Mapping environmental vulnerability to soil salinization in a semi-arid river basin in Brazil

Joint meeting of
INSAS and SUSTAIN

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International Network of Salt-Affected Soils

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SUSTAIN

VNIVERSITAT DE VALÈNCIA

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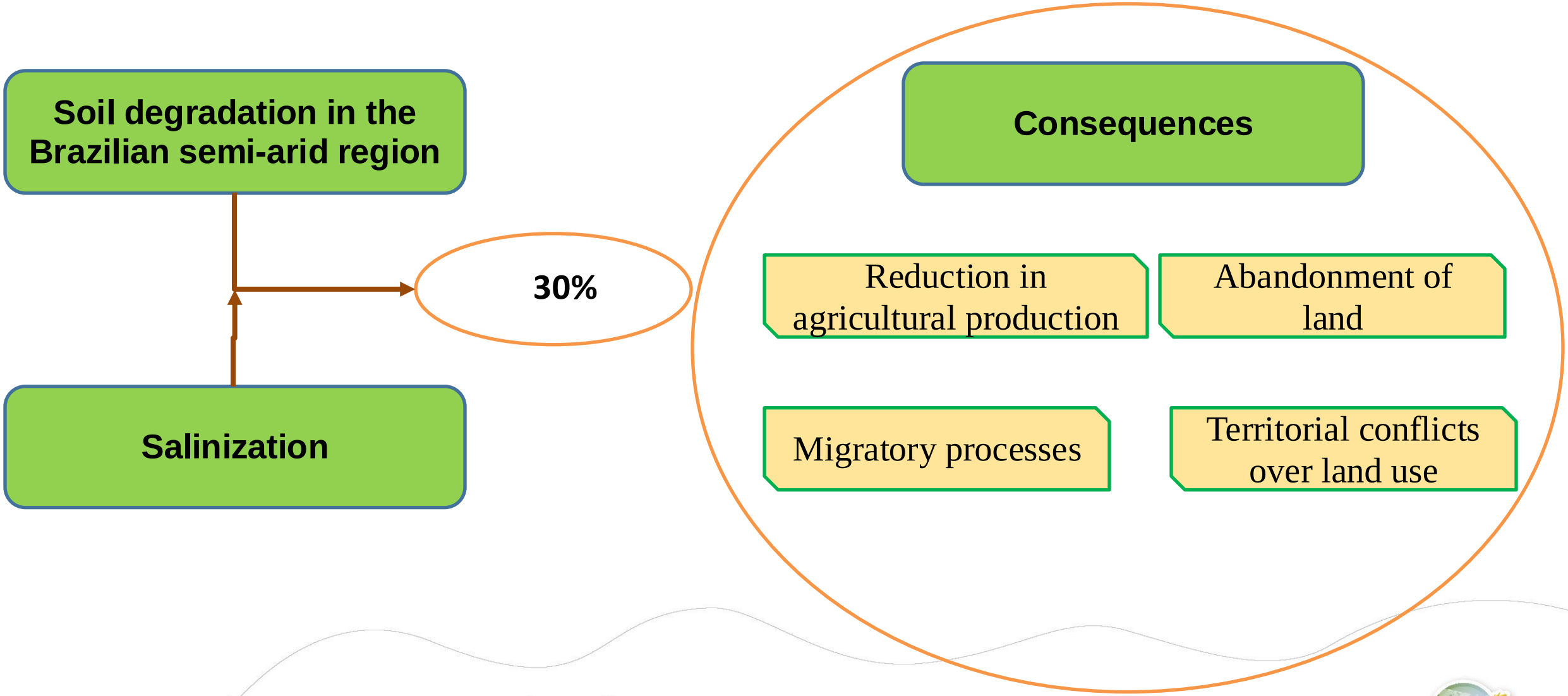
GLOBAL SOIL PARTNERSHIP

INTRODUCTION



INTRODUCTION

Expansion of salinization in Brazi

Increase in the number of studies

Lack of methods that...

Larger set of environmental variables

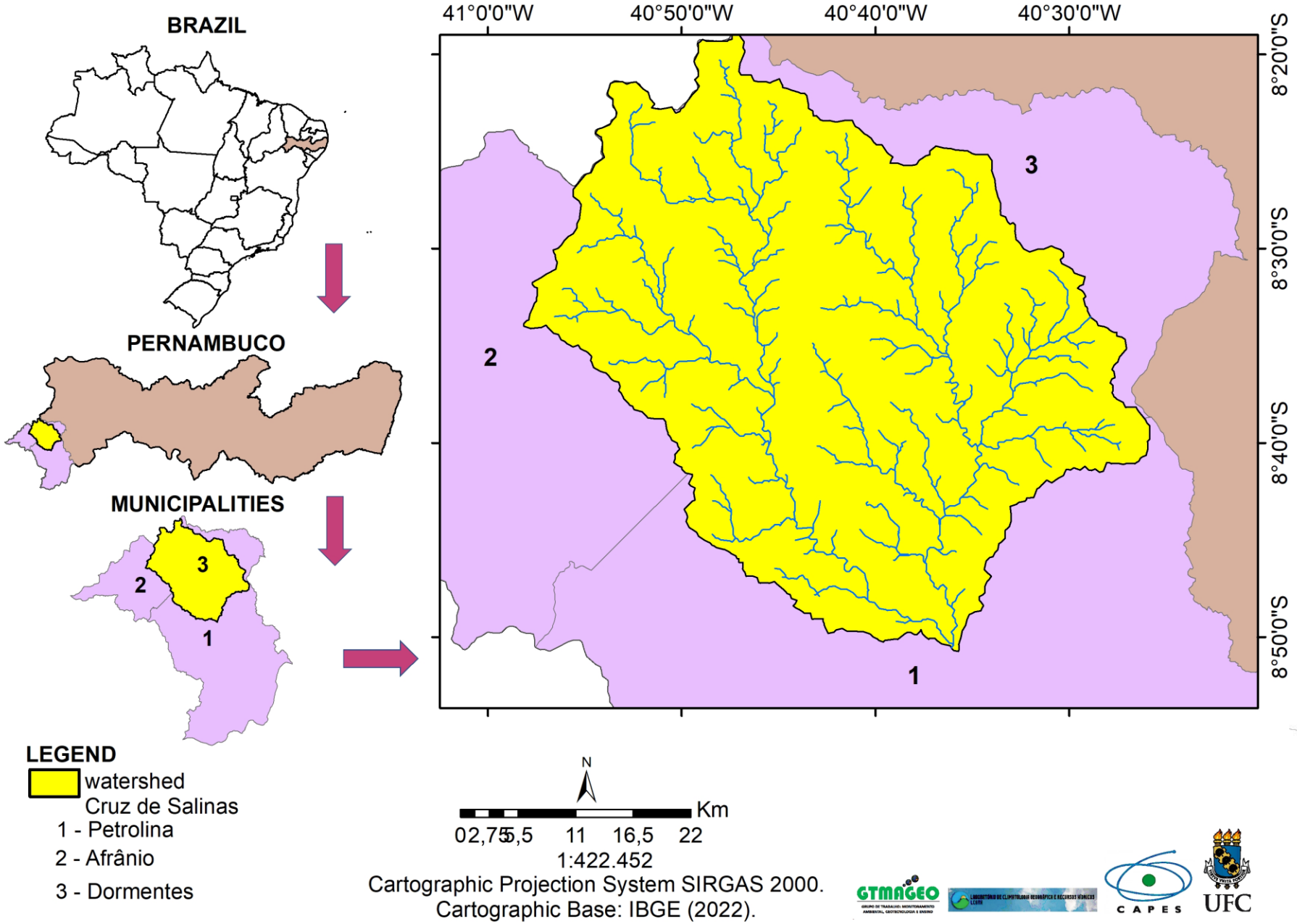
Social variables

Objective

Map the areas susceptible to soil salinization in a river basin in the Brazilian semi-arid region and assess the vulnerability of local rural populations.

Area Locus of study

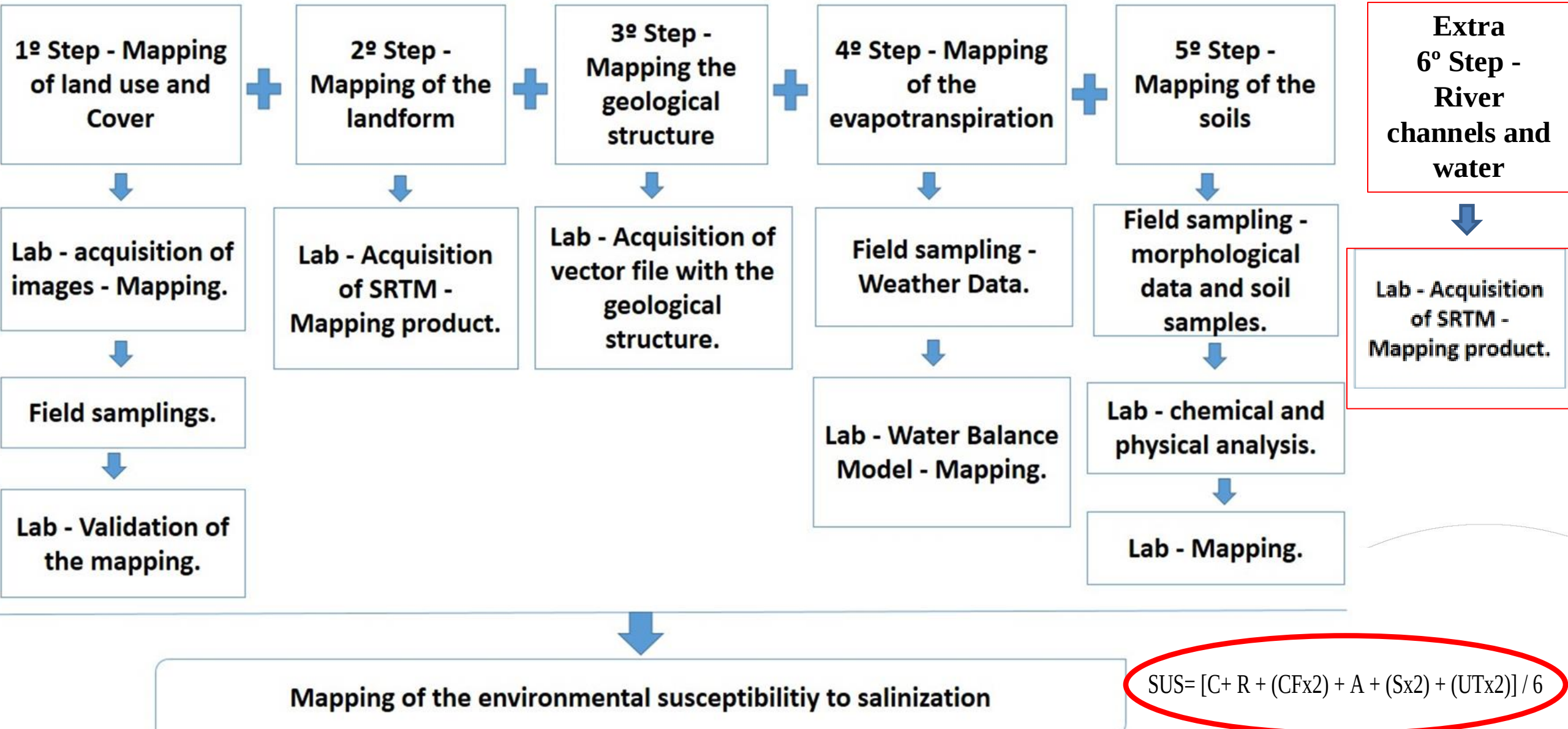
Figure 01: Location of the study area



- Watershed: fourth order;
- Predominant land use: rainfed and irrigated agriculture;
- Climate: Semi-arid;;
- Rainfall: 780mm

METHODOLOGY

Step 1
Mapping environmental susceptibility to salinization



Step 2
Mapping social vulnerability to salinization

Attribute - access to information and rural training + **Attribute – economic** + **Attribute – access to infrastructure**

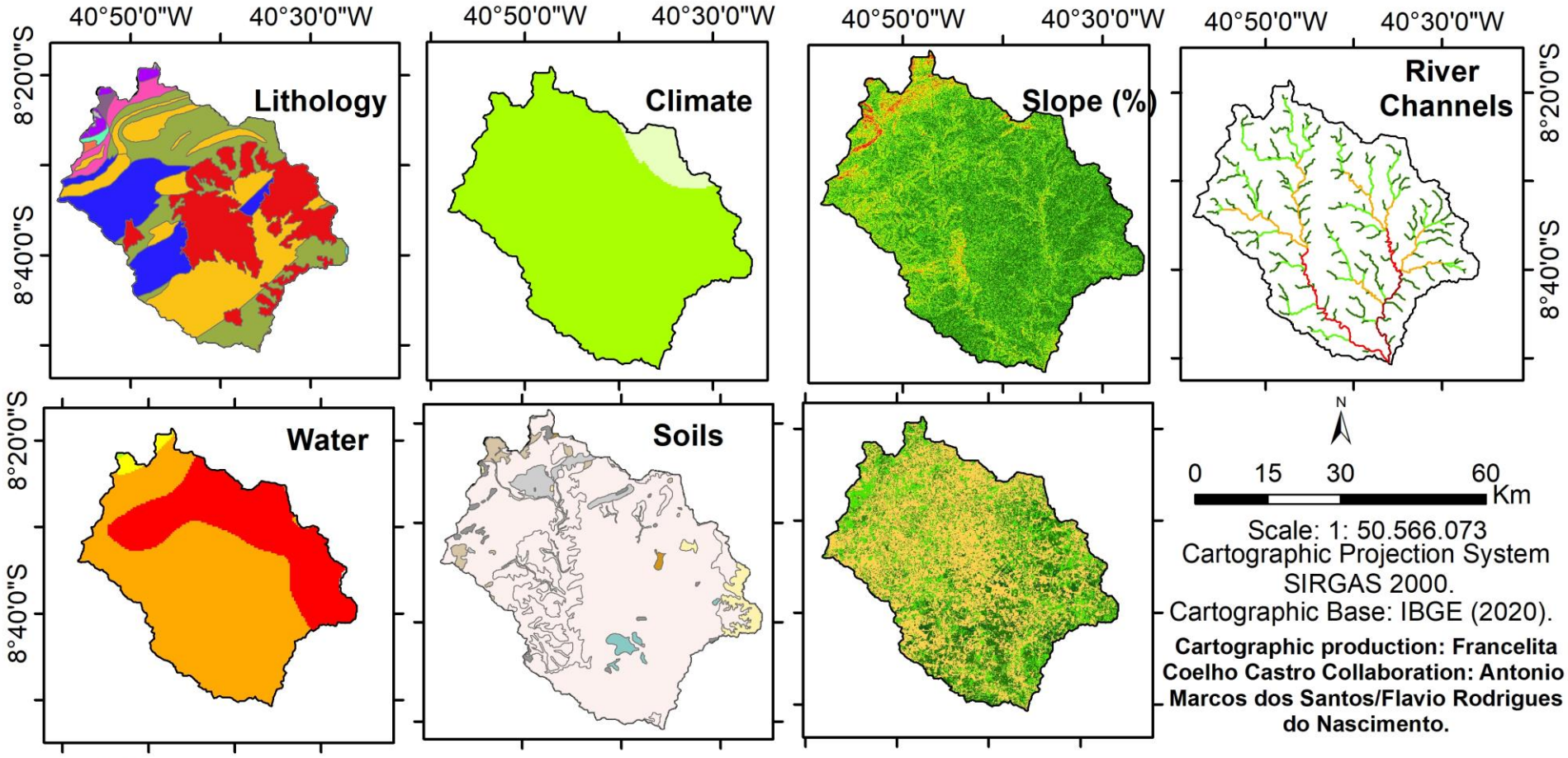
Mapping social vulnerability to salinization

Step 3
Crossing susceptibility to salinzation with social vulnerability

$$SUS = [C + R + (CFx2) + A + (Sx2) + (UTx2)] / 6 + V=((AIFR+AE+AL)/3)$$

Susceptibility to salinzation

Results of discussions



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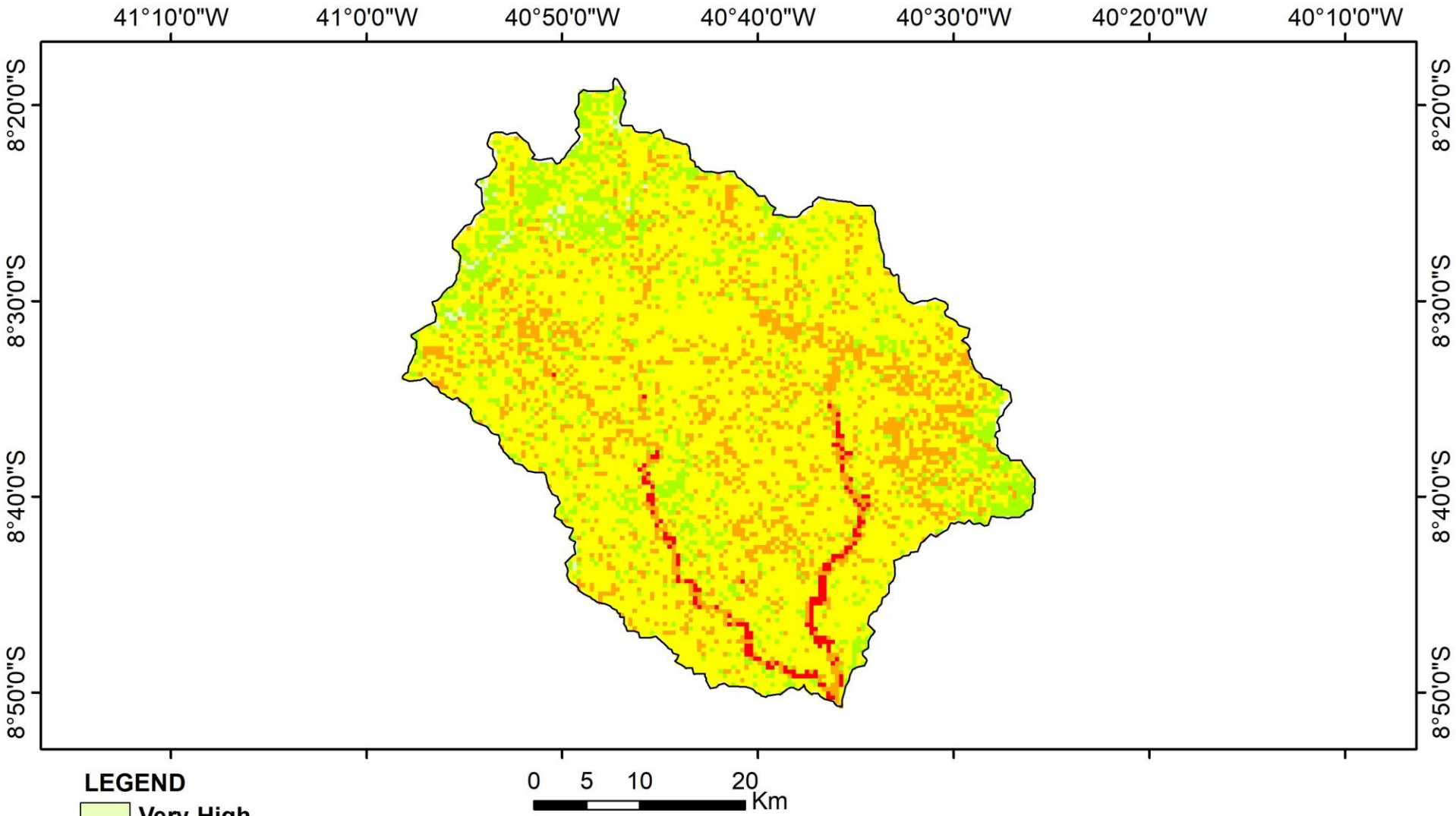
Susceptibility to salinzation

Results of discussions



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Cartographic Projection System
SIRGAS 2000.
Cartographic Base: IBGE (2020).
Cartographic production: Francelita Coelho Castro
Collaboration: Antonio Marcos dos Santos/
Flavio Rodrigues do Nascimento.

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GRUPO DE TRABALHO: MONITORAMENTO AMBIENTAL, GEOTECNOLOGIA E ENSINO

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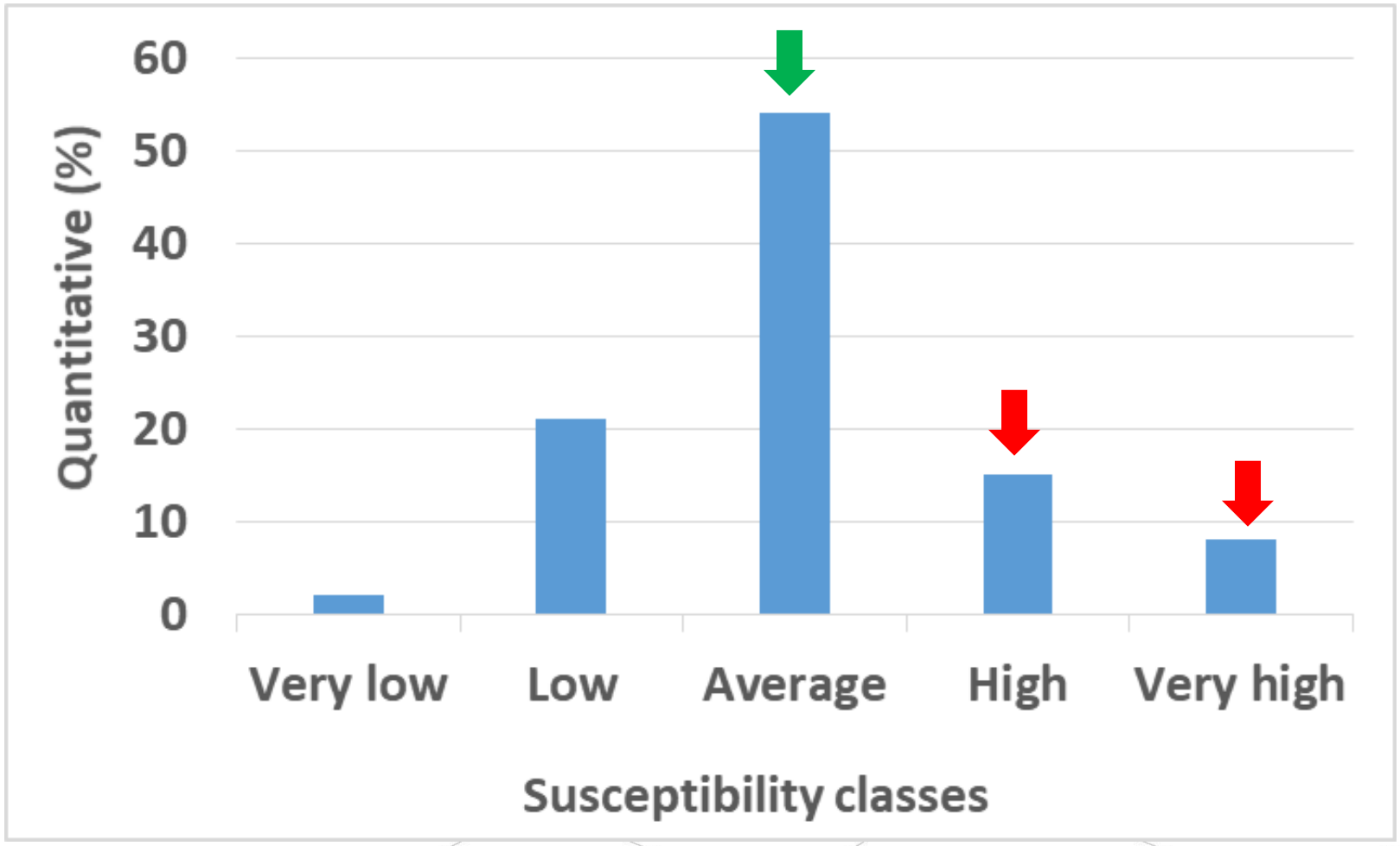
Results of discussions

Susceptibility to salinzation



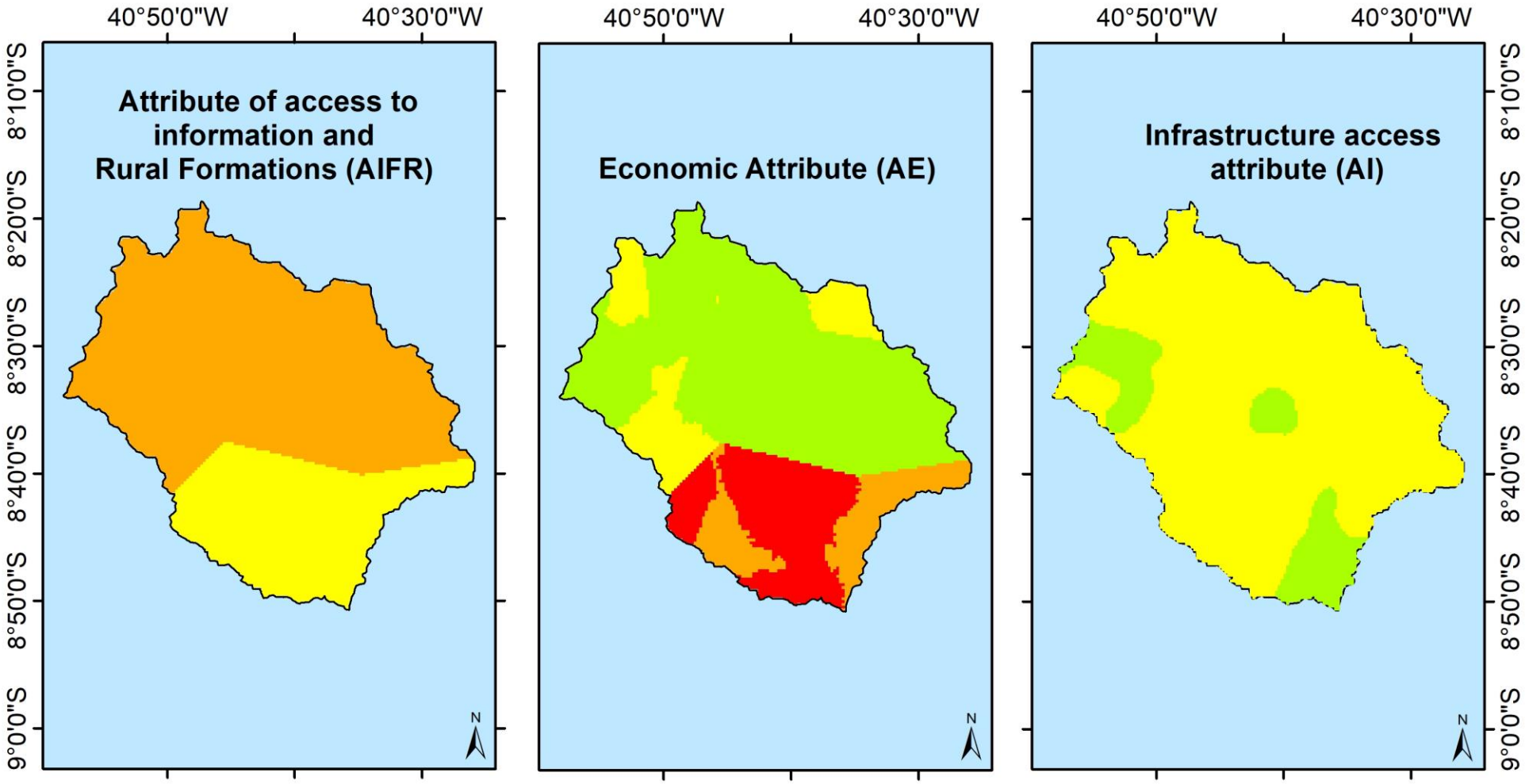
Average to low susceptibility

Influence of soils and areas not yet irrigated

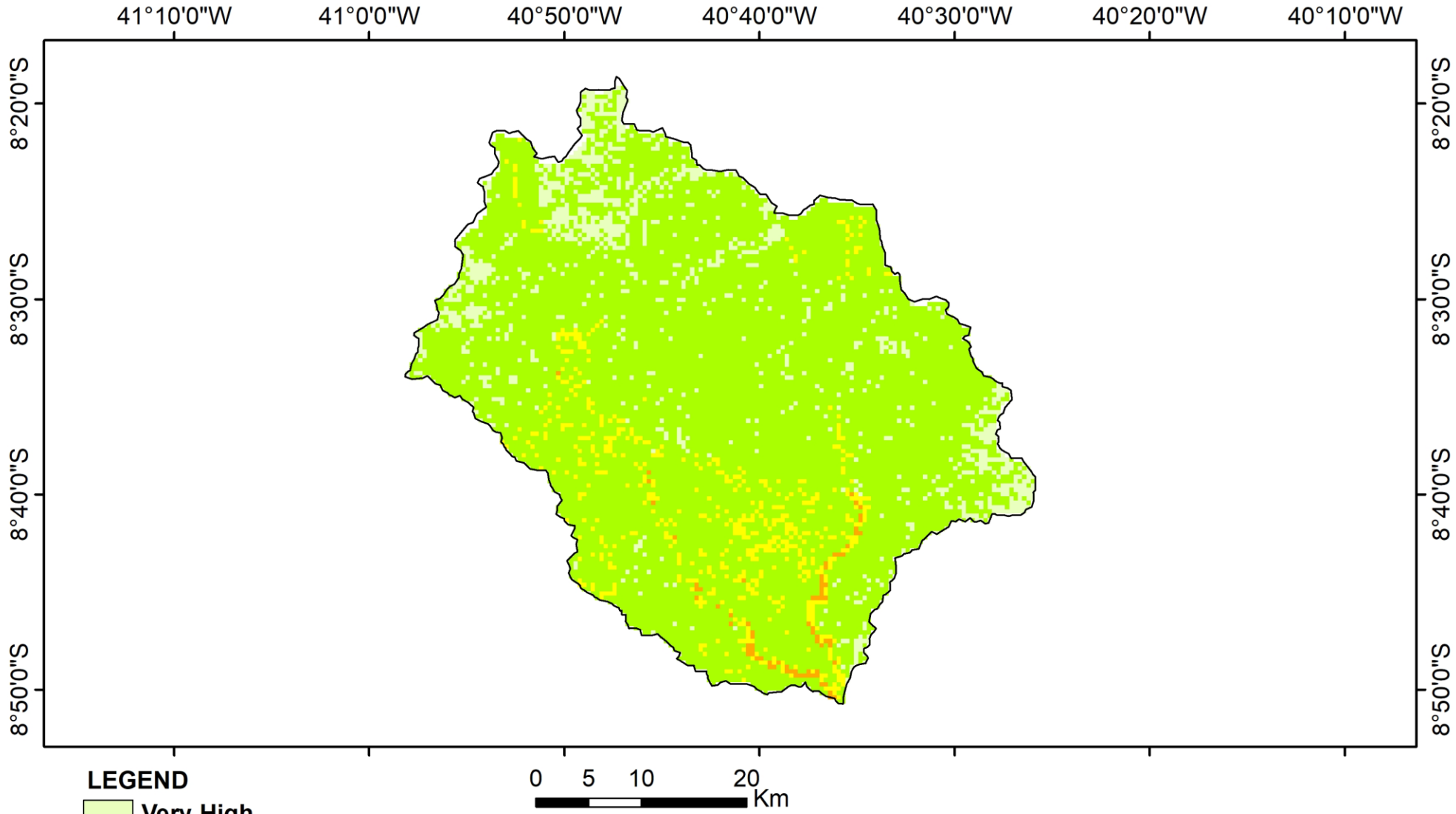
High and very high susceptibility

Influence of the ebb beds of the river channel and small irrigated areas.

Social vulnerability of the local population to salinization



Social vulnerability of the local population to salinization



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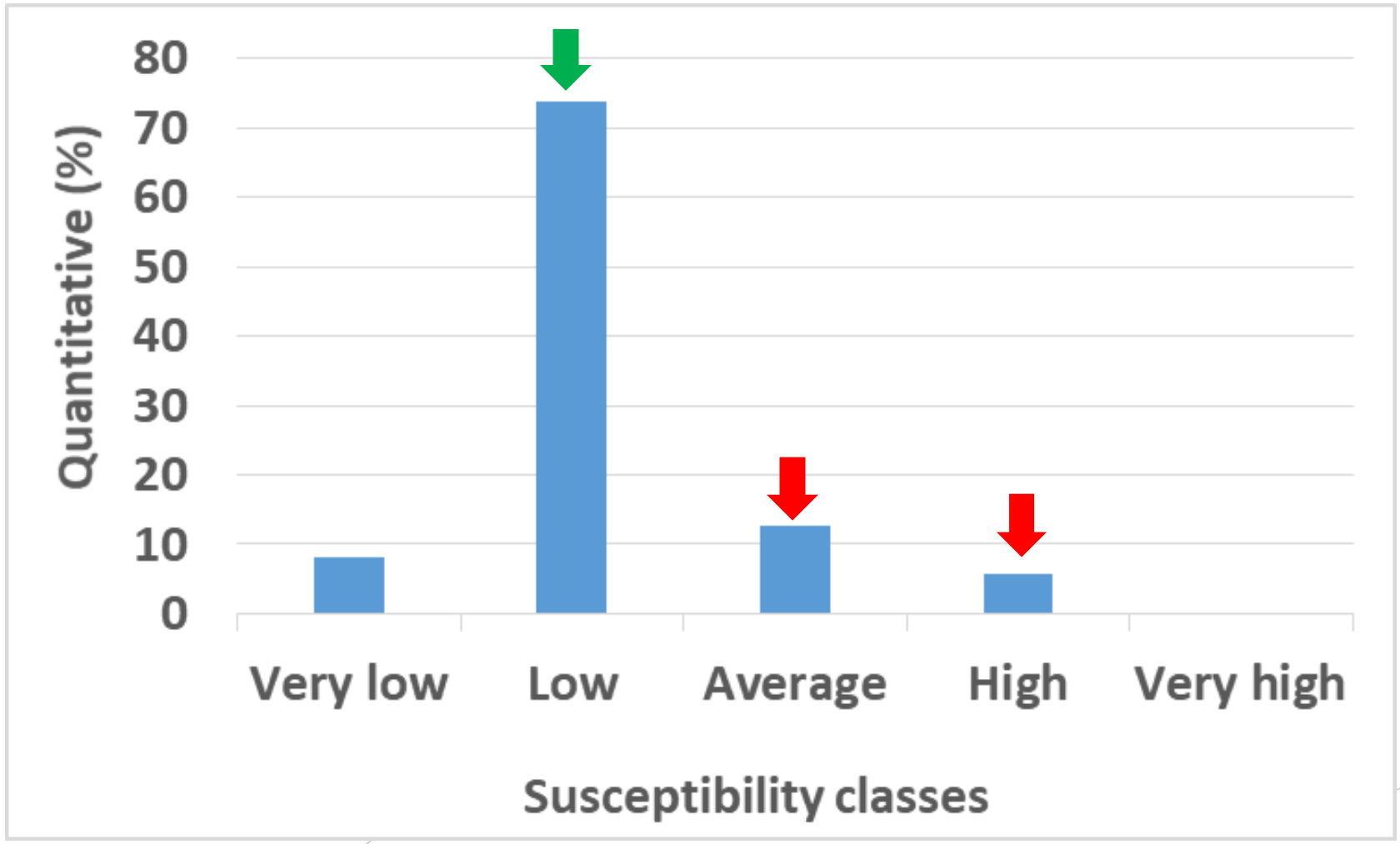
Social vulnerability of the local population to salinization

Results of discussions



Low vulnerability

Influence of areas with low susceptibility to salinization

High and Very high vulnerability

Influence:
- Area susceptible to salinization;
- Reduced access to information and guidance for land management;.

Conclusions

In the study area, the environments most conducive to salinization are those where the relief characteristics coincide, providing water accumulation and shallow water tables, and also areas where dams are located, with areas of agricultural production for the local population as they have soils with greater water absorption and less stonyness.

References

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SUSTAIN
Sustainable use of salt-affected lands

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