Magnesium

A large number of minerals contains magnesium, for example dolomite (calcium magnesium carbonate; $CaMg(CO_3)_2$) and magnesite (magnesium carbonate; $MgCO_3$). Magnesium is washed from rocks and subsequently ends up in water. Magnesium has many different purposes and consequently may end up in water in many different ways. Chemical industries add magnesium to plastics and other materials as a fire protection measure or as filler. It also ends up in the environment from fertilizer application and from cattle feed. Magnesium sulphate is applied in breweries and magnesium hydroxide is applied as a flocculent in wastewater treatment plants. Magnesium is also a mild laxative.

Effects on Environment and Human Health

The studies found an inverse (protective) association between cardiovascular disease mortality and increased water hardness (measured by calcium carbonate or another hardness parameter and/or the calcium and magnesium content of water). The associations were reported in numerous studies, While magnesium is one of the elements that supports life, many studies have been performed regarding physiological functions as well as correlation with diseases.
Environmental problems indirectly caused by magnesium in water are caused by applying softeners. Calcium and magnesium ions (particularly calcium) negatively influence cleansing power of detergents, because these form nearly insoluble salts with soap.

Remedial Measures

Magnesium compounds can be removed from water by means of water softening.

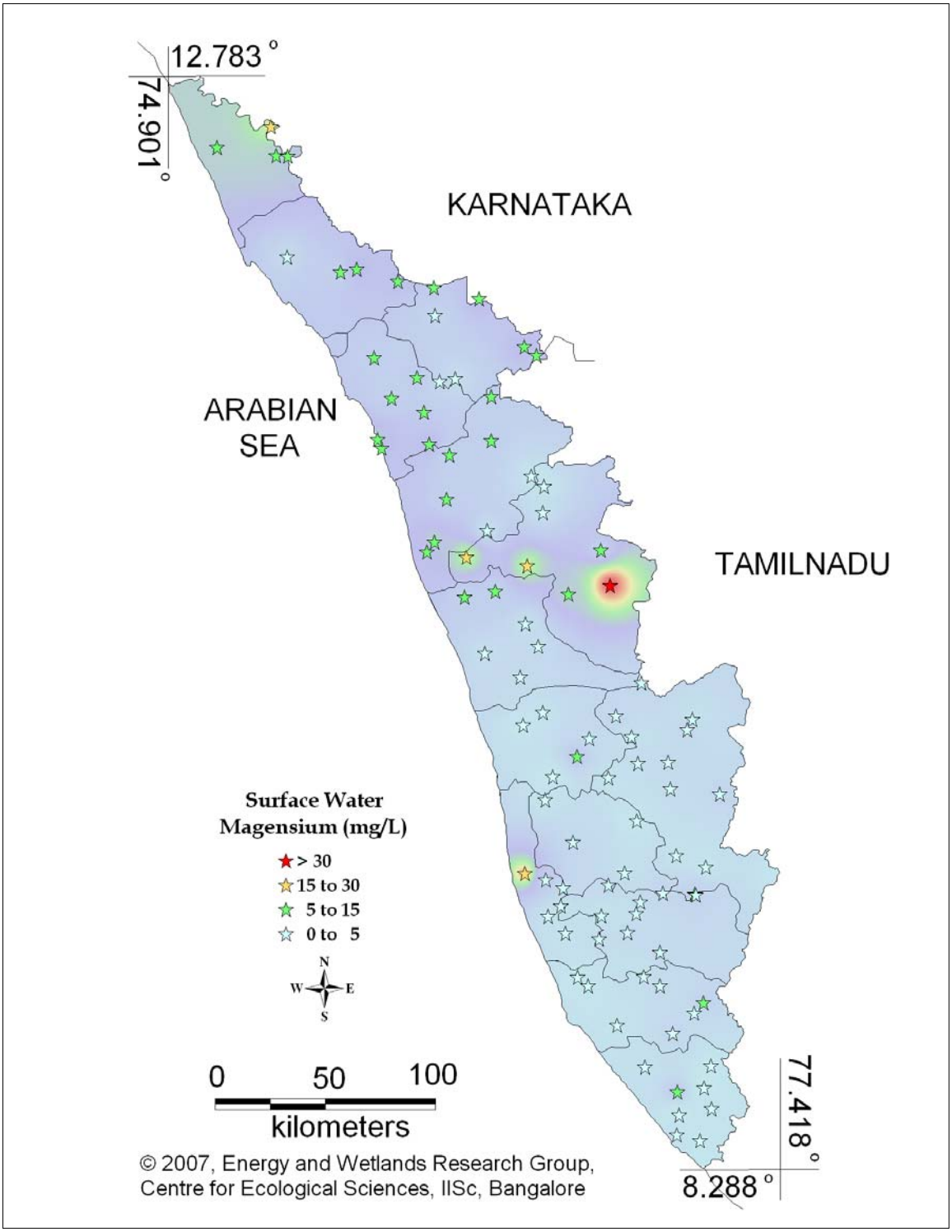


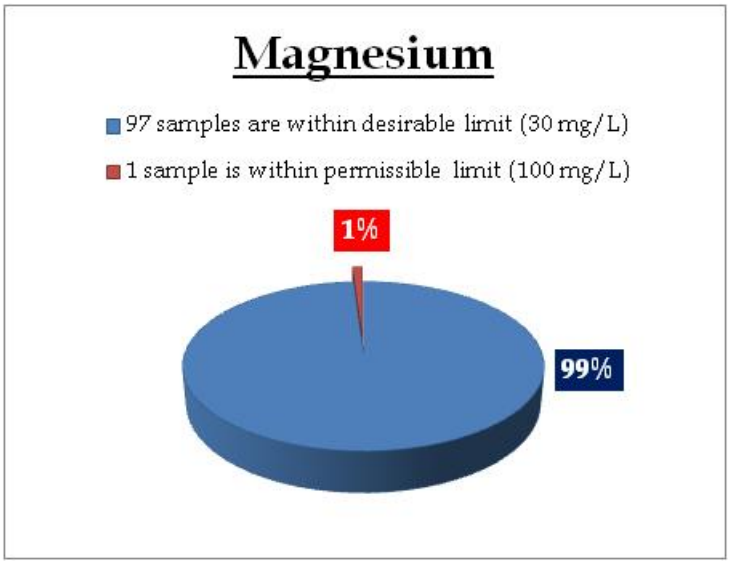
Figure 17.1: Spatial variation of Magnesium in Kerala's surface water

Surface water - Magnesium

Tolerance limit for inland surface waters subject to pollution

Desirable Limit: 30 mg/L*
Permissible Limit: 100 mg/L*

*Standard for Drinking Water (BIS 105000)



Remarks
Sampling site above desirable limit of Magnesium is:

Location	Value	District
Puzhapalam	31.60	Palakkad

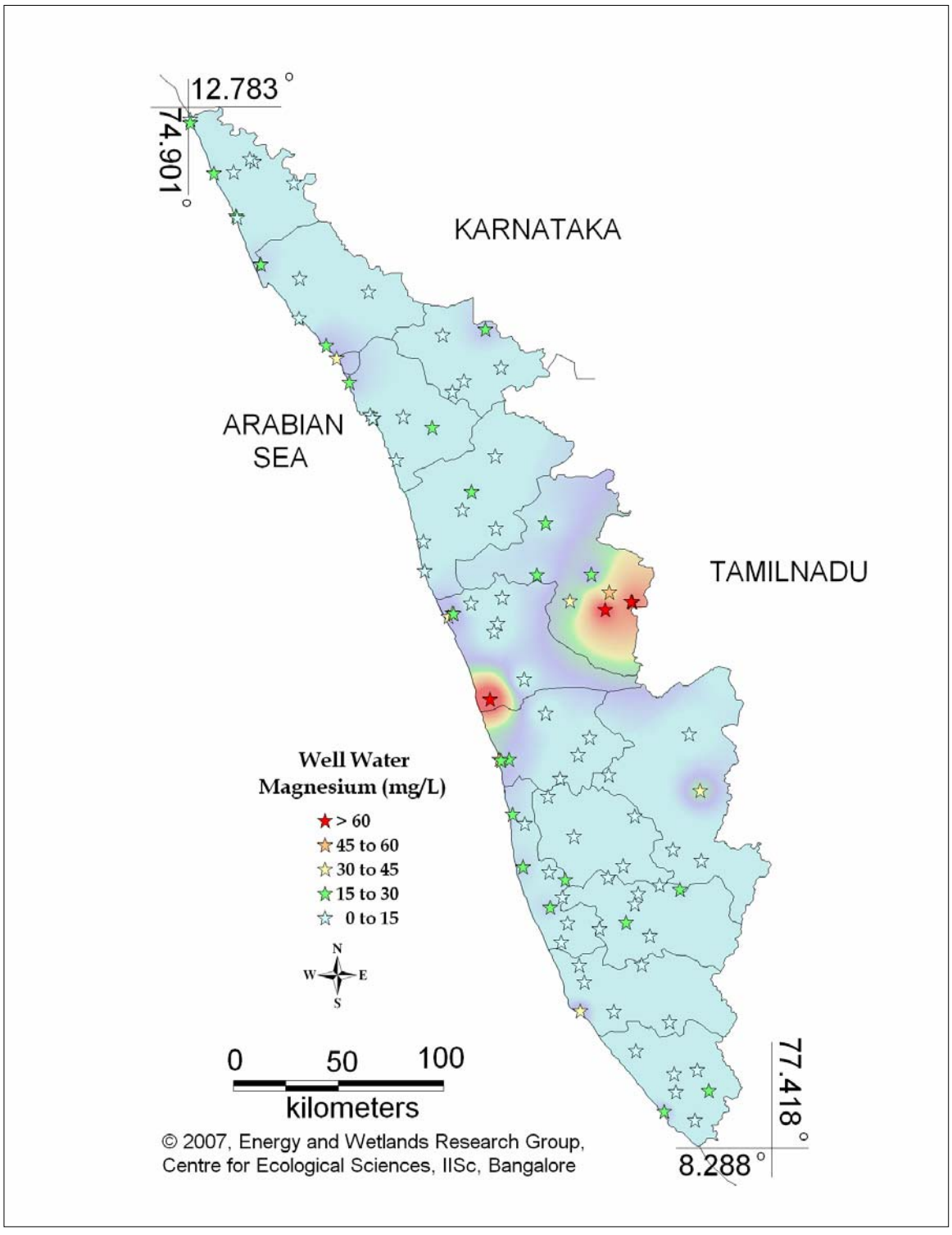
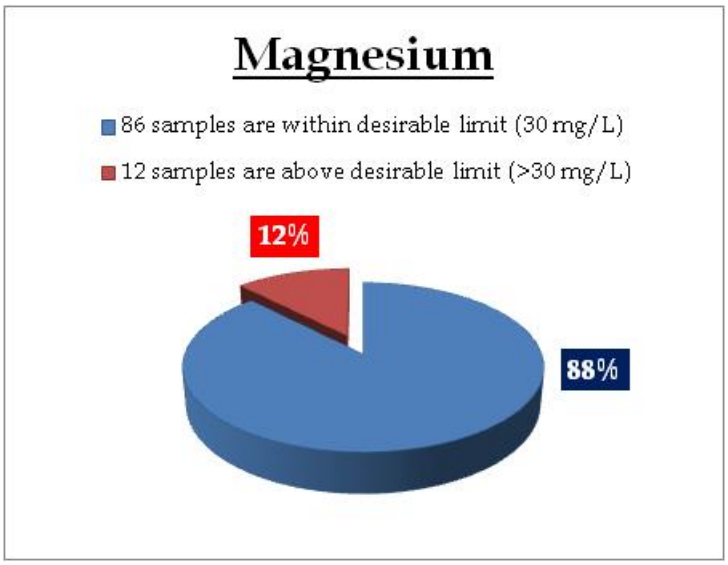


Figure 17.2: Spatial variation of Magnesium in Kerala's well water

Well water - Magnesium

Standard for Drinking Water (BIS 105000)
Desirable Limit: 30 mg/L
Permissible limit in the absence of an alternative source:100 mg/L



Remarks
Sampling sites where Magnesium is above desirable limit

Location	Value	District
Chavakkad	30.81	Thrissur
Mahe	31.99	Mahe - Puducheery
Kochupilammood	35.10	Kollam
Alathur	36.69	Palakkad
Guruvayoor	41.95	Thrissur
Thannimoodu	42.14	Idukki
Puzhapalam	46.24	Palakkad
Fort Cochin	57.31	Ernakulam
Kannimari	69.47	Palakkad
Placimada	109.67	Palakkad
Kollengode	118.67	Palakkad
Koodungalur	141.46	Thrissur

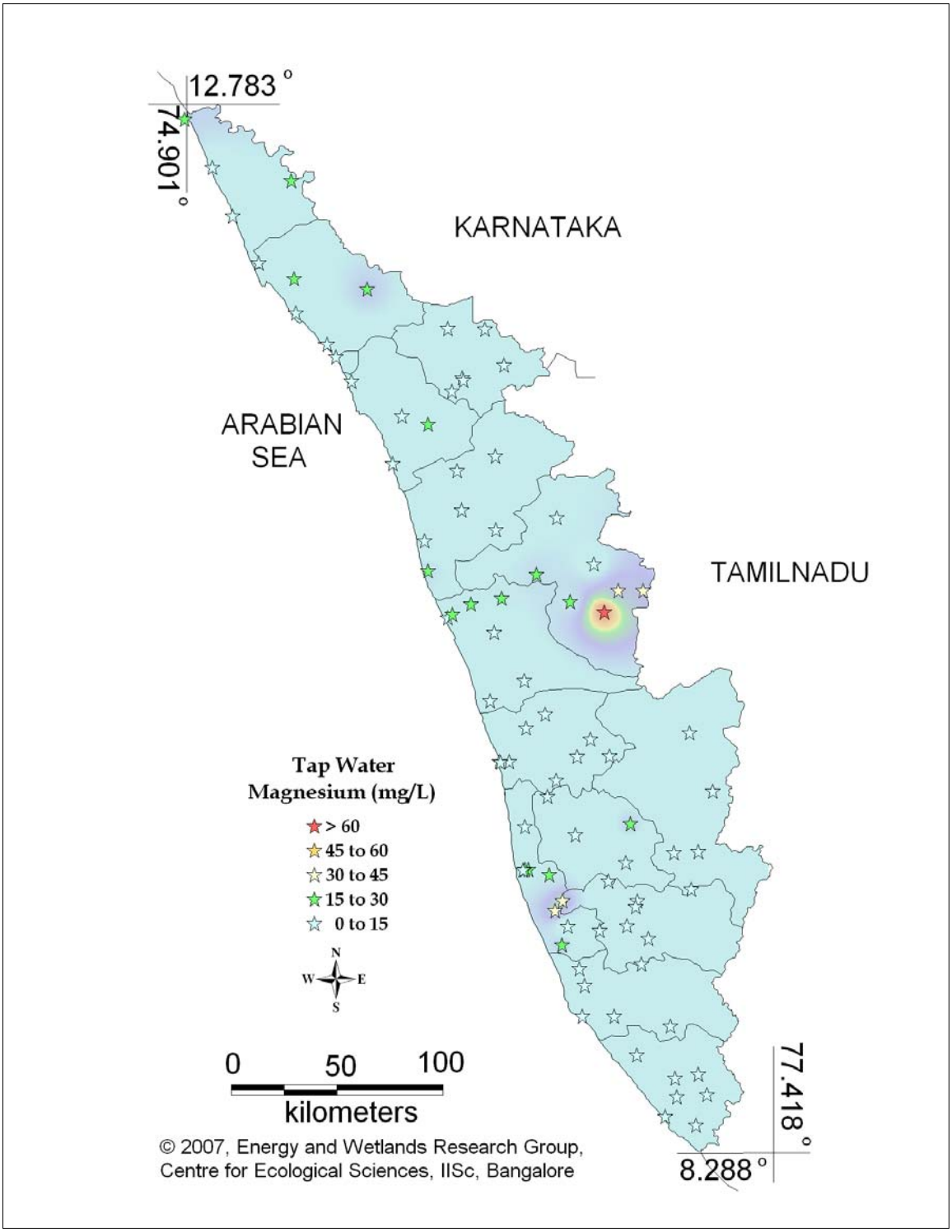
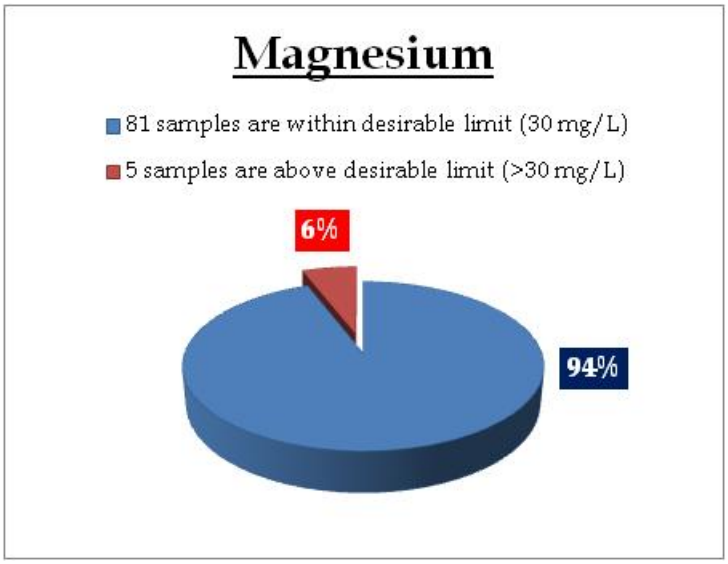


Figure 17.3: Spatial variation of Magnesium in Kerala's tap water

Tap water - Magnesium

Standard for Drinking Water (BIS 105000)
Desirable Limit: 30 mg/L
Permissible limit in the absence of an alternative source:100 mg/L



Remarks
Sampling sites where Magnesium is above desirable limit

Location	Value	District
Moonkilmada	31.80	Palakkad
Chittur	32.19	Palakkad
Veeyapuram	39.98	Alappuzha
Chenkulathukavu	40.58	Kottayam
Kollengode-Vellanara	80.77	Palakkad