.3) by Gate 3 in 2024 (final FID).

To ensure minimal production loss during construction and change-over to new technology, it is essential that in the planned bi-annual turn-round in 2025 the required tie-ins will be executed. Final commissioning and start-up of the respective MVRs is planned in Q4 2027 and Q1 2028 to be done sequential with minimal time between the two start-ups.

As agreed in the EoP Nobian has already started with the engineering activities of the Delfzijl Project ahead of a tailor-made agreement. In parallel, Nobian has submitted a grant application for financial support on external costs incurred for engineering activities for this project. The total costs for the Project are approximately 11.2 million euro. The State has provided a customisation grant of 4 million euro to support this Project and to share the financial risks for this Gate.

<b>Project phase</b>	<b>Main activities</b>	<b>Milestone - schedule</b>
Initiation	Define alternatives to be evaluated, -30/+50% cost estimate	Gate 1 - March 2023
Study	<ul style="list-style-type: none"><li>• Discuss permit approach with authorities</li><li>• Safety and environmental studies</li><li>• -20/+30% cost estimate, update business case</li><li>• Evaluate alternatives, select one alternative</li><li>• Prepared grand order</li></ul>	Gate 2 – Dec. 2023
Pre-project	<ul style="list-style-type: none"><li>• Basic engineering, define project scope</li><li>• Hazard and operability study, environmental calculations</li><li>• -10/+10% cost estimate, update business case</li><li>• Prepare permits application documents</li><li>• Permits approval process</li></ul>	Gate 3 (FID) - Nov. 2024
Realization	<ul style="list-style-type: none"><li>• Detail engineering, construction</li><li>• Commissioning &amp; Start-up, 1<sup>st</sup> MVR</li><li>• Commissioning &amp; Start-up, 2<sup>nd</sup> MVR</li></ul>	Q4 2027 Q1 2028
Utility study CPD	Investigate Steam/Electricity/Water needs & consequences of MVR project for the Chemie Park Delfzijl	In parallel to Study phase

### 7.1.2 Infrastructure & impact to utilities at Chemie Park Delfzijl (CPD)

#### *Introduction*

CPD hosts high-performance chemical companies which are highly integrated to optimize efficiency across parties at the Site. Nobian is currently the main utility supplier and distributor for steam, electricity and other utilities such as process water at CPD. The MVR project has an impact on the existing balance with regard to utilities on the CPD. The exact impact requires further investigation and is to be addressed in the tailor-made agreement.

#### **Efforts Nobian**

##### *Steam supply: balancing and reliability*

Nobian both supplies and balances the steam grid on the CPD using its Delesto 1 CHP plant. Nobian also integrates the third-party steam supply from both the waste incinerator of EEW and the Eneco biomass plant into the CPD steam portfolio.

Nobian secures the steam reliability to current customers with a combination of the Delesto 1 CHP plant, third party steam and the flexible operation of the steam driven salt plants (MEEs). Completion of installation of the MVRs (Project 1) would in principle enable the shutdown of the CHP unit Delesto 1. This would make additional steam from biomass and municipal waste available for other users at CPD. Since these utilities are essential for the CPD as a whole, an overall future proof utility plan needs to be developed, and the future role of Nobian in this respect. Nobian will initiate the activities to come to a plan with all relevant stakeholders at and around the CPD. Therefore:

- a. In parallel to the MVR project, Nobian will make reasonable efforts to facilitate and enter into good faith discussions for the future set up of the steam supply and distribution to the current steam consumers on the CPD cluster. Participation of regional stakeholders like Groningen Seaports (GSP), EEW, BGR/Eneco, Province of Groningen, I&W (policy MWI) and others is expected as the longer-term demand and supply of steam in the CPD area needs to be mapped out. This should include the future and legislation of Municipal Waste Incineration (MWI) and potential new future steam generators, if any. Electrification of other (non-Nobian) plants at the CPD will be studied to reduce steam demand and potential investments to facilitate this electrification will be elaborated on in the tailor-made agreement. A non-fossil based back-up will be explored and included if required in the tailor-made agreement of this Project, including the related investment.

#### *Electricity infrastructure*

With the new MVRs in operation, the electricity demand on the CPD will increase by about 25 MW, whereas shutdown of the Delesto 1 CHP plant results in a reduction of about 50 MW electricity generation. Based on first calculations, the e-infrastructure of the CPD is sufficient to support these modifications. However, future electrification opportunities, which might be required as a result of the change in steam supply situation, on the CPD might be limited as its electrical infrastructure is reaching its limits. Therefore:

- b. Nobian proposes to engage with CPD and other stakeholders (including Groningen Seaports (GSP), the Province of Groningen, Chemport, Enexis, TenneT and others) to investigate options for further electrification of the CPD. If required, additional measures and investments will be addressed in the tailor-made agreement for the Delfzijl Project.

#### *Water*

With the conversion to MVRs, about 1 million m<sup>3</sup> per year additional process water will become available at CPD. This water could potentially be of interest for other (new) companies in the region. Therefore:

- c. Nobian to engage with stakeholders to explore opportunities for better use of this water.

### **Efforts State**

#### *Steam supply: balancing and reliability*

- a. Policy, legislation and taxation of CO<sub>2</sub> and other Greenhouse Gases impacts MWIs and hence the future of EEW and BGR/Eneco, which will become the key steam suppliers of CPD. The State therefore is an important stakeholder in the roadmap for MWIs to define a solution for the steam supply to CPD when Delesto 1 is being shut down.

#### *Electrical infrastructure*

- b. The State will continue to coordinate the accelerated realisation of MIEK projects, notably the upgrading of the 110/220kv infrastructure at station Weiwerd and the realisation of a new 220kv station at Farmsum.
- c. The State endeavours to make renewable electricity more accessible (within the boundaries of the law) to the industry.

### 7.1.3 Permits

#### *Introduction*

Based on the current forecasts, it is expected that the Delfzijl Project will result in improvements to nature, environment and water as the intake of fresh water, emission of heat load to Waddenzee, emission to air, and use of natural gas will decrease. Design measures are required to ensure that the Project fits within noise limits.

However, despite the fact that Nobian expects improvements for most environmental aspects, based on Nobian's initial assessment, Nobian has identified the following general risks related to permitting:

1. interference of permit application process with other (new) key initiatives;
2. interference by revisions of existing permits; and
3. interference by new legislation (e.g., Omgevingswet applicable 1/1/2024); and/or
4. capacity of staff of competent authorities ('bevoegd gezag').

In the following table the relevant competent authority is highlighted, indicating areas in which Parties require additional effort. Permit complexity is considered a high risk for Water/RWS. Capacity of the competent authority is considered a high risk for Environment/ODG.

Competent Authority	Nature	Environment	Water
Province of Groningen (ODG)	Prov. Groningen	Prov. Groningen (ODG)	RWS

#### **Efforts Nobian**

- a. Nobian to prepare and submit permit applications specific to this Project and expand the internal team.
- b. Nobian will periodically schedule meetings with competent authorities to review the project portfolio with associated impact on applications (running and planned), with the aim to enhance insight in upcoming projects, in order to jointly assess impact and potentially prioritise.
- c. Nobian and the State will periodically schedule a meeting between them and the coordinating authority to discuss the progress in the permitting process.

#### **Efforts State**

- a. The State will facilitate, where possible and within its purview, timely decision-making on permit applications for any Permit and, whilst respecting their respective authority and function under public law, encourage relevant public entities and authorities whose actions and/or decisions are required for obtaining any Permit to contribute to timely decision making.
- b. The State to explore options with Nobian to process permits in parallel if possible within the applicable legal framework.
- c. Parties will consult with the State, relevant regional and local authorities and their advisers (if any) to come to an aligned view on relevance and prioritisation of the Projects.
- d. Since the Project is not officially classified as of national importance, the 'Rijkscoördinatiereregeling' (RCR) is not applicable. However, the State endeavours to set up a support for the permitting process as a pilot to implement the 'Omgevingswet' for projects. The availability of a senior permit expert to coach and support the permitting application process should address possible bottlenecks and shorten lead times.
- e. In order to achieve the aforementioned goal, the State aims to provide financial aid to the authorities responsible for the relevant permitting procedures under Dutch-law – so as to provide them with additional means to expand their human capital resources

to form an 'expert pool' – which aims at generating a context within which permitting procedures can be executed in a timely manner.

Parties recognize that there are some additional critical success factors in the permitting procedures, such as capacity, options to handle application procedures in parallel and consultations between Nobian, the State and the 'Omgevingsdienst Groningen'.

If required the competent authority could use human capital resources from the intended expert pool (as mentioned as Effort E from State Article 7.1.3).

This JLoI or its content in no way limits or affects the authority and/or discretion of the relevant public bodies or authorities, for instance with respect to, but not limited to, licensing, review of permit applications or enforcement.

#### **7.1.4 Summary (all to be validated and finalised in tailor-made agreement)**

##### *Technical changes by Nobian*

- a. Realisation of 2 new salt production plants of about 1500 kt/yr, based upon Mechanical Vapor Recompression Technology (MVR).
- b. Brine purification and salt centrifuge capacity unchanged, so total Site production capacity will remain unchanged.
- c. 2 of the 3 existing salt production plants, based on steam (MEE technology), will be stopped, reducing the steam demand and thereby the CO<sub>2</sub> and NO<sub>x</sub> emission.
- d. The MEE plant that stays in operation will continue to use third party steam currently sourced from EEW (waste) and/or BGR/Eneco (biomass).
- e. The MVR will be designed to operate in a flexible way to be able to support the balancing of the electricity grid.
- f. Design for a future utility supply to the current Nobian utility customers at the CPD.

##### *Expected results by 2029 to be realized by Nobian*

- a. Scope 1 CO<sub>2</sub>-emission reduction: 295 kton CO<sub>2</sub>/yr
- b. NO<sub>x</sub> emission reduction: 235 ton NO<sub>x</sub> ton/yr
- c. Natural gas saving: 165 million m<sup>3</sup>/yr
- d. Extra volume of high-quality process water availability (condensate from brine evaporation): 1million m<sup>3</sup>/yr; volume will be validated during the Study phase
- e. Reduction of residual heat into Waddenzee ca. 65-85 MW; volume will be validated during the Study phase
- f. Additional E-flex capability of approximately 7 MW
- g. The ability to sustainably process brine coming from to-be-developed energy storage caverns in the Zuidwending area

##### *Risk and mitigations*

As an integral part of the Nobian project management methodology (see Annex III), risks are identified, tracked, assessed and mitigated. Project Assurance Reviews are an integral part of the stage gate process. As proven technology will be implemented for this Project, no additional risks with regard to technology are foreseen. Overall financial and business risks are highlighted in Article 6.3 and set out in more detail in Annex VIII, which for business confidential reasons will not be published.

##### *Additional risks for this Project:*

- a. Delay in **mining permits** and/or concessions for Heiligerlee, Zuidwending and Zuiderveen, results in delay of final investment decision of the Project. Potential mitigation is (continue) to work in close cooperation with Parties, competent authority and regional stakeholders. Track progress in line with Article 10 (Governance).
- b. Experts indicate that the **revision of Omgevingswet** might result in freezing of permit requests. This might impact existing permit requests resulting in knock-on effect on

new requests related to the Project. Potential mitigation is close cooperation and progress monitoring between Parties and competent authorities as also described in Article 7.1.3 (Permits).

- c. For this Project, specific expertise, equipment and precious materials (e.g. titanium, monel, cupronickel) are required. **Scarcity** in the (Dutch) market of any of these will result in delay and/or increase of costs. Potential mitigating action is to pre-order long-lead items and/or early commitments to critical vendors. This is only feasible if risk of obtaining required permits and financial risks are mitigated.
- d. **Shutting down CHP** (Delesto 1) might have bigger than expected impact on CPD. This might result in implementing alternative and/or back-up options (e.g., for steam) currently not in scope of the Project. As stated in Article 7.1.2, Nobian will execute a study with the aim to identify potential impact and propose mitigating actions.

## **7.2 Project 2: Hengelo – electrification of large salt production plant based on heat pump technology (MVR)**

### **7.2.1 Description of the Project and timeline**

#### *Introduction*

Nobian's second largest salt plant in Europe is located in Hengelo, with an annual capacity of approximately 2.6 million ton of high purity vacuum salt which is produced from brine in two Multi-Effect-Evaporation (MEE) units (approximately 85%) and one Mechanical Vapor Recompression (MVR) unit (approximately 15%). More technical details and background on MVR technology can be found in Annex IV. The technology used at the Hengelo Site for the production of salt is comparable to the technology used at the Delfzijl Site. Total employment of Nobian employees at the Hengelo Site is approximately 200 people (Nobian) and approximately 400 in total including third parties.

The brine for the Hengelo Site is obtained via solution mining in the nearby salt deposits in the region of Hengelo. Dependent on production rate, about 50% of the required steam is produced by Nobian's own gas fuelled steam production from a Combined Heat Power (CHP) installation. The remaining required steam sourced from Twence, a municipal waste incinerator (MWI), from three different installations: the waste to energy plant, the biomass energy plant (BEC) and the Empyro pyrolysis installation. In 2006 Nobian installed the first MVR in Hengelo.

Nobian and Twence have a long relationship (as of 2010) utilising each other's strengths in the chain of energy production, steam- and salt production and supporting the region with residual heat. In the current set-up, steam from Twence is utilised by Nobian to provide heat to the MEEs.

The residual heat after the evaporation process of Nobian in one of the MEE installations is made available to the local district heating system of Hengelo Zuid (free of charge without supply commitment).

#### *Technical description*

The Project concerns the replacement of one large steam driven MEE plant for salt production by two electricity-driven MVR plants. As a consequence of this replacement, a significant amount of energy will be saved, since MVRs are more energy-efficient than MEEs. Furthermore, the shift from steam to electrical power will result in substantially lower steam demand for salt production, enabling ramping down or even completely shutting down the CHP. The 2 new 700 kt/yr (final dimension to be defined in study phase) salt MVRs will become one of the largest MVR salt installations in Europe to date. In line with the renewable energy targets of Nobian, the MVRs are currently targeted to run on 66% renewable electricity by 2030 and 100% by 2040.

#### *E-flex capability*

The design of the MVRs will support e-flexing capabilities for mFRR (mainly) and potentially aFRR of approximately 7 MW (see also article 6.2).

#### *Timeline*

Nobian follows a proven and stage-gated project management methodology (more details in Annex III). It is anticipated that a tailor-made agreement is entered into between Nobian and the State in Stage 2, which means that conditional FID can be taken. Engineering and construction of the 2 MVRs will be done simultaneously.

To ensure minimal production loss during construction and change-over to new technology, it is essential that in the planned bi-annual turn-round in 2027 the required tie-ins will be executed. Final commissioning and start-up are planned in H2 2029 and H1 2030 respectively to be done sequential with minimal time between the two start-ups.

Project phase	Main activities	Milestone – schedule
Initiation	Define alternatives to be evaluated, -30/+50% cost estimate	Gate 1 – Dec. 2023
Study	<ul style="list-style-type: none"> <li>• Discuss permit approach with authorities</li> <li>• Safety and environmental studies</li> <li>• -20/+30% cost estimate, update business case</li> <li>• Evaluate alternatives, select one alternative</li> <li>• Prepared grand order</li> </ul>	Gate 2 – Q2 2024
Pre-project	<ul style="list-style-type: none"> <li>• Basic engineering, define project scope</li> <li>• Hazard and operability study, environmental calculations</li> <li>• -10/+10% cost estimate, update business case</li> <li>• Prepare permits application documents</li> <li>• Permits approval process</li> </ul>	Gate 3 (FID) – Q4 2026
Realization	<ul style="list-style-type: none"> <li>• Detail engineering, construction</li> <li>• Commissioning &amp; Start-up, 1<sup>st</sup> MVR</li> <li>• Commissioning &amp; Start-up, 2<sup>nd</sup> MVR</li> </ul>	H2 2029 H1 2030
Twence steam extension	Investigate together with Twence opportunity to accelerate emission reduction by (temp.) extension of existing steam intake	In parallel to Study phase

### 7.2.1.1 Option for further acceleration

As of 2010 a dedicated steam pipeline delivers steam produced by the Twence waste incineration installation and biomass plant to Nobian.



An option which will be investigated by Nobian and Twence in parallel to the Electrification project, is a further expansion of this existing steam delivery. This option could potentially facilitate an *additional acceleration* of reaching (significant part of) the sustainability targets by reducing operating hours of the Nobian CHP unit. Based on current insights, this could technically be realised on relatively short notice (in 2025) as a temporary and intermediate solution. Details on this scenario are described in Annex V.

Figure 7.2.1: existing steam pipeline (marked yellow) between Twence and Nobian

This intermediate step could bring value from a sustainability and economic point of view, however the robust and long-term solution for making Nobian’s production process in Hengelo sustainable remains electrification via MVR technology (for details see Annex V). This intermediate solution is being worked out between Nobian, Twence and other key stakeholders. If the intermediate solution is viable, Nobian will align with the State whether to implement this solution and under which conditions the MVR project can be postponed for a couple of years, provided that the FID for this project will be taken by the end of 2029 at the latest.

### 7.2.2 Infrastructure & impact to utilities at Hengelo Site and region

#### Introduction

The Hengelo electrification project has an impact on the Hengelo Site and the region it is situated in. Nobian currently supplies intermediate pressure steam to other party co-located on the Hengelo Site, for this supply an alternative solution is required. In addition, as Nobian’s CHP is also a regional supplier of electricity, shutting down the CHP will reduce the production of electricity.

## **Efforts Nobian**

### *Steam supply to on-site customer*

For the steam supply obligation to a third party at the Hengelo Site, Nobian is in the process of implementing a temporary solution.

- a. As part of the MVR project and also of the investigation to accelerate, Nobian will define a future solution for continued steam supply.

### *Electricity infrastructure*

Both having the new MVRs in operation results in a net electricity demand increase in the region of approximately 80 MW. Due to 55 MW less generation by Nobian CHP and 25 MW intake by MVRs or equivalent less electricity production by Twence (as less steam is required for Nobian). This might have an impact on the local and/or regional and potentially the Dutch national grid. In order to support the green electrification ambition of the region as well as Nobian's green electricity ambition, the electrical infrastructure towards the Hengelo region might need to be enforced. This lies outside the scope of Nobian's responsibility but might play a role in the timing of putting the MVR capacity in operation.

- b. Nobian to engage and collaborate with the State, the Province of Overijssel, Enexis and TenneT to jointly investigate the forecasted electricity demand and supply.

### *Water*

To minimise the suppletion of fresh water from the Twentekanaal, the evaporation plant and the extraction of brine from the brine fields operate in a closed circuit. However, 100% recycling (quantity and temperature) is impossible. When switching from MEE to MVR technology this suppletion will be further reduced leading to a reduction of approximately 0.6 – 0.8 million m<sup>3</sup> water intake per year from the Twentekanaal and a potential reduction of up to 25 MW of residual heat into the Twentekanaal.

- c. Nobian to engage with the municipality of Hengelo and other competent authorities to ensure a positive impact on the environment and permitting process.

## **Efforts State**

### *Steam supply*

- a. Policy, legislation and taxation of CO<sub>2</sub> impacts MWIs and, as a consequence, the future of the Twence MWI. The State therefore should take on the role of stakeholder in the roadmap to define a solution when Nobian's CHP can be shut down, as Twence will become the key steam supplier of Nobian at its Hengelo Site.

### *Electrical infrastructure*

- b. The State Will continue to coordinate the accelerated realisation of electrical infrastructure projects in the Tennet and Enexis bi-annual investment plans and the provincial MIEK, notably in the Hengelo region.
- c. The State will engage and collaborate with the State, the Province of Overijssel, Enexis, TenneT, Twence, Nobian and others to jointly investigate the forecasted electricity demand and supply.
- d. The State endeavours to make renewable electricity more accessible (within the boundaries of the law) to the industry.

## **Efforts Province Overijssel**

### *Electrical infrastructure*

- a. Province Overijssel to support in engage and collaborate with the State / Enexis / Tennet / Nobian / Twence / other regional stakeholders to jointly investigate the forecasted electricity demand and supply.

### 7.2.3 Permits

#### *Introduction*

Based on the current forecasts, it is expected that the Hengelo Project will result in improvements to nature, environment and water as the intake of fresh water, emission of heat load to Twentekanaal, emission to air, and use of natural gas will decrease. Design measures are required to ensure that the Project fits within noise limits.

However, despite the fact that Nobian expects improvements for most environmental aspects, based on Nobian's initial assessment, Nobian has identified the following general risks related to permitting:

1. interference of permit application process with other (new) key initiatives;
2. interference by revisions of existing permits;
3. interference by new legislation (e.g., Omgevingswet applicable 1/1/2024); and/or
4. capacity of staff of competent authorities ('bevoegd gezag').

In the following table the relevant competent authority is highlighted, indicating areas in which Parties required additional effort. Special attention is required for the combination of running projects and revisions, and the MVR project. Permit complexity is considered a high risk for EZK (SodM).

Competent Authority	Nature	Environment	Water
EZK	Prov. Overijssel	EZK	RWS

Nature: primary responsibility with Prov. Overijssel, for significant changes LNV

#### **Efforts Nobian**

- a. Nobian to prepare and submit permit applications specific to this Project (including 'omgevingsmanagement') and expand the internal team.
- b. Nobian will periodically schedule meetings with the relevant competent authorities to review its project portfolio and associated impact on applications (running and planned), with the aim to enhance insight in upcoming projects in order to jointly assess impact and potentially prioritise.
- c. Nobian and the State will periodically schedule a meeting between them and the coordinating authority to discuss the progress in the permitting process.

#### **Efforts State**

- a. The State will facilitate, where possible and within its purview, timely decision-making on permit applications for any Permit and, whilst respecting their respective authority and function under public law, encourage relevant public entities and authorities whose actions and/or decisions are required for obtaining any Permit to contribute to timely decision making.
- b. The State to explore options with Nobian to handle permit application procedures in parallel if possible within the legal framework
- c. Parties will consult with the relevant national, regional and local authorities and their advisers (if any) to come to an aligned view on the relevance and prioritisation of the Projects.
- d. Since the project is not officially classified as of national importance, the 'Rijkscoördinatierregeling' (RCR) is not applicable. However, the State endeavours to set up a support for the permitting process as a pilot to implement the 'Contourennota aanpassing Mijnbouw' for projects. The availability of a senior permit expert to coach and support the permitting application process should address possible bottlenecks and shorten lead times.

- f. In order to achieve the aforementioned goal, the State aims to provide financial aid to the authorities responsible for the relevant permitting procedures under Dutch law – so as to provide them with additional means to expand their human capital resources to form an 'expert pool' – which aims at generating a context within which permitting procedures can be executed in a timely manner.

This JLoI or its content in no way limits or affects the authority and/or discretion of the relevant public bodies or authorities, for instance with respect to, but not limited to, licensing, review of permit applications or enforcement.

#### **Efforts Province**

Support Nobian and the State with a meeting between them and the coordinating authority to discuss the progress in the permitting process.

#### **7.2.4 Summary (all to be validated and finalized in tailor-made agreement)**

##### *Technical changes by Nobian*

- a. Realisation of 2 new salt production plants of about 1400 kt/yr in total, based on Mechanical Vapor Recompression Technology (MVR), final configuration of MVRs and other (existing) equipment/assets to be determined during study phase taking the (physical) constraints at the location into account.
- b. Brine purification and salt centrifuge capacity unchanged, so total Site production capacity will remain unchanged.
- c. 1 (largest) of the 2 existing salt production plants, based on steam (MEE technology), will be stopped, reducing the steam demand and thereby the CO<sub>2</sub> and NO<sub>x</sub> emission.
- d. The MEE plant that stays in operation will continue to use third party steam currently sourced from Twence (municipal waste/biomass).
- e. The MVR will be designed to operate in a flexible way to be able to support the balancing of the electricity grid.

##### *Expected results by 2030 to be realised by Nobian*

- a. Scope 1 CO<sub>2</sub>-emission reduction: 245 kton CO<sub>2</sub>/yr
- b. NO<sub>x</sub> emission reduction: 195 ton NO<sub>x</sub> ton/yr
- c. Natural gas saving: 135 million m<sup>3</sup>/yr
- d. Reduction of intake of fresh water from 'Twente kanaal' of 0.6 – 0.8 million m<sup>3</sup>/yr
- e. Reduction of residual heat into Twente kanaal up to 25 MW
- f. Additional E-flex capability of 7 MW

##### *Detail out option 'further acceleration'*

Nobian to share with the State (Maatwerk team) the outcome of the study in Q4 2023 together with Twence to further accelerate as a temporary measure before embarking on the MVR project and thus potentially postponing the MVR investment. Latest moment of the Final Investment Decision (FID) for the MVR project will be taken by end of 2029.

##### *Risks and mitigations*

As an integral part of the Nobian project management methodology (see Annex III), risks are identified, tracked, assessed and mitigated. Project Assurance Reviews are an integral part of the stage gate process. As proven technology will be implemented for this Project, no additional risks with regard to technology are foreseen. Overall financial and business risks are highlighted in Article 6.3 and set out in more detail in Annex VIII, which for business confidential reasons will not be published.

##### *Additional risks for this Project:*

- a. Delay in **mining permits** and/or concessions in the Province of Overijssel. Results in either delay or cancellation of final investment decision for the Project. Potential

mitigation is (continued) close cooperation between Parties, competent authority and regional stakeholders. Track progress in line with Article 10 (Governance).

- b. Experts indicate that the **revision of the Omgevingswet** might result in freezing of permit requests. This might impact existing permit requests resulting in a knock-on effect on new requests related to the Project. Potential mitigation is close cooperation and progress monitoring between Parties and competent authorities as also described in Article 7.1.3 (Permits).
- c. For this Project, specific expertise, equipment and precious materials (e.g., titanium, monel, cupronickel) are required. **Scarcity** in the (Dutch) market of any of these will result in delay and/or increase of costs. Potential mitigating action is to pre-order long-lead items and/or early commitments to critical vendors. This is only feasible if risk of obtaining required permits and financial risks are mitigated.
- d. **Shutting down CHP** might have bigger than expected impact on the Twente region. This might result in Twente option not feasible and/or full shut down of CHP needs to remain stand-by for a longer period. As stated in Article 7.2.2, Nobian will work together with Province Overijssel, Twence, TenneT, Enexis etc. to investigate impact.

## 7.3 – Project 3: Rotterdam - New electrolysis technology in Rotterdam

### 7.3.1 Description of the project and timeline

#### *Introduction*

At the Botlek site Nobian produces caustic soda, chlorine, hydrogen and hypochlorite by applying electrical current (electrolysis) on dissolved high purity salt. These products are used at the Rotterdam Site and in the Rotterdam area by several customers and delivered directly via pipeline to them. Nobian and its customers produce e.g., PVC, Epoxy and Polyurethane and together form a strong and fully integrated chlorine-based cluster in Europe. Total direct employment of Nobian Rotterdam is approximately 220 people, and approximately 450 at the Site.



Nobian's chlor-alkali electrolysis plant in Rotterdam, when built in 1983, was equipped with the best available technology for the electrolyzers based on membranes. In 2005 new technology called *zero gap* was developed, making the electrolysis process much more energy efficient and bringing it close to its theoretical optimum in terms of electricity consumption. This proven technology is already operational at 8 of the 32 electrolyzers in Rotterdam and at other sites of Nobian in the Netherlands and Germany.

**Figure 7.3:** Electrolyzers for chlor-alkali production in Rotterdam

#### *Technical description*

The aim of this Project is to upgrade the remaining 24 electrolyzers towards zero gap technology and related equipment, such as catholyte system, purge brine supply and heat integration. This saves approximately 15% electricity consumption compared to current technology, translating into a reduction of approximately 135 GWh<sup>23</sup> on the highly congested electricity grid in Rotterdam. The payback period of these savings is much more than seven years, which means the project does not qualify under the Dutch 'energiebesparingsplicht'.

#### *E-flex capability*

With the current set-up of the electrolyzers, Nobian's site in Rotterdam already provides significant E-flex capabilities to support the balancing of the electricity net. With the new technology, an additional E-flex capacity of approximately 25MW will become available.

#### *Timeline*

Nobian follows a project management methodology as included in Annex III, which includes decision gates. It is anticipated that a tailor-made agreement between Nobian and the State is agreed in Q1 2024 after reaching Stage 2 (December 2023, i.e., conditional FID), and that FID will be taken in September 2024.

After FID, the Project will commence with detailed engineering and subsequently construction. To minimise production losses and ensure a safe work environment, most of the conversion will be executed in the bi-annual turnarounds of 2027 and 2029 (with preparatory activities such as tie-ins already being realized in the turnaround of 2025). It

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<sup>23</sup> Equivalent of 25% of wind park Amalia

is foreseen that the turnarounds of 2027 and 2029 need to be extended with approximately four weeks. The consequential production losses are included in the business case.

Although the technology is well known, conversion of the electrolysers is expensive, complex and time consuming. Therefore, it can only be done in combination with a turn-around to limit production loss and create a safe work environment for the execution of the Project. Hence the replacement is planned to be executed during 2 consecutive turn-arounds (2027 and 2029), provided that during the turn-around in 2025 preparations (e.g. tie-ins) will be executed as well that in the period between 2025 and 2027 the plant will be prepared for the conversion. To complete the conversion, it is expected that the bi-annual turnarounds in 2027 and 2029 need to be extended.

As agreed in the EoP Nobian has already started with the engineering activities of the Rotterdam Project ahead of a tailor-made agreement. In parallel, Nobian has submitted a grant application for financial support on external costs incurred for engineering activities for this project, which is currently under review by the State. The total costs for the Project are approximately 11.1 million euro.

Project phase	Main activities	Milestone – schedule
Initiation	Define alternatives to be evaluated, -30/+50% cost estimate	Gate 1 – May 2023
Study	<ul style="list-style-type: none"> <li>• Discuss permit approach with authorities</li> <li>• Safety and environmental studies</li> <li>• -20/+30% cost estimate, update business case</li> <li>• Evaluate alternatives, select one alternative</li> <li>• Prepared grand order</li> </ul>	Gate 2 – Dec. 2023
Pre-project	<ul style="list-style-type: none"> <li>• Basic engineering, define project scope</li> <li>• Hazard and operability study, environmental calculations</li> <li>• -10/+10% cost estimate, update business case</li> <li>• Prepare permits application documents</li> <li>• Permits approval process</li> </ul>	Gate 3 (FID) – Sep. 2024
Realization	<ul style="list-style-type: none"> <li>• Detail engineering, construction</li> <li>• Tie-ins during Turn Around 2025 (FID for TA2025 activities in March 2024)</li> <li>• Commissioning &amp; Start-up, first 50% of the Elo's during an extended Turn Around</li> <li>• Commissioning &amp; Start-up, second 50% of the Elo's during an extended Turn Around</li> </ul>	Q2 2025 Q2 2027  Q2 2029

### 7.3.2 Infrastructure and impact to utilities at Rotterdam Site and region

#### *Introduction*

This Project will reduce the electricity required for Nobian's operations on the Rotterdam Site. This will have a positive impact on the grid, while for utilities the negative impact is limited. After execution of this Project other improvement Projects as described in article 7.5 can be executed.

#### **Efforts Nobian**

The Project has a positive impact on the electricity consumption of the Site and the region. Nobian currently supplies steam to other companies on the Site in a fully integrated manner. Together with a neighbouring company Nobian will detail out solution to further reduce emissions as stated in Project 5: 'Portfolio Projects'.

#### **Efforts State**

The State endeavours to make renewable electricity more accessible (within the boundaries of the law) to the industry.

#### **Efforts Province Zuid-Holland**

##### *Electricity infrastructure*

The relieve provided on the grid will enable Electrification projects of other companies at Site or in the area. Province to engage with stakeholders in order to optimize leveraging this relieve.

### 7.3.3 Permits

#### Introduction

Based on the current forecasts, it is expected that the Rotterdam Project will result in improvements to nature, environment and water as the use of electricity, fresh water intake, emission of heat load to the harbour and to some extent noise emission will decrease. No significant negative environmental impact is foreseen.

However, despite the fact that Nobian expects improvements for most environmental aspects, based on Nobian's initial assessment, Nobian has identified the following general risks related to permitting:

1. interference of permit application process with other (new) key initiatives;
2. interference by revisions of existing permits;
3. interference by new legislation (e.g. Omgevingswet applicable 1/1/2024); and/or
4. capacity of staff of competent authorities ('bevoegd gezag').

In the following table the relevant competent authorities for permitting are set out, indicating areas in which Parties require additional efforts to be made. As multiple projects as well as revisions of permits are in progress, or about to commence, this poses a significant risk for delays, especially related to the environment which is handled by DCMR.

Competent Authority	Nature	Environment	Water
Province of Zuid Holland (DCMR)	ODH	Province of Zuid Holland (DCMR)	RWS

#### Efforts Nobian

- a. Nobian to prepare and submit permit applications specific to this project and expand internal team.
- b. Nobian will periodically schedule meetings with the relevant competent authorities to review its project portfolio and associated impact on applications (running and planned), with the aim to enhance insight in upcoming projects in order to jointly assess impact and potentially prioritise.
- c. Nobian and the State will periodically schedule a meeting between them and the coordinating authority to discuss the progress in the permitting process.

#### Efforts State

- a. The State will facilitate, where possible and within its purview, timely decision-making on permit applications for any Permit and, whilst respecting their respective authority and function under public law, encourage relevant public entities and authorities whose actions and/or decisions are required for obtaining any Permit to contribute to timely decision making.
- b. The State to explore options with Nobian to handle permit application procedures in parallel if possible within the applicable legal framework.
- c. Parties will consult with the relevant national, regional and local authorities and their advisers (if any) to come to an aligned view on relevance and prioritisation of the Projects.
- d. Since the project is not officially classified as of national importance, the 'Rijkscoördinatieregeling' (RCR) is not applicable. However, the State endeavours to set up a support for the permitting process as a pilot to implement the 'Omgevingswet' for projects. The availability of a senior permit expert to coach and support the permitting application process should address possible bottlenecks and shorten lead times.

- e. In order to achieve the aforementioned goal, the State aims to provide financial aid to the authorities responsible for the relevant permitting procedures under Dutch law – so as to provide them with additional means to expand their human capital resources to form an 'expert pool' – which aims at generating a context within which permitting procedures can be executed in a timely manner.

#### **Efforts Province Zuid-Holland**

- a. Province (DCMR) to use best efforts to procure that capacity and capabilities are in line with the agreed permit procedure (timing and milestones), including,).
- b. Province (DCMR) to explore options with Nobian to handle permit application procedures in parallel if possible within the applicable legal framework.
- c. Support Nobian in reviewing its project portfolio with associated impact on applications (running and planned), with the aim to enhance insight in upcoming projects in order to jointly assess impact.
- d. Support Nobian and the State with a meeting between them and the coordinating authority.

If required for effort A-D, the Province could use human capital resources from the intended expert pool (as mentioned as Effort E from State Article 7.1.3).

This JLoI or its content in no way limits or affects the authority and/or discretion of the relevant public bodies or authorities, for instance with respect to, but not limited to, licensing, review of permit applications or enforcement.

#### **7.3.4 Summary (all to be validated and finalized in tailor-made agreement)**

##### *Technical changes by Nobian*

- a. Conversion of 24 existing electrolysers; including membranes, frames, piping, instrumentation and analysers towards Zero Gap technology.
- b. Modification of required process units e.g. purge brine system, catholyte and caustic system.
- c. Demolition of obsolete part of the caustic evaporation unit.

##### *Expected results by 2030 to be realized by Nobian and to be confirmed in the study.*

- a. Reduction electricity consumption of approximately 135 GWh/yr
- b. E-flex capability increase of 25 MW
- c. Fresh water reduction of approximately 0.1 million m<sup>3</sup> /yr and reduction of heat load to the harbour of approximately 10-15 MW  
Indirect benefits: as TenneT and Stedin grid is highly congested, the significant reduction of electricity consumption enables other parties to embark on electrification roadmap

##### *Risks and mitigations*

As an integral part of the Nobian project management methodology (see Annex III), risks are identified, tracked, assessed and mitigated. Project Assurance Reviews are an integral part of the stage gate process. As proven technology will be implemented for this Project, no additional risks with regard to technology are foreseen. Overall financial and business risks are highlighted in Article 6.3 and set out in more detail in Annex VIII, which for business confidential reasons will not be published.

##### *Additional risks for this Project:*

- a. **PFAS** is an essential material for Chlor-Alkali production as it is applied in e.g. membranes, piping and equipment, gaskets, hoses, valves and analysers as it is resistant to wet chlorine rich environments and elevated temperatures. The national authorities of the Netherlands combined with 4 other countries have submitted a proposal to ECHA to restrict PFASs under REACH, the European Union's (EU) chemicals regulation. If this restriction comes into effect without derogation for Chlor-Alkali this

can have significant impact on the Project (and the wider chemical industry). To mitigate this risk a derogation will be asked by Nobian together with Industry parties (e.g. CEFIC and/or EuroChlor) for the critical use of PFAS towards ECHA. In parallel, within the project alternative materials (where possible) are being explored. Track progress in line with Article 10 Governance.

- b. Experts indicate that the **revision of the Omgevingswet** might result in freezing of permit requests. This might impact existing permit requests resulting in a knock-on effect on new requests related to the Project. Potential mitigation is close cooperation and progress monitoring between Parties and competent authorities as also described in Article 7.1.3 (Permits).
- c. For this Project, specific expertise and equipment (e.g., electrolyser frames) are required. **Scarcity** in the (Dutch) market of any of these will result in delay and/or increase of costs. Potential mitigating action is to pre-order long-lead items and/or early commitments to critical vendors. This is only feasible if risk of obtaining required permits and financial risks are mitigated.
- d. **Construction of the new assets** during the 2027 and 2029 planned **turn-around** might take longer than planned. This results in prolonged shut down, increasing production losses. Mitigating action is very detailed planning and short communication lines during execution.

## 7.4 Project 4: Energy Storage caverns in the Zuidwending area

### *Introduction*

As the share of wind and solar energy increases, and as more end-users are switching from fossil fuels to either electricity or renewable gases for their energy supply, it is important to build a resilient energy system capable of handling the volatility in production (e.g., no photovoltaics during the night, periods of low wind). This resilience can be realised by combining 'flexible offtake' (e.g., asking large industrials to reduce intake during periods with limited renewable production) and ensuring sufficient 'energy storage'. In addition to 'energy security', this also helps to avoid curtailing wind farms in periods of 'over-supply' (thereby increasing the financial attractiveness of investments in renewable electricity generation).

Already today, salt caverns play a role in energy storage: in the Netherlands, Nobian has realised six (6) caverns for the storage of natural gas (in Zuidwending, together with Gasunie's EnergyStock), one (1) cavern for nitrogen storage (in Heiligerlee, together with Gasunie) and two (2) caverns for the storage of diesel oil (in Twente, as part of the Dutch National Reserve overseen by COVA).

### *Energy storage in Zuidwending*

Nobian is currently working together with Gasunie's EnergyStock to realise hydrogen storage caverns in the Zuidwending area (in the period until 2030). The project includes four (4) hydrogen storage caverns (1 million m<sup>3</sup> per cavern), together with EnergyStock, acting on behalf of HyStock. These caverns are planned to be in operation before 2030, and will be an important part of the Hydrogen Network currently being developed. Hydrogen storage is qualified as national importance, which means the RCR procedure applies for the zoning plan applicable to this Project.

Besides the four (4) hydrogen storage caverns, Nobian is planning to realize six to seven (6-7) additional caverns in the Zuidwending area. These caverns will be designed and developed in a way that these are suitable for energy storage (either hydrogen or compressed air):

- a. For two (2) of these caverns (each 0.5 million m<sup>3</sup>), Nobian intends to develop these caverns and subsequently hand-over to Corre Energy for their compressed air project (CAES, with a capacity of 320MW for a period of 3-4 days, to be utilized by Eneco once operational). CAES, unlike hydrogen storage, is not qualified as a project of national importance. This implies that the RCR procedure does not apply to the zoning plan of the CAES caverns. Should it not be possible to obtain the relevant permits for the intended compressed air storage project, it remains an option to re-purpose the caverns for hydrogen storage (also subject to further permitting)
- b. The other four to five (4-5) caverns (each 1 million m<sup>3</sup>) are 'replacement caverns' and needed by Nobian to anticipate the future end-of-life of existing caverns in Heiligerlee and Zuidwending. These caverns will ensure a robust supply of brine to Nobian's salt site in Delfzijl, and in the future can also act as 'post-saturation' caverns in case more energy storage caverns are needed in the period after 2030. Over time, and after following the relevant permitting procedures, these caverns can be utilized for energy storage (at this moment not yet foreseen)

To realise both hydrogen storage caverns as well the CAES project and associated infrastructure, Nobian and partners intend to invest over EUR 500 million in the period until 2030 (for the development of caverns, but also for compressor stations).

For this Project no binding tailor-made agreement is foreseen, as this Project will be executed by Nobian together with other parties such as Gasunie Energystock. Support from the State, regional and local authorities is however required for timely permitting, as this Project is foundational to the execution of the energy transformation from natural gas to

hydrogen and renewable energy. The efforts as described in Article 7.4.1 will be periodically discussed in the Governance structure as described in Article 10 of the JLoI.

*Critical success factors to realize the project*

The successful realisation of the project requires extensive permitting and community engagement – please see the overview of critical success factors below.

- a. Extension of the existing extraction plans (“winningplannen”) for existing caverns in Heiligerlee and Zuidwending, as some of these caverns will be needed for post-saturation (i.e., process to more than half the development time of new storage caverns). The current extraction plans for these caverns expire in November 2025, and Nobian started preparations to apply for a permit extension.
- b. Until 2030, several initiatives will be developed in the same area (i.e. hydrogen storage caverns, compressed air storage caverns, extension of existing extraction plans, new caverns in Zuiderveen and replacement caverns in the Zuidwending area). Many of these initiatives follow separate and parallel permit procedures (e.g., the 4 hydrogen caverns fall under the RCR, the other permit procedures do not fall under the RCR). It is important to align the permit approach and timelines of the various initiatives.
- c. With various initiatives executed in parallel, it is important to align the community engagement approach. If this approach is not aligned across the various initiatives, or if not executed correctly, there is a risk that local stakeholders are (or: feel) misinformed and that frustration with, or resistance against these initiatives builds up.
- d. Next to a well-organised community engagement process, Nobian is also of the opinion that local stakeholders should benefit from Nobian’s (energy storage) activities in their region.

A more detailed overview of the area planning process (‘gebiedsproces’) and governance thereof in connection with this Project 4 and other Nobian projects is set out in Annex VII: Energy Storage ‘gebiedsproces’ and governance.

*Background on the development of energy storage caverns and the importance of ‘post-saturation capacity’*

Developing energy storage caverns requires extensive community engagement, permitting and also the leaching phase is time-consuming. To ensure timely completion of the planned energy storage caverns (i.e. before 2030), it is crucial that Nobian can continue operating existing caverns as these provide ‘post-saturation’-capacity:

- a. To develop energy storage caverns in the shortest timeframe possible, Nobian will follow the accelerated leaching method. This accelerated leaching method results in unsaturated brine production during the development of these new caverns, and brings back the leaching phase of a cavern from ~8 years (conventional leaching) to 3-4 years.
- b. As the Delfzijl Site requires saturated brine, Nobian will route the unsaturated brine coming from the future energy storage caverns, to existing caverns in the Zuidwending and Heiligerlee area. In these existing caverns, the unsaturated brine will be saturated by blending with the saturated brine already present in these caverns (i.e., post-saturation). The resulting saturated brine is subsequently transported to the Delfzijl Site via existing pipelines.
- c. Without this post-saturation capacity in existing caverns in Zuidwending and Heiligerlee, Nobian would have to revert to a slower pace of leaching and the leaching period would take approximately 8 years per cavern of 1 million m<sup>3</sup>. In addition, this would also lead to substantial brine shortage in Delfzijl (impacting Nobian’s future, as well as the future of our customers, the chemical value chain, and the supply of high purity vacuum salt to the European chemical sector). Finally, producing salt from unsaturated brine would substantially increase the required amount of energy leading to higher cost and lower efficiency.

#### 7.4.1 Required efforts of the Parties

The efforts undertaken by both Parties are captured in this Article and are binding pursuant to this JLoI.

##### *Permits*

- a. Nobian will prepare an integrated Permit application overview for all Nobian's mining activities in the North of the Netherlands, and provide monthly updates to the State. In this overview, Nobian will also inform the State on the status of existing mining permits.
- b. Nobian and the State will organise upfront alignments on the required process and level of detail for Permits related to mining activities in the North of the Netherlands. As part of this alignment, the State also provides clear and upfront guidance to Nobian on the role of local stakeholders in the various permitting procedures (e.g., whether a "Verklaring van Geen Bedenkingen" is required for exploration permits).
- c. Nobian will prepare and submit Permit applications specific to this Project. As part of this, Nobian will, together with partners, perform the necessary studies and seek timely alignment with local stakeholders and competent authorities.
- d. The State will (within reason) use its best endeavours to procure that permitting authorities and their advisers are sufficiently staffed to handle incoming permit applications for Nobian's mining activities and to handling these applications in a timely manner (i.e., within the procedural time limitations as stipulated in the applicable public and administrative laws and/or guidelines). If this is not possible, the State will engage with Nobian proactively to discuss possible mitigations with the intention to avoid that extended timelines for permitting gets on the critical path.

If required for effort A-D, the competent authority could use human capital resources from the intended expert pool (as mentioned as Effort E from State in Article 7.3.3).

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##### *Community engagement*

- a. In line with recent 'countourennota aanpassing Mijnbouwwet', Nobian is primarily responsible for local community engagement ('participatie'). Nobian will create an integral community engagement plan together with other relevant partners (including the State, specifically in relation to the hydrogen storage projects due to the national importance of hydrogen storage). The impact on local stakeholders and how they could benefit from the development of energy storage caverns in their neighbourhood will also be part of the plan.
- b. The State, with inputs from Nobian, local government and other relevant partners, will develop a narrative on (the importance of) energy storage in onshore salt caverns. Nobian and partners will leverage this narrative in the aforementioned community engagement plan (incl. clarity on how this will be implemented in practice).
- c. The State will develop a State program for sustainable use of the subsurface (Rijksprogramma voor duurzaam gebruik van de ondergrond) as mentioned in the 'contourennota aanpassing Mijnbouwwet' which specifies in which areas subsurface activities may or may not take place under which conditions. Local stakeholders will be involved in the State program.

##### *Outlook to 'energy storage caverns beyond 2030*

- a. The State and Nobian continue the collaboration on the "Routekaart Energieopslag" just as the State does with other relevant stakeholders. As part of the implementation of the "Routekaart Energieopslag", the State provides clarity and guidance on the role of energy storage in onshore salt caverns in the future energy mix, including guidance on

required volumes for storage caverns and a clear process to designate areas in the North of the Netherlands for the development of large-scale energy storage.

- b. The State and Nobian engage in an open discussion on how Nobian can support the further development of energy storage in salt caverns beyond 2030, including the requirements to make this a success (e.g., investments in brine transport capacity etc.).
- c. For the 4-5 planned replacement caverns in Zuidwending (i.e. beyond the 4 hydrogen and the 2 compressed air caverns), Nobian will plan and design these caverns in a way to ensure future optionality for energy storage. Important to note is that it is currently not foreseen that these caverns will be used for energy storage in the future. If this changes, it will be subject to relevant permitting and stakeholder engagement activities.

## **7.5 Project 5: Portfolio Projects (outside of scope tailor-made agreements)**

The Projects 1 through 3 result in a reduction of scope 1 CO<sub>2</sub> emissions of approximately 85%. For the remaining scope 1 emissions Nobian has identified various opportunities which are bundled in a portfolio of smaller projects at its Sites in Delfzijl and Rotterdam. Nobian is committed to execute these projects (without additional support via 'Maatwerk') and these projects therefore fall outside of the scope of the tailor-made approach. Aim of Nobian is to execute these projects in the same timeframe as Projects 1 through 3.

For some of the projects in the portfolio the plans are already advanced to the level that they will demonstrably achieve the envisaged emissions reduction, while for other projects a final approach still needs to be determined. Prioritisation of these projects will be based on the potential impact in the reduction of scope 1 CO<sub>2</sub> emissions, in combination with other factors determining timing and logic.

Efforts as stated in Articles 7.1 (Delfzijl) and 7.3 (Rotterdam) with regard to permits also apply to the projects forming part of the Portfolio Projects. As these projects will proceed in parallel with Project 1 and 3, permit procedures for these projects might interfere with permit procedures of the Projects that are part of the tailor-made agreements. This may lead to inconvenient delays of any of the projects. The Parties will discuss an adequate solution should such interference of permit procedures occur or become foreseeable.

For two of the projects forming part of the Portfolio Projects, Nobian requires cooperation of other companies in the chemical cluster of the relevant Site.

More details and background can be found in Annex VI.

#### **Article 8 – No limitation of authority and discretion public bodies and authorities**

This JLoI or its content in no way limits or affects the authority and/or discretion of the relevant public bodies or authorities, for instance with respect to, but not limited to, licensing, review of permit applications or enforcement.

#### **Article 9 – Nobian in the Netherlands**

Nobian has the ambition to remain a leading Dutch and European essential chemicals company and employer of choice. Nobian anticipates for the long term, beyond the term of the conclusion of the tailor-made agreements and the realisation of the Projects, to maintain the centre of its business operations and production capacity in the Netherlands.

To that effect Nobian intends, among others:

- a. to continue investing in its Dutch production facilities in a sustainable way;
- b. to keep one or more registered offices in the Netherlands;
- c. to keep its production in the Netherlands at least at current levels (with a preference to increase if the opportunity passes by);
- d. to remain a substantial employer (local and national) at its Sites and its Dutch offices;
- e. to keep investing in innovation and knowledge institutions in the Netherlands; and
- f. to keep investing in local communities.

Nobian's Dutch ambitions and intentions as set out above are based on a business environment that continues to create adequate conditions for investment and the required permits to enable it to conduct its business. The ownership of Nobian can change over time, but as the majority of its business operations, (physical) assets and workforce are based in the Netherlands, and given the nature of its business and production, Nobian's Dutch presence can be expected to remain strong in the future.

#### **Article 10 – Governance**

1. Both Nobian and the State will appoint a dedicated project team consisting of different areas of expertise. The project teams of Nobian and the State will meet on a frequent basis to further develop and monitor progress on the tailor-made agreements and the other Projects. Until at least the binding tailor-made agreements are signed or the Projects for which no tailor-made agreement will be entered into will have reached a satisfactory phase (including by having obtained the necessary permits and efforts made, as set out in this JLoI), the project team will remain in place and continue to perform its duties.
2. If the Parties cannot reach agreement on certain (sub)topics, the following options for escalation will be available (in that order):
  - a. the matter should first be discussed between the department "verduurzaming industrie" of the Ministry of Economic Affairs and Climate Policy, management of Nobian and if applicable the provincial deputies involved;
  - b. if an agreement cannot be reached between parties mentioned under paragraph a) above, the matter will be discussed between the senior management of Nobian and the director-general for Industry Policy and Innovation of the Ministry of Economic Affairs and Climate Policy;
  - c. ultimately, if an agreement cannot be reached between parties mentioned under paragraph b) above, the matter will be discussed between the CEO of Nobian and the Minister of Economic Affairs and Climate Policy.
3. Upon signing the tailor-made agreements, the Parties will agree on the adequate future governance structure, including an adequate monitoring system. In the monitoring, information will be collected on progress made on crucial project stages, the steps taken by the Parties, the realisation of the aims specified in the agreement (CO<sub>2</sub> emission reduction, CO<sub>2</sub> dispensation rights, reduction of NO<sub>x</sub> emissions, health improvement etcetera) and the timeliness of the realization. The Parties will report on the progress on a regular basis, but at least once a year. The relevant tailor-made agreement will describe the details of the monitoring process.

4. Nobian's CEO and the Minister of Economic Affairs and Climate Policy will meet once a year to discuss progress on the Projects, the tailor-made agreements and/or ancillary matters.
5. If requested by one of the Parties or the Parties jointly, an independent programme management officer shall be appointed. The primary task of such officer shall include monitoring and stimulating progress towards the execution of the steps, principles, terms and conditions as set out in this JLoI with respect to each of the Projects, and the terms and conditions agreed in the subsequent tailor-made agreements for certain Projects (each of which shall also include separate governance provisions).

#### **Article 11 – Change of Law; unforeseen circumstances**

1. In this JLoI, unless the context requires otherwise, references to a statutory provision include references to that statutory provision as amended from time to time, extended or re-enacted and any regulations made under it, provided that in the event that the amendment, extension or re-enactment of any statutory provision or introduction of any new statutory provision has a material impact on the obligations of one or more Parties, the Parties will negotiate in good faith to agree such amendments to this JLoI as may be appropriate in the circumstances as to minimise the consequences for any terms and obligations hereunder.
2. If, within a reasonable period of time, Nobian and the other Parties cannot reach agreement on the nature of the changes required or other terms and conditions, either Party may seek to have the matter determined in accordance with Article 24 (Jurisdiction) below.
3. During the term of this JLoI, circumstances or developments might occur which are not provided for in this JLoI, but which are relevant for the implementation of this JLoI. It is possible that as a consequence of such circumstances or developments, the unaltered maintenance of this JLoI cannot reasonably be expected from one or both Parties. In that case, the Parties shall at the first request of one of the Parties enter into good faith consultations about such reasonable amendment of this JLoI as is necessary to overcome the negative consequences of those circumstances or developments as much as possible, whilst the content and purport of this JLoI are maintained as much as possible. If such amendment is not agreed upon within two months after such request was submitted, either Party may bring an action before the competent court to amend this JLoI with the application of the principles referred to above

#### **Article 12 – Legal status, term and termination**

1. This JLoI comes into force after all Parties have signed the JLoI and shall then constitute legally valid, binding and enforceable obligations on the Parties hereto.
2. A Party may terminate (*opzeggen*) the JLoI with immediate effect upon serving a notice in writing, if:
  - a. Parties have not reached an agreement on the final tailor-made agreements on 1 November 2024 at the latest, except regarding Project 4, for which the terms of this JLoI shall remain in full force and effect after that date and for which a termination right under this subsection a. shall not be applicable unless the Parties agree on such termination; or
  - b. another Party becomes bankrupt or insolvent, goes into liquidation, has a receiving or administration order made against it, compounds with its creditors, or carries on business under a receiver, trustee or manager for the benefit of its creditors.
3. The State may terminate the JLoI with immediate effect, upon serving a notice in writing, in the case that:
  - a. if there is a change in the identity of the entity or entities that directly or indirectly control Nobian, provided that this change in the identity materially affects the legitimate interests of the State; or
  - b. in case Nobian is convicted of a criminal offence by a court in first instance. In case of a criminal prosecution, Parties will discuss with each other whether this presents a circumstance or development as mentioned in Article 11 paragraph 3.

4. Nobian may terminate the JLoI with immediate effect, upon serving a notice in writing, if there is a material change in Nobian's regulatory or business environment as a result of which Nobian can no longer be reasonably expected to perform its obligations under this JLoI, including but not limited to, if there is no realistic perspective for Nobian to obtain required salt permits relating to its salt mining operations in the Province of Overijssel within a timeframe acceptable to it.
5. The terminating Party is not liable for damages or compensation of costs towards (any of) the other Parties.

**Article 13 – (Termination) clause in case of new or changed policy; status controversial**

1. Without prejudice to any other (termination) rights and/or obligations and/or remedies the State and/or Nobian and/or the Province of Overijssel and/or the Province of Zuid-Holland may have, invoke or rely on under this JLoI, either the State or Nobian can terminate (opzeggen) this JLoI partially or entirely with immediate effect upon serving a notice in writing to the other party, if and to the extent this JLoI becomes partially or entirely incompatible with:
  - any policy of a new government installed after the fall of the government on 7 July 2023 not to proceed with the tailor-made approach or not in a manner as laid down in this JLoI or not to make available (sufficient) funds for the tailor-made approach; and/or
  - the Second and/or First Chamber of Dutch Parliament (Eerste en/of Tweede Kamer) having declared controversial (controversieel verklaren) in view of the government's status as caretaker government (demissionair kabinet) since 7 July 2023:
    - a) the tailor-made approach sustainable industry (maatwerk aanpak verduurzaming industrie); and/or
    - b) this JLoI or a part thereof; and/or
    - c) all or part of the obligations ensuing from this JLoI for the State; and/or
    - d) the full or part of the execution of this JLoI by the State; and/or
    - e) any further negotiations about or the conclusion of – binding – tailor-made agreements ((bindende) maatwerkafspraken) with the selected companies, including Nobian.
2. The State shall not be liable towards nor be required to otherwise compensate Nobian, the Province of Overijssel and/or the Province of Zuid-Holland:
  - for any damage Nobian, the Province of Overijssel and/or the Province of Zuid-Holland may suffer as a consequence of any termination of this JLoI or any part thereof pursuant to Article 13 paragraph 1; nor
  - for any costs and/or for any investments made by Nobian, the Province of Overijssel and/or the Province of Zuid-Holland in respect of any:
    - o obligation ensuing from the JLoI that was – partially – fulfilled and/or
    - o activity that was carried out
 in relation to the part or parts of this JLoI which is or are terminated pursuant to Article 13 paragraph 1, prior to the moment as of which that part or those parts of this JLoI is or are terminated pursuant to Article 13 paragraph 1.
3. In the event of termination of this JLoI or any part thereof as per Article 13 paragraph 1 the Parties shall remain committed to discuss with each other if and to what extent the State's policy in respect of the Paris Agreement, European Climate law, the Dutch Climate Law (Klimaatwet) and the National Roadmap for Energy Storage (Routekaart Energieopslag) on the one hand and Nobian's sustainability and carbon dioxide (CO<sub>2</sub>) emission reduction goals in the Netherlands on the other can be reconciled, however not as part of the tailor-made approach. This article does not imply or entail any rights or entitlement for any Party to compensation whatsoever nor any commitment by any Party to support the other Party's policy or goals as meant in the preceding sentence.

#### **Article 14– Provinces**

The Provinces Overijssel and Zuid-Holland are co-signing this JLoI, to express their support of this JLoI and to commit to the efforts per Project relevant to them. Both provinces are committed to participate in the upcoming discussions about the binding tailor-made project agreements and participate in the set-up of the governance thereof.

#### **Article 15 - Implementation in accordance with the law**

1. The agreements set out in this JLoI and their further elaboration will be implemented in accordance with international law, European law and Dutch law, in particular to the extent that the agreements are within the scope of the international, European and Dutch rules on procurement, competition, state aid and technical standards and regulations.
2. The Parties acknowledge that for the determination and provision by the State of the financial support that Nobian may be entitled to, the applicable national and European legislation at the time of the provision of the support, or at the time that a final draft subsidy decision (and where applicable a final draft of an implementation agreement or other documentation) is submitted to the European Commission for approval (whichever is earlier), will be decisive to determine whether and if yes, to what extent the Project meets the criteria for additional CO<sub>2</sub> reduction and the principles of state aid. If that determination deviates from the current expectations, the Parties shall in good faith discuss an adjustment of this JLoI.

#### **Article 16 – Notices**

Any notice and correspondence under this JLoI must be in writing and is sent to a Party by letter or email to the address set out in (Annex II) to this JLoI.

#### **Article 17 – Costs**

Each Party bears its own costs incurred with the negotiation, preparation, signature and performance in connection to this JLoI (and any documents referred to in the JLoI) and its own costs associated with the activities intended to be carried out under this JLoI, unless otherwise specified in this JLoI or if and when Parties agree otherwise in writing.

#### **Article 18 – Assignment**

Unless provided otherwise in this JLoI, no Party may assign this JLoI (*contractoverneming*) or assign any of its rights thereunder, or have such rights transferred by way of a legal merger or demerger, without the prior written consent of the other Party.

#### **Article 19– Amendments**

Any amendments or additions to this JLoI shall be valid and binding only if made in writing and signed by all Parties.

#### **Article 20 – Partial Invalidity**

If, at any time, any term of this JLoI is or becomes illegal, invalid or unenforceable in any respect, or this JLoI is or becomes ineffective in any respect, under the laws of any jurisdiction, such illegality, invalidity, unenforceability or ineffectiveness shall not affect:

- a. the legality, validity or enforceability in that jurisdiction of any other term of this JLoI or the effectiveness in any other respect of this JLoI in that jurisdiction; or
- b. the legality, validity or enforceability in other jurisdictions of that or any other term of this JLoI or the effectiveness of this JLoI under the laws of such other jurisdictions.

#### **Article 21 – Third Party Rights**

Parties do not intend for any third party to have any rights under this JLoI or be able to enforce this JLoI and Parties exclude to the extent permitted under applicable law any such third-party rights that might otherwise be implied.

#### **Article 22 – Entire Agreement**

This JLoI constitutes the entire agreement between Parties with respect to the subject matter thereof.

**Article 23 – Counterparts**

This JLoI may be executed in any number of counterparts and this has the same effect as if the signatures on the counterparts were on a single copy of this JLoI.

**Article 24 – Governing law**

This JLoI and any non-contractual obligation arising out of or in connection with it are governed by the laws of the Netherlands.

**Article 25 – Jurisdiction**

Any dispute in connection with this JLoI, including a dispute regarding the existence, validity or termination of this JLoI or the consequences of its nullity or any non-contractual obligation arising out of or in connection with this JLoI, shall be subject to the exclusive jurisdiction of the courts of The Hague, the Netherlands.

**Signed in Rotterdam on 21 November 2023, in four original copies, each in the English language.**

**The State of the Netherlands,  
Minister of Economic Affairs and Climate Policy,**  
*acting in her capacity as administrative body (bestuursorgaan) and as representative of  
the State of the Netherlands,*

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By: Mrs. M.A.M. Adriaansens

**The State of the Netherlands,  
State Secretary of Infrastructure and Water Management,**  
*acting in her capacity as administrative body (bestuursorgaan) and as representative of  
the State of the Netherlands,*

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By: Mrs. V.L.W.A. Heijnen

**Nobian Industrial Chemicals B.V.**

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By: Mr. M. Koenig  
Title: Chief Executive Officer

**Co-signed in Rotterdam on 21 November 2023**

**The Provincial Executive of the Dutch province of Overijssel**

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By: Mr. E. Hoogland  
Title: Member of the Provincial Executive

**The Provincial Executive of the Dutch province of Zuid-Holland**

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By: Mrs. J. Baljeu  
Title: Member of the Provincial Executive

- [Annex I](#): Expression of Principles between Nobian and the State
- [Annex II](#): Notices
- [Annex III](#): Stage gate process Nobian projects
- [Annex IV](#): Technical background on MVR technology
- [Annex V](#): Background on potential intermediate solution to further accelerate in Hengelo (project 2)
- [Annex VI](#): Portfolio Projects
- [Annex VII](#): Energy Storage 'gebiedsproces' and governance
- [Annex VIII](#): **Confidential**: business case for the Advisory Committee

**Annex I** - Expression of Principles between Nobian, and Minister of Economic Affairs and Climate Policy

[Expression of Principles Nobian | Publicatie | Rijksoverheid.nl](#)

## **Annex II – Notices**

Any notice and correspondence under this JLoI must be in writing and is sent to a Party by letter to the following address:

**For the State:**

Ministerie van Economische Zaken en Klimaat  
Directie Verduurzaming Industrie  
Postbus 20401  
2500 EK Den Haag

**For Nobian:**

Nobian Industrial Chemicals B.V.  
Legal department  
Van Asch van Wijckstraat 53  
3811 LP Amersfoort

### Annex III – Stage gate process Nobian projects

All Project are executed following the Nobian Project Management methodology. Summary of deliverables per stage gates are listed in table III.1 The aim is to reach tailor-made agreements between the Parties for the Projects 1 through 3 at the moment a project is at Gate 2 (see table III.1 below), which is the moment Nobian can take conditional Final Investment Decision (FID).

Each tailor-made agreement will have a concrete timeline following the decision gates for the realisation of the relevant Project(s) as from the signing of the tailor made agreements pertaining to that Project. When all the deliverables are met positively, the FID will be made.

The tailor-made agreements will include (not limited):

- a. a clear stage gating process with well-defined go/no-go decisions with clear deliverables and commitments from the Parties to move to the next phase;
- b. a financing structure of the Project(s) based on the business plan, the assumptions in this plan and the concept 'subsidie beschikking';
- c. an integral governance structure with all relevant stakeholders to ensure on time completion of the Projects and manager risks.

Cost estimates:

As part of the Nobian Project Stage Gate process, the cost estimate includes the following items:

- Project management
- Engineering & Procurement
- Construction (static, rotating, piping, civil, instrumentation, electrical, insulation)
- Construction in-directs (management/supervision, scaffolding/cranes)
- Special (duty/freight/spare parts)
- Commissioning and Start-up
- Contingency

Topic	Initiate Phase - Deliverable in this phase:	Study phase - Deliverable in this phase:	Pre project phase - Deliverables in this phase:
<b>Engineering &amp; Cost est.</b>	Technical concept, scope & capacity chosen  Cost estimate (-30%/+50%)	One technical alternative  Cost estimate (-20%/+30%)	Basic engineering package  Budget (-10%/+10%) Commitment from equipment suppliers
<b>Finance</b>	Project plan and costs for FEL2 (study) Conceptual financial instrument portfolio identified Financial stakeholders identified and case discussed  Check for requirement for EU check Clarification of Government support for FEL2 engineering committed	Project plan and costs for FEL3 (basic engineering phase) Approval by Board Nobian to start basic engineering (FEL3) Commitment from all financial stakeholders on time schedule and financial instruments State support check at EU started Clarification of Government support for FEL3 engineering committed	Project plan for execution phase Subsidy request submitted in time, finance secured Financial instruments available in time for submission and accessible for Nobian
<b>Permits</b>	Permit plan ready and discussed with authorities.  Stakeholder analysis for permits prepared  Permit plan ready & competent authorities involved and first indication that granting the permit is possible and identification of right approach for those elements where legislation is less clear. Agree meeting structure and escalation model. First indication of resource and competency required.	Concept permit application ready for submission and pre-discussed with competent authorities.  Permit requirements clarified and accounted for in project scope and plan. Stakeholder analysis ready, aligned with bevoegde gezagen.	Permit application submitted in time. All requirements for permits for construction and license to operate clarified and accounted for in design and plan. Delivery of permits according to planning. Joint stakeholder management in operation.
<b>Business case</b>	Feasibility proven  Identification of required support	Clarification on resource availability at permit authorities (e.g. omgevingsdienst Noord/NL (Delfzijl), DCMR (Botlek), EZK (Hengelo)) and legal periods for permits incl governance structure. Subsidy 'beschikking' covering the financial aspects and 'frozen' governmental policy parameters impacting the business case	Frozen

Gate 1

Gate 2: Cond. FID

Gate 3: final FID\*

\* Key milestones after Gate 3: Detailed engineering, Construction, Commissioning & Start-up

Table III.1: Nobian Project Stage Gate process

## ANNEX IV – Technical background on MVR technology

Vacuum salt production is based upon recrystallisation of solid salt crystals from a purified brine to create high purity salt. This crystallization is achieved by the evaporation of water from the saturated purified brine, originating from the Salt caverns. This evaporation takes place in the crystallizer/evaporator: the incoming brine is finally heated until boiling point in the large circulation heat exchanger and flashes out in the crystallizer/evaporator creating two streams: a salt slurry and water vapor. The salt slurry is sent to the salt centrifuges to segregate the solid salt crystals from brine. The water vapor leaves the crystallizer/evaporator from the top, is cleaned in a scrubber and after that compressed to a higher pressure and temperature in the compressor. The heated vapor at the outlet of the compressor is used for the heating, in the circulation heat exchanger, of the boiling salt slurry/ brine to maintain the crystallization process.

As a result of the heat flux from the vapor to the salt slurry the vapor condenses into water (condensate). This hot condensate is being used to pre-heat the incoming cold feed brine to enhance over-all thermal efficiency of the process. By making use of this MVR-technology (Mechanical Vapor Recompression) the energy in the vapor is being recycled in the most efficient way like a heat pump. Therefore, a high over-all efficiency is obtained. Further reduction of energy is achieved by smart heat integration as will be applied in the project.

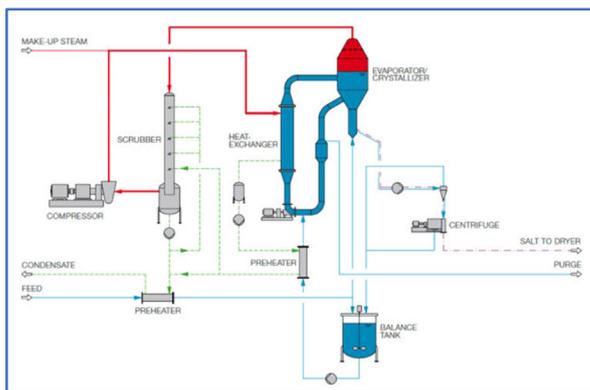


Figure IV.1: Schematic diagram of MVR

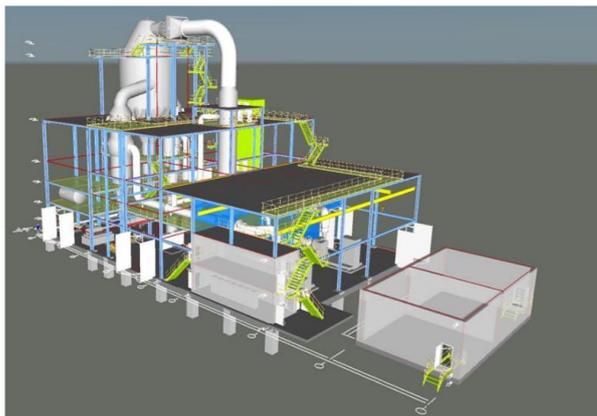


Figure IV.2: 3D model of a single 700 kt MVR unit. Typical footprint: 32m wide, 61m long and 33m high.

## **Annex V: Background on potential intermediate solution to further accelerate in Hengelo (Project 2)**

It is expected that in future the steam supply from Twence towards Nobian declines making this option not future proof for Nobian. This for the following reasons:

- a. Development and maturity of the regional heat hub of Hengelo region (100,000 household equivalents) resulting in increased heat demand in the region resulting in reduced supply to Nobian
- b. Stricter Policies/legislation of waste incineration in Netherlands in general and the position of Twence specifically
- c. Decline of supply of waste for Twence (circular economy, import of waste from Germany etc)
- d. Roll-out of Carbon Capture Utilisation technology by Twence which increase the demand of steam
- e. Cooperation between Twence and Nobian with regard to 'Waste to Energy' innovation roadmap ('create green molecules from waste'), resulting in decline of available heat available for steam

Increase of price of steam supplied by Twence driven by the factors above

Another reason to move away from MEE to MVR technology is that this reduces water intake from Twente Kanaal with 0.6-0.8 million m<sup>3</sup> per year and reduces 0-25 MW residual heat towards Twente Kanaal.

Although the ultimate set-up, as described under 7.2.1., is clear and robustly positioned, the indicated intermediate option to accelerate the transition phase, as described under 7.2.1.1, seems feasible. Current initial insights show that until 2030 on average there would be enough steam for Nobian to run its large MEE on Twence steam.

To further explore this opportunity on behalf of Nobian and Twence, a third party was engaged and is currently executing an analysis of heat demand and supply of the region around Twence, taking into account both residential heat as well as industrial heat demand/supply. The outcome will be available in 2<sup>nd</sup> half of Q2 2023 and will be used as input for the study whether extension/debottlenecking of the existing steam pipeline is to be considered.

Next to analysis on heat, also an analysis on electricity demand and supply is required. Twence and Nobian are both also electricity producers. With the switch from steam produced by Nobian to steam consumed from Twence, Nobian's electricity production will decline so will the electricity production of Twence. This might have a negative impact on net production of electricity in the region. See for more details Article 7.2.2. Third component is that Nobian and Twence require a commercial agreement.

## **Annex VI: Portfolio Projects**

### Projects at the Site Delfzijl

Three projects in the portfolio at CDP:

- Caustic evaporator
- Delsalto circular brine

#### *1. Caustic evaporator*

Most of the caustic (NaOH) produced in the electrolysis plant in Delfzijl is concentrated to 50% in a relatively inefficient single-step evaporator running on steam. At this moment it is being investigated what the most efficient solution is to reduce the energy usage and/or become independent of fossil fuel-based steam.

#### *2. Delsalto circular brine*

This project concerns the recycling of a residual brine stream from one of the chemical companies at CDP. The project results in a reduced carbon footprint per kg of product and reduces emission to water of substances of very high concern. The project is included because of the circular character, environmental benefits and complexity of permitting in line with the scope of this JLoI.

### Projects at the Site Rotterdam

Three projects in the portfolio at Rotterdam Site:

- Bifuel boiler
- Caustic evaporation
- The steam boilers producing steam for Nobian and other companies

At the Rotterdam Site the utilities are well integrated with a neighbouring chemical company (Shin-Etsu). Because of many interdependencies, the overall reduction of the scope 1 emissions is being worked out in close cooperation between both companies.

#### *1. Bifuel boiler*

At this moment boilers are mainly using natural gas and to a lesser extent hydrogen and waste gas from the neighbouring company as fuel. From the electrolysis process at the Site, hydrogen could be used in the boiler to further reduce the use of natural gas and thus reducing scope 1 CO<sub>2</sub> emissions. Installation of a bifuel boiler will enable boilers to run both on natural gas and hydrogen.

#### *2. Caustic evaporation*

The caustic evaporation on the Rotterdam Site runs takes place in an efficient multi-effect evaporator running on steam. At this moment about 80% of the steam is coming from the boilers and about 20% of the steam from the neighbouring company (Shin-Etsu) from an exothermic process. In the future, when the relevant neighbouring company will further electrify its process, it could enable Nobian to run the caustic evaporator on the excess steam from the exothermic process of Shin-Etsu only. This will be an incremental process requiring several investments in equipment and infrastructure that need to be worked out in the coming years.

#### *3. Steam boilers*

Once the bifuel boiler has been installed and the neighbouring company has started the electrification of their processes, the use of natural gas can be further reduced step by step, since the amount of steam needed will be reduced and hydrogen can be used as an alternative fuel. Eventually a boiler will still be needed to burn the waste gas, where also some additional fuel (potentially hydrogen) will be needed to reach the required energy content. In that case the only remaining CO<sub>2</sub> emission (max. 10-20 kton/yr) will come from the waste gas.

## **Annex VII: Energy Storage 'gebiedsproces' and governance**

In addition to governance described in Article 10, specifically for Project 4 Energy Storage caverns in the Zuidwending area the following approach and governance is applicable.

### *Local participation*

The Parties see a good relationship and cooperation with the society (i.e. (local) authorities, (local) interest groups, residents, and other municipal partners) as an integral part of successful project management and day to day operations. For this reason, due attention is being paid to local participation in the development and execution of Nobian's mining projects. A thorough 'gebiedsproces' is mentioned as an important element in future permitting in the recent policy letter of Deputy Minister Vijlbrief 'Contourennota voor de aanpassing van de Mijnbouwwet'. In Zuidwending, with several operators active (i.e., Nobian, Gasunie EnergyStock and affiliates, and in the future also Corre Energy), the 'gebiedsproces' requires close coordination and cooperation between those operators, as well as clear and aligned communications towards society and local authorities.

### **The Nobian approach to 'Gebiedsprocessen'**

#### *Introduction*

The proposed approach to 'gebiedsprocessen' is inspired by the 'pilot - gebiedsproces - Schoonebeek' and experiences from other operators such as Gasunie, yet tailored to the specific situation of the Project Energy Storage in the Zuidwending area.

#### *Involvement and alignment*

Community engagement is not something that one company can do alone, however Nobian feels responsible for setting up appropriate community engagement for all the projects in which it is involved. Especially in this area with multiple operators, clear and aligned communication is key. Therefore, Nobian emphasizes the need of a combined and centralized communication and community involvement plan together with other operators in Zuidwending. Communication has to be focussed on discussing and sharing an integrated perspective on all plans/ approaches with all local and regional stakeholders involved, such as local interest groups, (local) authorities, residents, societal organizations and municipalities. Through direct interaction, meetings and conversations, plans are being discussed. The feedback from this interaction is being used to further refine the community involvement plan.

#### *Gebiedsprocessen*

As part of the Nobian 'gebiedsprocessen' the following elements are included:

- **Clear and timely communications:** effective and transparent communication is important to share all required information and to pro-actively inform all relevant stakeholders. Information is timely made available and shared in easily accessible locations or through direct meetings and plenary sessions. It is clear what has been decided, outcomes of discussions in smaller groups are shared with the broader group of stakeholders.
- **'Keukentafelgesprekken':** project and mining teams conduct direct meetings with residents, landowners, etc. on a regular basis. This increases visibility and approachability of the project(s) and mining teams. This way important feedback is collected, but it also provides an opportunity to explain information and developments in more detail, or for people to ask questions which they prefer not to ask in a plenary session.
- **'Tekentafel sessies':** Nobian works together with local stakeholders to define and develop the exact design and location of the mining/storage well-pads, as well as the design of above-the-ground installations ('zouthuisjes'). Possible design options are being refined through several rounds. Residents living adjacent to project locations are extra involved in decision making about visible landscaping aspects.

- **Site visits:** through site visits to the project locations, Nobian project teams and management ensure that they are fully informed and aware of local details and specificities to improve decision making. Likewise, it increases their involvement in local engagement and relations.
- **Local upside ('lusten en lasten'):** it is important that local communities benefit from the presence of mining (underground) activities in their community. In the Zuidwending area various operators (e.g. Nobian constructing the caverns in Zuidwending, but Gasunie EnergyStock operating the hydrogen storage) are active. In the 'Tekentafel sessies', the wishes and possible benefits for the region are discussed and identified. For local residents it is not always easy to distinguish clearly between Nobian and the other operators or the overall effects. Therefore, Nobian will work with the other operator(s) on how to structure such an approach and to identify regional benefits.
- **Guarantees:** there is no proven relation between Nobian's method of salt mining (solution mining) and damages to buildings or houses. Nor have these types of damages occurred as a result of salt mining in the more than 100 years that Nobian is actively mining salt in the Netherlands. Nevertheless, Nobian attaches value to providing as much certainty as possible, ahead of regulation or legal obligations. For this reason Nobian will discuss and align various options with local stakeholders such as executing "0 - measurements" to assess the state of the houses in the area close to the mining activities, and/or an independent fund outside Nobian for potential claims, and/or the set-up of a central information and damage settlement office (together with other operators).
- **Safety:** safety is a key priority for all mining projects. A part of Nobian's community approach is to educate and inform the local community and authorities about all relevant safety aspects. Another element is that information from seismic or soil measurements and monitoring is being shared on a regular basis with residents. Furthermore, Nobian will define preventative and corrective measures and a monitoring plan to safeguard safety of the mining activities (to be included in the extraction plan, in accordance with prevailing regulations, and to be evaluated by EZK and advisors).
- **Permits:** the permit process for salt mining (and energy storage) is complex and various parties have different responsibilities in the permit procedures (e.g. ruimte, ondergrond). Clear understanding of those responsibilities and transparency on information and steps / status in the procedures is essential. The State endeavours to set up a support for the permitting process as a pilot to implement the 'Contourennota aanpassing Mijnbouw'. The availability of a senior permit expert to coach and support the permitting application process should address possible bottlenecks and shorten lead times.

#### *Organization*

Nobian is committed to provide the optimum support to the 'gebiedsproces', which is also reflected in the fact that more capacity has been made available to support this process, for example an 'omgevingsmanager' and 'communications manager' have been appointed, who work in close cooperation with the project, mining, and site teams.

Community management and involvement is part of Nobian's project management process. Which means that community input in the design of the project and locations will be proactively sought and included in the development of the design of the project. This way important social and local criteria are taken on-board in an early stage of the project, in addition to, for example, technical, safety and environmental criteria.

#### Governance and working with partners

In some areas Nobian is the exclusive 'owner' of the local community engagement. However, in the energy storage projects Nobian actively cooperates with other stakeholders, such as Gasunie EnergyStock, HyStock, Corre Energy and EZK as linking pin towards the Maatwerk program and team of the Rijkscoördinatierегeling (RCR). In these projects Nobian is not the overall lead nor the main initiator of the project, but mainly responsible for developing new salt caverns in the Zuidwending area that are suitable for energy storage (hydrogen, compressed air), which will then be handed over and consequently operated by the 'energy storage operator' (e.g., Gasunie EnergyStock, Corre Energy).

Working with different parties creates different needs for setting up successful 'gebiedsprocessen'. Clearly close alignment between the partners involved is key. For example:

- The planned hydrogen storage caverns in Zuidwending are considered as a project of 'national importance' and as such fall under the RCR. Under the RCR, the National government coordinates the communication, engagement, and permitting process to ensure priority and adherence to the time schedule.
- The planned energy storage caverns in Zuidwending will not be operated by Nobian (but by Gasunie EnergyStock and Corre Energy). Nobian is (only) responsible for the development of the caverns, after which they are handed over. These parties are also responsible for the above-the-ground installations in Zuidwending (and the associated permitting), with the exception of 'zouthuisjes/ wellpads'
- Key parties (Nobian, EZK/SodM) and stakeholders (Province of Groningen, local municipality, relevant advisors and (when required) Gasunie EnergyStock and Corre Energy), will typically meet once a month at project management level and once a year at top management level. This Project continues to fall under the governance as stated in Article 10 of this JLoI.

**Annex VIII: Business case for the Advisory Committee**

For confidentiality reasons only shared with Advisory Committee