

## Wine chain from Europe to China – Authenticity, Testing, Traceability and Vulnerability

### Partnership EU-China

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### Definition of problem

The international wine market has been frequently subject to fraud in recent decades. While several studies attested a special vulnerability of the fast growing wine business in China, there is a particular lack of information on the quality and genuineness of European wine marketed in China. Within the EU-China-Safe project, different activities were conducted in order to identify current authenticity challenges, the vulnerability and critical points in this supply chain.

### Pathway to solution

As part of the EU-China-Safe project, trade flows and authenticity challenges were exemplarily analysed for wine traded between France and China<sup>i</sup> (which is the most important example of wine EU-China trade). From literature and first hand reports it became clear that the basic weaknesses of the EU-China wine supply chain are traceability issues and practical difficulties in protecting (European) imports from “home-made” lookalike products produced in China. Well-established analytical methods to test wine authenticity were successfully exchanged between Europe and China. In a spot check, 50 wines with European labelling, purchased on the Chinese market, were analysed for fraud-relevant parameters<sup>ii</sup>. The analytical results revealed indications for fraudulent practices in a high rate of the wine samples (>20%) including watering, chaptalisation, glycerol addition and the use of non-Vitis anthocyanin sources. Fraud vulnerabilities<sup>iii</sup> in the wine supply chain were examined with a survey: The highest fraud vulnerability risk was found to be the ease of adulteration as technical opportunity. Top scoring motivation was the large price difference between wines produced in Europe and Asia. Place for improvement was associated with the low developed state-of-the-art track and trace technical control instruments (e.g. blockchain). Interestingly, enforcement and fraud monitoring revealed the lowest fraud risk level, whereby food fraud-related legislation is strictly enforced (managerial control) according to the respondents.

### Long-term impact

The long-term impact of identifying wine fraud, and thus reducing future cases, is to improve trade relations, grow mutual trust between the regions, and create resilient business environments between Europe and China. Relationships need to be cultivated at different levels (individual, organizational, national and regional) through various interested stakeholders. Implementation of sophisticated traceability systems starting at the European production could also mitigate fraud, providing digital information to market participants including (Chinese) consumers on food safety and reliability on authenticity. Technical Opportunity and high economic gain are crucial but almost unalterable factors for wine fraud. The third factor, lack of control, although not prominently perceived within the survey, appears also to be relevant. The high rate of suspicious samples in the spot check study indicate the importance of improved analytical inspections. For this, the analytical prerequisites have been established within the EU-China-Safe project, which set the basis for further enforcement actions on the Chinese local market.

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<sup>i</sup> Nofima Report 10/2021 “Mapping the local-global wine chain from Europe to China - Towards shared standards and benchmarks in wine traceability and authenticity”, available at <https://nofima.com/>

<sup>ii</sup> Müller et al. (2021). What’s in a wine? – A spot check of the integrity of European wine sold in China based on anthocyanin composition, stable isotope and glycerol impurity analysis. *Food Additives & Contaminants: Part A*, 38:8, 1289-1300.

<sup>iii</sup> van Ruth et al. (2018). Differences in fraud vulnerability in various food supply chains and their tiers. *Food Control*, 84, 375-381.