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# Sludge production and utilization in Italy

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# Sludge production and utilization in Italy

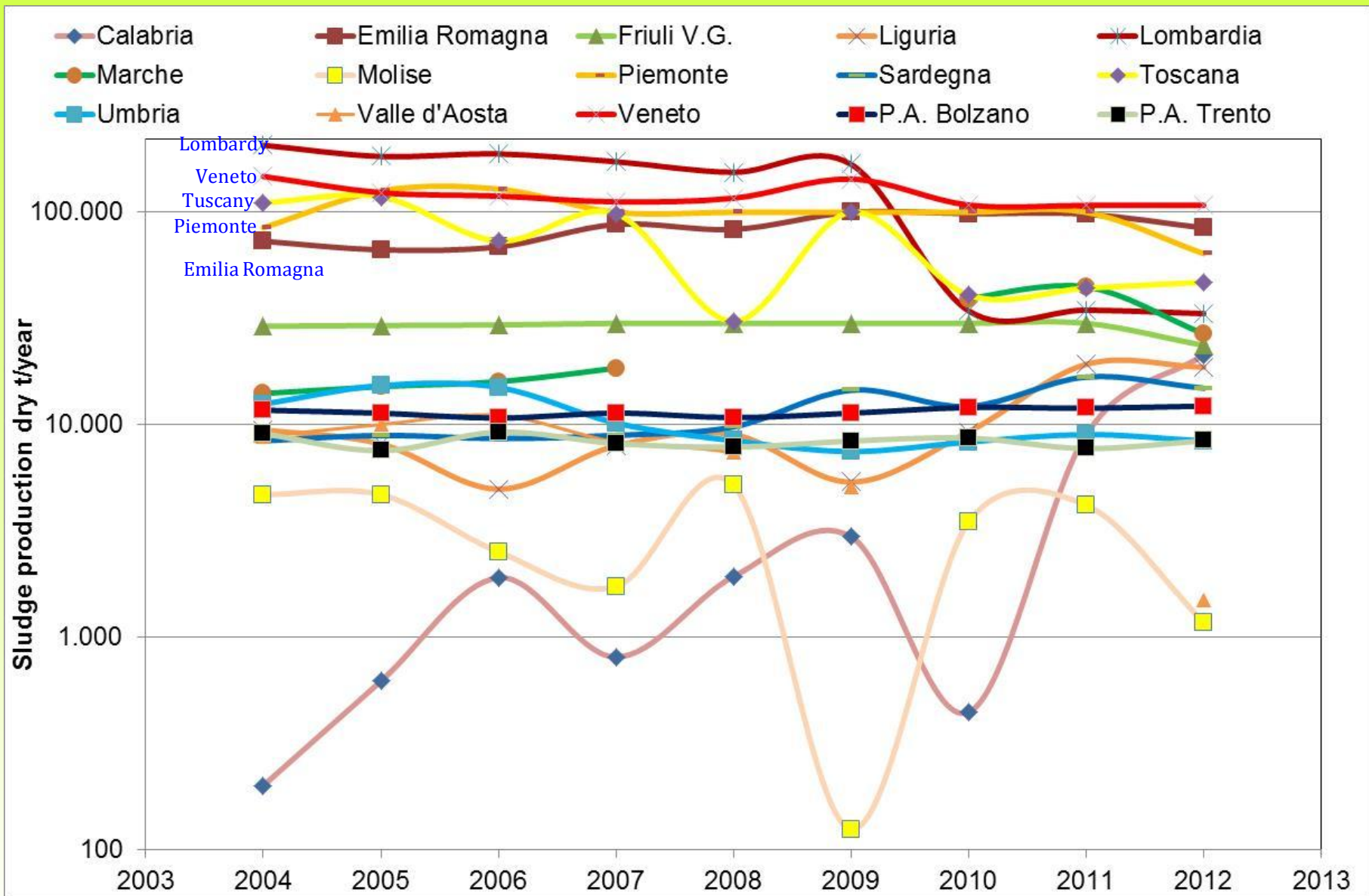
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<sup>1</sup>Cnr-Water Research Institute (Rome)

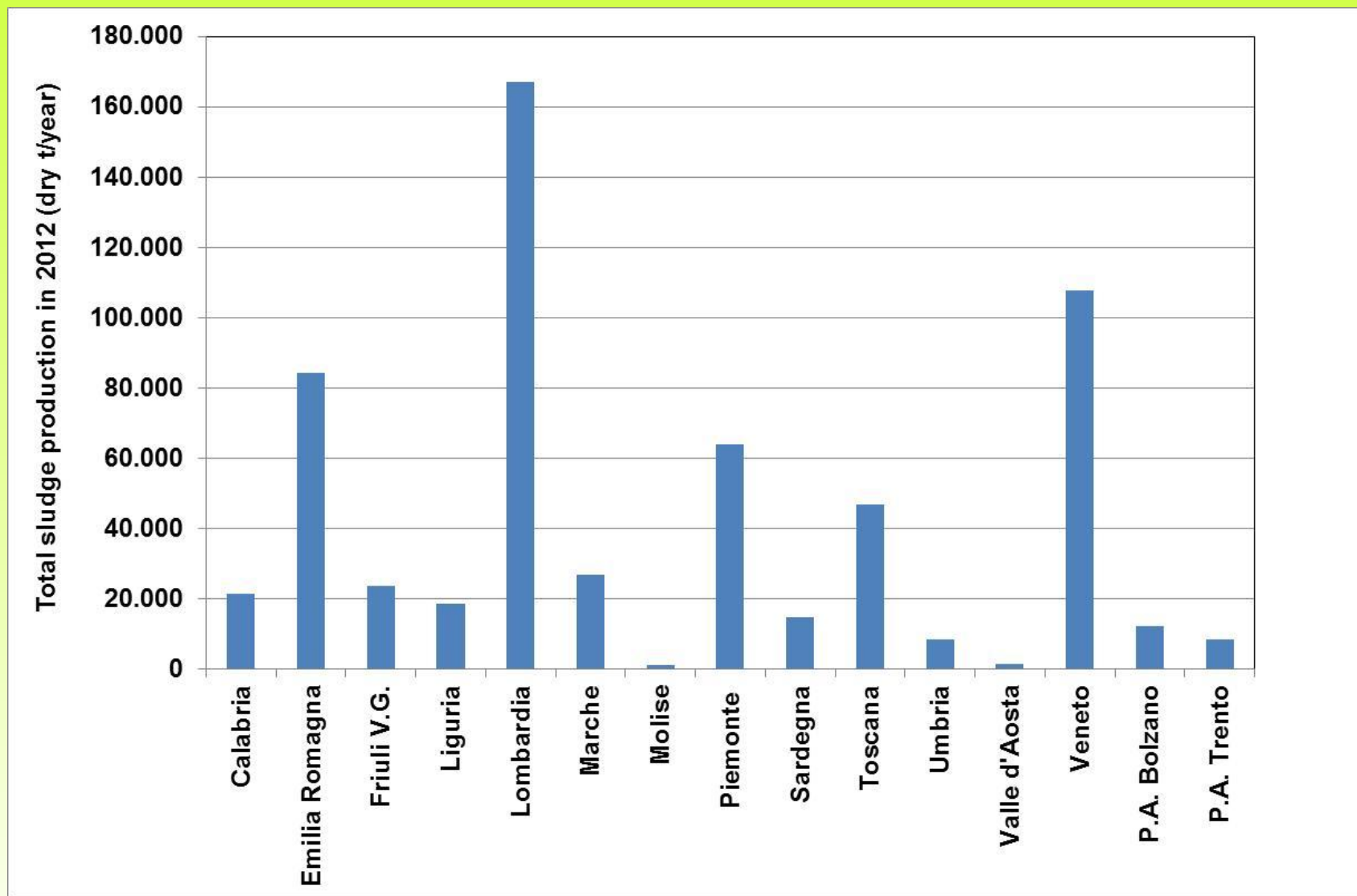
<sup>2</sup>Italian Ministry of the Environment

Direction Water and Territory Protection (Rome)

# Sludge production (dry t/year)

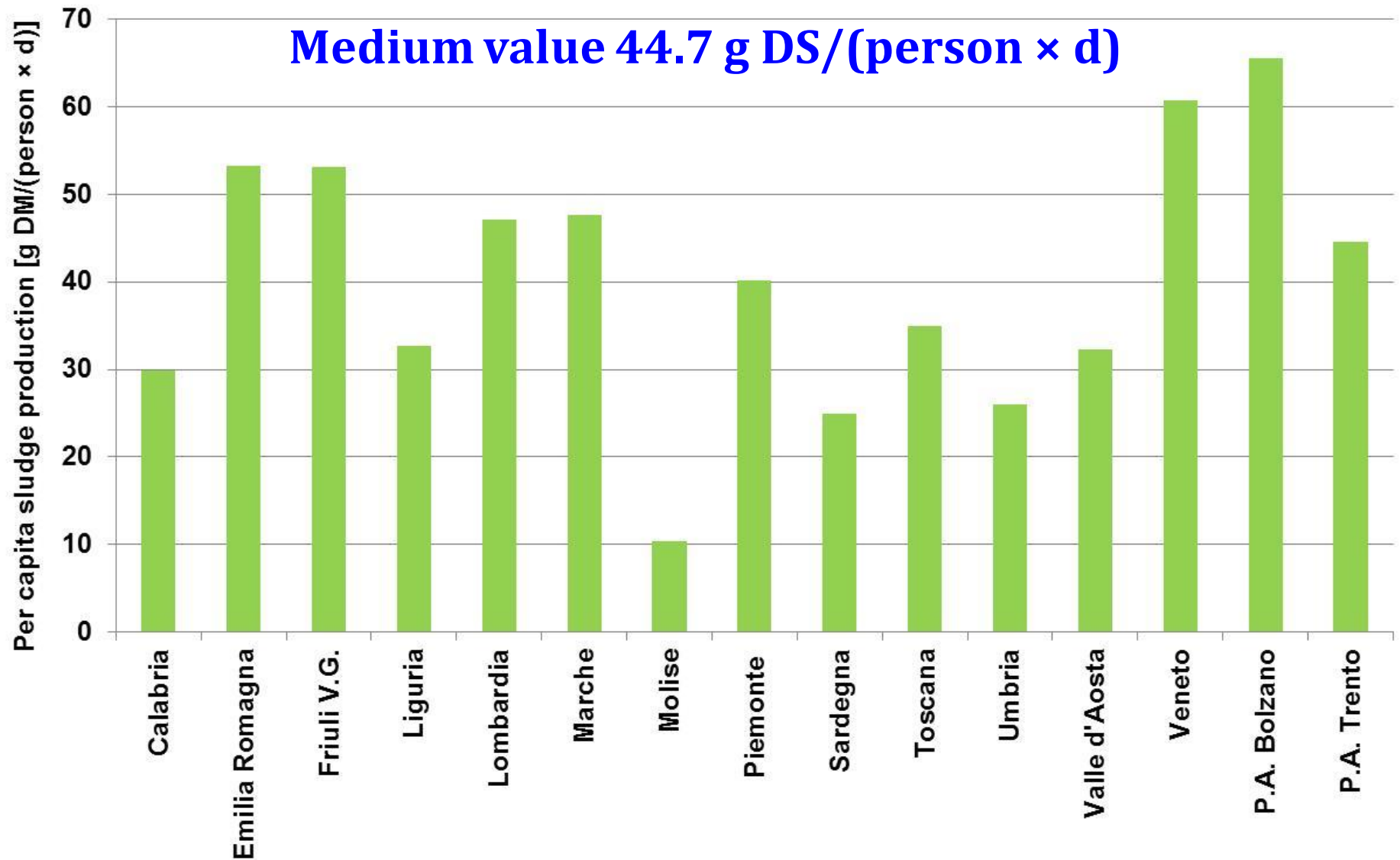


# Total sludge production in 2012

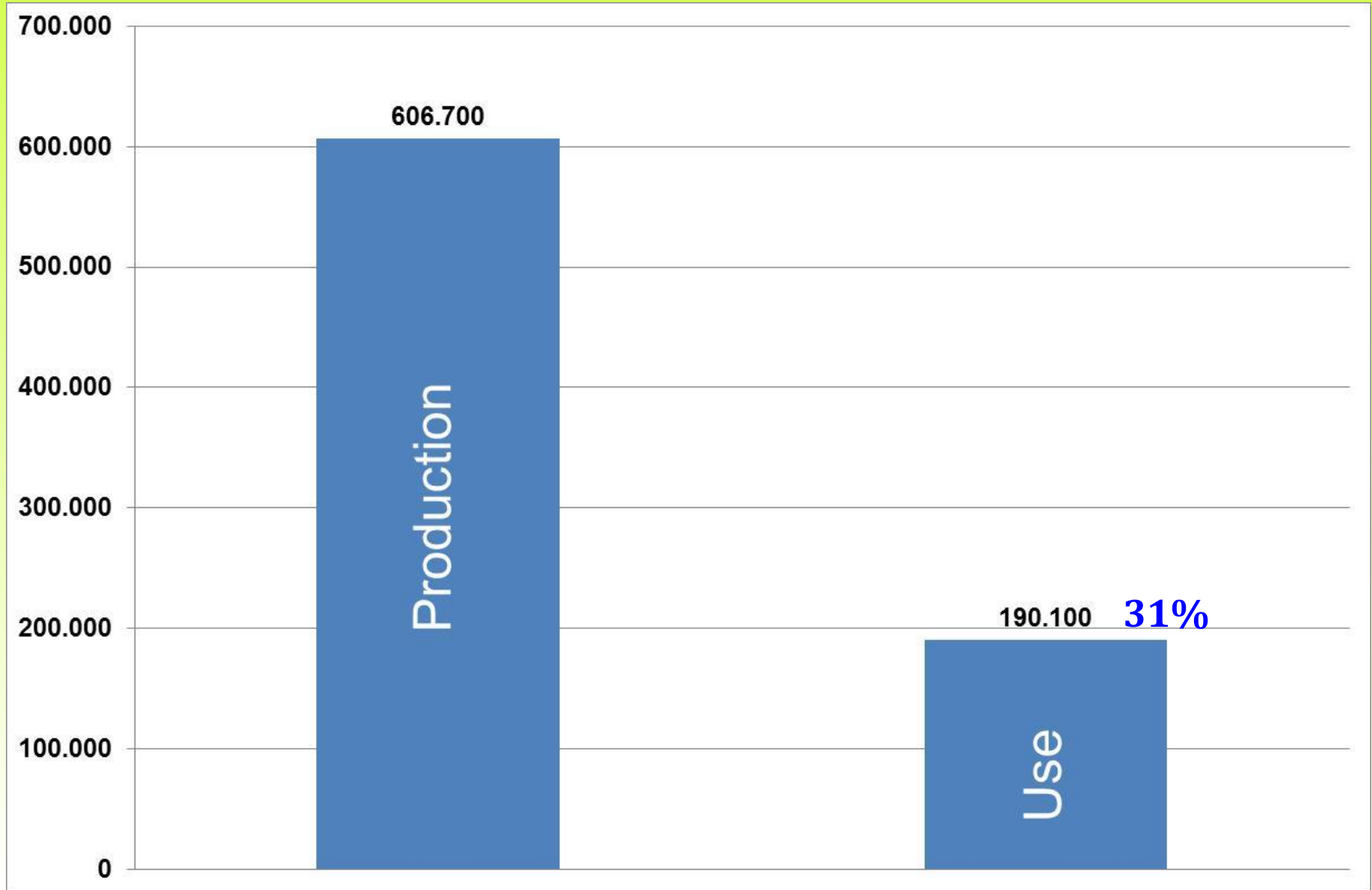


Production from 15 regions out of 21, accounting a population of 37.196.000, i.e. 63% of total=607.000 t. Expected total production 969.000 t

# Per capita sludge production in 2012

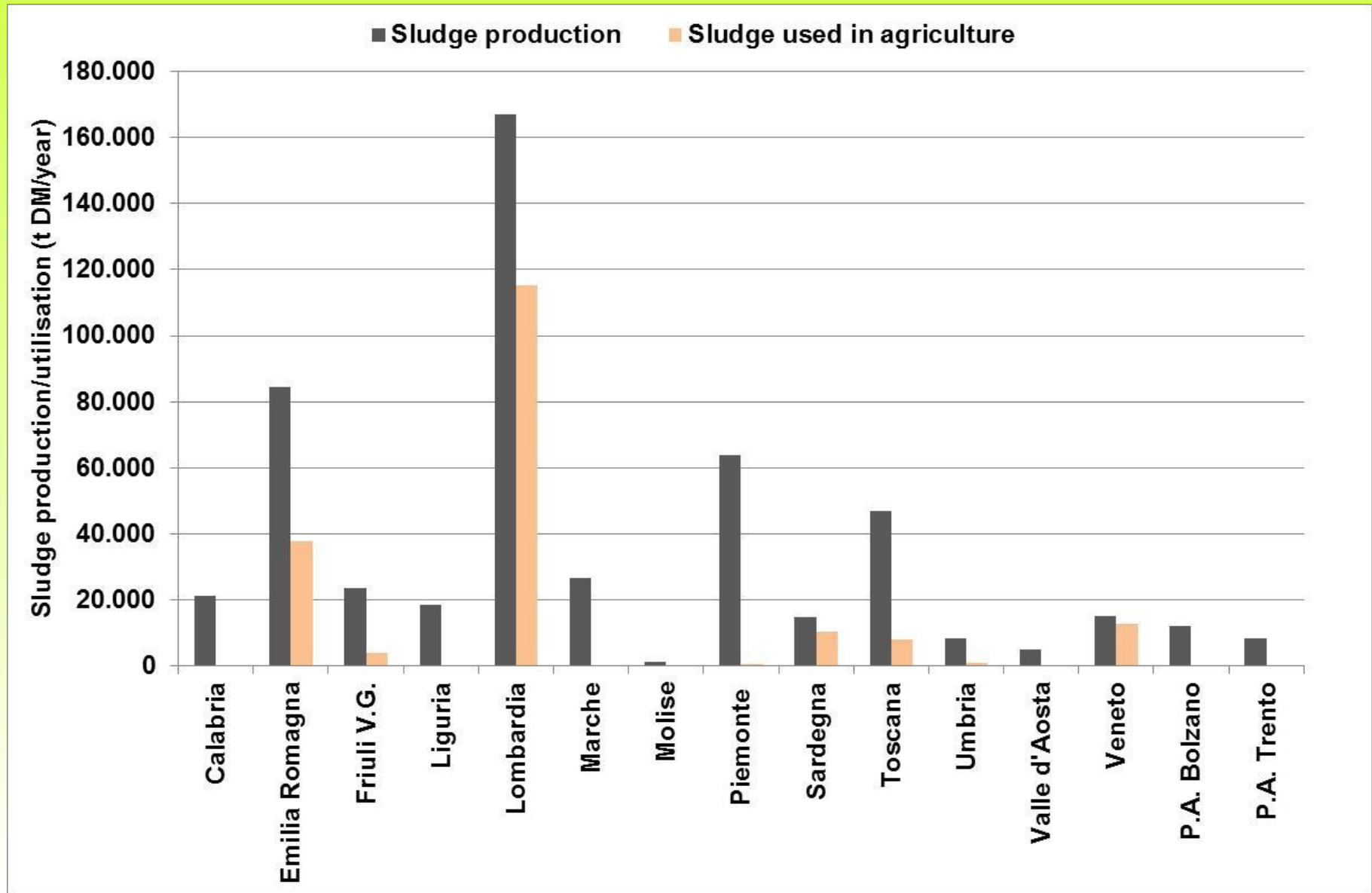


# Comparison between production and utilisation in 2012





# Sludge production and utilisation in 2012





# Sludge quality

(mean values for all the Italian regions)

	2010	2011	2012
Cadmium (mg/kg DM)	0,84	0,77	0,80
Copper (mg/kg DM)	139,42	166,50	176,25
Nickel (mg/kg DM)	17,65	18,25	16,71
Lead (mg/kg DM)	26,66	27,47	38,47
Zinc (mg/kg DM)	326,09	352,62	356,43
Mercury (mg/kg DM)	0,45	0,60	0,54
Chromium (mg/kg DM)	28,46	27,12	22,15
Total nitrogen (% of DM)	2,75	3,03	2,86
Total phosphorus (% of DM)	1,44	1,23	1,64

# Conclusions

- Sludge production changes during the years also due to the economic crisis and the consequent reduction of industrial wastewaters treated in the urban WWTPs.
- Some regions have problems to manage the data and therefore they are not provided to the Ministry of the Environment.
- On the basis of the available and reliable data provided in 2012 is possible to estimate a total production in Italy of 969.000 t DM.
- The current sludge management in Italy is quite different among the different regions.
- The regions using large quantities in comparison with the production are Lombardy, Emilia Romagna, Sardegna and Veneto. Also Apulia in the last year utilized directly 63% of total production.
- In Piemonte the most part of the sludge is composted.
- Current data of the presence of heavy metals in sewage sludge confirm that in Italy as in the other European countries the quality of sludge improved very much in the last 30 years.

**Thank for your attention  
Questions?**