Pipeline restoration in different ecosystems throughout Israel

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Israel



- Small country
 - (~22,145 sq. km, 420 km. length and 115 km. wide)
- Dense and increasing population (~9 million people)
- Varying and unique ecosystems
 - Mediterranean grove, meadows and shrublands
 - Semi-arid shrublands
 - Arid and hyper-arid deserts
 - Streams
 - Beaches and sand-dunes
- One pipeline can cross a multitude of environments





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Working model



Geoteva environmental consultants have been working on longitudinal infrastructure restoration for over 20 years.





Tailor-made restoration plan

Hydrologist/Geologist Geomorphology Landscape architect Topography



Guidelines



- Removal and return of top-soil
- Narrowing of work area according to the ecosystem (stream, natural area, pasture, etc.)
- Special protection of natural assets \rightarrow geophytes, nests
- Return of habitat heterogeneity according to the natural slopes, topography and morphology of the area
- Monitoring and removal of invasive species after infrastructure placement and restoration















Narrowed work area reduces environmental disturbances

Standard work strip for longitudinal infrastructure Narrowed work strip Pipeline Pipeline placement placement machine machine Overburden Overburden soil layer Topsoil layer Topsoil layer soil layer 1/2 ~5 m ~5 m 10 m 10 m 4 m 4 m 25 m 25 m



Pipeline Restoration Methodology

Restoration based on natural geomorphological placement and dispersal





Examples of Pipeline Project Areas



Mediterranean meadows, agricultural fields and pastures

Mediterranean woods and shrubland

Judean (hyper-arid) desert



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Galilee pipeline



Constructed from 2015 to 2016











Jerusalem pipeline





Ecological rejuvenation after pipeline placement







Jerusalem pipeline 2018



Plant cross-sections over restored pipeline – Findings 2018







Jerusalem pipeline 2021



Plant cross-sections over restored pipeline – March 2021

Natural Succession of Vegetation in the Jerusalem Mountains (Denin 1980)



Location of Natural Gas Line





Geo**teva**

Judean desert pipeline Geoteva



Constructed from 2015 to 2016





Take home message

Implementing our method of utilizing natural geomorphological progression as a tool for restoration planning improves success of restoration efforts and reduces ecosystem recovery times.

Environmental consultancy

Pipeline placement can be an insignificant, temporary disturbance that doesn't damage the ecosystem long-term.

