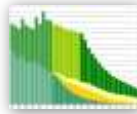


# E&P opportunities & activities in the Netherlands

Harmen Mijnlief

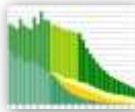
The logo for 'ebn' is displayed in white lowercase letters on a solid maroon square background.

Ministry of Economic Affairs



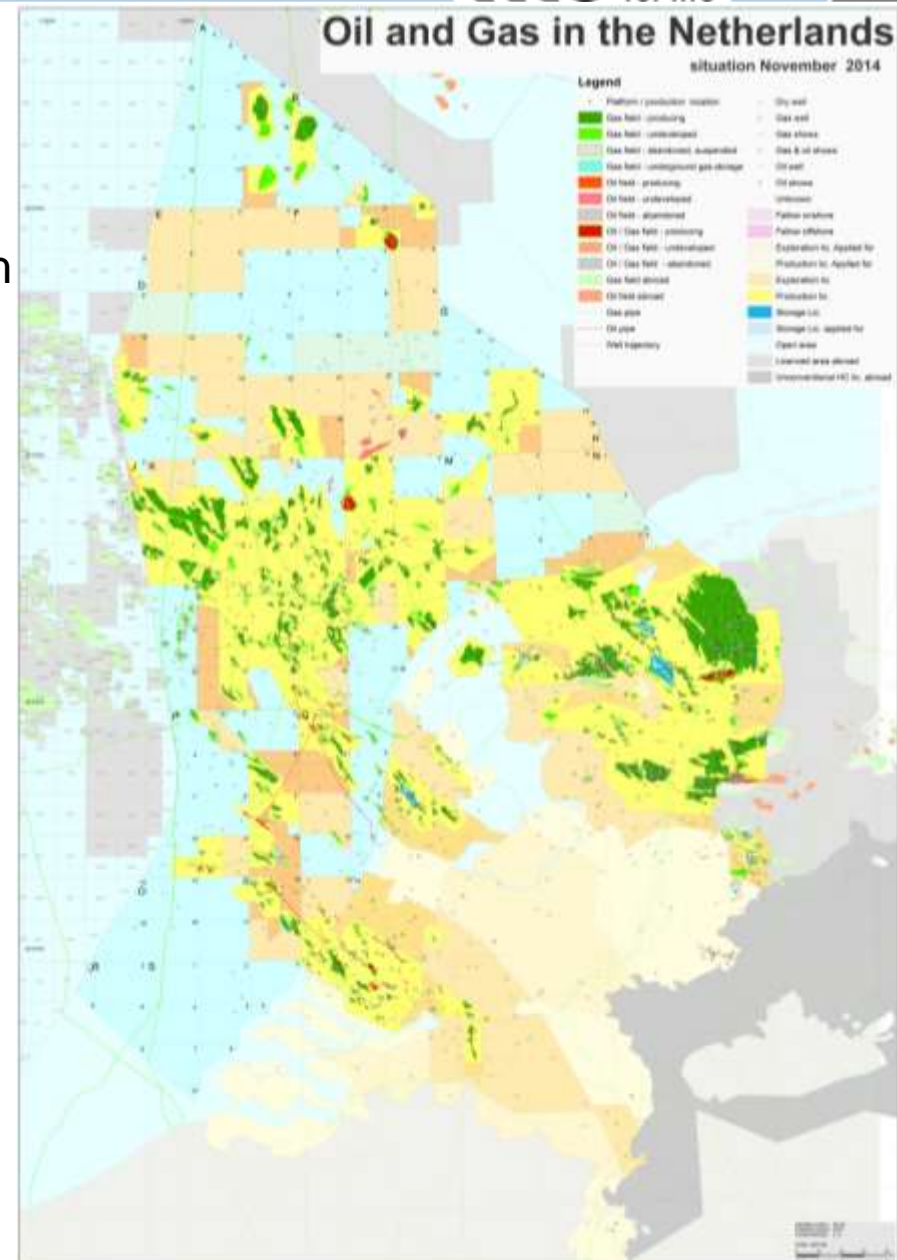
# Outline of the presentation:

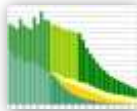
- › Look back 2014
- › Resources
- › Opportunities
- › Conclusions



## Present day E&P map

- › Licence situation: nothing much changed.
- › Still have the 9<sup>th</sup> open licencing round
- › Shallow water < 50m
- › Excellent infrastructure.
- › Close to coast / market

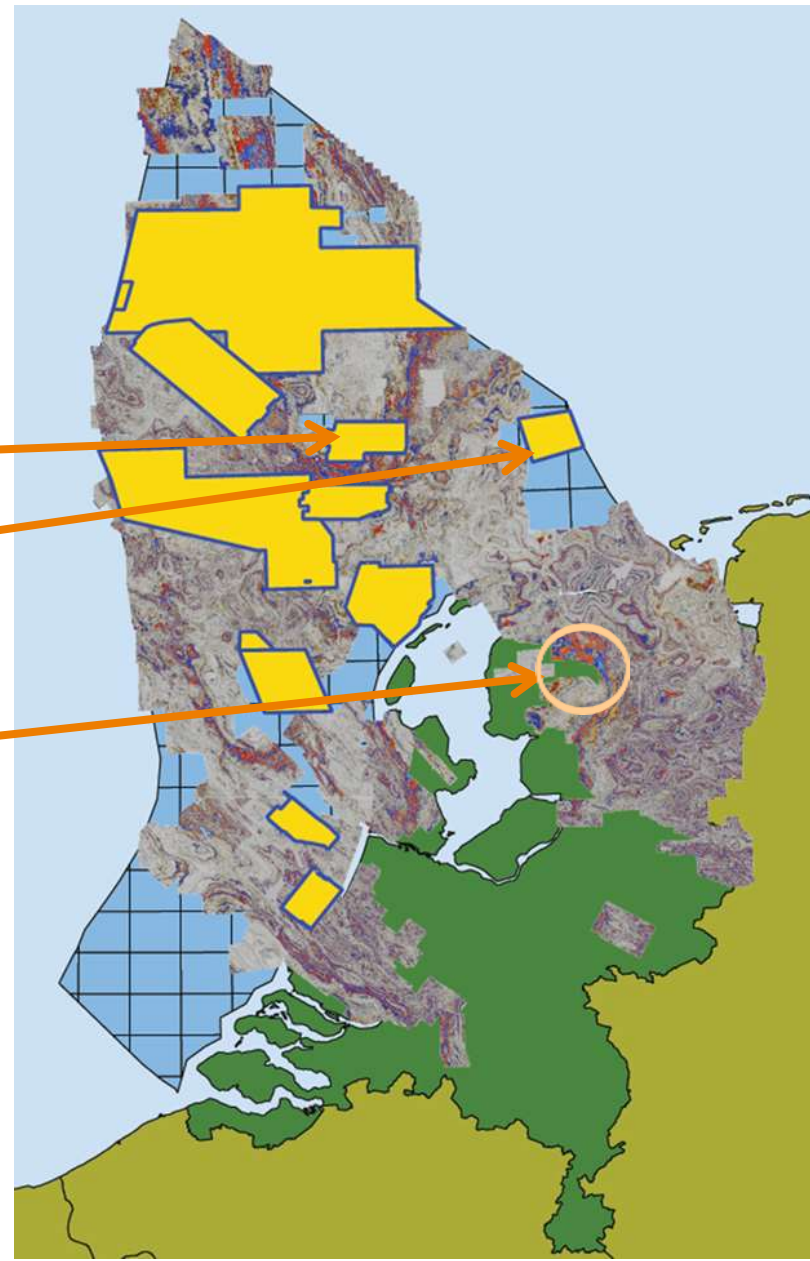


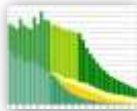


# Seismic acquisition

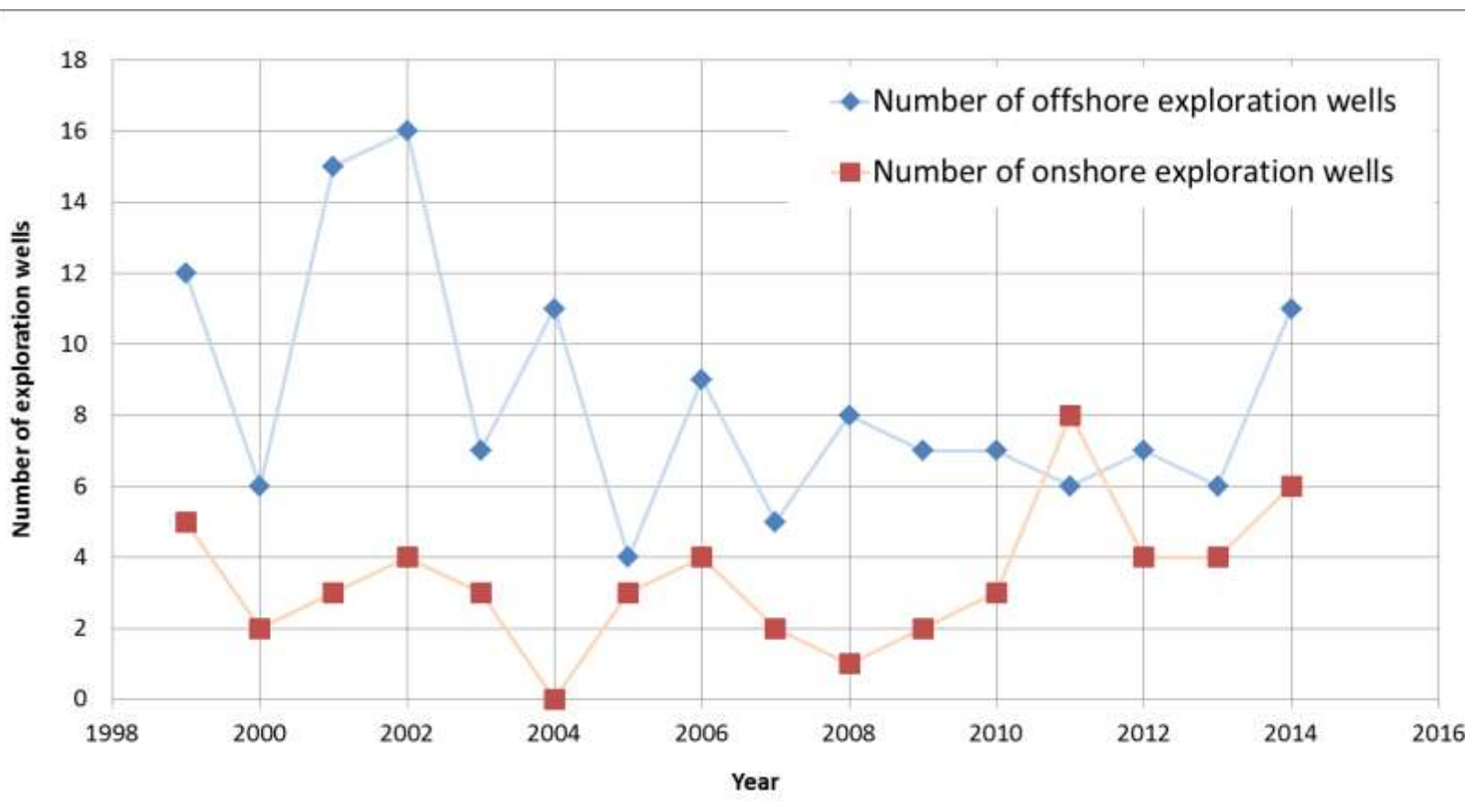
from 2011 onward

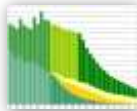
- › Notable activities in 2014:
  - › Sterling shot 1<sup>st</sup> Broadband survey
  - › Hansa: 1<sup>st</sup> continuous line acquisition survey in NL
- › Planned onshore survey by Vermilion





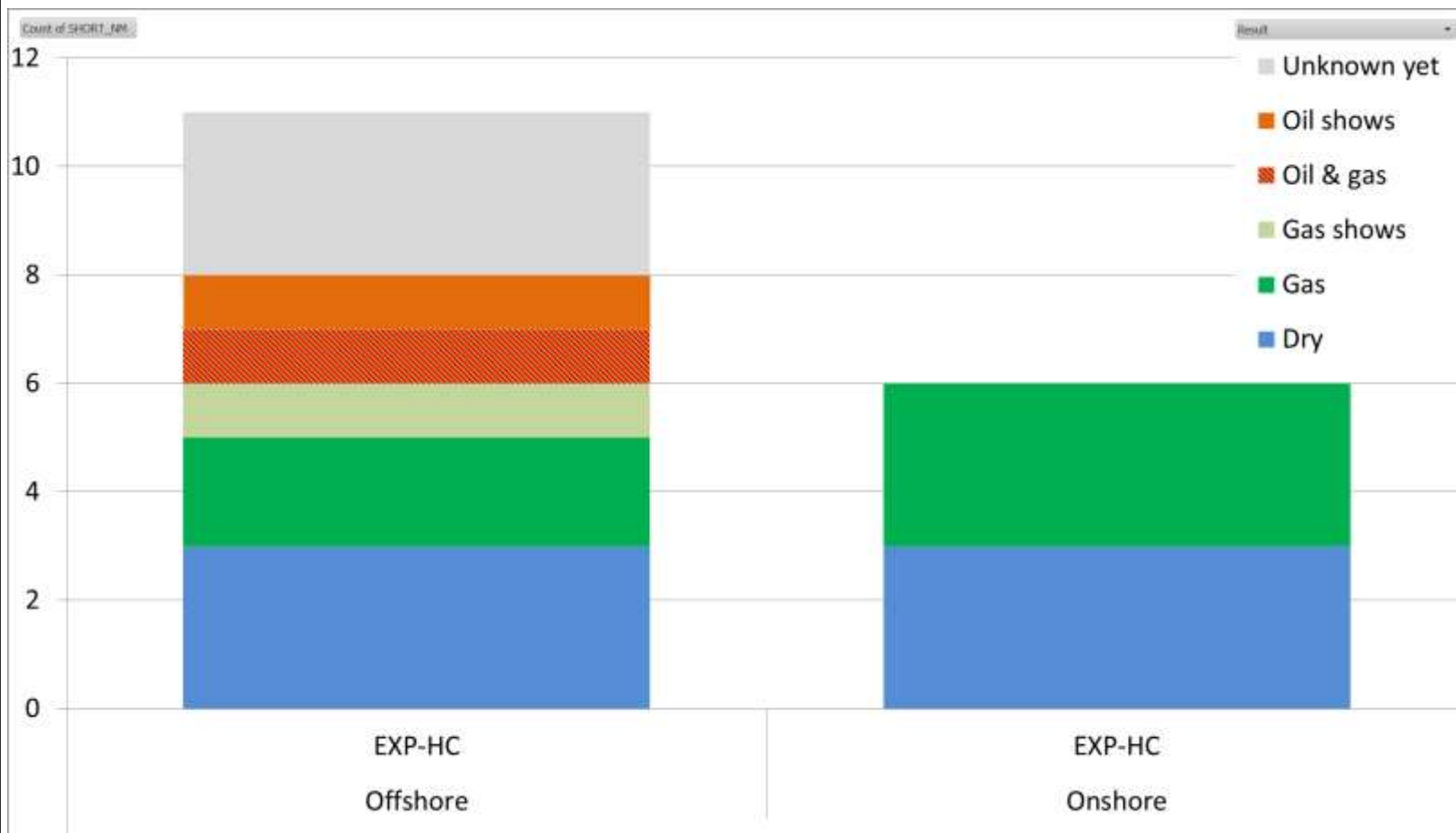
# Exploration drilling 2000-2014

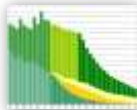




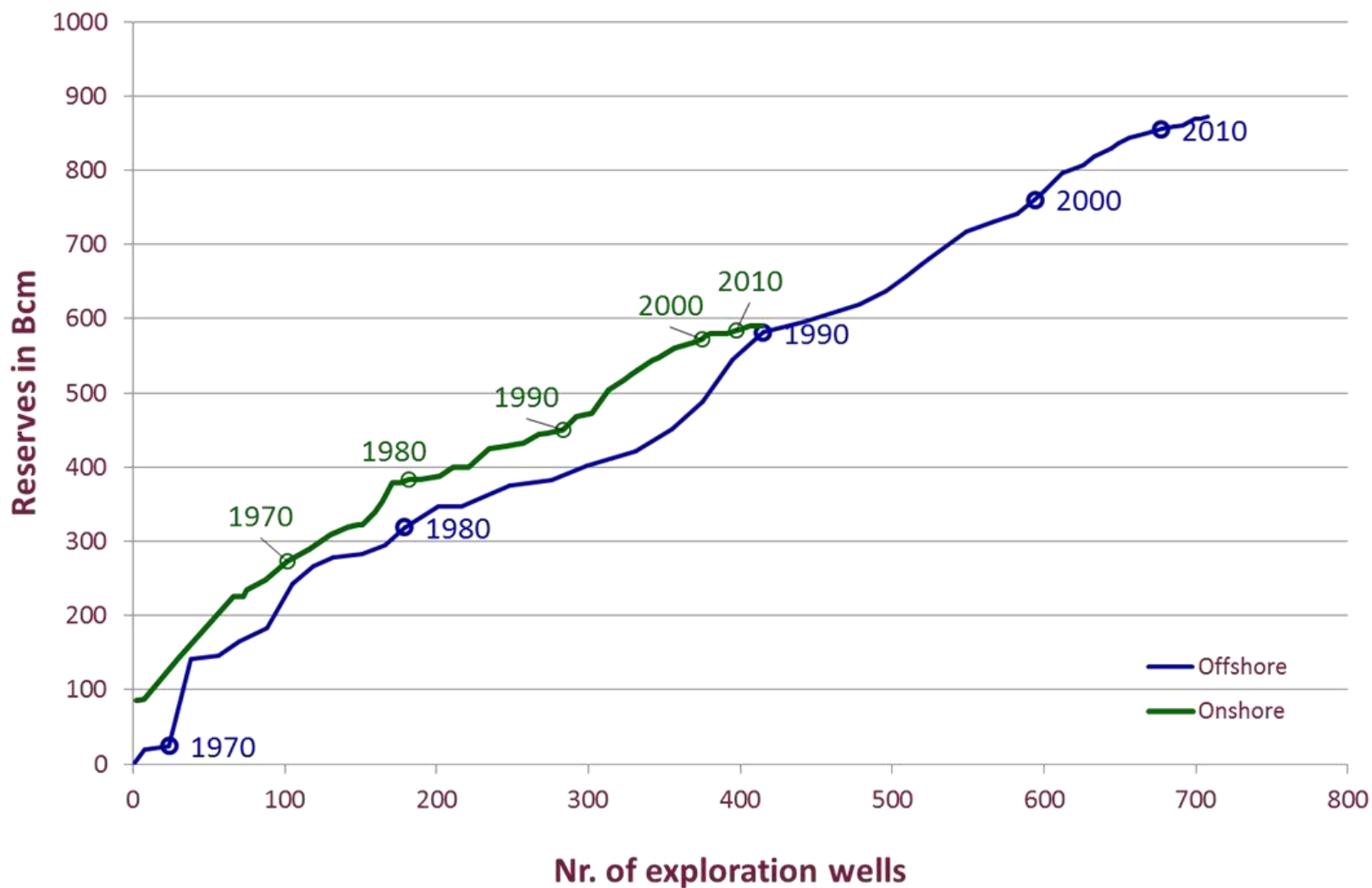
# Exploration activity 2014

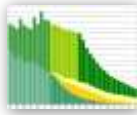
## › Wells started in 2014





## On- and Offshore creaming curve

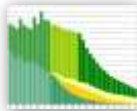




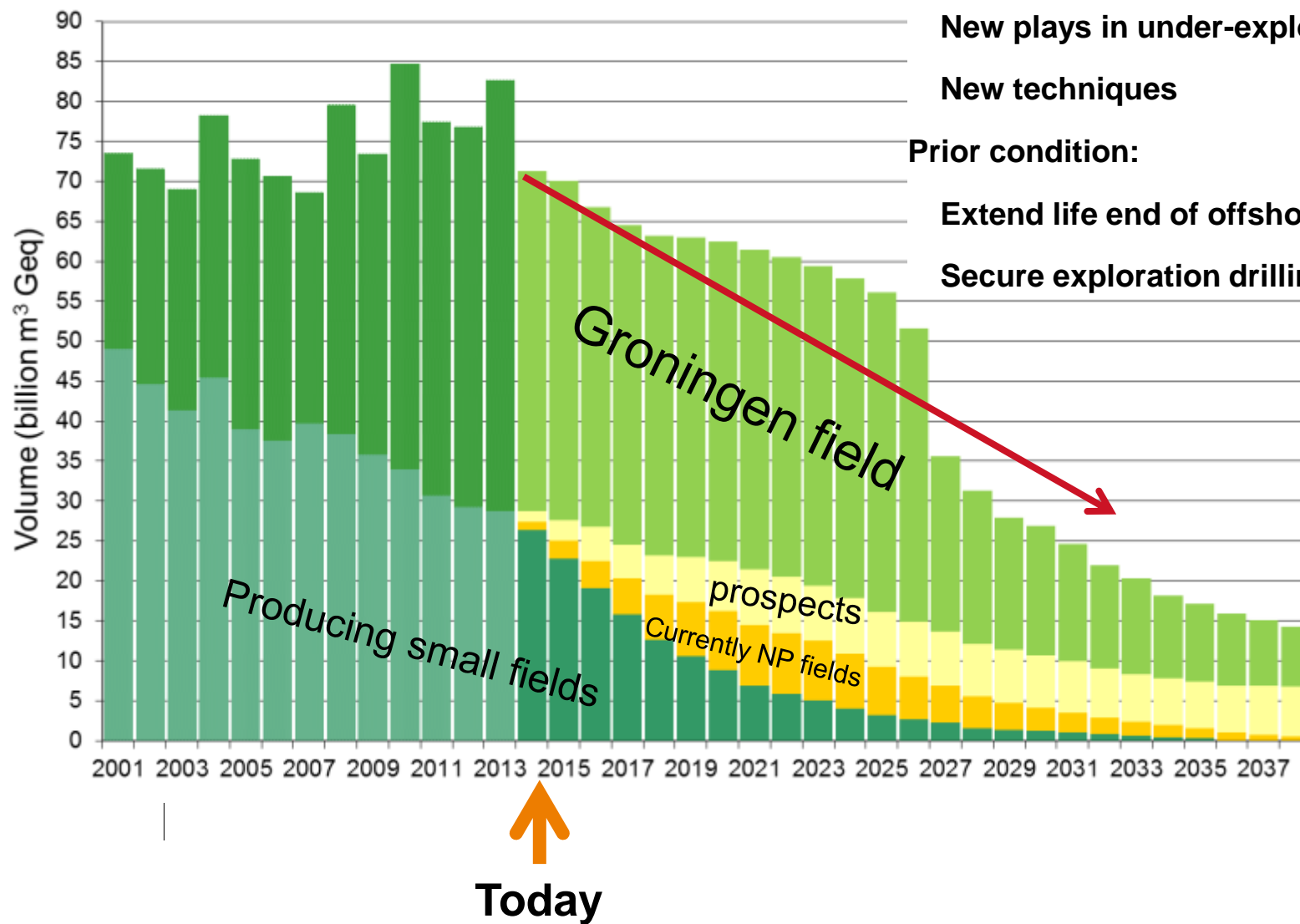
## Intermediate summary: What do we see

- › High exploration activity:
  - › 17 exploration wells in 2014
    - › high success rate (approx. 60%)
  - › Successful mix of near field and frontier exploration
  - › Secures (life) extension of infrastructure
- › Large seismic surveys shot last couple of years
- › High volume of seismic reprocessing





# Dutch resources



Exploration ambition:

Need to tap sizable reserves

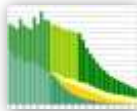
New plays in under-explored areas

New techniques

Prior condition:

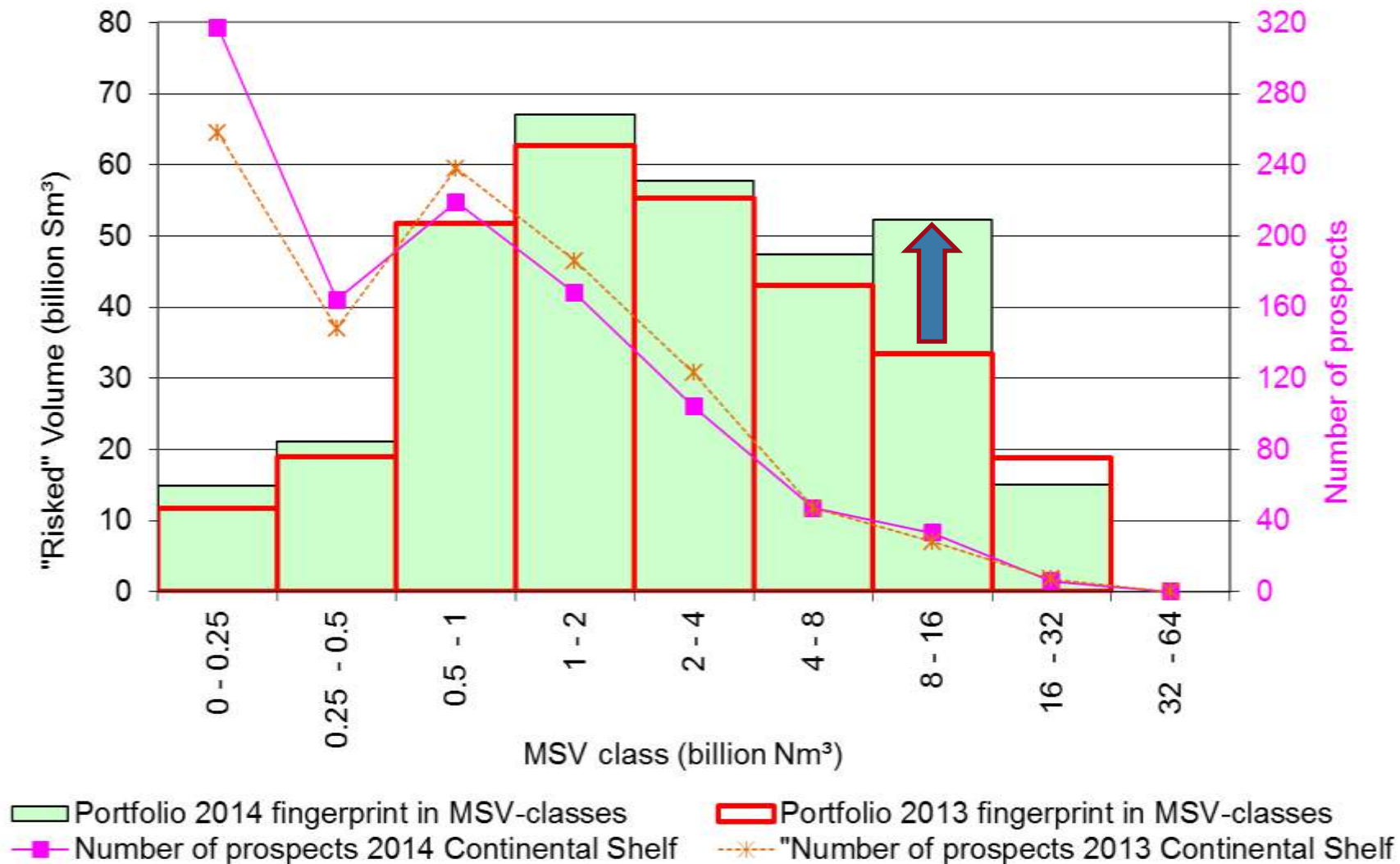
Extend life end of offshore infrastructure

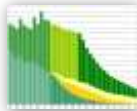
Secure exploration drilling activity



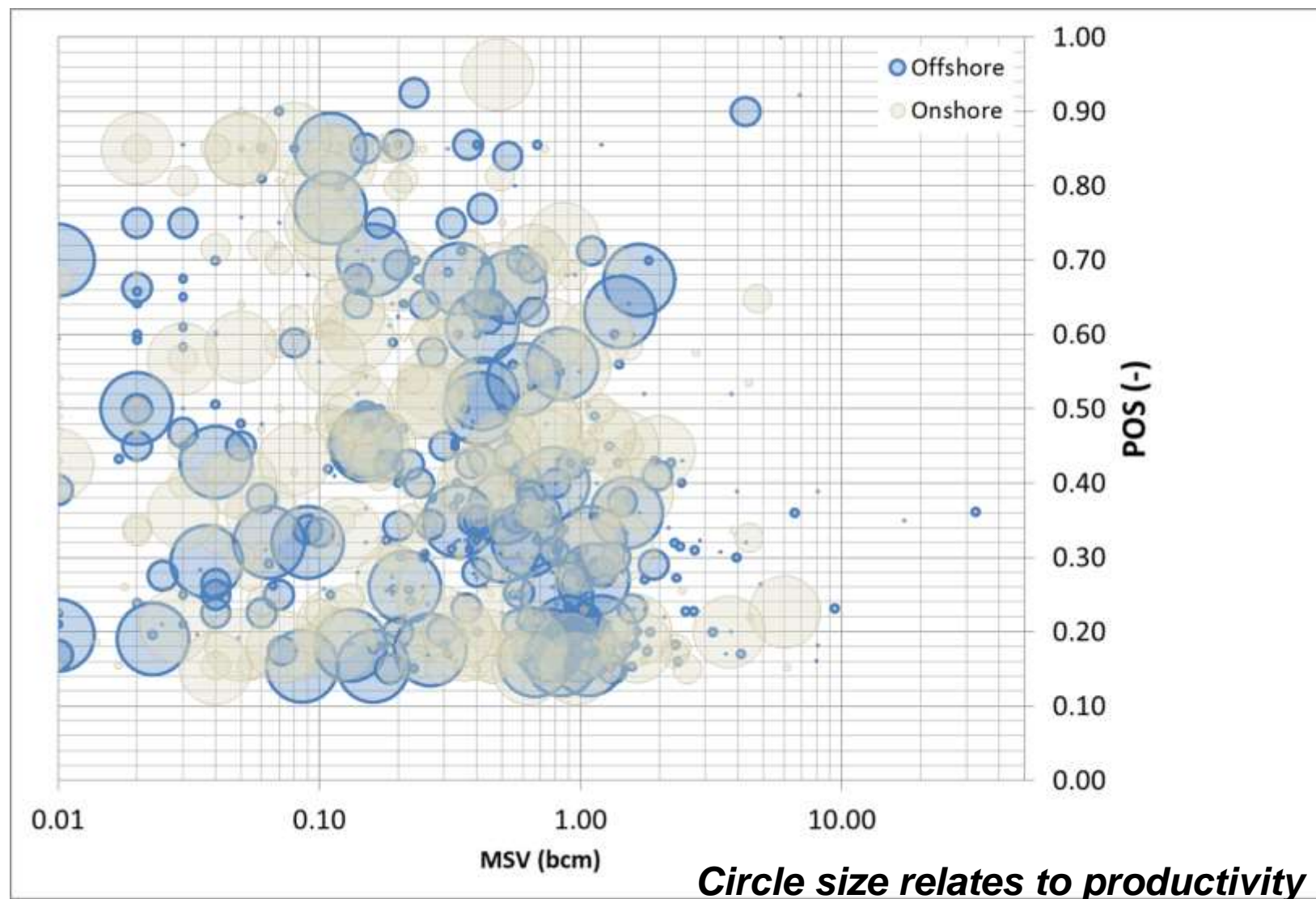
# Offshore Prospects in Proven gas plays

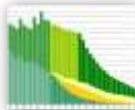
Exploration potential MEA annual review 2012 & 2013





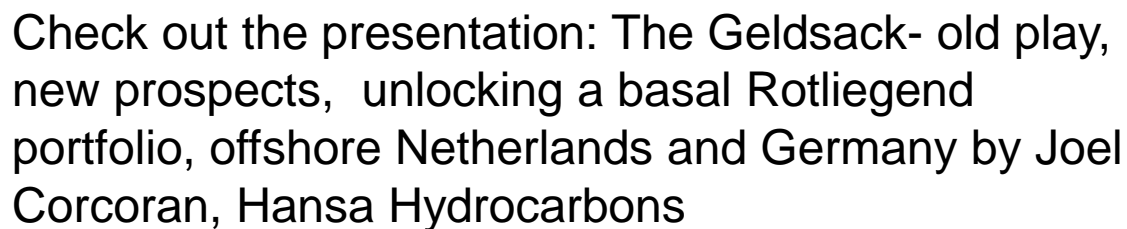
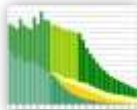
## Fingerprint of Prospect portfolio within Proven Play



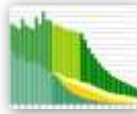


- Tertiary shallow gas









# New petroleum systems in the Dutch Northern Offshore

## Revision of distribution of pre-Zechstein reservoir and source rocks

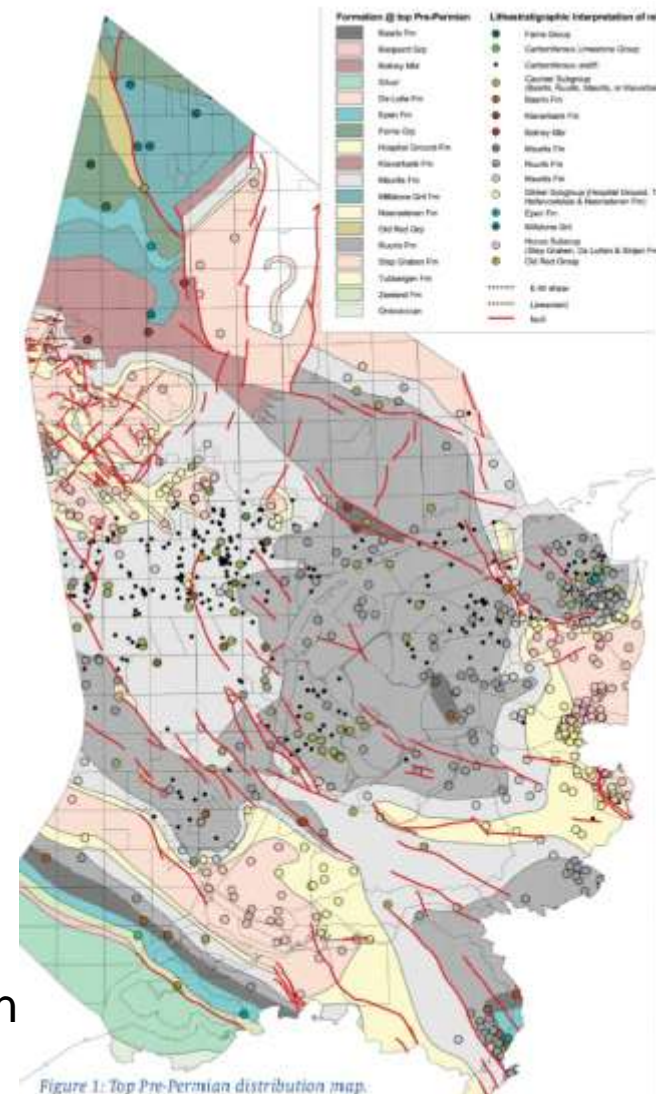
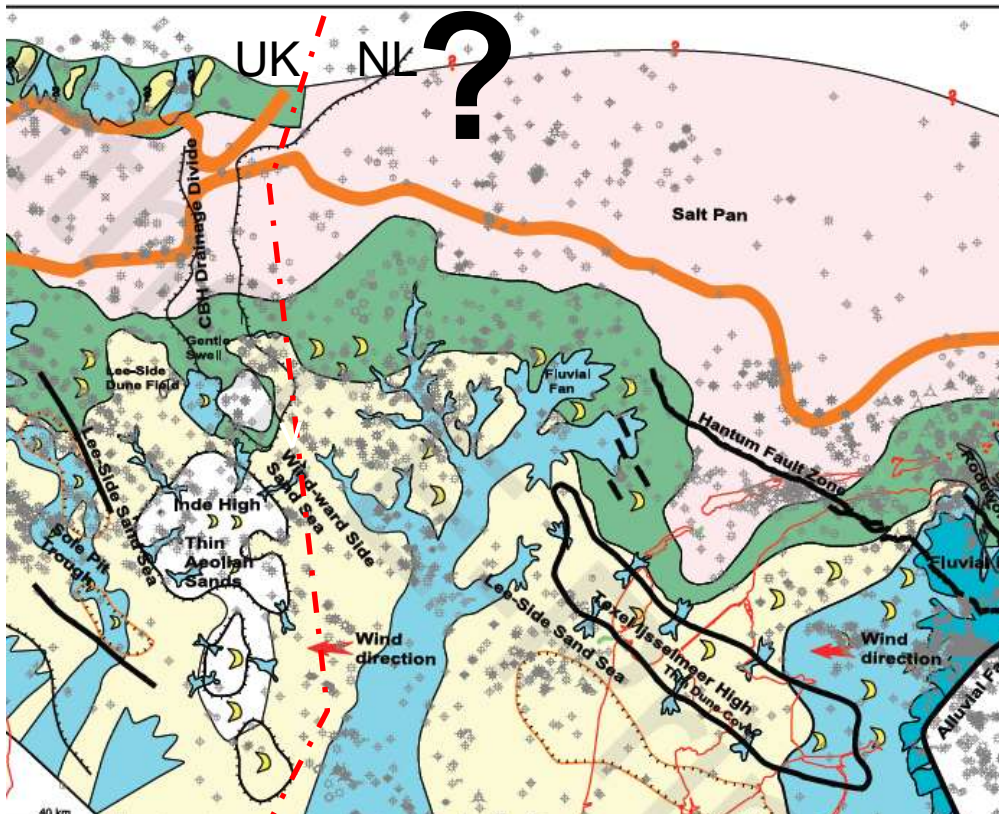
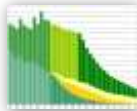
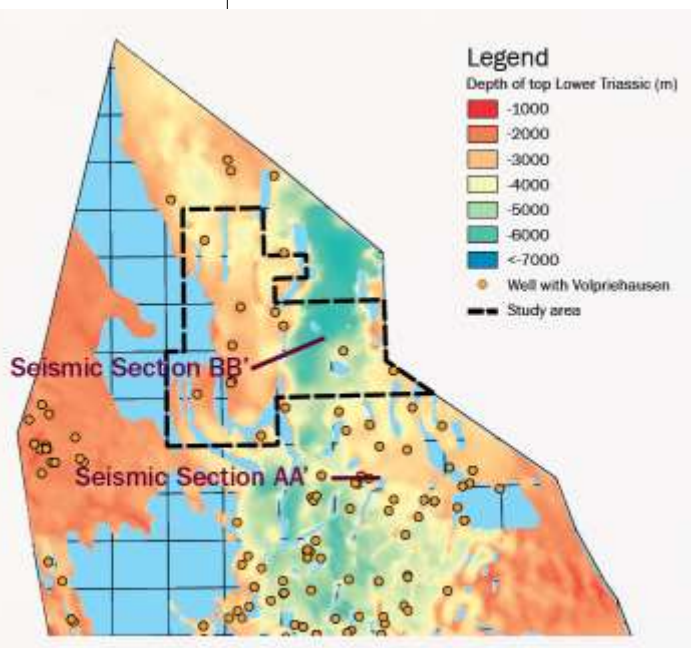


Figure 1: Top Pre-Permian distribution map.

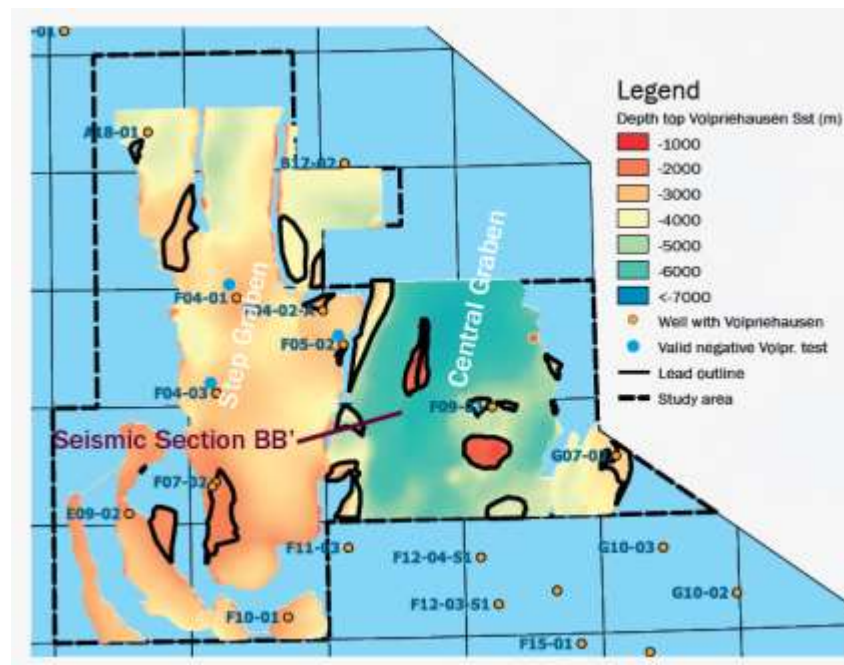
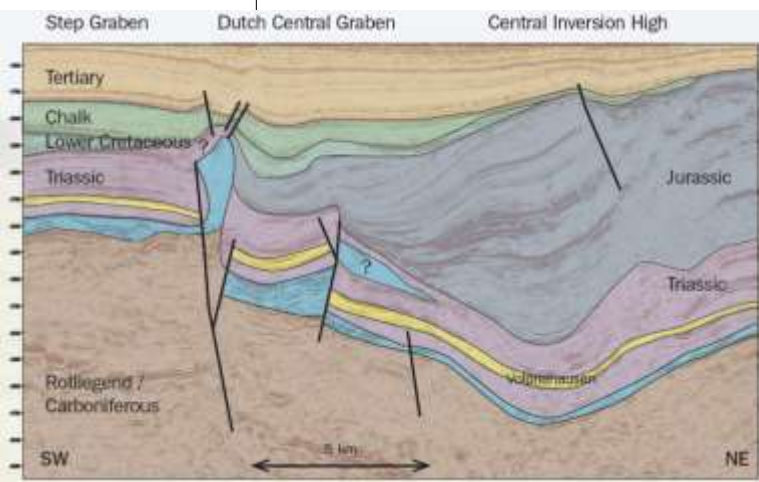
- Resolve the question marks on the old maps
- Large partner group; Study almost finished.
- Regional analysis of reservoir and source rock distribution
- Resulted in large revision of pre-Zechstein



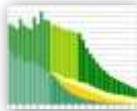
# Triassic in the Northern Offshore



- › Second largest play in the Netherlands under-explored in Dutch Northern Offshore
- › Northernmost Triassic gas field: F15-A
- › Play-elements studied: charge and reservoir distribution
- › 18 leads identified in study area

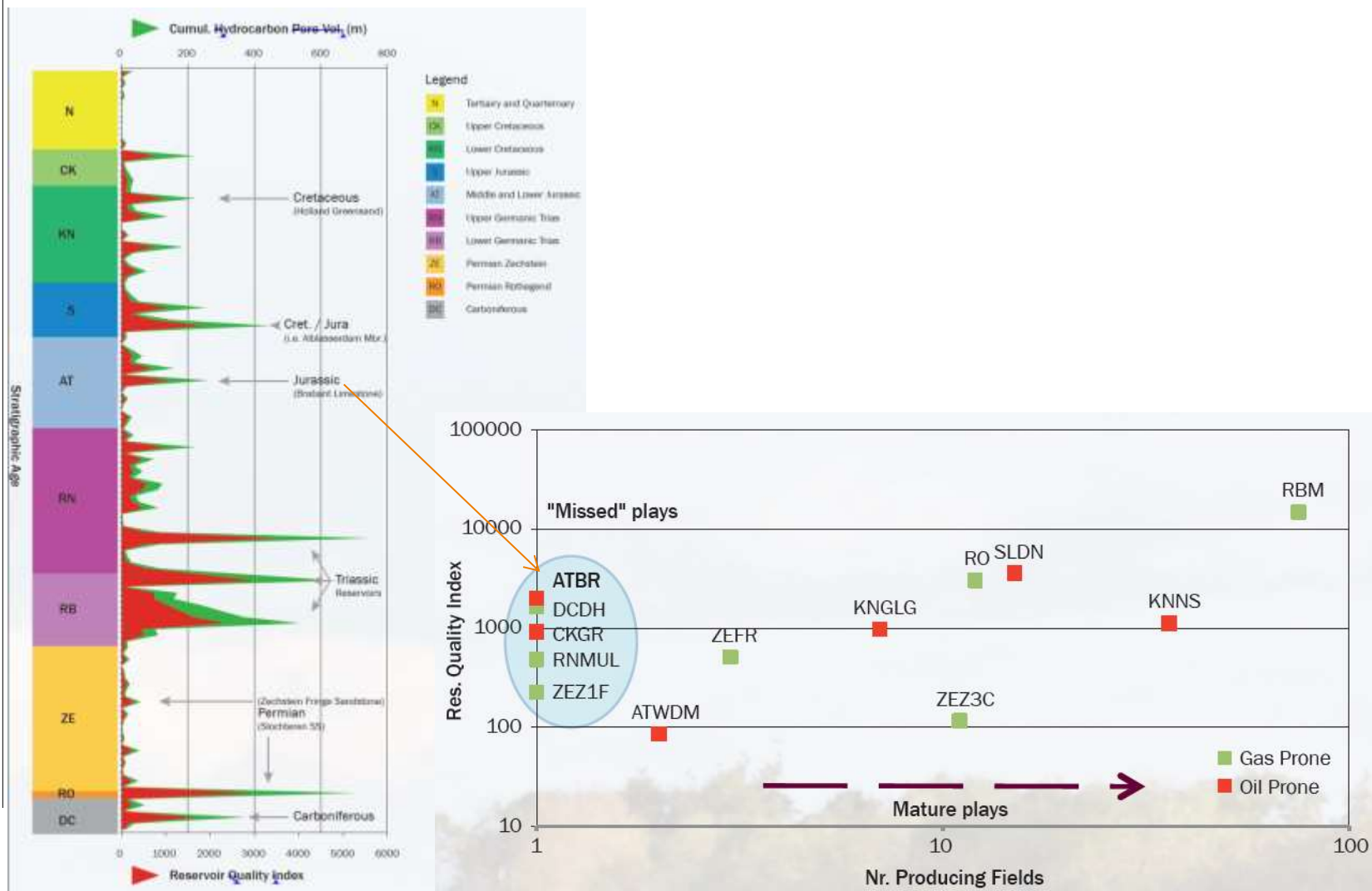




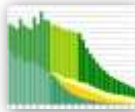


# Missed Plays

## NUTECH study on Broad Fourteens Basin

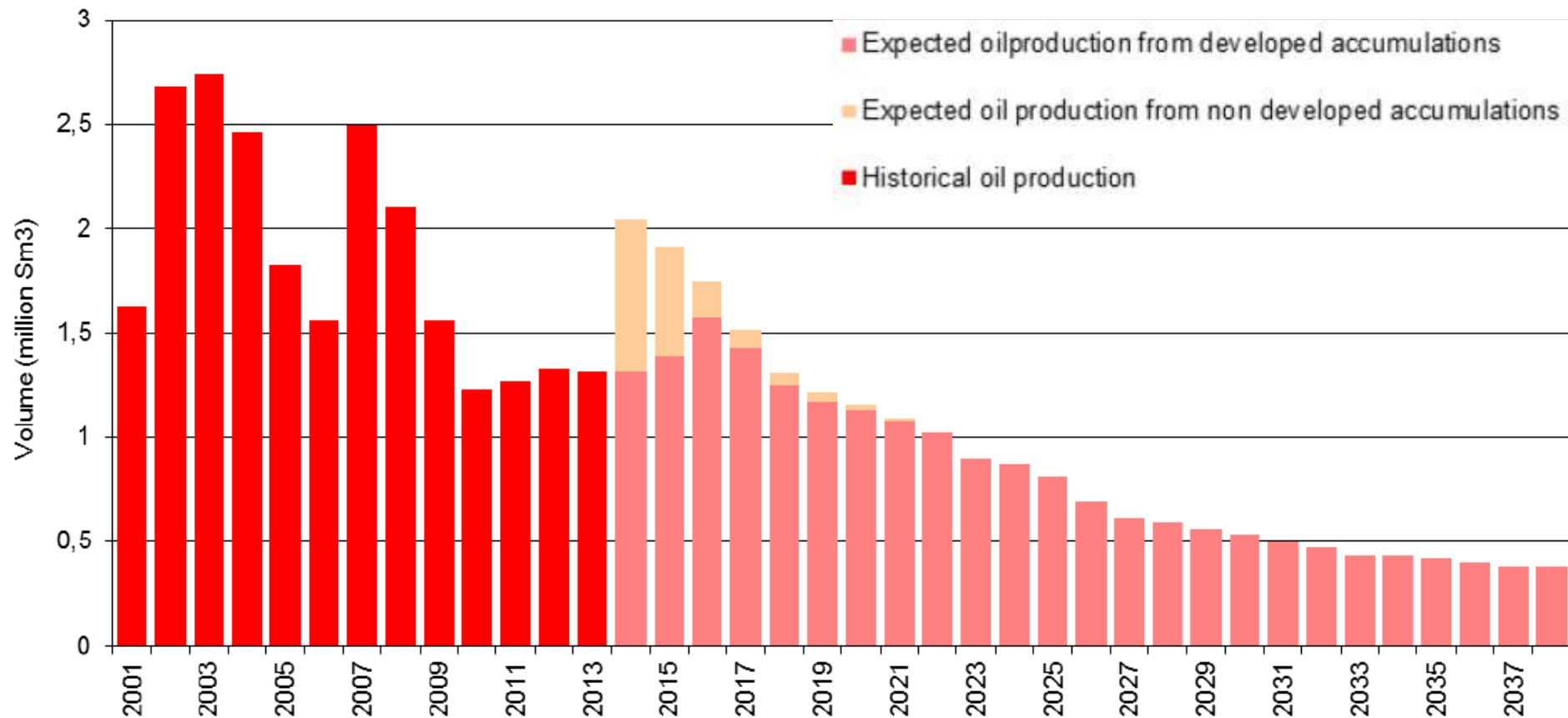


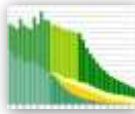




# Oil in the Netherlands

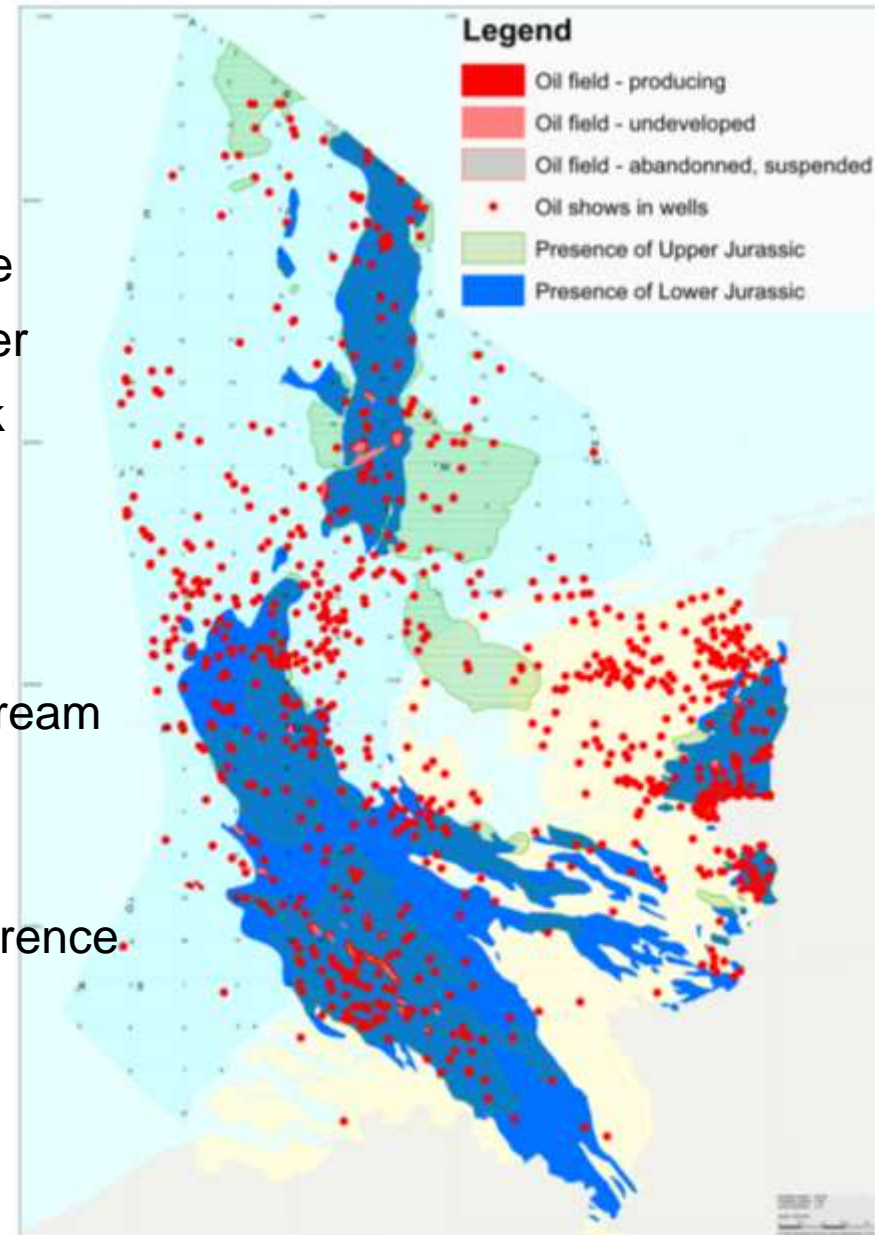
## Historic and future oil production from existing fields

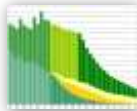




## Oil in the Netherlands

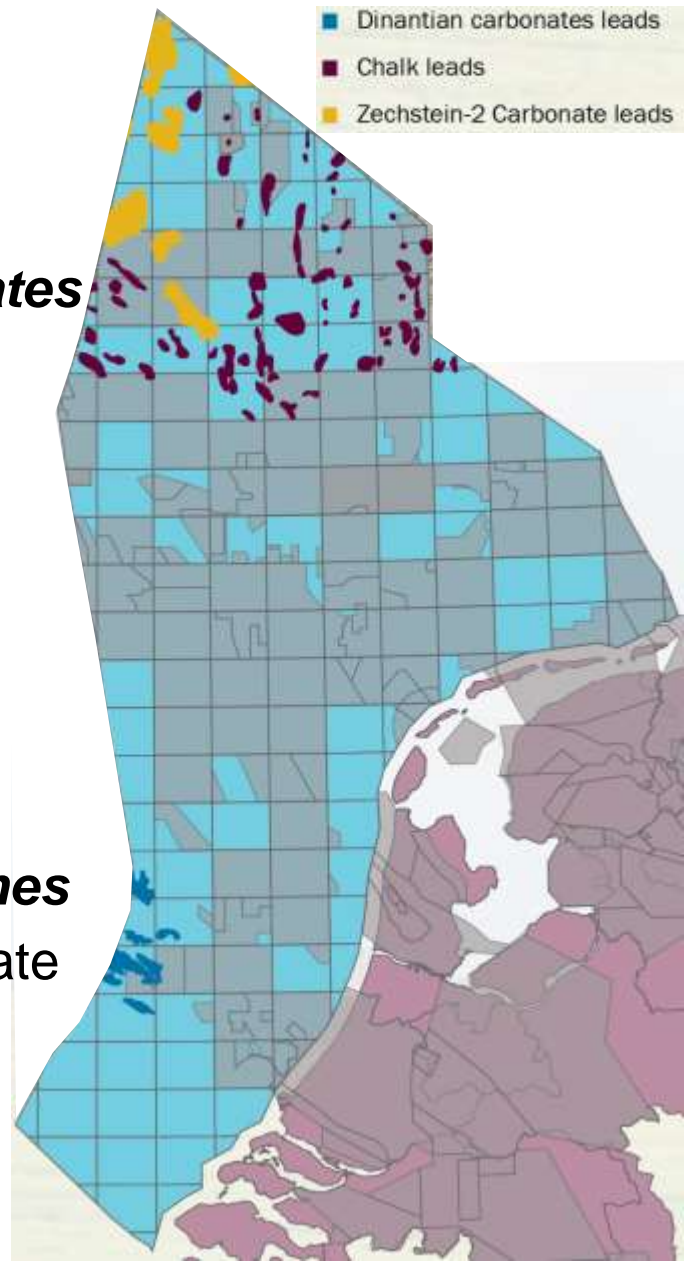
- › Proven oil play:
  - › Source Jurassic Posidonia shale
  - › Reservoir: Upper Jurassic, Lower Cretaceous sandstones & Chalk
- › Recent developments:
  - › F17-oil discovery in 2012
  - › Q13-Amstel stranded field on stream
  - › Schoonebeek re-development
- › Oil shows outside Posidonia occurrence.
  - › Long distance migration
  - › Zechstein source
  - › Carboniferous source

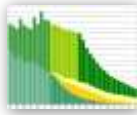




## Carbonate plays

- › Northern offshore ***Zechstein Carbonates***
  - › Proven gas in the Dutch onshore
  - › Proven oil play in Poland
- › ***Chalk***
  - › Proven but under-explored
  - › Re-emerging oil play
- › Southern offshore ***Dinantian limestones***
  - › Target = fractured / karstified carbonate
  - › Charge?

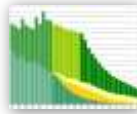




# Reliable & stable E&P investment framework

*which constantly improves*

- › Small fields policy (long standing successful strategy)
  - › Guaranteed offtake (GasTerra)
  - › Guaranteed transport (GasTransport-Services)
- › State Participation through EBN in exploration & production
- › New mining act (2003)
- › Marginal fields and prospects incentive (2011)
- › Fallow acreage incentive (2011)
- › Research & development incentive (2012)
- › Excellent access to Subsurface Data and other E&P information =>  
***www.nlog.nl***



## Conclusion

- › Step up in creaming curve feasible; opportunities in:
  - › Underexplored areas & new plays
  - › Exploration in existing licences to extend life infrastructure
  - › Underexplored oil plays in a gas country
  
- › Chalk oil play is hot:
  - › exploration & appraisal wells planned,
  - › 3D seismic reprocessing
  
- › Attractive E&P country
  - › State of the art exploration studies available
  - › Stable fiscal and regulatory environment
  - › Tax incentives for marginal fields
  - › Extraordinary data accessibility (also for new parties!)