

# SOIL CAPACITY GAP ANALYSIS SUMMARY

## 1 Overview

A Soil Capacity Gap Analysis (SCGA) has been completed for the Southern Queensland and Northern NSW region by the Hub's Regional Soil Coordinator (RSC). The SCGA will inform the development of programs and policies as part of the National Soil Strategy (NSS) and the National Soil Action Plan (NSAP).

The aim of the SCGA was to evaluate gaps in soil capacity and barriers to adoption of best soil management practices within the context of the NSS. Information sources included relevant literature, 65 semi-structured interviews with 112 people and 204 responses to a National Soil Survey.

## 2 Soil Issues

The primary soil issue raised during the development of the SCGA was erosion. Erosion was identified as an issue on both sides of the border. It is evident that the capacity to manage has erosion has significantly diminished over time.

Another issue identified that has received little attention from a research and extension perspective is the impact of flooding and inundation on soil. A long slow recovery from recent flooding events has been observed in multiple areas across the region.

## 3 Risks

Three key risks to improving soil condition & achieving the goals and objectives of the NSS were identified.

Risk	Description	Risk Assessment
The economic environment	Economic drivers result in farm business decision-making focused on short term financial imperatives leading to long term soil degradation.	Extreme
Resourcing of the NSS	Soil degradation will continue caused by inadequate resourcing for programs and policies required to address soils that are in overall poor condition and deteriorating.	Extreme
The soil workforce	Multiple causal factors result in a regression in soil human resource capability and capacity.	Extreme

## 4 Recommendations

A total of nine recommendations were made, of which three were described as transformative.

Recommendation	Recommendation Overview
One Health (Transformative)	Implementation of a 'One Health' framework that links food quality to landscape/soil health and aligns incentive structures throughout the supply chain to address public health, farm business sustainability and landscape health.

A National Soil Service (Transformative)	The creation of a National Soil Service/program to attract, recruit, develop and mentor the future soil workforce was recommended as a comprehensive approach to addressing the identified soil workforce issues.
Enhancing On Farm Experimentation (Transformative)	On Farm Experimentation (OFE) has been described as an innovation process that could ' <i>transform global agriculture</i> '. Enhancing support to OFE is an approach that could facilitate accelerated practice change at scale.
Organisational Rationalisation	The soils RD&E organisational ecosystem is complex, atomised and highly competitive resulting in multiple negative consequences. Rationalising the soils organisational ecosystem is recommended to increase the effectiveness of investment in soil related RD&E.
Soil Strategy Development	Soil related objectives of both State Government's and NRM groups are either absent or lack specificity, how they will be achieved is unclear as are the associated resource requirements. Further development of State Government and NRM group strategies are required.
Workforce Planning & Development Program	A deliberate workforce planning and development program is required to ensure that the future soil workforce is sufficient in quantity and inadequately skilled.
Soil Science Skills and Education	Tertiary soil science education across the region has regressed in terms of depth, practical experience, and coverage of specialist areas. Addressing these deficiencies is required to ensure land managers and the soil workforce is adequately skilled and educated.
Facilitating Practice Change	The SCGA indicates that the delivery of training and education related to extension has regressed significantly. Reinvigorating extension training and education is required if accelerated practice change, as envisaged in the NSAP, is to be achieved.
Soil Erosion and Flooding	Soil erosion is a forever problem that is likely to worsen in the future with predictions of higher intensity rainfall events. A comprehensive reinvigoration of soil conservation efforts is required to minimise human induced erosion.

## 5 Next steps

- The SCGA provides a baseline of soil capacity in the SQNNSW Region that will inform the development of the NSAP.
- The RSC will maintain and update the SCGA on a biennial basis. It will also inform the priorities of the RSC work program.
- The SQNNSW Innovation Hub and RSC will continue to work with stakeholders to address, where possible, the gaps and barriers that have been identified.

**Disclaimer:** The independent findings and recommendations of this report do not necessarily represent the views of the Australian Government or the University of Southern Queensland.