



**3D SPATIAL PLANNING OF THE DUTCH SUBSURFACE
WHY IS IT SO VITAL?**

GEO DESIGN&BIM

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TNO innov
for li



Subsurface – Major factor in the Energy transition

- › 28th of March 2018 The Ministry of Economics and Climate announce the historical decision to stop the Groningen Gas Production by 2030
 - › 2020 production below 12 billion cubic meter

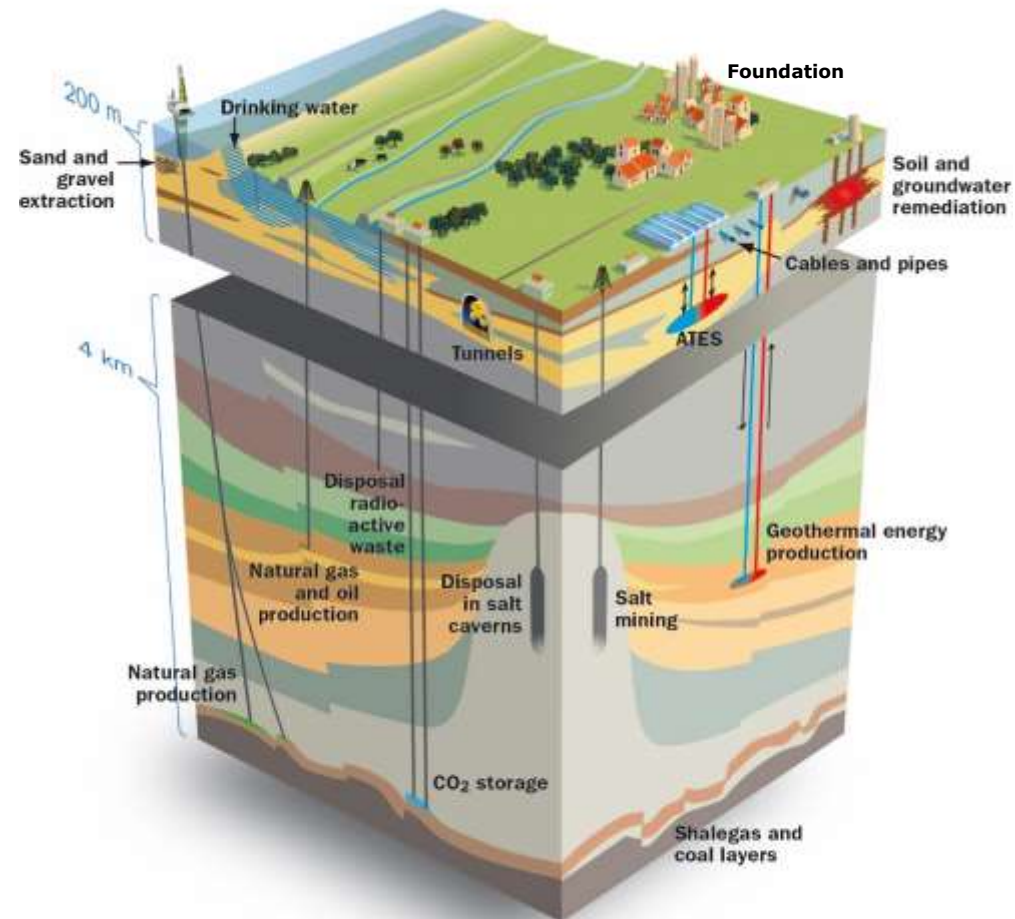
- › 30th of May 2018 Small Gas Fields Policy
 - › No E&P licenses for gas production onshore
 - › No E&P for licenses for shalegas
 - › Max exploration offshore

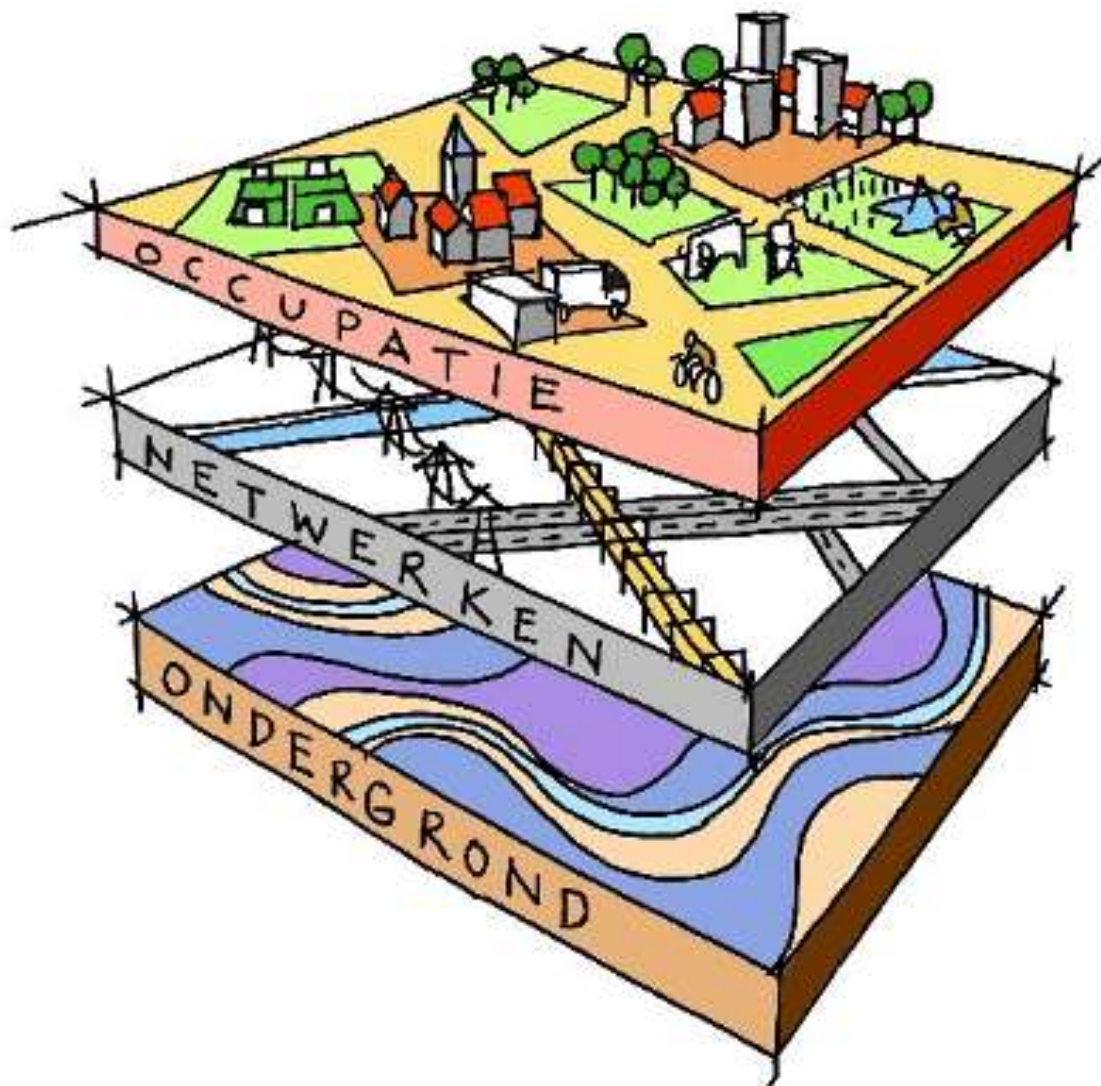
- › Climate goals and alternative energy
 - › 2030 towards 1200 geothermal doublets, Ultra Deep Geothermal
 - › CO2 storage
 - › Storage of heat



activities in the Dutch subsurface

- › in the deep subsurface
... we make money
- › in the shallow subsurface
... we avoid costs

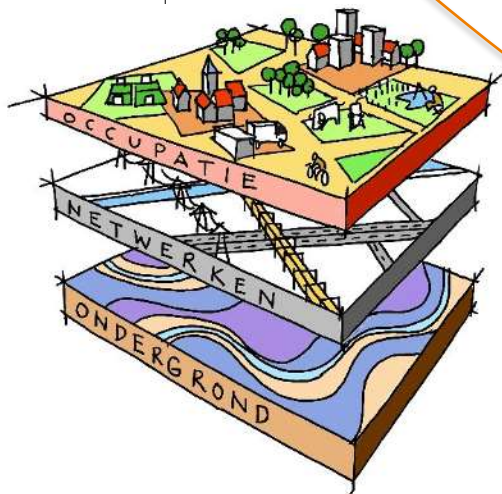






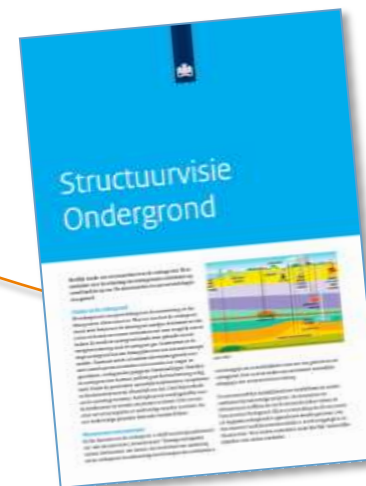
Driver for urban-scale modeling: 3D spatial planning

'layer approach' acknowledges
the subsurface in spatial planning



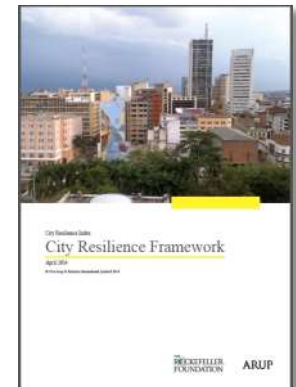
Early 2000's

planning conflicts
in the subsurface
led to a 'structure
vision'



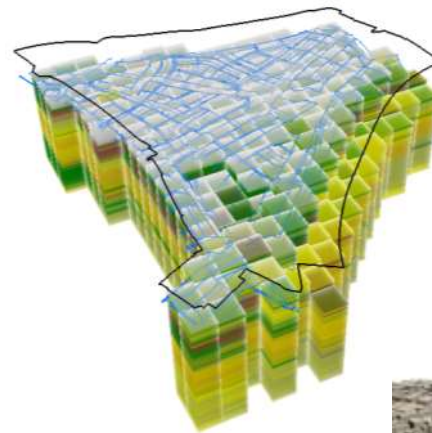
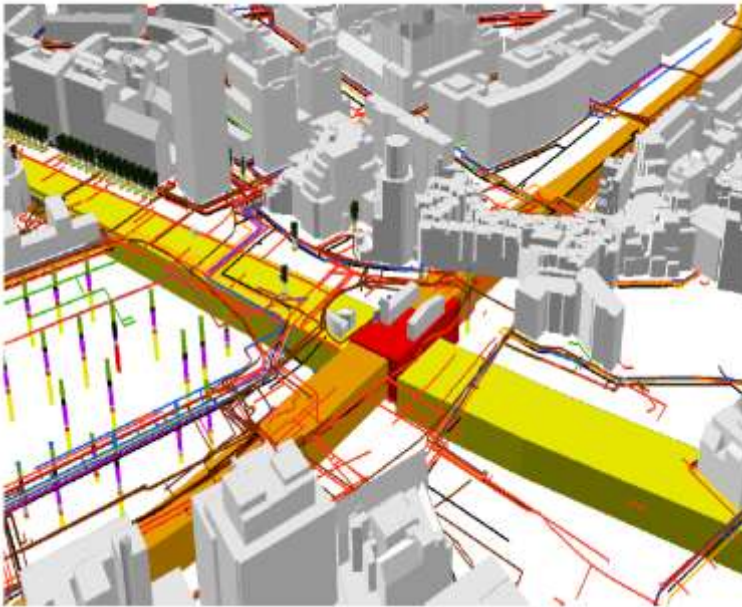
2011-2015

3D spatial planning
requires 3D
subsurface data





EXAMPLE ROTTERDAM



ArcScene

*Drinking-water pipes combined
with lithological-class model*

BIM-
compliance

3D PDF

