Shale gas – case study

Introduction

This case study provides the Dutch National Council of R&Dialogue evidence based input on the role of dialogue in energy implementation projects. Not only the demonstration project shale gas in Boxtel is investigated; five other case studies are developed, namely: 1) carbon capture and storage in Barendrecht, 2) gas storage near Bergermeer, 3) wind offshore near Noordwijk/Zandvoort, 4) gas production in Groningen and 5) local energy cooperation's and their developments.

This case study presents the process and dialogue in the shale gas discussion in Boxtel. Cuadrilla Resources is an exploration and production company of (shale) gas and licensee of exploration drillings for shale gas in the province of Noord-Braband including Boxtel, a process postponed by Dutch government after a won lawsuit by Rabobank Nederland. The objective of this case study is to research the impact of dialogue and process on energy policy and project implementation. Investigated are the implications of this case study on future dialogue and public support for the energy technology of shale gas production. This is based on stakeholder interviews and analysis, desk research on policy and company documentation, laws and procedures.

First, a short overview of shale gas and shale gas developments is presented. Second, Dutch gas policy and the role of gas in the Netherlands is shown. Subsequently, the project for exploration drillings in Boxtel is presented focussing on the dialogue between stakeholders and citizen and the process of project implementation. This leads to conclusions of the role of dialogue and recommendations for future dialogues in energy implementation projects and processes. Especially considering the future shale gas discussion in the Netherlands and worldwide.

Shale gas

Shale gas is natural gas found trapped within shale formations. To extract shale gas hydraulic fracturing or fracking is used by injecting high-pressure fluid – combination of water mixed with sand (together approximately 99%) and chemicals (1%) – in order to create small fractures in the rock formation to allow the gas to escape. The technique is commonly applied to wells for shale gas, tight gas and oil and coal seam gas. In order to get into the shale rock formation, horizontal drilling is applied. After the installation of a vertical hole up to a depth of 1,500 to 3,000 meters a horizontal drain, that can reach distances of 1,000 to 2,000 meters, is installed. The main difference with conventional gas drilling gas is that shale gas drillings use fracking to increase the production from the low permeability shale formation. In the gas industry, it is not uncommon to drill horizontally or use water and chemicals.

Shale gas fracking is highly discussed and questioned. It is estimated that 32 counties have shale gas potential. In 2013, only the US, Canada, Mexico and China produce shale gas, Poland and the UK started explorations for shale gas production. Some countries like France and Tunisia have banned the practise, Quebec in Canada and some states in the US have a moratorium on shale gas fracking. Main arguments are possible risks for, amongst others, environmental damage like waste water pollution, ground water pollution, subsidence and earthquakes and visual pollution. [1] [2] [3] [4] [5] [6] [7] [8] [9] [10] [11] [12] [13]

[1] http://www.rijksoverheid.nl/onderwerpen/schaliegas/schaliegas-in-nederland
[2] https://milieudefensie.nl/schaliegas
[3] https://www.schaliegasvrij.nl/factsheet-schaliegas/
[4] https://www.tno.nl/downloads/pb_tno_2011_60_argumentenkaart_schaliegaswinning1.pdf
[5] https://www.tno.nl/images/shared/overtno/magazine/tnotime_1_voorjaar_2012_16.pdf
[6] https://www.tno.nl/downloads/Zijp_TNO_Gea2012_juni_Schaliegas.pdf
[7] http://www.ebn.nl/Actueel/Documents/201109%20Schaliegas%20in%20Nederland.pdf
[8] http://www.ebn.nl/Actueel/Documents/20110905%20standpunt%20EBN%20rondetafelgesprek.pdf
[9] PWC 2011 – Shale gas – A renaissance in US manufacturing?

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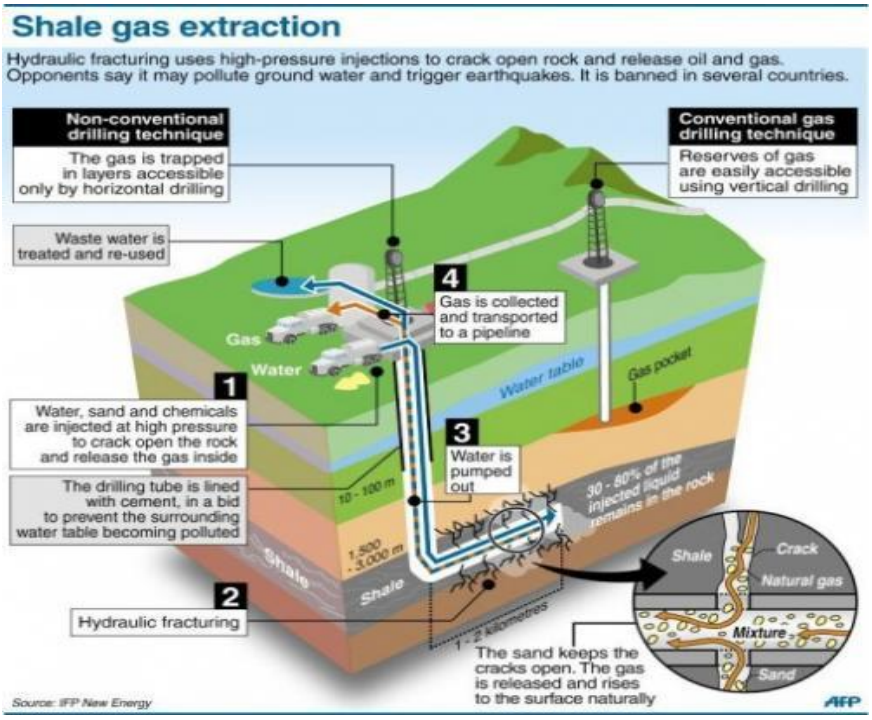


Gas policy

Dutch government considers gas a transition fuel towards reaching the climate and energy goals for 2020 (20% CO_2-reduction, 20% energy savings, 14% renewables in the mix) and 2050 (80-95% CO_2-reduction). [14] With the Slochteren gas field, gas serves as an important source for energy supply (mainly heat, electricity and feedstock for the industry), and with the available gas infrastructure and expertise, shale gas can be a part of the energy transition policy. Dutch gas policy focusses on small field policy. The large Slochteren field is used as swing producer and small fields operate at maximum production, this towards the development of a gas roundabout, a strategy focussing on the Netherlands as gas hub (in import, export and production) for Northwest Europe. [15] [16] [17]

It is expected that the gas production from the Slochteren field declines within the next 10 to 25 years and that from 2030 onwards, the Netherlands will be a nett importer of natural gas in a business-as-usual scenario (excluding shale gas developments). In order to have an alternative and fulfil the demand for gas, it is investigated whether shale gas can be a part of the energy portfolio of the Netherlands. EBN (Dutch gas and oil research and exploration company - owned by Ministry of Economic Affairs and has a 40% equity stake in every exploration and production project in the Netherlands) has the ambition to

[10] Energy Information Administration 2011 – United States
[11] https://www.gov.uk/oil-and-gas-onshore-exploration-and-production
[12] http://af.reuters.com/article/commoditiesNews/idAFL5N0OY12020140617
[13] http://www.eia.gov/countries/analysisbriefs/Mexico/mexico.pdf
[14] http://www.energieakkoordser.nl/energieakkoord.aspx
[15] http://www.nlog.nl/resources/Publicaties/Energierapport2005.pdf
[16] http://www.rijksoverheid.nl/documenten-en-publicaties/rapporten/2008/06/18/energierapport-2008.html
[17] http://www.rijksoverheid.nl/documenten-en-publicaties/rapporten/2011/06/10/energierapport-2011.html

maintain 30 billion m^3 gas production on a yearly basis till 2030 to fulfil the gas demand till 2030 and beyond. Shale gas can be a part of that ambition to secure the gas supply and production. The Netherlands can benefit from own resources and increase trade, creating independence from gas import and usage and expand the knowledge, expertise and experience in the field of gas of Dutch professionals. Research has shown different numbers so far, but it is expected that between 200 and 500 billion m^3 shale gas can be found, which means an extension of 4 to 10 years of own gas production and relative independence from other gas supplying countries.[18] [19] [20] [21]

Gas in the Netherlands

Gas is an important source for heat in buildings, in the energy-intensive industry and electricity. With own production from Slochteren and smaller fields, the gas production fulfils Dutch own demand and provides the opportunity to trade and export gas on the European market, as shown in the chart below.

Gas in the Netherlands

Gas in million m^3	2000	2005	2010	2011	2012
Supply# in the Netherlands	46,346	46,770	52,024	45,426	43,626
Production# in the Netherlands	69,180	74,460	83,944	76,429	76,020
Import of gas	16,500	21,747	24,408	21,812	23,769
Import of LNG	-	-	-	-	961
Export of gas	39,329	49,445	56,433	52,945	57,263
Stock*	-5	8	-19	-2	-115
Total usage in the Netherlands	46,346	46,770	52,024	45,426	43,626

Source: CBS 2013

supply is the primary gas available for usage in the Netherlands and production is the gas that comes from Dutch reservoirs - both onshore as offshore reservoirs.

* positive means decrease in stocks, negative means increase in stocks

Gas and the economy

The impact of gas for the Dutch economy is significant since gas revenues and gas trade are an important source of income for Dutch state. The relatively large energy-intensive industry benefits from the gas production and supply. International developments (the discovery of shale gas in the United States and the changes in their internal market) caused price differences for coal, exported for a lower prices to the European market. This is one of the many factors that causes non-profitable business cases for gas power plants. Other factors are, decreasing power demand due to the recession, higher operation costs for gas power plants compared to coal power plants, excess supply of wind and solar power, and that European gas contracts are linked to oil prices and finally the low price for CO_2 in the EU-ETS. [22]

These developments stimulate the dialogue on the use of gas and the role shale gas can have.
Gas is important for the Dutch economy, gas revenues contribute to Dutch economy with approximately €12 billion on yearly basis and a significant share in GDP, as shown in the chart below and figure below.

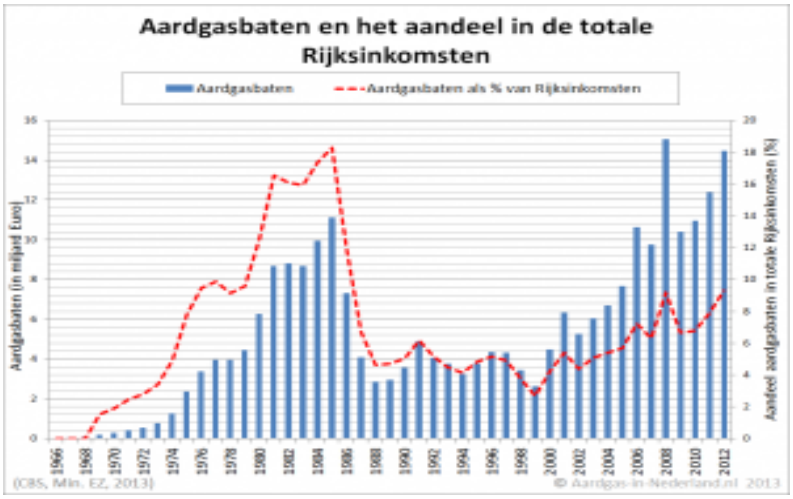
[18] ECN
[19] TNO
[20] http://www.rijksoverheid.nl/onderwerpen/schaliegas/schaliegas-in-nederland
[21] http://www.ebn.nl/OverEBN/Paginas/Rol-in-de-olie--en-gassector.aspx
[22] Emissions Trading System – system for trading greenhouse gas emission allowances with a 'cap and trade' principle for more than 11,000 power stations, industrial plants and airlines (only European flights) in 31 countries (EU28 and Iceland, Liechtenstein, Norway).

Gas revenues and its percentage of GDP

Billion €	2000	2005	2010	*2011
Gas revenues	4,490	7,579	10,670	12,391
GDP	480,825	513,407	549,265	554,543
% of GDP	1.07 %	1.47 %	1.81 %	2.05 %

Source CBS 2014

* provisional data



Source: Initiatief Aardgas in Nederland

SER National Energy Agreement

The SER National Energy Agreement does not specifically mention shale gas but stresses a role for gas in the future of the Netherlands. In the field of gas, the Netherlands is at the top of the world league in term of knowledge, expertise and experience and gas can play a role in the transition towards a sustainable energy supply. Gas is considered a transition fuel – as biogas or 'green' gas, emissions are lower than of coal and by changes in the rules and regulations concerning gas, sustainable development is promoted. [23]

The project – shale gas in Boxtel

National level

In 2008, Dutch state tendered for shale gas drillings European wide as a part of the gasroundabout policy. Two parties applied for the tender. Staatstoezicht op de Mijnen (SodM – State Supervision of Mines), EBN, TNO (Dutch research institute), the Mine Board and the Provincial Executives of Noord-Brabant were asked to give advice on shale gas drillings (the latter did not provided advice) and considered shale gas drillings optional. On 13 October 2009, Cuardrilla Resources received a licence (concession) from the Ministry of Economic Affairs for exploration drillings for shale gas the province of Noord-Braband, around Boxtel based on the Mine Act. [24] The licence for exploration drillings in Boxtel was awarded to Cuadrilla Resources for a period of five years in an area of 2026 km^2 round Engelen and Waalwijk in Noord-Brabant.

[23] http://www.energieakkoordser.nl/energieakkoord.aspx

[24] https://zoek.officielebekendmakingen.nl/stcrt-2009-16000.html

Municipal level
In August 2010, the municipality of Boxtel cooperates with the licence for exploration drillings and points out the desired location. Therefore, Cuadrilla Resources requested for an environmental permit (Wabo and WRO [25]) and a permit for temporary exemption of land-use plans to install the derrick at the local authority in September of that same year. Negotiations started between municipality Boxtel and Cuadrilla Resources on allowances and the rental agreement. [26] In October and November 2010, two information gatherings were held by the municipality to inform the people, not many people attended. The municipality informs the local community, organises information meetings and allows to stage appeals. In total, 14 appeals were handed in. In February 2011, the municipality of Boxtel provided Cuadrilla Resources the licence for the construction of the derrick and additional agreements. The additional agreements focussed on a rental agreement, goodwill contribution € 150,000,-, contribution to a green zone of € 54,000,-, co-sponsorship in *Boxtel Energieneutraal 2040* programme [27] of € 25,000,- for the municipality of Boxtel.

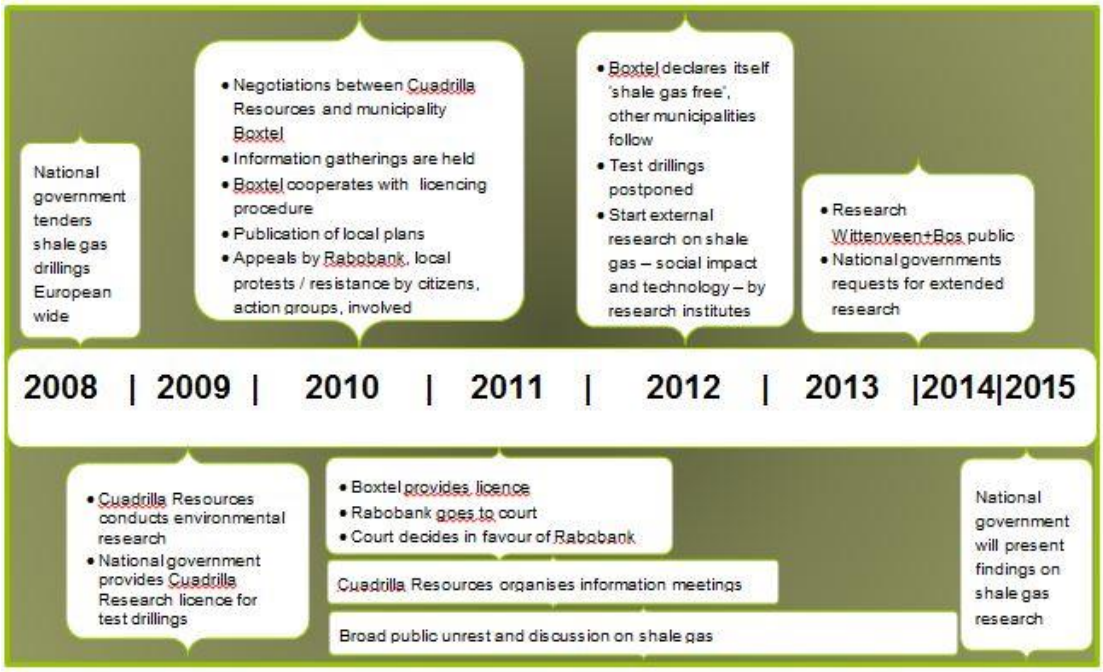
Rabobank
The direct neighbour of Cuadrilla's drilling facility, Rabobank Nederland, has a datacentre at the business area in Boxtel. The location of the datacentre was carefully judged by the ministry of Economic Affairs, based on a risk analysis in 2009 before starting the construction. The datacentre is in operation since 2010. Rabobank Nederlands was informed late on the developments and got involved from the moment the municipality of Boxtel published the intended licence in the media. On 2 December 2010, they handed in an appeal at the Municipality of Boxtel against the permits for Cuadrilla Resources. Main reason for the appeal was their concern for possible risks and consequences of the exploration drillings for the datacentre and their clients (e.g. homeowners with a mortgage). They were surprised by the developments of shale gas in Boxtel, were behind in their level of knowledge and questioned the level of innovation, effects on the local community and the collective advantage of shale gas production.

The municipality of Boxtel disgarded the view of Rabobank Nederland – arguing that the Ministry of Economic Affairs did their research and would not provide a licence otherwise. A construction licence is provided to Cuadrilla Resources on 11 January 2011. As a response, Rabobank Nederland started a legal procedure to stop Cuadrilla Resources from starting the exploration drillings at Boxtel, Their main argument is that the temporality of the licence can be questioned, which had legally the best opportunities of success compared to other procedures and jurisprudence. Rabobank Nederland also had other concerns but these were less likely to make a difference. On 25 October 2011, the court decides that the temporality of the exploration drillings is not proven and decides in favour of Rabobank Nederland. [28] Parallel, other parties got involved like water company Brabant Water and beer breweries.

How further?
Exploration drilling by Cuadrilla Resources is postponed. The municipality of Boxtel declared itself shale gas free in March 2012 providing information for its citizens to protest and hand in appeals. On behalf of Dutch Government a consortium led by research consultancy Witteveen+Bos investigated the risks and concerns of shale gas drillings. A sounding board group (klankbordgroep) consisting parties like Rabobank Nederland, Brabant Water and Municipality Boxtel was involved. The conceptualisations of the sounding board group and the investigation of Witteveen+Bos is differently perceived, some stakeholders argue they have not been involved in the outcomes and information sharing and therefore stepped out of the sounding board group, others argue that outcomes could not be published as long as

[25] Wet Algemene Bepalingen Omgevingsrecht (WABO) and Wet Ruimtelijke Ordening (WRO)
[26] http://www.nrc.nl/apps/schaliegas/knipsel/20110330-huurovereenkomst.pdf
[27] https://www.boxtel.nl/fileadmin/Bestuur/Beleid/BoxtelEnergieNeutraal_sep2011.pdf
[28] Municipality of Boxtel has wrongly issued WRO article 3.22 and therefore the temporality of the project

the parliament was uninformed and do not understand the fuss why stakeholders stepped out of the sounding board group. [29] [30] [31] [32] [33] [34]



Media coverage and opposition

Parallel to these developments, shale gas became a topic in Dutch media. Action groups like *Schaliegasvrij Nederland* and local shale gas action groups emerge with citizens questioning and mainly being against shale gas drillings. A wide variety of companies and organisations express their opinion and worries on shale gas like environmental organisations, beer breweries and water companies. In July 2014, 182 municipalities pronounced to be against shale gas drillings. The discussion of shale gas exploration in the Netherlands is even held cross-border, when the German minister of North Rhine Westphalia spoke out against the shale gas developments in the Netherlands and Germany based on the possible risks of shale gas drillings for the environment and will discuss his view with Dutch government. Parallel to this, shale gas became a topic of discussion in other countries too.

Fictional, incoherent, debatable and factual information is spread and questioned randomly. Exemplary is the documentary *Gasland*, where the director filmed a water tap set on fire due to shale gas drillings affecting the image of shale gas in a negative way, admitting later it was hoax. [35] [36] Reports from

[29] http://www.nrc.nl/apps/schaliegas/knipsel/zienswijze-rabobank-2010.pdf
[30] https://www.boxtel.nl/digitaal-loket/veelgestelde-vragen/schaliegas.html?tx_windfaq_pi1%5Bquestion%5D=139
[31] http://www.nrc.nl/schaliegas/
[32] Interviews with Municipality of Boxtel, Schaliegasvrij Nederland, Rabobank Nederland, Brabant Water, IMSA, RVO
[33] https://www.boxtel.nl/schaliegas
[34] http://www.vemw.nl/~/media/VEMW/Downloads/Public/Gas%20en%20WKK/Schaliegas%20WitBo%20rapport.ashx
[35] The amount of methane in the water is the reason for the burning tap water going back as far as 1936. The director considered this as a non-relevant mater to discuss.
[36] http://wattsupwiththat.com/2011/06/04/the-gasland-movie-a-fracking-shame-director-pulls-video-to-hide-inconvenient-truths/

renowned research institutes are questioned and distrusted. Shale gas production, together with unknown risks coming along with exploration and production caused large discussions resulting in many distrust and ongoing investigations to the effects of shale gas in the Netherlands. Possible risks of shale gas production are ground water pollution, subsidence and earthquakes, visual pollution and extra safety measures due to the number of derricks. [37] [38] [39] [40] [41]

Current situation

Currently, no exploration drillings for shale gas are carried out. After the succesful legal procedure of Rabobank Nederland, Dutch government decided to postpone further activities and will first conduct more research. Dutch government assigned for additional research on the effects, risks and advantages of shale gas for the Netherlands. In 2015, Dutch government will present their findings on the contribution of shale gas on the transition towards a sustainable energy systemin a structural vision. In other European countries, like in the United Kingdom government pushes ahaid with shale gas fracking plans, funding nearly £ 2.5 million to encourage fracking, despite local protests. [42] [43] [44] [45] [46]

Dialogue

When looking at the shale gas developments in the Netherlands, we notice that some topics are of main importance for the role of dialogue and the implementation process. The different levels of dialogue can be identified (macro and micro level dialogue), the level of responsibility, communications and trust. In the case of shale gas in Boxtel, the degree of dialogue caused the postponing of the project in Boxtel and can have severe consequences for the future of shale gas developments in the Netherlands.

Macro versus micro level dialogue

The dialogue at macro level concerns experts and professionals in the field. In the case of shale gas, the Ministry of Economic Affairs, together with institutes as TNO, EBN and SoDM, investigated the possibilities, threats and risks of shale gas drillings for the Netherlands, consulting this with the Province of Noord-Brabant. The latter did not used their right of consultation. With the experience and knowledge of gas production, shale gas is considered a logical next step and worth investigating. Exploration drillings are in order to research the capacity, quality and way of production. They held this dialogue according to their responsibilities, existing policies and rules of law. Based on this, the licence (concession) is provided to Cuadrilla Resources, an experienced professional (since 2007) in gas drillings and wanting to perform business-as-usual. Cuadrilla Resources is the executive party and directly involved in the macro level dialogue with national government and research institutes. The dialogue at macro level was and is very familiar to them. They tender for business opportunities when they see one and Dutch policy gives opportunities for shale gas exploration drillings. For Cuadrilla Resources it is a business opportunity to respond to.

All legal and juridical steps are followed and contact is sought by Cuadrilla Resources with the local authority in order to receive the local permits and negotiate local conditions (in terms of location, compensation etc.). Here starts the dialogue at micro level.

[37] Interviews with Municipality of Boxtel, Schaliegasvrij Nederland, Rabobank Nederland
[38] http://www.gaslandthemovie.com/
[39] https://milieudefensie.nl/schaliegas
[40] https://www.schaliegasvrij.nl/
[41] http://www.umwelt.nrw.de/ministerium/presse/presse_aktuell/presse140721.php
[42] http://www.rijksoverheid.nl/onderwerpen/schaliegas/schaliegas-in-nederland
[43] http://www.rijksoverheid.nl/onderwerpen/schaliegas/documenten-en-publicaties/kamerstukken/2013/11/13/kamerbrief-opdracht-breed-onderzoek-schaliegas-in-nederland.html
[44] http://www.rijksoverheid.nl/onderwerpen/schaliegas/documenten-en-publicaties/kamerstukken/2014/05/28/kamerbrief-over-milieuonderzoek-schaliegas.html
[45] http://www.theguardian.com/environment/2014/jul/28/fracking-office-single-unit-shale-gas-produced
[46] http://www.theguardian.com/environment/2014/jul/28/fracking-expansion-shale-gas-opposition-britain

The dialogue at micro level concerns lower authorities, citizens and organised citizens in action groups etc. These stakeholders are involved in a later stadium of the dialogue or process. The lower authority, the municipality of Boxtel, was involved in the process when the matter reached their jurisdiction. From that moment, citizens got involved in the process, information gatherings were held, and action groups against shale gas were formed.

Based on legal grounds, Rabobank Nederland successfully stopped the process on which national government postponed shale gas activities. The motives of Rabobank Nederland are bases on NIMBY (Not In My BackYard) arguments, not wanting exploration drillings, or what so ever, near their datacentre. The main reason for it is to avoid risks for their datacentre – vibrations destabilising the datacentre and risks for pollution and damage to their cogeneration. When their expertise increased, they questioned the reasoning for shale gas exploration drillings and its added economic value, specially based on the consequences of the project in the direct environment based on devaluation of the housing market or a negative business climate for current and new industries. Due to the jurisdiction, Rabobank Nederland got involved in the micro level dialogue contesting the licence provided by the municipality of Boxtel.

Due to the legal process, project developers or market parties are not obliged to inform local communities and stakeholders in the investigation and research process (e.g. when conducting the environmental and local impact research, but later in the process when project developers apply for permits.

Level of responsibility
Who is responsible for what and why? This is a recurring question when analysing the implementation of energy policies and projects. The difficulty lies in official responsibilities and actual responsibilities. The development of energy and climate policy lies in the hands of national and European policy makers and politicians. They are responsible for and create policy instruments and targets. As a response and due to liberalisation, market players in the Netherlands are considered the responsible parties for implementation of a project in order to reach the targets. In practise this means that market players are responsible for local and public support for energy projects which is not their direct core business and expertise.

Market players are considered and perceived to develop business and make profits. Subsequently, this makes it difficult to understand the role and responsibility market players take in energy implementation projects, while wanting to make profit. It is even suggested that a market player is not a trustworthy partner when advocating policy. The responsibility market players take is perhaps one that lies at government and local authorities, who have the role of process manager and responsible executive instead of leaving it to the market.

At local level, local authorities take responsibilities they do not directly have. For example, municipalities calling themselves ‘shale gas free’ have no jurisdiction to do so, it is merely a symbolic statement. This confuses the dialogue, image-forming or perceptions and level of responsibility. Notable absentee is national government whereof is expected an explanation of the need and necessity of shale gas drillings and why this fits national energy policy. Currently, market players take over the responsibility to inform people on the need and necessity, leading to distrust.

Trust
As mentioned before, the level of trust in the involved stakeholders – mainly government and market players - is vital for the success of a project. The level of trust in a stakeholder(s) is often disputed. Due to inconsistent policies, lack of leadership, shifting responsibilities and unclear communication on policy

initiatives, stakeholders are distrusted or receive a lack of trust. When a stakeholder is distrusted, this influences the message and way of communication, having the risk that some stakeholders are perceived as less important dialogue partners, partners only being interested in own interests and so forth.

Communication
Communication is key in difficult and complex projects. In the shale gas discussion two levels of communication are identified. Communication at macro level concerns government, market players and research institutes. Within their vision and policy they operate and the communication is direct and clear. Based on legal procedures, the market player hands in the necessary documentation for the project and research institutes investigate opportunities and threats of the project. Contact with local authorities or communities is not required at this stage. They are involved at the inspection and appeal stage, halfway the project.

When micro level is reached, the preference of local community is to understand and know the reasoning behind the changes in their direct environment. When the local community is concerned, all types of information, media and sources is used to proof ones right opinion, sometimes even falsified information. Often local protests are perceived as NIMBY effects (Not In My BackYard) meaning that local communities are not necessarily against technical innovation and change as long as it is not implemented in their backyard. This can result in local, and even national protests, depending on the way of communication and the strength of the messages. In the case of shale gas, the messages were very strong, perceived as truth or given and disrupted the dialogue at all levels.

According to the interviewees and research studies, the current process in terms of legal steps and communication has had a negative effect on the image and representation of the involved stakeholders, the level of trust, and responsibility.

Conclusion
According to several research reports drawn on this topic, certain issues could and should be dealt with differently in order to be more successful in the future. When focussing on dialogue, this case study can conclude and recommend the following:

- The decision-making process lies, due to current legislation, in the hands of national government;
- The implementation of shale gas projects follows rules and regulations applied to the gas and mining business;
- Parties applying for tenders have to follow the rules and regulations with the involved stakeholders, leaving local communities and lower authorities out;
- Public and local communities are informed when the party applying for the tender submits the application licence – causing questions and protests from local communities;
- The party applying for the tender is the appointed party to create public support;
- This requires good communication and negotiations, and trust in government, public authorities and market parties;
- Responsible parties intending on implementing the policy line cause protests (from local communities and lower authorities) and lack of trust;
- In the dialogue, many different resources and tools of information are used, not always complimenting the dialogue and even disrupting the topic;
- Changing attitudes towards national policy lines at local level is detrimental for project implementation;
- The points above create a lack of trust in government, public authorities, market players and communication tools / messages;

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- Finally resulting in ongoing research on the risks and potentials of shale gas, municipalities declaring themselves ‘shale gas free’, and no clear policy message on the need and necessity of shale gas in the Dutch energy mix.

Recommendations:

- Government and market players should involve local communities and involved parties (landowners, direct involved parties and communities) in plans beforehand and explain the vision and reasoning behind the plans, technical details as appointed location, drilling technology, environmental impact, be open for discussion and create a codecision procedure;
- Government and market players should improve communications on the process itself (vision and goals, implementation process, participation, decision procedure), from the beginning of the process – depending on the level of responsibility at macro or micro level - towards the involved parties, e.g. an open and transparent Environment Impact Assessment or likewise processes.
- The improvement of communications involves the choice of the communicator, timing of communication, medium used and targeting. Communication should be tuned to the message and goals;
- Mainly government and as a supporter market players have to communicate the reasoning behind the implementation – express a clear vision on energy policy and the specific embodiment;
- National government should give choices / scenarios on where to implement shale gas projects; giving local authorities and companies options where to implement a project thereby creating local engagement and provide situations whereby local benefits are given priority;
- The decision-making process should be improved by including stakeholders (direct involved parties) in the policy creation process being able to draft together a successful implementation process;
- Topics as participation, compensation and other forms of direct engagement, involvement and refund should be an open and transparent topic of discussion amongst the involved stakeholders;
- The implementation process should be open and flexible for feedback from a broad range of stakeholders (including citizens), creating the option for a codecision procedure wherein policy-makers and involved stakeholders, from every level, can codecide on aspects of the implementation process (e.g. location, forms of compensation etc.). During this process, the vision and goals behind the actual implementation should be communicated early in the process, transparently, and clearly.