



Published on *Ecologic Institute: Science and Policy for a Sustainable World*  
(<https://www.ecologic.eu>)

[Home](#) > Subsoil Compaction - A threat to sustainable food production and soil ecosystem services

---

## PUBLICATION

Policy Brief  
Agriculture  
Cities  
Land Use  
Soil

# Subsoil Compaction - A threat to sustainable food production and soil ecosystem services



The persistent damaging impacts of subsoil compaction call for policy intervention in order to secure yields and adapt to climate change, as well as to sustain soil ecosystem services for future generations. The authors of this RECARE Policy Brief, including Ana Frelih-Larsen of Ecologic Institute, demand that policy responses need to address the underlying drivers of farmers' decision-making concerning field traffic through a systematic and coordinated approach for sustainable soil management in Europe. The RECARE policy brief is available for download.

Compaction of soil affects soil functions and soil ecosystem services, including crop yield. While natural processes and tillage can ameliorate topsoil compaction, compaction of the subsoil, i.e. the layers below normal tillage depth, is persistent and should be prevented. Due to increasing size and weight of field machinery applied in European agriculture, soils are at a growing risk of persistent damage to the subsoil. Between 1960 - 2010, wheel loads from machinery increased by almost 600%. RECARE work indicates that approximately 29% of subsoils across all Europe already are affected by subsoil compaction.

Subsoil compaction results in substantial losses of ecosystem services. The long-term annual loss in agricultural yield has been estimated to six percent or well over a billion Euros a year across Europe. The threat of subsoil compaction is systemic in nature. Having to balance different considerations including profitability, efficiency, weather, labour and timing when planning their field traffic, farmers rarely prioritize preventing subsoil compaction. The costs of preventive measures are not rewarded by immediate benefits as such measures are costly. It may still be more profitable

for farmers to use heavy machinery and compact the subsoil than to adopt preventive measures.

### Attachments

-  2730\_recare\_subsoil-compaction\_web.pdf

### Main Link

Download: Subsoil Compaction [pdf, 2 MB, English]

### Ecologic Related Articles

- Assigning Soil Values for Land Use Categories Based on Soil Threats
- International Yearbook of Soil Law and Policy 2016
- Updated Inventory and Assessment of Soil Protection Policy Instruments in EU Member States
- RECARE Project - Finding and sharing solutions to protect our soils
- Soil Sealing and Land Take
- Remediating Historical Soil Contamination
- Preventing and Remediating Degradation of Soils in Europe - RECARE Final Policy Conference

---

### Citation

Schjønning, Per et. al. 2018: Subsoil Compaction - A threat to sustainable food production and soil ecosystem services. RECARE Policy Brief. Aarhus University, Ecologic Institute: Aarhus, Berlin.

### Language

English

### Author(s)

Dr. Ana Frelih-Larsen

### Author(s)

Per Schjønning (Aarhus University, Denmark)  
Mathieu Lamandé (Aarhus University, Denmark)  
Martin Hvarregaard Thorsøe (Aarhus University, Denmark)

### Credits

**Layout:** Arif Jensen (Ecologic Institute)

### Funding

- European Commission, Directorate-General Research & Innovation (DG Research & Innovation)

### Year

2018

### Dimension

8 pp.

### Project

Preventing and Remediating Soil Degradation (RECARE)

**Project ID**

2730

**Table of Contents**

Summary

Introduction

RECARE Project

Prevention Rather Than Remediation of Subsoil Compaction

The Risk of Subsoil Compaction is Significant under Current Farming in Europe

Drivers of Subsoil Compaction

Policy Response

Common Agricultural Policy (CAP) Post 2020

R&D Support for Technologies for Sustainable Soil Management

References

**Keywords**

soil management, agriculture, climate change, ecosystem services, soil functions,  
Europe, layout, design

---

**Source URL (modified on 10/19/2018 - 07:40):** <https://www.ecologic.eu/16002>

**Links**

[1] <https://www.ecologic.eu/sites/files/presentation/2018/cover-recare-pb-subsoil-compaction-web.png>