

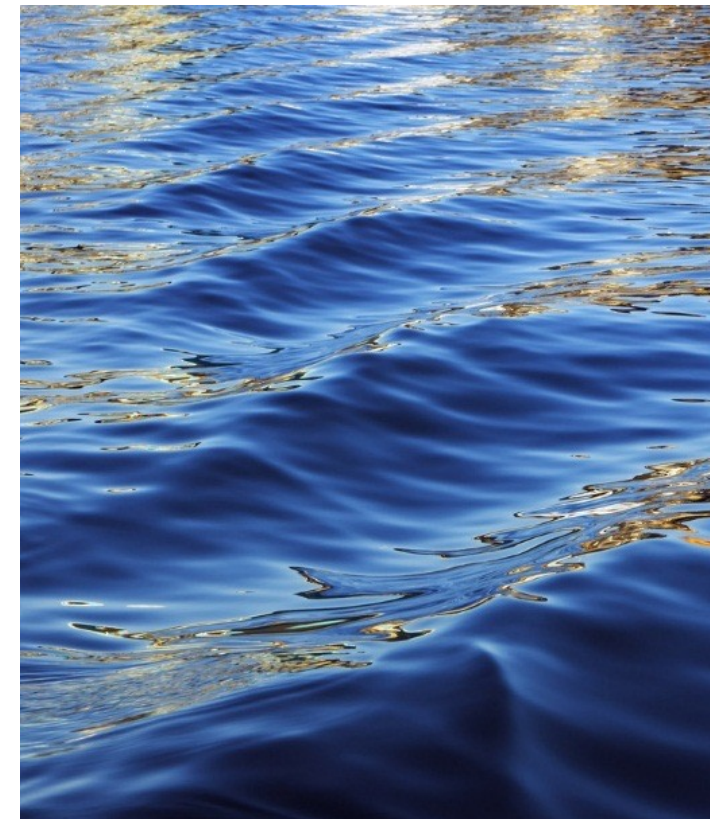


Paths and **side paths** of environmentally-sounds viticulture in Slovenia – more than 30 years of implementation, experiences and perspectives



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# Slovenia – climates

Mountain Climate  
T: 0-6.0 °C  
P: 2000-3000 mm

Temperate  
Continental  
Climate

T: 9-11 °C  
P: 1000-1200 mm



Sub  
Mediterranean  
Climate

T: 13-14 °C  
P: 1400-1600 mm

# Slovenia – climate changes



Changes per Decade:

Temperature:

↑ 0.3 – 0.4 °C

Precipitation:

↓ 20 – 40 mm (heavy rain)

Evapotranspiration:

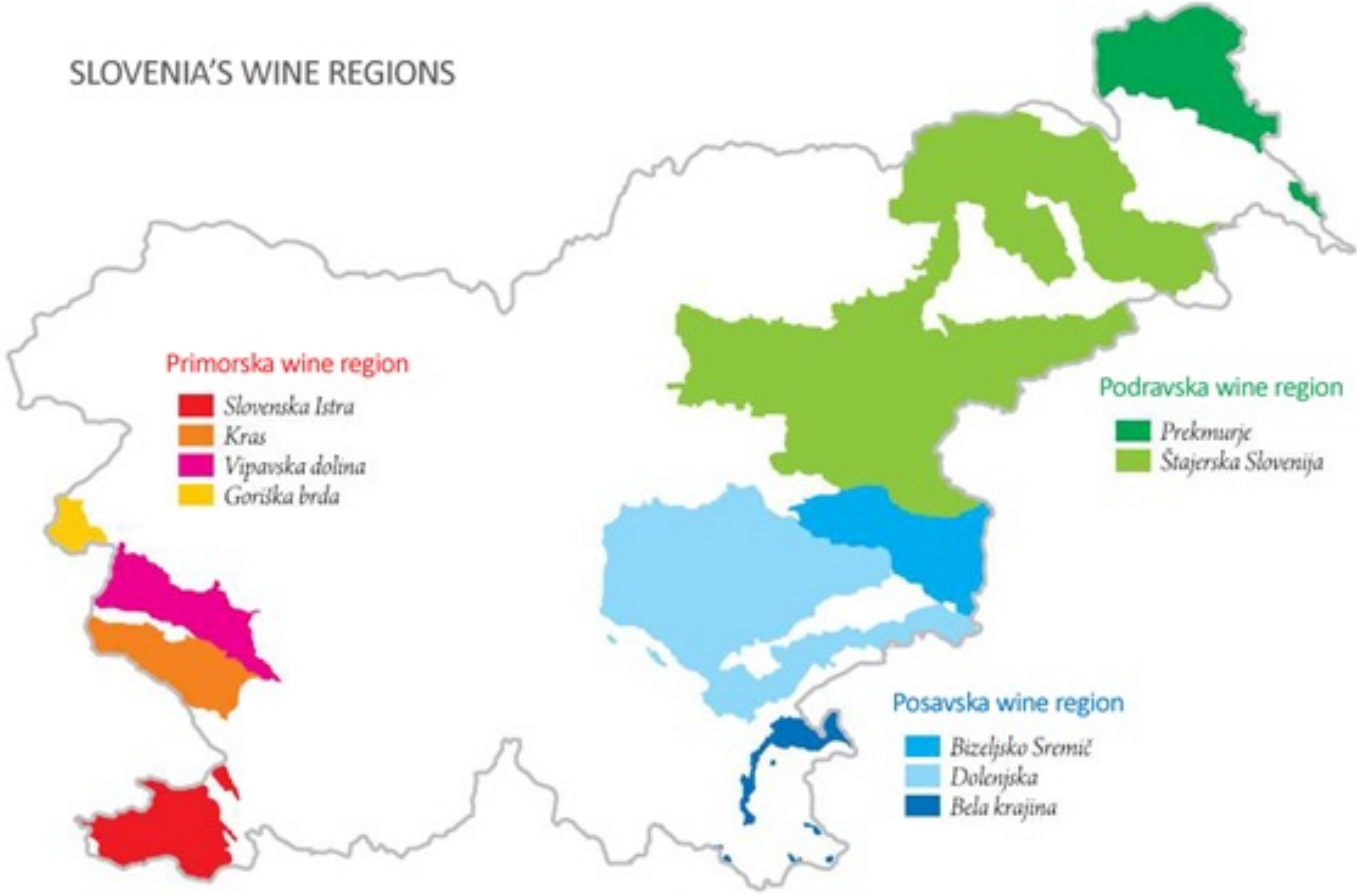
↑ 30 – 50 mm

Solar radiation:

↑ 40 – 100 hours

# Slovenia – vitiviniculture

SLOVENIA'S WINE REGIONS



14.000 ha vineyard

28.000 grape/wine producers

0.5 ha an average grape producer (~ 0.25 ha average vineyard area)



52 mio liters of wine

# Slovenia: environmentally – sounds viticulture

**Until 1991:** Conventional grape production (100%)

**1991 – 2014:**

- Conventional grape production – standard production (~38%)
- Integrated grape production - above-standard production (gradually till 60%)
- Ecological (biological, organic) grape production - above-standard production (~2%)

**2014 - 2022:**

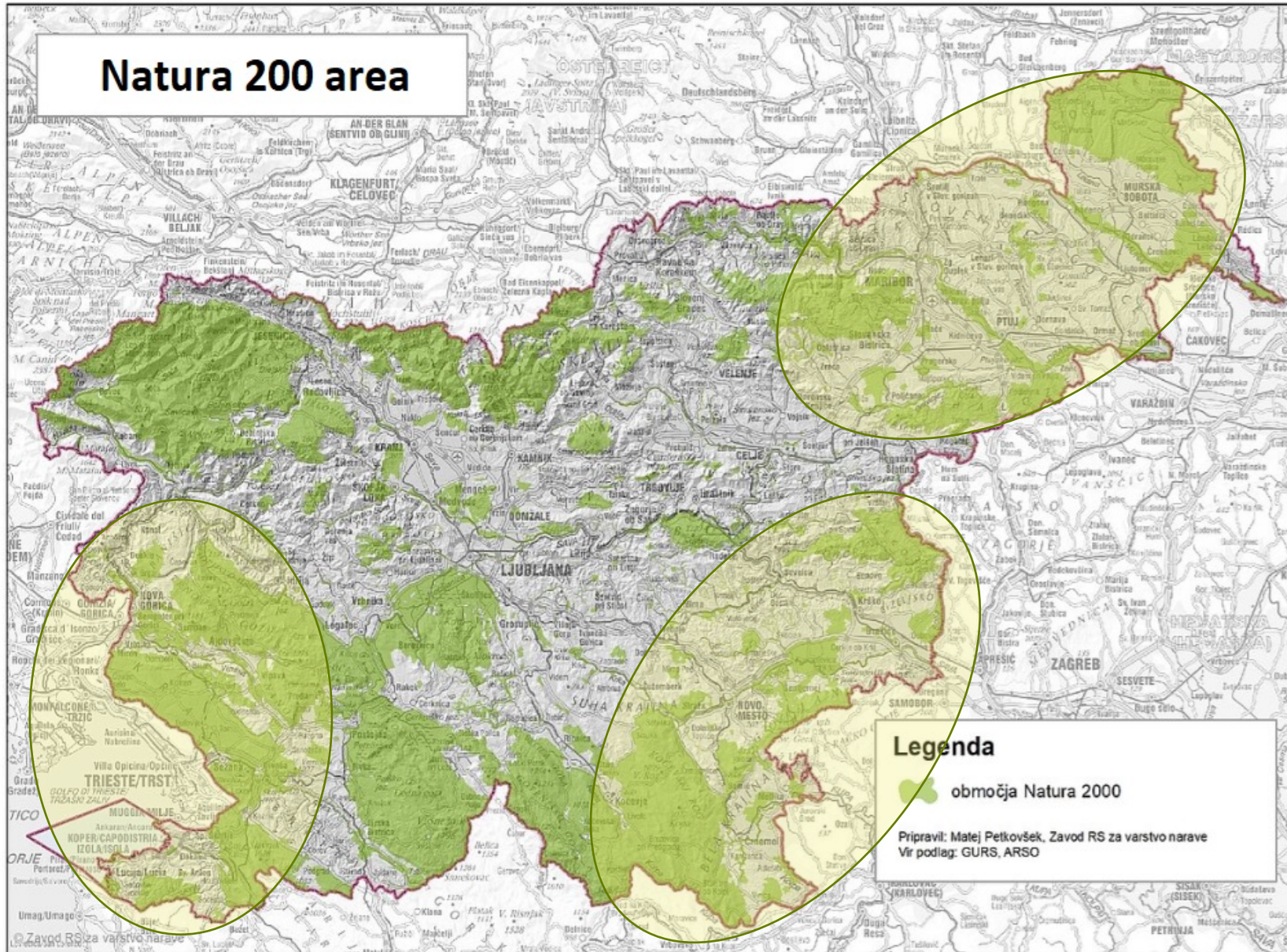
- Integrated grape production – standard production (94%)
- Ecological (biological, organic) grape production - above-standard production (~3.5%)
- Biodynamic grape production - above-standard production (~0.5%)

**2023 – 2027:**

- Integrated grape production – standard production (others?)
- „KOPO“ Integrated grape production - above-standard production (?)
- Ecological (biological, organic) grape production - above-standard production (~6%)
- Biodynamic grape production - above-standard production (~0.5%)



# Slovenia: Natura 2000 sites



There are 355 Natura 2000 areas in Slovenia, which cover over 37% of the country's territory.

70% of Natura 2000 areas are covered by forest, and **more than 20% by agricultural land. In some area all vineyards!**

**It is not allowed to use any pesticides, not even those permitted in organic farming (copper, sulfur, etc.).**



Paths and **side paths**  
of environmentally-  
sounds viticulture



# Our experiences regarding the environmentally sounds production! Is it sustainable?

## Paths

In 30 years:

- the use of pesticides was reduced by 50%.
- the use of mineral fertilizers (NPK) was reduced by 50-70%,
- increased of the permanent greening in the vineyards,
- decreased soil erosion and lacking of minerals,
- increased of an organic matter in vineyards,
- maintenance of smaller vineyards (not huge complexes)
- keeping a biodiversity (small vineyards around by ecological niches)...

## Side Paths

In 30 years:

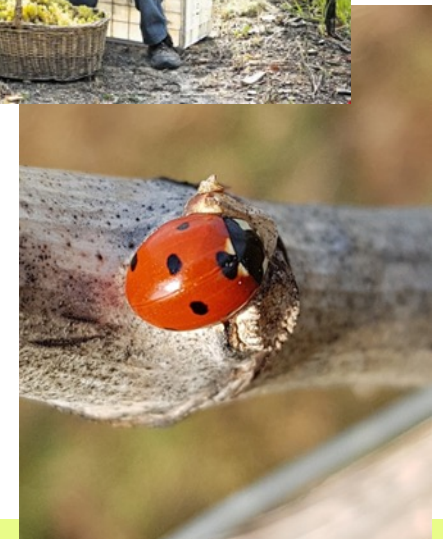
- a number of grape producers decreased for 30%,
- the proportion of abandoned vineyards/land increased by 50%,
- production has become more expensive (more work, mainly manual),
- chemical agents for the effective vine protection drastically decreased,
- Increase a share of unorganized landscape,
- viticulture/agriculture is less and less interesting for young people,
- In some cases also increase a consumption of fuel, energy and water (ecological production)...



# Slovenia – vitiviniculture in the next future?

- I. Any restrictive measure reduces interest in cultivation.
- II. Grape production is becoming more and more expensive and difficult due to nature conservation measures and climate changes!
- III. Will new technologies (sensors, digitization, robotization) really reduce the cost of production even on small plots of land (vineyards)?

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**Thank you for your attention!**