

Stranded fields in the Netherlands

Opportunities for new development

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The stranded fields portfolio in the Netherlands holds some 100 proven hydrocarbon accumulations. The stranded fields are either tight or remote, contain small volumes, or are located in environmentally sensitive areas. Significant volumes of gas (and oil) can be unlocked by addressing the blockers that hampered development so far for these stranded fields.

The economic conditions and technologies that prevented development at the time of drilling may since then have changed in such a way that development is viable in the present economic climate. A significant number of stranded fields has already been developed in the last years.

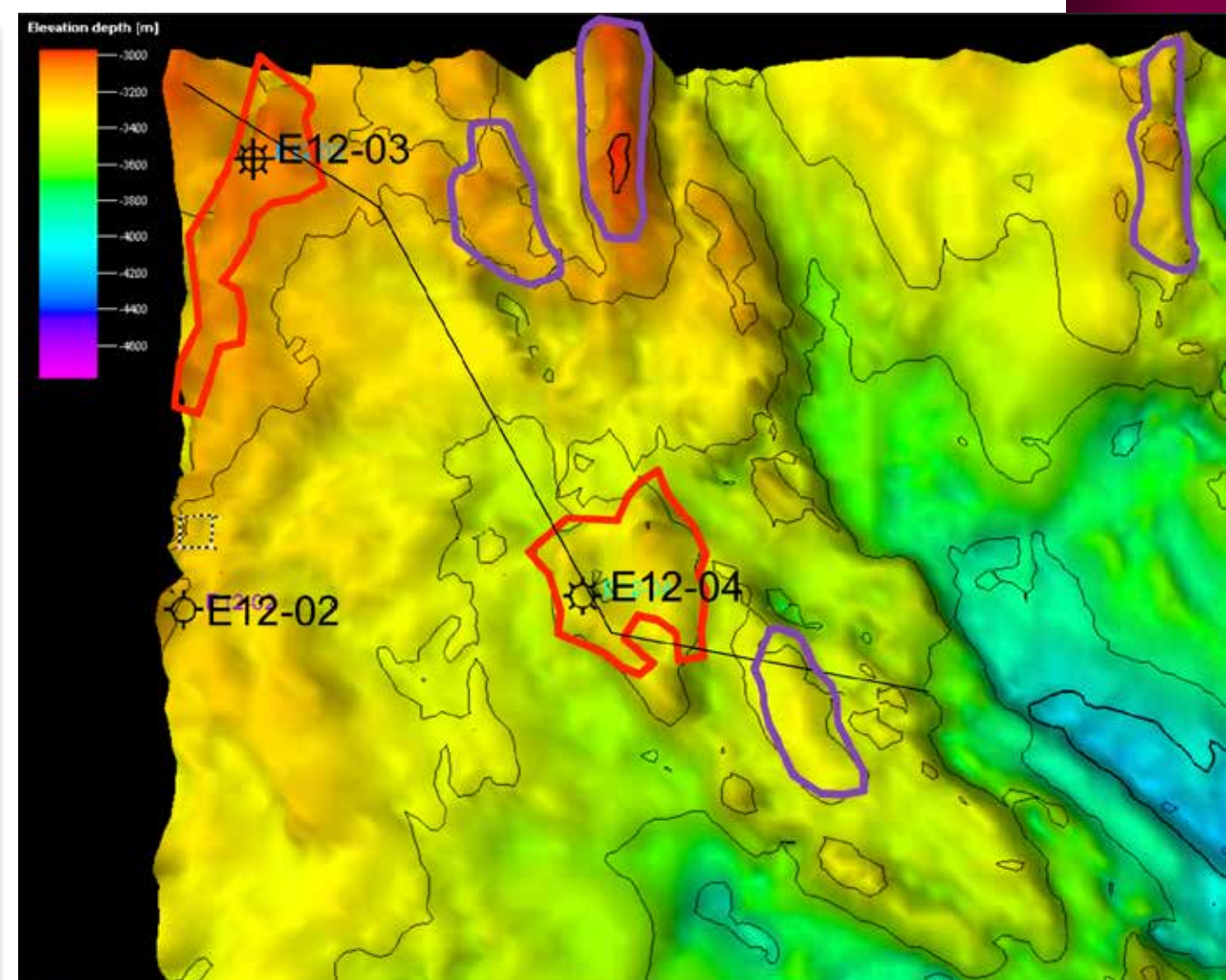
- The following initiatives initiated by the Dutch Government should aid the development of stranded fields:
- Fallow acreage declaration (see below)
 - Financial measure marginal gas fields and prospects (tax benefit)
 - Identify & promote stranded fields with upside (EBN)

The total volumes contained in stranded fields amount to about 130 BCM (4590 Bcf) (GIIP), and about 60 million m³ (380 million barrels)(STOIIP). The average size of a stranded gas field is about 1.7 BCM GIIP.

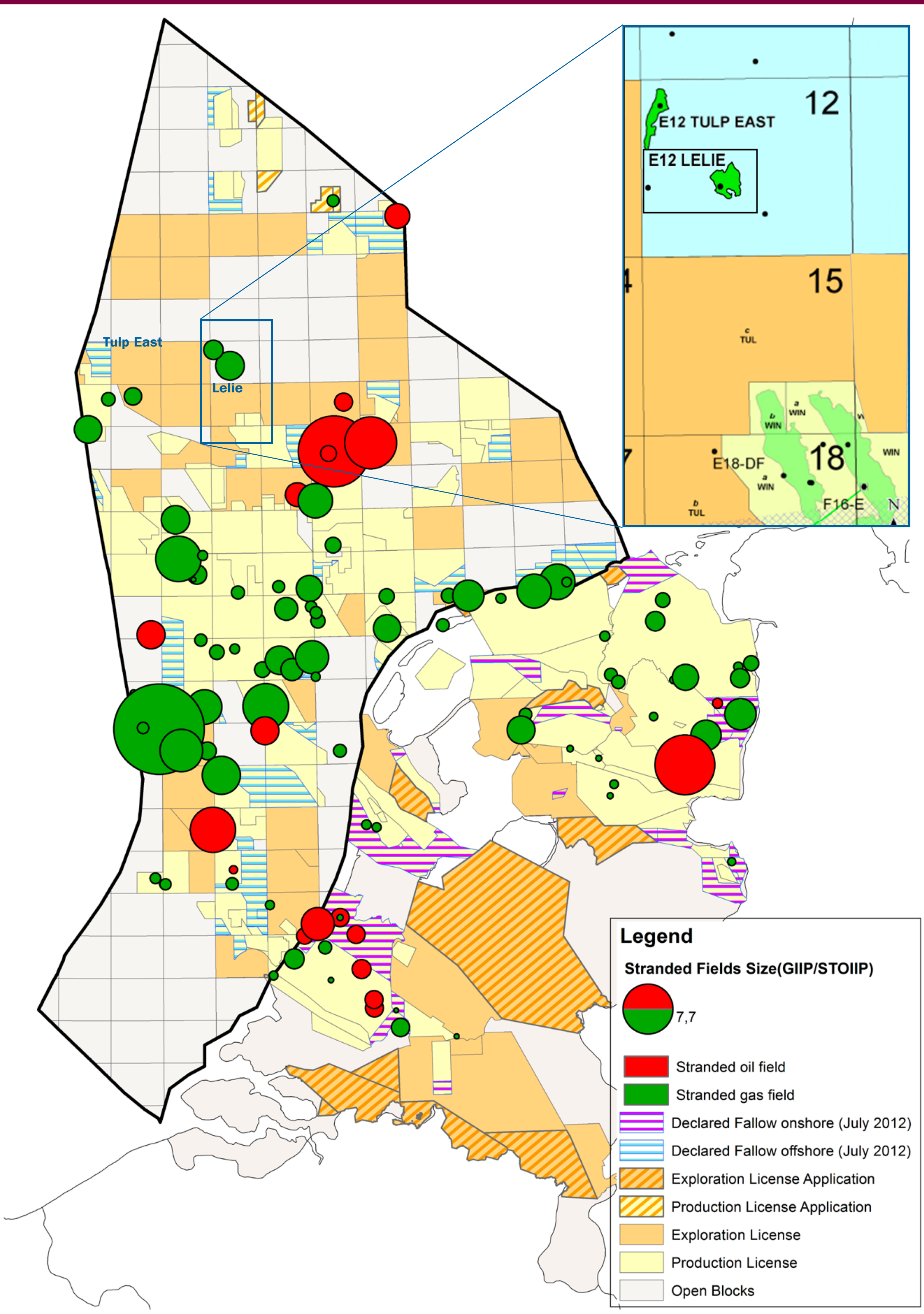
Stranded gas fields Tulp East and Lelie in open acreage

The Tulp East and Lelie were discovered in the early nineties and are located in the E12 block of the Dutch northern offshore, in the surrounding area several leads have been identified. Both fields are fault dip closures at Base Zechstein level and defined on survey Z3PET1993A. The area has been covered in 2012 by Fugro's multiclient DEF survey.

Fields	Lelie	Tulp East
Well	E12-4 (1991)	E12-3 (1995)
GIIP	Exp: 2.54 BCM	Exp: 1.17 BCM
UR	Exp: 1.91 BCM	Exp: 0.68 BCM
Upside GIIP	3.28 BCM	1.46 BCM
Reservoir Fm	Slochteren Fm/Millstone grit Fm	Millstone Grit Fm
Porosity	11.5%	9-13%
Charge	Carboniferous	Carboniferous
Seismic coverage	Z3PET1993A, 2011 DEF survey	Z3PET1993A, 2011 DEF survey
Hydrocarbon specifications	CH ₄ : 22%, CO ₂ : 3%, N ₂ : 65%?	CH ₄ : 64%, CO ₂ : 3%, N ₂ : 33%



Prospectivity (purple outlines), wells that reached the Carboniferous and the Tulp East and Lelie fields (red outline) in E12 block, shown on base Zechstein map (TVD)



Development Tulp East and Lelie fields

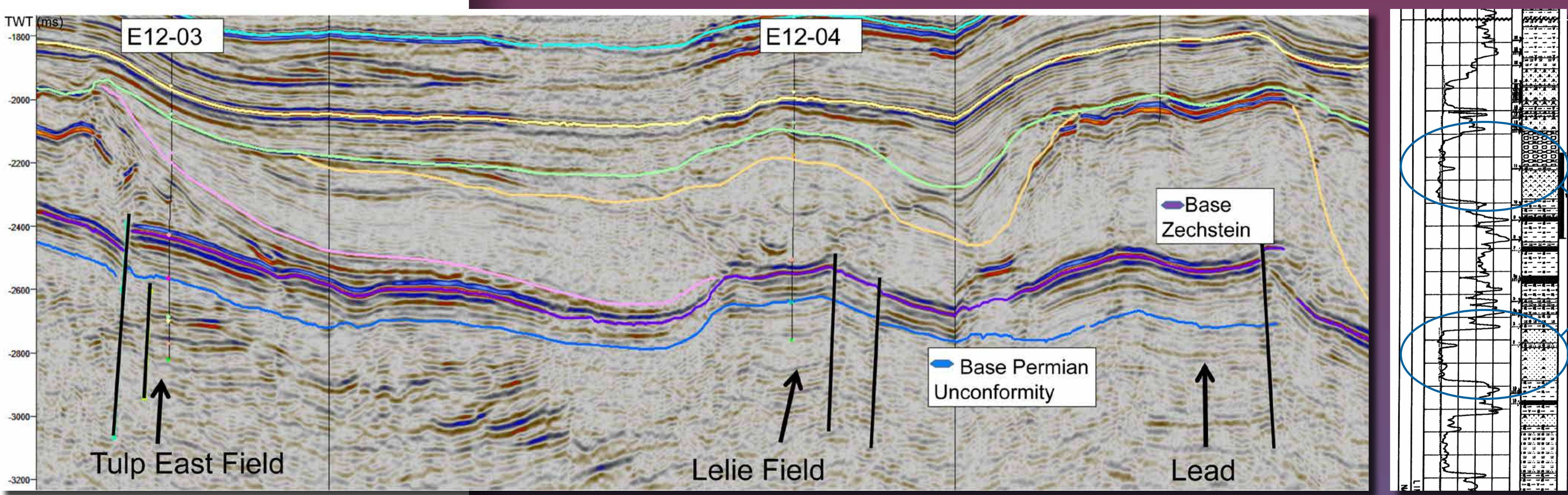
Challenges for development of the fields are:

- Low GHV (Gross Heating Value MJ/Nm³) of the gas
- Distance to present infrastructure (~ 34 km)

Why develop these fields now?

- Improved economic climate
- Tax incentives marginal fields
- Cluster development possible with undrilled prospects
- New technologies to deal with Low Cal gas composition

More information regarding the Tulp East and Lelie fields can be found on www.nlog.nl



Tulp East/ Lelie composite line (Northwest – Southeast)

E12-04, Lelie

Opportunities in Fallow Acreage in the Netherlands

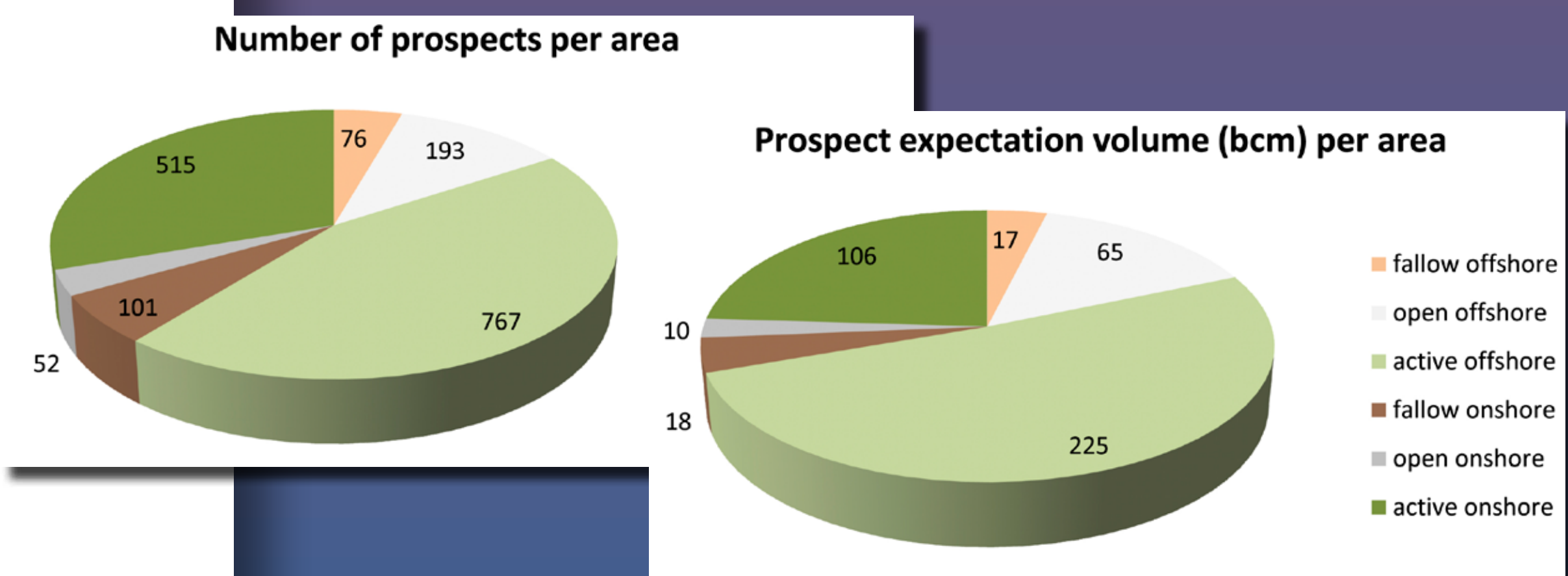
In 2010 the Dutch government and NOGEPa agreed on a Fallow Acreage Covenant enabling E&P companies to submit applications for this inactive acreage (and parts thereof) in the Dutch offshore domain. The fallow acreage is marked by an absence of significant exploration, production and storage activities over the last two years. The onshore domain is still covered by the acts in the Mining Law stating that the Ministry is allowed to reduce any part of acreage marked by inactivity but is not part of the covenant.

The declared fallow acreage on- and offshore, is published on www.nlog.nl. The fallow licenses, declared fallow in 2011 are now open to submission of a workplan by third parties.

Several opportunities including stranded fields and prospects are located in fallow and open acreage, these opportunities can be of interest to new applicants.

The graphs and tables provide an overview of opportunities within the current fallow and open areas at this moment. Currently there are 11 stranded fields located in Fallow Acreage and 8 stranded fields in Open Acreage.

The fallow acreage classification will be updated regularly and in the coming years more areas containing stranded fields and prospects may become available enabling easier access to new applicants in the future.



		No. Gasfields		No. Oilfields	
		Abandoned	Undeveloped	Abandoned	Undeveloped
Fallow Acreage	Offshore	1			1
	Onshore	3	11	1	2
Open Acreage	Offshore	11	6		1
	Onshore		2		



For all information and data on Exploration and Production in the Netherlands, see the Netherlands Oil and Gas Portal

www.nlog.nl & www.ebn.nl

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