TA to support the "Filière du Vin" operation and the beneficiary SMEs

Republic of Moldova

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STE Mission Report

Winemaking efficiency and productivity benchmarking exercise

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1 Abreviations – Conversion – Preliminary remarks

MDL = Moldovan Lei
1 Hl = 10 Dal = 100 Lt
IGP = Indication Geographic Protected
AOP = Appellation of Origin Protected
PDO = Protected Denomination of Origin

Approximation used: 1.5 kg of grape produces 1lt of wine
Exchange rate used : 1 EURO = 18.5 MDL

2 Mission objectives

This wine benchmarking exercise has the following objectives:

1- Based on the wine processing cost structure of one of the largest and leading wine making entity in Moldova in addition to other financial data from one of the most qualitative producer of wines in Moldova[1], evaluate the average cost structure of grape processing and wine production in Moldova.

2- Compare the cost structure of these two entities with “equivalent” wine entities in different other countries (European and non-european)

3- Identify in which area of grape processing and wine making, sources of improvement of efficiency and cost cuttings could eventually be found for the production of wine in Moldova.

3 Methodology used for the Moldovan data analysis

This benchmarking exercise is not trying to evaluate or compare financial profitability of wine making operations in Moldova, with other countries.
The data provided to us on costs of production of wine in Moldova do not include marketing costs, administrative costs, earnings of owners or shareholders and net profit.
This exercise is then, only concentrating on costs, in Moldova, of processing grapes into wine and costs of bottling wines, and trying to compare these costs with some other foreign wine producing countries data.

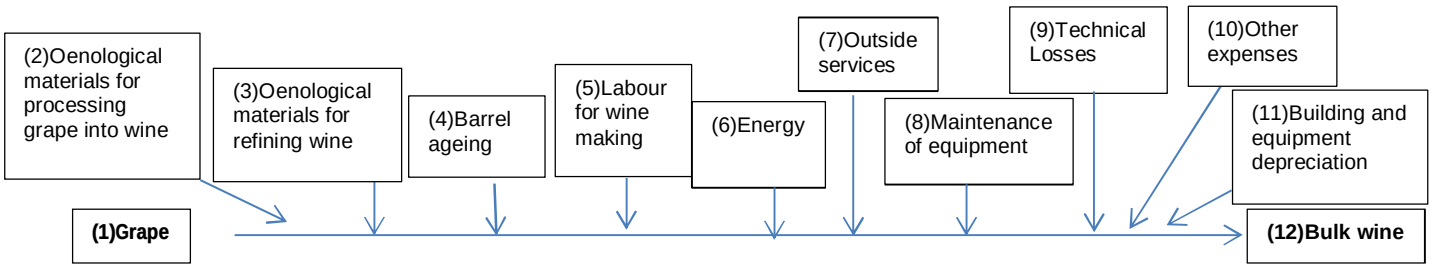
As international benchmarking data were only available on **dry wines (not sweetened[2])**, this Report is concentrating only on analysing costs of production of dry wines in bulk, in 75cl glass bottle and in BIBs.

[1] See Annex H for the original financial data received and their analysis.
[2] Cost of concentrated juice used for sweetening wines is fluctuating quite heavily from year to year. In 2013/2014, the best prices for concentrated juice were around 1,300€/ton, and was mostly available from Spain or Argentina.

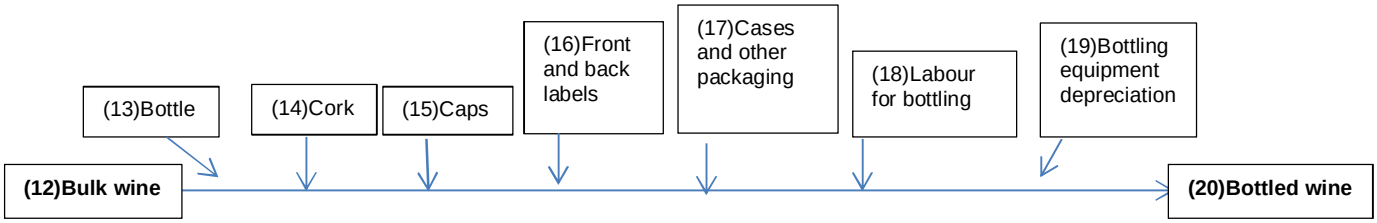
In order to conduct coherent analysis, we have "reprocessed" the data given to us by the Moldovan companies, and the one available from foreign countries.
To do so, we have created the following "***wine processing cost clusters***":

Table 1 – Wine processing costs clusters

⇒ **From grape to bulk wine ready to be bottled:**



⇒ **From bulk wine to bottled wine:**



For each "**Wine processing cost cluster**", the following methodology of calculation is used:

- **(1) grapes**
  - Average cost of grape is the average cost for growing wine grapes, based on harvest 2013 and 2014. This cost is an average between the price paid for grapes when the grapes are bought, and the cost of production when the grape is produced. This average was necessary for two main reasons:
    - In Moldova, the cost of production of a variety of grape is usually higher than the price it is sold for on the market (see Annex A).
    - The prices of grapes in 2013 were significantly higher in 2013 compared with 2014, due to the bad weather conditions and low yield (See Annex A).
  - Based on the types of grape varieties used for wine processing, we have evaluated the average cost of grapes for making white wines and red wines. Inside each of these two categories, we have allocated each grape variety based on its technical capacity, but also market acceptance, to give **Low quality wines**, **Medium quality wines** and **Top quality wines**.
  - Table 2 is giving the final result. Annex A is giving the details of the calculation.

Table 2 – Average cost of grapes in Moldova (based on harvest 2013 and 2014) (MDL/kg)

	White grapes			Red grapes		
	Lower quality	Medium Quality	Top Quality	Lower quality	Medium Quality	Top Quality
MDL/Kg	**Yield >12tons per ha**	**Yield between 10 and 12 tons per ha**	**Yield < 10 tons per ha**	**Yield >12tons per ha**	**Yield between 10 and 12 tons per ha**	**Yield < 10 tons per ha**
Aligoté	2,438					
Bianca	3,297					
Silvaner		2,867	4,141			
Muscat white		2,545				
Muscat blue		4,232				
Muscat de Hambourg		2,883				
Italian Muscat		2,667				
Muscat ottonel		3,308				
Muscat petit grain		2,548				
Chardonnay	2,734	4,300	5,830			
Sauvignion	2,937	3,066	5,840			
Traminer	2,854	6,618	5,310			
Ugni blanc	3,125	5,023				
Pinot blanc	3,125	5,840	7,350			
Feteasca alba			6,000			
Pinot gris	3,263	5,176	5,840			
Rkatsiteli	3,691					
White grapes	**3,052**	**3,929**	**5,759**			
Pinot Noir				2,914	3,368	6
Saperavi						5,649
Cabernet Sauvignon				2,728	5,938	6,000
Cabernet franc					2,659	3,157
Merlot				2,735	4,459	6,000
Petit verdot					3,157	5,137
Feteasca Neagra						6
Rara Neagra						6
Montepulciano						6
Syrah					2,899	4,204
Malbec					2,000	6
Red grapes				**2,792**	**3,497**	**5,468**

- **(2) Oenological materials for processing grapes into wine**
  - Discussions with the local oenologists have shown that, in Moldova, production of bulk or bottled wines is not decided based on vineyard management or grape varieties but rather on oenological practices and final quality of wine.
  - The costs of oenological materials for processing grape into wine include yeasts, tannins, PVPP, bacterias.

- **(3) Oenological material used for refining the bulk**
  - Discussions with the local oenologists have shown that the wines sold in bottle receive additional oenological attention: addition of oak chips, gelatine, bentonite, glue, etc… but also coupage with bulk wines bought from other producers. We have then attributed these costs only to the wines sold in bottled, and not in bulk.

- **(4) Barrels ageing**
  - Cost of barrels is referring to the oak barrels bought.
  - After discussions with the local oenologists, it was decided to use the following methodology for estimating the costs of barrel ageing per bottle:
    - Barrel ageing is only used for Top quality wines (for the lower and medium quality wines, oak chips are eventually used).
    - On average, barrels have to be replaced by new ones every 34 months.
    - On average, new barrels are used during the first 4 month for white wine production, then during the 30 month left, for red production.

- **(5) Labour for wine making**
  - It includes all the costs of the employees working in the winery and dedicated to grape processing into wine.

- **(6) Energy**
  - It includes all the costs of electricity, gaz and fuel spent during wine making, bottling and storage.

- **(7) Outside services**
  - It includes the costs of using outside laboratories, consultants (national or international) and any services provided by external service companies.

- **(8) Maintenance of equipment**
  - It includes the costs of repairing and maintaining in proper working conditions the wine making buildings and equipment.

- **(9) Technical losses**
  - It includes the costs of lost or spoiled wines during the process of wine making.

- **(10) Other expenses**
  - It includes the costs not included in previous clusters.

- **(11) Building and wine making equipment depreciation**
  - The value was been given by the Financial department of the Moldovan companies.
  - It is not the depreciation rate fixed by the fiscal law (which usually impose a depreciation rate of 20% for equipment and 5% for buildings). It is the depreciation rate based on expected operational life of equipment or building.

- **(12) Bulk wine**
  - It is the finish wine ready to be bottled.

- **Bottles (13); Corks (14); Caps (15); Front and back Labels (16); Cases and other packaging (17)**
  - It is the average costs paid for these goods.

- **(18) Labour for wine bottling**
  - It includes the costs of the employees working in the winery and dedicated to wine bottling.

- **(19) Bottling equipment depreciation**
  - The value was given by the Financial department of the Moldovan companies.
  - It is not the depreciation rate fixed by the fiscal law (which usually impose a depreciation rate of 20% for equipment and 5% for buildings). It is the depreciation rate based on expected operational life of bottling equipment.

- **(20) Bottled wine**
  - It is the packaged wine ready to be sold on the market for consumer consumption.

In addition to "**Wine processing Cost Clusters**", this Report has divided the costs based on different '**Wine qualities produced**".

4 different "**Wine qualities produced**" have been used to evaluate costs production for whites and for reds:

- ***Lower quality dry reds and white wines***
  - These wines are usually produced with high yield grape varietals (over 12 tons of grapes per hectare – See Table 2), with minimum use of oenological materials and cheaper bottles and corks during wine making.

- ***Medium quality dry reds and white wines***
  - These wines are usually coming with grape varietals produced at a yield between 10 tons to 12 tons of grapes per hectare (See Table 2). Oak chips and other refining oenological materials are used during wine making. Bottles and corks are of a better quality and bought at higher prices.

- ***Top quality dry reds and white wines without new oak barrel ageing***
  - These wines are usually produced with low yield grape varietals (less than 10 tons of grapes per hectare – See Table 2).
  - They are not aged in new oak barrels but qualitative oak chips or staves could be used during the wine making process.
  - The quality and prices paid for the bottle, cork and labels are high.

- ***Top quality dry reds and white wines aged in new oak barrels***
  - These wines are usually produced with low yield grape varietals (less than 10 tons of grapes per hectare – See Table 2).
  - They are aged in new oak barrels during an average of 5 to 34 months and qualitative refining oenological products are used during the wine making process.
  - The quality and prices paid for the bottle, cork and labels are high.

4 Results : average costs of production of Moldovan wines

The average cost of production is calculated in MDL and EURO per liter of wine produced.

Table 3: Costs of production of lower quality wines in Moldova

It reflects the costs of producing wines with grapes harvested with yield over 12 tons per hectare (See Table 2). Harvest is done by hand and transported in large trucks. Quantity and quality of oenological products used are minimal. Quality of bottle, cork, and cap used are at the lowest price available on the Moldovan market.

Table 4: Costs of production of Medium quality wines in Moldova

It reflects the costs of producing wines with grapes harvested between 10 and 12 tons per hectare (see Table 2). Harvest is done by hand and transported in trucks. Quantity and quality of oenological products used are according to modern wine making practices. Quality of bottle, cork, and cap used are of fair quality and medium prices.

Table 5: Costs of production of top quality wines in Moldova without new oak barrel ageing

It reflects the costs of producing wines with grapes harvested at less than 10 tons per hectare (See Table 2). Harvest is done manually and transported in 20/30 kg small cases. Quantity and quality of oenological products used during winemaking are at international level. International wine making consulting services are used. Oak chips, staves and eventually old oak barrels are used but no new barrels. Bottle, cork, and caps used are of top quality.

Table 6: Costs of production of top quality wines in Moldova in new barrel ageing

It reflects the costs of producing wines with grapes harvested at less than 10 tons per hectare. Harvest is done manually and transported in 20/30 kg small cases. Quantity and quality of oenological products used are at international level. International wine making consulting services are used. Oak chips and new oak barrels are used. On average, the barrels are younger than 34 month. White wines are, on average, aged during 4 months in new oak barrels, then the barrels are used to age the red wines for an additional duration of 30 months. Bottle, cork, and caps used are of top quality.

Table 3 – Average costs of production of lower quality wines in Moldova (MDL/lt)

MDL/lt	Lower quality (>12T/ha)			
	Red	%	White	%
Average Cost of grape	4,189	44,5%	4,422	46,1%
Cost of eonological material for processing grape into wine	0,387	4,1%	0,413	4,3%
Cost of eonological material for refining wine	0,594	6,3%	0,592	6,2%
Cost of bulk	1,487	15,8%	1,487	15,5%
Barrels				
Labour	1,360	14,5%	1,360	14,2%
Energy	0,537	5,7%	0,460	4,8%
Outside Services (Lab, consultant, etc...)	0,018	0,2%	0,018	0,2%
Maintenance of equipment	0,255	2,7%	0,255	2,7%
Technical losses	0,090	1,0%	0,090	0,9%
Other expennses	0,071	0,8%	0,071	0,7%
Building and equipment depreciation	0,422	4,5%	0,422	4,4%
TOTAL Costs of wine before bottling (MDL/Lt	**9,409**	100,0%	**9,590**	100,0%
Total costs €/Lt (18,5MDL = 1€)	**0,509**		**0,518**	
Cost of wine before bottling (MDL/Lt)	9,409	54,4%	9,590	54,9%
Bottle (MDL/Lt)	4,300	24,9%	4,300	24,6%
Cork (MDL/Lt)	0,573	3,3%	0,573	3,3%
Cap (MDL/Lt)	0,220	1,3%	0,220	1,3%
Label + Back (MDL/Lt)	1,000	5,8%	1,000	5,7%
Case (MDL/Lt)	1,209	7,0%	1,209	6,9%
Labour for bottling (MDL/lt)	0,393	2,3%	0,393	2,3%
Depreciation of bottling equipment (MDL/Lt)	0,180	1,0%	0,180	1,0%
TOTAL Average cost of bottled wine MDL/Lt	**17,284**		**17,465**	
TOTAL Average cost MDL/75cl	12,963		13,099	
TOTAL Average cost €/75cl	0,701		0,708	

Table 4 – Average costs of production of medium quality wines in Moldova (MDL/lt)

MDL/lt	Medium quality (between 12 and 10 T/ha)			
	Red	%	White	%
Average Cost of grape	5,246	46,6%	5,893	49,25%
Cost of eonological material for processing grape into wine	0,747	6,6%	0,773	6,46%
Cost of eonological material for refining wine	0,854	7,6%	0,966	8,07%
Cost of bulk	1,659	14,7%	1,659	13,87%
Barrels				
Labour	1,360	12,1%	1,360	11,36%
Energy	0,537	4,8%	0,460	3,85%
Outside Services (Lab, consultant, etc...)	0,018	0,2%	0,018	0,15%
Maintenance of equipment	0,255	2,3%	0,255	2,13%
Technical losses	0,090	0,8%	0,090	0,75%
Other expennses	0,071	0,6%	0,071	0,59%
Building and equipment depreciation	0,422	3,7%	0,422	3,53%
TOTAL Costs of wine before bottling (MDL/Lt	**11,259**	100,0%	**11,967**	100,00%
Total costs €/Lt (18,5MDL = 1€)	**0,609**		**0,647**	
Cost of wine before bottling (MDL/Lt)	11,259	54,0%	11,967	55,5%
Bottle (MDL/Lt)	4,500	21,6%	4,500	20,9%
Cork (MDL/Lt)	0,950	4,6%	0,950	4,4%
Cap (MDL/Lt)	0,460	2,2%	0,460	2,1%
Label + Back (MDL/Lt)	1,912	9,2%	1,912	8,9%
Case (MDL/Lt)	1,209	5,8%	1,209	5,6%
Labour for bottling (MDL/lt)	0,393	1,9%	0,393	1,8%
Depreciation of bottling equipment (MDL/Lt)	0,180	0,9%	0,180	0,8%
TOTAL Average cost of bottled wine MDL/Lt	**20,863**		**21,571**	
TOTAL Average cost MDL/75cl	15,647		16,178	
TOTAL Average cost €/75cl	0,846		0,875	

Table 5 – Average costs of production of top quality wines in Moldova without new barrel ageing (MDL/lt)

MDL/lt	Top quality without barrel ageing Lower that 10T/ha			
	Red	%	White	%
Average Cost of grape	5,246	31,7%	5,893	36,8%
Cost of eonological material for processing grape into wine	2,350	14,2%	1,189	7,4%
Cost of eonological material for refining wine	1,448	8,8%	1,448	9,1%
Cost of bulk				
Barrels				
Labour	1,828	11,0%	1,828	11,4%
Energy	0,532	3,2%	0,532	3,3%
Outside Services (Lab, consultant, etc...)	2,065	12,5%	2,065	12,9%
Maintenance of equipment	0,077	0,5%	0,076	0,5%
Technical losses	0,268	1,6%	0,265	1,7%
Other expennses	0,380	2,3%	0,375	2,3%
Building and equipment depreciation	2,352	14,2%	2,324	14,5%
TOTAL Costs of wine before bottling (MDL/Lt	**16,545**	100,0%	**15,993**	100,0%
Total costs €/Lt (18,5MDL = 1€)	**0,894**		**0,865**	
Cost of wine before bottling (MDL/Lt)	16,545	53,1%	15,993	51,7%
Bottle (MDL/Lt)	5,289	17,0%	5,475	17,7%
Cork (MDL/Lt)	1,506	4,8%	1,524	4,9%
Cap (MDL/Lt)	0,548	1,8%	0,554	1,8%
Label + Back (MDL/Lt)	2,738	8,8%	2,771	8,9%
Case (MDL/Lt)	2,040	6,6%	2,180	7,0%
Labour for bottling (MDL/lt)	1,536	4,9%	1,536	5,0%
Depreciation of bottling equipment (MDL/Lt)	0,931	3,0%	0,931	3,0%
TOTAL Average cost of bottled wine MDL/Lt	**31,131**		**30,964**	
TOTAL Average cost MDL/75cl	23,348		23,223	
TOTAL Average cost €/75cl	1,262		1,255	

Table 6 – Average costs of production of top quality wines in Moldova aged in new oak barrels (MDL/Lt)

MDL/lt	Top quality with barrel ageing (lower than 10 T/ha)			
	Red	%	White	%
Average Cost of grape	8,202	13,2%	8,242	33,2%
Cost of eonological material for processing grape into wine	3,318	5,3%	2,156	8,7%
Cost of eonological material for refining wine	0,780	1,3%	0,780	3,1%
Cost of bulk				
Barrels	41,145	66,3%	5,486	22,1%
Labour	1,828	2,9%	1,828	7,4%
Energy	0,532	0,9%	0,532	2,1%
Outside Services (Lab, consultant, etc...)	2,065	3,3%	2,065	8,3%
Maintenance of equipment	0,075	0,1%	0,068	0,3%
Technical losses	0,262	0,4%	0,237	1,0%
Other expennses	0,371	0,6%	0,336	1,4%
Building and equipment depreciation	3,446	5,6%	3,127	12,6%
TOTAL Costs of wine before bottling (MDL/Lt	**62,022**	100,0%	**24,856**	100,0%
Total costs €/Lt (18,5MDL = 1€)	**3,353**		**1,344**	
Cost of wine before bottling (MDL/Lt)	62,022	65,3%	24,856	43,1%
Bottle (MDL/Lt)	16,395	17,3%	16,433	28,5%
Cork (MDL/Lt)	3,484	3,7%	3,463	6,0%
Cap (MDL/Lt)	5,575	5,9%	5,541	9,6%
Label + Back (MDL/Lt)	2,787	2,9%	2,770	4,8%
Case (MDL/Lt)	2,250	2,4%	2,080	3,6%
Labour for bottling (MDL/lt)	1,536	1,6%	1,536	2,7%
Depreciation of bottling equipment (MDL/Lt)	0,931	1,0%	0,931	1,6%
TOTAL Average cost of bottled wine MDL/Lt	**94,980**		**57,610**	
TOTAL Average cost MDL/75cl	71,235		43,208	
TOTAL Average cost €/75cl	3,851		2,336	

5 Benchmarking exercise

5.1 Data collected

To be compared with Moldova's wine costs of production, the benchmarking exercise has collected the following data:

Benchmark 1 – Producer of red IGP at 10 to 12 tons/ha

Average costs 2012 to 2015
Country: France
Type of wine produced: IGP red wine
Average yield: 80hl/ha – 10.8tons/ha –
Average winery size: 30 ha - 2400hl produced per year
Sales: 550hl sold in bottles – 750hl sold in BIBs - 1100hl sold in bulk
(Source : Agriculture Chamber of Vaucluse)
See Annex B for details

Benchmark 2 – Producer of red AOP in bulk between 8 to 10 tons/ha

Average costs 2012 to 2015
Country: France
Type of wine produced: AOP red wine
Average yield: 60hl/ha – 9Tons/ha
Average winery size: 25ha - 1250hl produced
Sales : 100% sold in bulk
(Source : Agriculture Chamber of Gironde)
See Annex C for details

Benchmark 3 – Producer of red AOP bottled at less than 8 tons/ha

Average costs 2012
Country : France
Type of wine produced: AOP red wine
Average yield: 40hl/ha – 6Tons/ha
Average winery size: 25ha – 1250hl produced
Sales : 100% sold in bottles
(Source : Agriculture Chamber of Gironde)
See Annex D for details

Benchmark 4 – Producer of white AOP at between 8 to 10 tons/ha

Average costs 2013 – 2015
Country: France
Type of wine produced: AOP white wine
Average yield: 55hl/ha – 8Tons/ha
Average country size: 20ha - 1100hl produced
Sales : 400hl sold in bottles or BIB - 700hl sold in bulk
(Source : Agriculture Chamber of Loire)
See Annex E for details

Benchmark 5 – Producer in PDO Rioja (Spain)

Average costs 2013 - 2014
Country: Spain
Type of wine produced: PDO Rioja
Source : Francisco Cervantes – 2015
See Annex F for details

Benchmark 6 – New Zealand winegrowers

Average costs 2013
Country: New Zealand
Type of wine produced : Country wine
5 winery sizes:

- Turnover of less than 1.5 million NZD (New Zealand Dollar)
- Turnover of 1.5 to 5 million NZD (New Zealand Dollar)
- Turnover of 5 to 10 million NZD (New Zealand Dollar)
- Turnover of 10 to 20 million NZD (New Zealand Dollar)
- Turnover of more than 20 million NZD

(Source : Deloitte)
See Annex G for details

5.2 Comparison of benchmark data with Moldova

5.2.1 Benchmark 1 - Comparison with Producers of Red IGP produced between 10 and 12 tons/ha (Annex B)

This benchmark is comparing costs of wine production in Moldova with a red wine producer from France, harvesting grapes between 10 and 12 tons per ha[3], from average aged vineyard of 12 to 20 years, planted at 4 000 vines per ha.
The wine produced is IGP red. Quantity of wine produced is 80hl/ha.
It could be assumed that the wine produced is aiming at being at lower to medium quality.
Costs of labor (without company social taxes) are: 14.28€/h for permanent workers and 13.64€/h for seasonal workers.

(i) Costs of IGP red grape production – Wine processing cost cluster (1)

The costs of production and harvesting (mechanical) IGP red grapes in France, are evaluated, on average, at 3,917€ per ha. If the harvest is manual, the cost would be increased by an average of 896€/ha, as it takes 65hours to harvest 1 hectare, to reach a total of 4,813€/ha.
Total costs of production of IGP red grapes (average yield of 10,800kg/ha) in France, is then 0.36€ per kg of grapes for mechanical harvesting and 0.445€ per kg of grapes for manual harvesting.
It then appears that costs of production of red grapes harvested in Moldova, are significantly lower than IGP red grapes harvested in France.

Table 7 – "Wine processing Cost cluster (1)" - Average costs of production of red grapes in Moldova compared with French red IGP producers (in €/kg of grapes)

	€/kg	Red wines					
		> 12 tons par ha		10 to 12 tons per ha		<10 tons per ha	
Moldova	Cost of production and harvesting grapes in Moldova	0,151		0,189		0,296	
France	Cost of production IGP at 10 to 12t/ha mechanically (4000 vines/ha)	0,326	116%	0,36	90%	0,3917	33%
France	Cost of production IGP at 10 to 12 t/ha manually (4000 vines per ha)	0,401	166%	0,445	135%	0,4813	63%

When the calculation is taking in consideration the costs of grapes per liter of wine produced (and no longer per Kg of grape), the competitiveness of Moldova is still higher than French IGP wine producers but with a smaller extend (0.443 € per liter of wine produced in Moldova compared with 0.56€ per liter of wine produced mechanically by IGP producers).

[3] Average of 10,800kg per ha is used for calculation

Table 8 – "Wine processing Cost cluster (1)" - Average costs of production of red grapes in Moldova compared with French red IGP producers (in €/litre of produced wine)

	€/l	Red wines					
		> 12 tons par ha		10 to 12 tons per ha		<10 tons per ha	
Moldova	Cost of production and harvesting grapes in Moldova	0,226		0,284		0,443	
France	Cost of production IGP at 10 to 12/ha mechanically (4000 vines/ha)	0,428	89%	0,49	73%	0,56	26%
France	Cost of production IGP at 10 to 12t/ha manually (4000 vines per ha)	0,642	184%	0,6	112%	0,65	47%

It shows that Moldova is losing some costs efficiency during the wine making operations.

(ii) Costs of bulk IGP red wine production

"Wine processing Cost cluster (2) + (3) – Oenological material"
For producing red IGP, the average costs of oenological materials for processing grapes into finished wine, is 88.1€ per 100hl of wine produced, equivalent to 0.00881€/litre of wine produced.

"Wine processing Cost cluster (4)– Barrel ageing"
This cluster is not relevant for IGP wines at 80hl/ha, as these wines are not barrel aged.

"Wine processing Cost cluster (5) – Labour for wine making"
For labour, it is estimated that, on average, 33.5 hours of work is necessary to vinify 100hl of IGP (including cleaning and follow up on wine making). Permanent workers are paid at 14.28€/h. So the total amount spent on labour is estimated at 478€ for 100hl, equivalent to 0.048€/litre of wine produced.

"Wine processing Cost cluster (6) – Energy"
The cost of energy (electricity, water) is 66.6€ per 100hl vinified, equivalent to 0.0066€/litre.

"Wine processing Cost cluster (7) – Outside services"
The average costs of Laboratory analysis + Consulting services from local oenologist + other outside services including insurance, is 342€ for 100hl vinified , equivalent to 0.0342€/litre.

"Wine processing Cost cluster (8) Technical losses + (9) maintenance equipment + (10) – Other expenses"
It is not individualized and is included in other clusters.

"Wine processing Cost cluster (11) – Building and winemaking equipment depreciation"
Cost of depreciation[4] of the equipment and buildings is 0.11€/litre.

[4] The international Benchmarking data collected are all using the fiscal approach for depreciation: 5 years (20%) for equipment and 20 years (5%) for buildings.

"Wine processing Cost cluster (12) – Bulk wine"

The cost of production of bulk red IGP in France, produced between 10 and 12 tons per hectare and 80hl/ha is then estimated at : **0.74€/litre**.

It then appears that, the costs of Moldovan bulk produced with red grapes harvested between 10 and 12 tons / ha, is cheaper than French red IGP (0.655€/lt in Moldova compared with 0.74€ /lt for 10.8 tons per ha).
However, when the harvest is lower than 10 tons per ha, Moldovan bulk is no longer competitive compared with French IGP bulk wine harvested between 10 and 12 tons per ha (0.894€/lt in Moldova compared with 0.74€/lt)

Table 9 – Average cost of production of bulk wine in Moldova compared with IGP producer (€/lt)

€/Lt	Lower quality (>12T/ha)		Medium quality (between 12 and 10 T/ha)		Top quality without barrel ageing Lower that 10T/ha		Top quality with barrel ageing (lower than 10 T/ha)		France Red IGP	
Exchange rate €/MDL 18,5	Red		Red		Red		Red	Red	€/lt	%
	€/lt	%	€/lt	%	€/lt	%	€/lt	%		
Average cost of grape	**0,226**	**44,52%**	**0,284**	**43,31%**	**0,284**	**31,71%**	**0,443**	**13,22%**	0,49	66,19%
Oenological materials	**0,053**	**10,43%**	**0,087**	**13,22%**	**0,205**	**22,96%**	**0,222**	**6,61%**	0,0088	1,19%
Cost of bulk	**0,080**	**15,80%**	**0,136**	**20,75%**						
Barrels							2,224	**66,34%**		
Labour	0,074	**14,45%**	0,074	**11,23%**	0,099	**11,05%**	0,099	**2,95%**	0,048	6,48%
Energy	0,029	**5,71%**	0,029	**4,43%**	0,029	**3,21%**	0,029	**0,86%**	0,0067	0,90%
Outside services	0,001	**0,19%**	0,001	**0,15%**	0,112	**12,48%**	0,112	**3,33%**	0,0342	4,62%
Maintenance	0,014	**2,71%**	0,014	**2,10%**	0,004	**0,46%**	0,004	**0,12%**	0,0427	5,76%
Technical losses + other expenses	0,009	**1,71%**	0,009	**1,33%**	0,035	**3,91%**	0,034	**1,02%**		
Depreciation	0,023	**4,48%**	0,023	**3,48%**	0,127	**14,22%**	0,186	**5,56%**	0,11	14,86%
Cost production of bulk	**0,509**	**100,00%**	**0,655**	**100,00%**	**0,894**	**100,00%**	**3,353**	**100,00%**	**0,740**	

Competitive

Not competitive

The decrease of competitiveness of Moldova for producing bulk wines is coming from three main Cost clusters: Oenological materials, Labour and Energy:

- Oenological materials represents more than 10.43% of the costs of producing bulk in Moldova compared with 1.19% in france
- Labour costs is 14.45% of the total cost of bulk production in Moldova compared with 6.48% in France, despite the fact that the hourly wage in France is much higher in France (14.28€/h)
- Energy (water, electricity and gas) represent 5.71% in Moldova compared with 0.90% in France.

(iii) Cost of IGP bottled wine

"Wine processing Cost cluster (13) to (17)"

The dry goods (750ml bottle, cork, cap, labels, case) of French IGP, costs 0.65€ per liter of wine produced.

In Moldova, the same clusters are heading up to 0.395€/lt for wines produced in Moldova at more than 12 tons/ha but goes up to 0.655€ per liter of wine produced when the harvest yield is less than 10 tons per ha.

According to data collected, it also appears that Moldova is obtaining competitive prices for BIBs (0.216€/lt in Moldova compared with 0.23€/lt in France).

"Wine processing Cost cluster (18) – Labour for bottling"

Cost of labour for bottling IGP is 0.04€/lt.

When bottling wines made with harvested grapes higher than 10 tons / ha, Moldova has a competitive advantage (0.021€/lt). However, when wines are from grapes harvested at less than 10 tons per ha, the cost of the labour is higher in Moldova than in France, despite a hourly wage much higher in France.

"Wine processing Cost cluster (20) – Bottled wine"

It appears once again, that Moldova is more competitive with wines made with grapes harvested at more than 12 tons per ha. When yield is down to 10 tons per ha, then it is the IGP production that becomes more competitive (1.660€/lt for IGP compared with 1.683€/lt for Moldova).

Table 10 – Cost of production of bottled wines in Moldova compared with a French IGP producer (€/lt)

€/Lt									France	
Exchange rate €/MDL	Lower quality (>12T/ha)		Medium quality (between 12 and 10 T/ha)		Top quality without barrel ageing Lower that 10T/ha		Top quality with barrel ageing (lower than 10 T/ha)		Red IGP	
18,5	Red		Red		Red		Red	Red	€/lt	%
Cost production of bulk	0,509	54,44%	0,655	55,78%	0,894	53,14%	3,353	65,30%	0,740	44,59%
Bottle	0,232	24,88%	0,243	20,72%	0,286	16,99%	0,886	17,26%		
Cork	0,031	3,32%	0,051	4,37%	0,081	4,84%	0,188	3,67%		
Cap	0,012	1,27%	0,025	2,12%	0,030	1,76%	0,301	5,87%		
Label + Back	0,054	5,79%	0,103	8,80%	0,148	8,79%	0,151	2,93%		
Case + other packaging	0,065	6,99%	0,065	5,57%	0,110	6,55%	0,122	2,37%		
Costs of packaged bottle	*0,395*	*42,25%*	*0,488*	*41,59%*	*0,655*	*38,93%*	*1,648*	*32,10%*	0,65	39,15%
Screw Cap	0,022	2,39%	0,022	1,95%						
BIBs	0,216	26,33%	0,216	22,35%					0,23	20,71%
Other packing materials, MDL/Lt										
Labour	0,021	2,28%	0,021	1,81%	0,083	4,93%	0,083	1,62%	0,04	2,41%
Depreciation	0,010	1,04%	0,010	0,83%	0,050	2,99%	0,050	0,98%	0,03	1,81%
Cost of bottle (€/lt)	**0,934**	**100,00%**	**1,174**	**100,00%**	**1,683**	**100,00%**	**5,134**	**100,00%**	**1,660**	

Competitive **Not competitive**

5.2.2 Benchmark 2 - Comparison with Producers of bulk Red AOP with yield between 8 and 10 tons/ha (See Annex C)

This benchmark is comparing costs of wine production in Moldova with a red wine producer harvesting grapes between 8 and 10 tons/ha[5], from average aged vineyard of 15 to 25 years, planted at 3,333 vines per ha. The wine produced is a red AOP produced in France (Bordeaux) at 55 hl/ha.
It could be assumed that the wine produced is aiming at being of lower to medium quality.
Costs of labor (including all taxes) are: 23€/h for permanent workers and 16 to 18€/h for seasonal workers.
This producer is selling 100% bulk.

(i) Cost of grape production for AOP – "Wine processing cluster (1)"

The total costs of producing and harvesting (mechanical) grapes dedicated to producing AOP wines in France to be sold bulk, are evaluated at an average of 3,862€ per ha.
With an average yield of 8,250kg/ha, the cost per kg of grape harvested is then: 0.468€/kg.
It then appears that costs of production of red grapes harvested in Moldova, are significantly lower than AOP red grapes harvested in France.

Table 11 – Average cost of production of red grapes in Moldova compared with French red AOP producers selling in bulk (€/Kg)

Benchmark 2	€/kg	Red wines					
		> 12 tons par ha		10 to 12 tons per ha		<10 tons per ha	
Moldova	Cost of production and harvesting grapes in Moldova	0,151		0,189		0,296	
France	Cost of production AOP at 8 to 10t/ha mechanically (3,333 vines/ha)	0,680	350%	0,624	230%	0,468	58%

The average Costs of grapes per liter (AOP at 55hl/ha), is then 0.702€/lt for mechanical harvesting.
It then appears that cost of production of grapes in Moldova is significantly lower than producing AOP in France.

Table 12 – Average cost of production of red grapes in Moldova compared with French red AOP producers selling in bulk (€/Lt)

Benchmark 2	€/l	Red wines					
		> 12 tons par ha		10 to 12 tons per ha		<10 tons per ha	
Moldova	Cost of production and harvesting grapes in Moldova	0,226		0,284		0,443	
France	Cost of production AOP at 8 to 10t/ha mechanically (3,333 vines/ha)	0,702	210%	0,702	148%	0,702	58%

[5] On average, 8,250kg per ha have been used for calculation.

(ii) Cost of AOP bulk wine production

"Wine processing Cost cluster (2) + (3) – Oenological material"
For producing red AOP, the average costs of oenological materials for processing grapes into finished wine, is 285€ per 100hl of wine produced, equivalent to 0.0285€/litre of wine produced.

"Wine processing Cost cluster (4)– Barrel ageing"
This cluster is not relevant for AOP wines sold bulk as no barrel ageing is conducted.

"Wine processing Cost cluster (5) – Labour for wine making"
For labour, it is estimated that an average of 50h is necessary to vinify 100hl of AOP wines. Permanent workers are paid, all tax included, at 23€/h. So the total amount spent on labour for 100hl is 1,150€, equivalent to 0.115€/litre of wine produced.

"Wine processing Cost cluster (6) – Energy"
The cost of energy (electricity, water) is 159€ per 100hl vinified, equivalent to 0.0159€/litre.

"Wine processing Cost cluster (7) – Outside services"
The average costs of Laboratory analysis + Consulting services from local oenologist + other outside services including insurance, is 233€ for 100hl vinified , equivalent to 0.0233€/litre.

"Wine processing Cost cluster (8) Technical losses + (9) maintenance equipment + (10) – Other expenses"
It is not individualized and is included in other clusters.

"Wine processing Cost cluster (11) – Building and winemaking equipment depreciation"
Cost of depreciation[6] of the equipment and buildings is 0.0673€/litre.

"Wine processing Cost cluster (12) – Bulk wine"
The cost of production of bulk red AOP in France at an average of 8,250kg/ha and 55hl/ha is then estimated at : **0.952€/litre**.

It then appears that, the cost of Moldovan bulk is more competitive than AOP French wines if it is produced with red grapes harvested at more than 10 tons / ha. If the yield is lower than 10 tons per ha, then Moldovan bulk is still competitive but the difference in costs (0.894€/lt for Moldova and 0.952€/lt for AOP) is no longer that obvious.

[6] The depreciation is 7 years for equipment without motorization, 8 years for vineyards equipment and 20 years for buildings.

Table 13 – Average cost of production of bulk wine in Moldova compared with a French AOP producer producing bulk (€/lt)

€/Lt								
Exchange rate €/MDL	Medium quality (between 12 and 10 T/ha)		Top quality without barrel ageing Lower that 10T/ha		Top quality with barrel ageing (lower than 10 T/ha)		France Red AOP	
18,5								
	Red		**Red**		**Red**		€/lt	%
	€/lt	**%**	**€/lt**	**%**	**€/lt**	**%**		
Average cost of grape	**0,284**	**43,31%**	**0,284**	**31,71%**	**0,443**	**13,22%**	0,7022	73,74%
Oenological materials	**0,087**	**13,22%**	**0,205**	**22,96%**	**0,222**	**6,61%**	0,0285	2,99%
Cost of bulk	**0,136**	**20,75%**						
Barrels					2,224	**66,34%**		
Labour	0,074	**11,23%**	0,099	**11,05%**	0,099	**2,95%**	0,115	12,08%
Energy	0,029	**4,43%**	0,029	**3,21%**	0,029	**0,86%**	0,0159	1,67%
Outside services	0,001	**0,15%**	0,112	**12,48%**	0,112	**3,33%**	0,0233	2,45%
Maintenance	0,014	**2,10%**	0,004	**0,46%**	0,004	**0,12%**		0,00%
Technical losses + other expe	0,009	**1,33%**	0,035	**3,91%**	0,034	**1,02%**		
Depreciation	0,023	**3,48%**	0,127	**14,22%**	0,186	**5,56%**	0,0281	2,95%
							0,0392	4,12%
Cost production of bulk	**0,655**	**100,00%**	**0,894**	**100,00%**	**3,353**	**100,00%**	**0,952**	**100,00%**

Competitive

5.2.3 Benchmark 3. Comparison with producers of bottled Red AOP at below 8 tons/ha (See Annex D)

This benchmark is comparing costs of wine production in Moldova with a French red wine producer harvesting grapes below 8 tons per ha[7], from average aged vineyard of 15 to 25 years, planted at 3,333 vines per ha. The wine produced is a red AOP at 50 hl/ha.
It could be considered that the wine produced is aiming at being top quality.
Costs of labor, all tax included, are: 23€/h for permanent workers and 16 to 18€/h for seasonal workers.
This producer is selling 100% in bottle.

(i) Cost of grape production for AOP – "Wine processing cluster (1)"

The total costs of production and harvesting (mechanical) of grapes dedicated to producing red AOP wines in France, are evaluated at an average of 5,633€ per ha.

The average Cost of grapes per kg produced with a yield of an average of 7,500kg/ha, is then 0.715€/kg for mechanical harvesting.

Table 14 – Average cost of production of red grapes in Moldova compared with French red AOP producers selling in bottle (€/Kg)

Benchmark 3	€/kg	Red wines					
		> 12 tons par ha		10 to 12 tons per ha		<10 tons per ha	
Moldova	Cost of production and harvesting grapes in Moldova	0,151		0,189		0,296	
France	Cost of production AOP at lower than 8t/ha mechanically (3,333 vines/h	0,469	211%	0,5633	198%	0,715	142%

With a yield of 50hl/ha, the cost of grapes per liter of wine produced is then 0.8312€/lt for mechanical harvesting.
(If harvest was done manually, an additional cost of 2,100€/ha would have to be added)
It then appears that cost of production of grapes in Moldova is significantly lower than producing white AOP in France.

Table 15 – Average costs of production of red grapes in Moldova compared with French red AOP producers selling in bottle (€/lt)

Benchmark 3	€/l	Red wines							
		> 12 tons par ha		10 to 12 tons per ha		<10 tons per ha		<10 tons per ha	
						No barrel ageing		With barrel ageing	
Moldova	Cost of production and harvesting grapes in Moldova	0,226		0,284		0,284		0,443	
France	Cost of production AOP at 7,5t/ha mechanically (3,333 vines/ha)	0,533	135%	0,64	126%	0,64	126%	0,8312	87%

[7] On average , 7,500kg of grapes per ha was used for calculation

(i) Cost of red AOP wine production

"Wine processing Cost cluster (2) + (3) – Oenological material"
For producing red AOP wines intended to be sold in bottle, the average costs of oenological materials for processing grapes into finished wine, is 293€ per 100hl of wine produced, equivalent to 0.0293€/litre of wine produced.

"Wine processing Cost cluster (4)– Barrel ageing"
This cluster is not relevant for this Benchmark, as the wine produced for this example is not barrel aged. If the wine was barrel aged, barrel would be depreciated over 3 years. As usually barrels are 220 litres capacity and bought new at 700€, the impact on cost would be 1.06€/lt.

"Wine processing Cost cluster (5) – Labour for wine making"
For labour, it is estimated that an average of 50h is necessary to vinify 100hl of AOP wines. Permanent workers are paid, all tax included, at 23€/h. So the total amount spent on labour for 100hl is 1,150€, equivalent to 0.115€/litre of wine produced.

"Wine processing Cost cluster (6) – Energy"
The cost of energy (electricity, water) is 163€ per 100hl vinified, equivalent to 0.0163€/litre.

"Wine processing Cost cluster (7) – Outside services"
The average costs of Laboratory analysis + Consulting services from local oenologist + other outside services including insurance, is 277€ for 100hl vinified , equivalent to 0.0277€/litre.

"Wine processing Cost cluster (8) Technical losses + (9) maintenance equipment + (10) – Other expenses"
It is not individualized and is included in other clusters.

"Wine processing Cost cluster (11) – Building and winemaking equipment depreciation"
Cost of depreciation8 of the equipment and buildings is 0.0967€/litre.

"Wine processing Cost cluster (12) – Bulk wine"
The cost of production of bulk red AOP at less than 8 tons per ha intended to be bottles, is then estimated at : **1.1162€/litre.**

It appears that, the cost of Moldovan bulk produced at yield lower than 10 tons/ha is more competitive than AOP French wines if it is produced with red grapes not aged in new barrels.

[8] The depreciation is 7 years for equipment without motorization, 8 years for vineyards equipment and 20 years for buildings.

When new barrel ageing is involved, then the production costs of bulk wine in Moldova becomes higher than production costs of bulk AOP wines, and Moldova is no longer competitive (3.353€/lt in Moldova compared with 2.176€/lt for red AOP)

Table 16 – Average cost of production of bulk wine in Moldova compared with a French AOP red producer producing bulk to be bottled

€/Lt									France			
Exchange rate €/MDL	Medium quality (between 12 and 10 T/ha)		Top quality without barrel ageing Lower that 10T/ha		Top quality with barrel ageing (lower than 10 T/ha)			AOP producer			
18,5								No barrel ageing		Barrel ageing	
	Red		Red		Red	Red	80% red	€/lt	%	€/lt	%
	€/lt	%	€/lt	%	€/lt	%					
Average cost of grape	0,284	43,31%	0,284	31,71%	0,443	13,22%	7500 kg/ha - 4156 €/ha	0,8312	74,47%	0,8312	38,20%
Oenological materials	0,087	13,22%	0,205	22,96%	0,222	6,61%	2,93€/hl	0,0293	2,62%	0,0293	1,35%
Cost of bulk	0,136	20,75%									
Barrels					2,224	66,34%	New barrels (3years)			1,06	48,71%
Labour	0,074	11,23%	0,099	11,05%	0,099	2,95%	0,5h/hl/year at 23€/h	0,115	10,30%	0,115	5,28%
Energy	0,029	4,43%	0,029	3,21%	0,029	0,86%		0,0163	1,46%	0,0163	0,75%
Outside services	0,001	0,15%	0,112	12,48%	0,112	3,33%		0,0277	2,48%	0,0277	1,27%
Maintenance	0,014	2,10%	0,004	0,46%	0,004	0,12%					
Technical losses + other expenses	0,009	1,33%	0,035	3,91%	0,034	1,02%					
Depreciation	0,023	3,48%	0,127	14,22%	0,186	5,56%	depreciation of buildings	0,0603	5,40%	0,0603	2,77%
							depreciation of equipment	0,0364	3,26%	0,0364	1,67%
Cost production of bulk	0,655	100,00%	0,894	100,00%	3,353	100,00%		1,1162	100,00%	2,1762	100,00%

Competitive

Not Competitive

(ii) Cost of AOP bottled wine

"Wine processing Cost cluster (13) to (17)"

The dry goods (bottle, cork, cap labels and case) of 750ml bottle used for bottling French AOP without barrel ageing, costs 1.3699€ per liter of wine produced.

In Moldova, the same clusters are heading at 0.655€ per liter if the wine bottled is produced with harvest yield is less than 10 tons per ha and without barrel ageing.

Moldova is then more competitive than AOP wines.

With the wine produced is barrel aged, then the costs of dry goods are of better quality: 1.4588€/lt for all dry goods (bottle, cork, caps, labels and case) for red AOP compared with 1.648€/lt in Moldova.

Moldova is then less competitive than AOP wines

"Wine processing Cost cluster (18) – Labour for bottling"

Cost of labour for bottling AOP is 0.3591€/lt.

To this cost of labour, it should be added the cost of using outside services (bottling services companies) that would provide the service of putting the wine inside the bottle, adding the cork, the cap, the label and putting the packaged bottle in the final case.

The average cost of such services are around 6,916€ per 100hl, eq to 0.6916€/lt.

"Wine processing Cost cluster (20) – Bottled wine"

It appears that Moldova, when producing wine without barrel ageing at less than 10 tons per ha, is more competitive than similar AOP wines.

However, the use of new barrels and the additional costs generated by improving the packaging of the finish bottle is making Moldova loose it competitiveness: AOP wines aged in new barrels have a cost so production of 4.6857€/lt compared with 5.134€/lt in Moldova.

Table 17 – Cost of production of bottled wines in Moldova compared with a French red AOP producer

€/Lt								France			
Exchange rate €/MDL	Medium quality (between 12 and 10 T/ha)		Top quality without barrel ageing Lower that 10T/ha		Top quality with barrel ageing (lower than 10 T/ha)			AOP producer			
18,5								No barrel ageing		Barrel ageing	
	Red		Red		Red	Red	80% red	€/lt	%	€/lt	%
Cost production of bulk	0,655	55,78%	0,894	53,14%	3,353	65,30%		1,1162	31,56%	2,1762	46,44%
Bottle	0,243	20,72%	0,286	16,99%	0,886	17,26%					
Cork	0,051	4,37%	0,081	4,84%	0,188	3,67%					
Cap	0,025	2,12%	0,030	1,76%	0,301	5,87%					
Label + Back	0,103	8,80%	0,148	8,79%	0,151	2,93%					
Case + other packaging	0,065	5,57%	0,110	6,55%	0,122	2,37%					
Costs of packaged bottle	*0,488*	*41,59%*	*0,655*	*38,93%*	*1,648*	*32,10%*	Bottle + cork + cap+ labels + Case	1,3699	38,73%	1,4588	31,13%
Screw Cap	0,022	1,95%									
BIBs	0,216	22,35%									
Other packing materials, MDL/Lt											
Labour	0,021	1,81%	0,083	4,93%	0,083	1,62%	Labour for bottling	0,3591	10,15%	0,3591	7,66%
							outside services for bottling	0,6916	19,55%	0,6916	14,76%
Depreciation	0,010	0,83%	0,050	2,99%	0,050	0,98%					
Cost of bulk	**0,655**		**0,894**		**3,353**		**TOTAL cost if selling bulk**	**1,1162**		**2,1762**	
Cost of bottle (€/lt)	**1,174**	**100,00%**	**1,683**	**100,00%**	**5,134**	**100,00%**	**Total cot if selling in bottle**	**3,5368**	**100,00%**	**4,6857**	**100,00%**

Bottling of is done by an external company

Competitive

Not Competitive

5.2.4 Benchmark 4: Comparison with French producers of bottled white AOP produced between 8 and 10 tons/ha (See Annex E)

This benchmark is comparing costs of wine production in Moldova with a wine producer of white AOP and harvesting grapes between 8 and 10[9] tons/ha, from average aged vineyard of 15 to 25 years, planted at 4,166 vines per ha.
The wine produced is a white AOP at 55 hl/ha.
It could be considered that the wine produced is aiming to be of a medium to top quality.
Average costs of labor is 15.90€/h for all workers (without company social taxes).
This producer is selling 35% in bottle, the rest bulk.

(i) Cost of grape production for white AOP– "Wine processing cluster (1)"

The total costs of production and harvesting (mechanical) of grapes dedicated to producing white AOP wines in France, is evaluated at on average to 6,888€ per ha.
The average costs of grapes per liter of wine produced with an average yield of 8,250kg/ha, is then 0.834€/kg
It then appears that cost of production of grapes in Moldova is significantly lower than producing white AOP in France.

Table 18 – Average cost of production of white grapes in Moldova compared with French white AOP producers (€/kg)

Benchmark 4	€/Kg	White wines					
		> 12 tons par ha		10 to 12 tons per ha		<10 tons per ha	
						No barrel ageing	
Moldova	Cost of production and harvesting grapes in Moldova	0,159		0,212		0,297	
France	Cost of production AOP at 8 to 10t/ha mechanically (4,166 vines/ha)	0,726	356%	0,758	257%	0,834	181%

With a production of 8,250kg/ha and an average yield of 55hl/ha, white AOP grapes have a cost of production of 1.252€/lt for mechanical harvesting.
(If harvest was done manually, an additional cost of 2,100€/ha would have to be added)

Table 19 – Average cost of production of white grapes in Moldova compared with French white AOP producers (€/l of produced wine)

Benchmark 4	€/l	White wines					
		> 12 tons par ha		10 to 12 tons per ha		<10 tons per ha	
						No barrel ageing	
Moldova	Cost of production and harvesting grapes in Moldova	0,239		0,319		0,319	
France	Cost of production AOP at 8 to 10t/ha mechanically (4,166 vines/ha)	1,089	356%	1,083	240%	1,089	242%

It confirms that Moldova has quite a significant competitive advantage in production of white grapes compared with white AOP grapes produced in France.

[9] An average of 8,250kh/ha of grapes have been used for calculation.

(ii) Costs of white AOP wine production

"Wine processing Cost cluster (2) + (3) – Oenological material"
For producing white AOP wines intended to be sold in bottle, the average costs of oenological materials for processing grapes into finished wine, is 507€ per 100hl of wine produced, equivalent to 0.0507€/litre of wine produced.

"Wine processing Cost cluster (4)– Barrel ageing"
This cluster is not relevant for this Benchmark, as no barrel ageing is conducted on the white producers used for this Benchmark.

"Wine processing Cost cluster (5) – Labour for wine making"
For the labour, it is estimated that a total of 38 hours of work is necessary to vinify 100hl. Workers are paid on an average of 15.90€/h (without company social taxes). So the total amount spent on labour is estimated at 0.0603€/litre of wine produced.

"Wine processing Cost cluster (6) – Energy"
The cost of energy (electricity, water) is 95€ per 100hl, equivalent to 0.0095€/litre.

"Wine processing Cost cluster (7) – Outside services"
The average costs of Laboratory analysis, Consulting services from local oenologist and other outside services including insurance, is 1,013€ for 100hl vinified, equivalent to 0.1013€/litre.

"Wine processing Cost cluster (8) Technical losses + (9) maintenance equipment + (10) – Other expenses"
It is not individualized and is included in other clusters.

"Wine processing Cost cluster (11) – Building and winemaking equipment depreciation"
Cost of depreciation[10] of the equipment and buildings is 0.2108€/litre.

"Wine processing Cost cluster (12) – Bulk wine"
The cost of production of bulk white AOP in France intended to be bottled, is then estimated at : 1.6846€/litre.

It then appears that costs of production of white bulk wines in Moldova is significantly lower than producing white AOP in France.

[10] The depreciation is 7 years for equipment without motorization, 8 years for vineyards equipment and 20 years for buildings

Table 20 – Average cost of production of white bulk in Moldova compared with French white AOP producers selling in bottle

€/Lt	Lower quality (>12T/ha)		Medium quality (between 12 and 10 T/ha)		Top quality without barrel ageing Lower that 10T/ha		Top quality with barrel ageing (lower than 10 T/ha)		France White AOP	
Exchange rate €/MDL 18,5	White		White		White		White		€/lt	%
	€/lt	%	€/lt	%	€/lt	%	€/lt	%		
Average cost of grape	**0,239**	**43,43%**	**0,319**	**45,57%**	**0,319**	**36,85%**	**0,446**	**33,16%**	1,252	74,32%
Oenological materials	**0,054**	**9,87%**	**0,094**	**13,45%**	**0,143**	**16,49%**	**0,159**	**11,81%**	0,0507	3,01%
Cost of bulk	**0,112**	**20,42%**	**0,142**	**20,30%**						
Barrels							0,297	**22,07%**		
Labour	0,074	**13,35%**	0,074	**10,51%**	0,099	**11,43%**	0,099	**7,35%**	0,0603	3,58%
Energy	0,025	**4,52%**	0,025	**3,56%**	0,029	**3,32%**	0,029	**2,14%**	0,0095	0,56%
Outside services	0,001	**0,17%**	0,001	**0,14%**	0,112	**12,91%**	0,112	**8,31%**	0,1013	6,01%
Maintenance	0,014	**2,50%**	0,014	**1,97%**	0,004	**0,47%**	0,004	**0,27%**		
Technical losses + other expe	0,009	**1,58%**	0,009	**1,24%**	0,035	**4,00%**	0,031	**2,31%**		
Depreciation	0,023	**4,14%**	0,023	**3,26%**	0,126	**14,53%**	0,169	**12,58%**	0,2108	12,51%
Cost production of bulk	**0,550**	**100,00%**	**0,699**	**100,00%**	**0,865**	**100,00%**	**1,344**	**100,00%**	**1,6846**	**100,00%**

(iii) Cost of AOP bottled white wine

"Wine processing Cost cluster (13) to (17)"

To the exception of BIBs, Moldova has a competitive advantage regarding prices of bottle, cork, caps, label, etc…

For BIBs, average price is 0.13€/lt compared with 0.216€/lt in Moldova.

Table 21 – Average costs between Moldova and France for dry goods used for bottled wine (€/lt)

€/Lt	Lower quality (>12T/ha)		Medium quality (between 12 and 10 T/ha)		Top quality without barrel ageing Lower that 10T/ha		France White AOP	France White AOP	
Exchange rate €/MDL 18,5	White		White		White		100% white	€/lt	%
Bottle	0,232	23,81%	0,243	19,97%	0,296	17,68%	0,25€/75cl bottle	0,3333	10,92%
Cork	0,031	3,18%	0,051	4,22%	0,082	4,92%	0,13€/cork	0,1733	5,68%
Cap	0,012	1,22%	0,025	2,04%	0,030	1,79%	0,03€/75cl bottle	0,04	1,31%
Label + Back	0,054	5,54%	0,103	8,48%	0,150	8,95%	0,10€/75cl bottle	0,1333	4,37%
Case + other packaging	0,065	6,69%	0,065	5,36%	0,118	7,04%	0,08€/75cl bottle	0,1067	3,50%
Costs of packaged bottle	*0,395*	*40,44%*	*0,488*	*40,07%*	*0,676*	*40,38%*		*0,7867*	*25,78%*
Screw Cap	0,022	2,29%	0,022	1,87%					
BIBs	0,216	25,06%	0,216	21,37%			0,13€/lt	0,13	5,67%

Table 22 – Average costs in France of dry goods

€/bt	Average cost in France for dry goods	
	Medium quality	**Top quality**
Bottle 750ml	0,25€/75cl bottle	0,47€/75cl bottle
Cork	0,13€/cork	0,23€/cork
Cap	0,03€/75cl bottle	0,03€/75cl bottle
Labels	0,10€/75cl bottle	0,12€/75cl bottle
case	0,08€/75cl bottle	0,08€/75cl bottle

Source: Chambre d'Agriculutre Loire -Atlantique

"Wine processing Cost cluster (18) – Labour for bottling"

Cost of labour for bottling AOP is 0.05€/lt.

To this cost of labour, it should be added the cost of using outside services (bottling services companies) that would provide the service of putting the wine inside the bottle, adding the cork, the cap, the label and putting the packaged bottle in the final case.

The average cost of such services are around 2,000€ per 100hl, eq to 0.2€/lt.

"Wine processing Cost cluster (20) – Bottled wine"

A bottle of French white AOP costs 3.0513€/lt to be produced, compared to 1.674€/lt for top quality wines produced in Moldova harvested at yield below 10 tons per ha.

Moldova appears to have significant competitive advantage in white wine production compared with AOP white wine production in France.

Table 23 – Cost of production of bottled wines in Moldova compared with a French white AOP producer

€/Lt							France	France	
Exchange rate €/MDL	Lower quality (>12T/ha)		Medium quality (between 12 and 10 T/ha)		Top quality without barrel ageing Lower that 10T/ha		White AOP	White AOP	
18,5	**White**		**White**		**White**		**100% white**	€/lt	%
Bottle	0,232	23,81%	0,243	19,97%	0,296	17,68%	0,25€/75cl bottle	0,3333	10,92%
Cork	0,031	3,18%	0,051	4,22%	0,082	4,92%	0,13€/cork	0,1733	5,68%
Cap	0,012	1,22%	0,025	2,04%	0,030	1,79%	0,03€/75cl bottle	0,04	1,31%
Label + Back	0,054	5,54%	0,103	8,48%	0,150	8,95%	0,10€/75cl bottle	0,1333	4,37%
Case + other packaging	0,065	6,69%	0,065	5,36%	0,118	7,04%	0,08€/75cl bottle	0,1067	3,50%
Costs of packaged bottle	*0,395*	*40,44%*	*0,488*	*40,07%*	*0,676*	*40,38%*		*0,7867*	*25,78%*
Screw Cap	0,022	2,29%	0,022	1,87%					
BIBs	0,216	25,06%	0,216	21,37%			0,13€/lt	0,13	5,67%
Other packing materials, MDL/Lt									
Labour	0,021	2,18%	0,021	1,74%	0,083	4,96%	500bt/h	0,05	1,64%
							outside service for bottling in BIBs	0,1	4,36%
							outside service for bottling in bottles	0,2	6,55%
Depreciation	0,010	1,00%	0,010	0,80%	0,050	3,01%		0,17	5,57%
							Tax and administratives expenses	0,16	5,24%
Cost of bulk	**0,550**		**0,699**		**0,865**		**TOTAL cost if selling bulk**	**1,6846**	
Cost of bottle (€/lt)	**0,976**	**100,00%**	**1,218**	**100,00%**	**1,674**	**100,00%**	**Total cot if selling in bottle**	**3,0513**	

5.2.5 Benchmark 5. Comparison with Spanish wine growers: example of Rioja (See Annex F)

Francisco Guillermo Cervantes Medina[11], has analysed costs structure of wines made in PDO Rioja Region:

- Tinto Joven: wines in their first or second year, which keep their primary freshness and fruitiness.
- Crianza: Wines which are at least in their third year, having spent a minimum of one year in casks. For white wines, the minimum cask ageing period is 6 months.

Results of the benchmark are the followings:

Table 24 – Cost of production of bottled "Tinto Joven" wines in Rioja

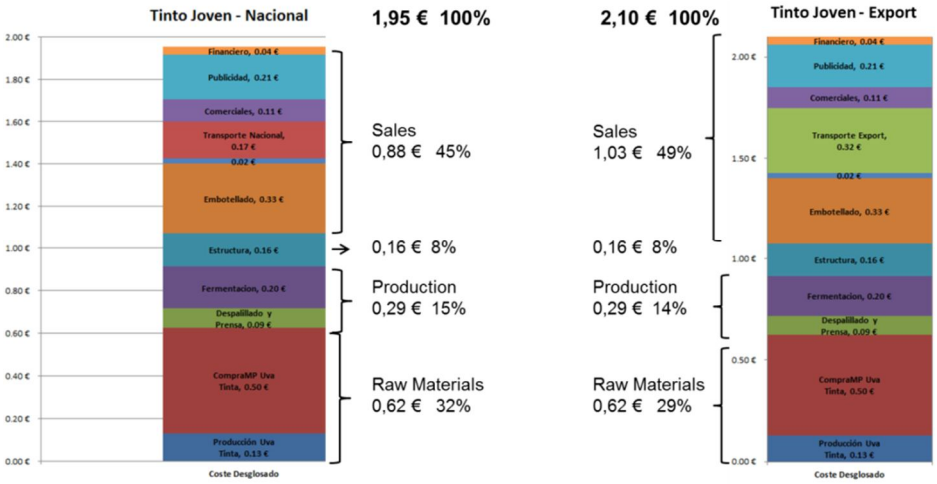
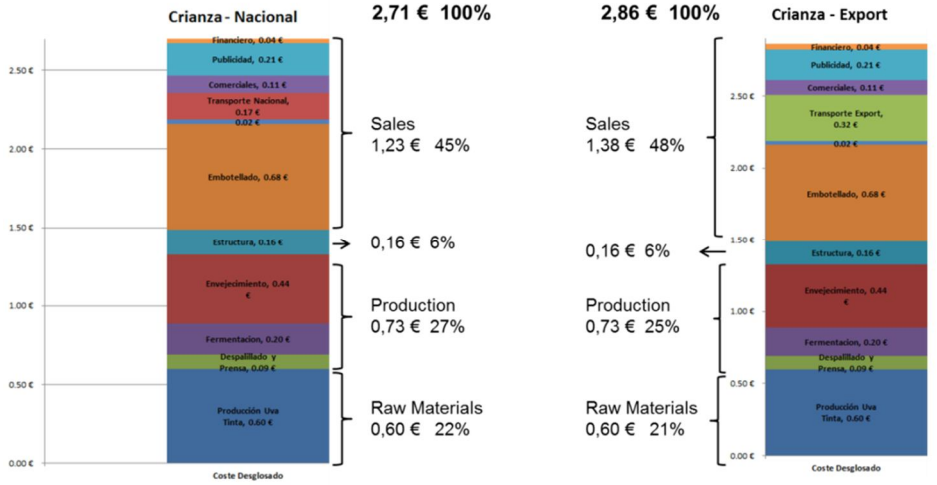


Table 25 – Cost of production of bottled "Crianza" wines in Rioja



[11] Club de Marketing de la Rioja – Presentation of April 13, 2015.

When compared with costs of production in Moldova, we have the following results:

Table 26 – Cost of production of bottled wines in Moldova compared with wines from the Rioja Region (Spain)

€/Lt									Wines from Rioja			
Exchange rate €/MDL	Lower quality (>12T/ha)		Medium quality (between 12 and 10 T/ha)		Top quality without barrel ageing Lower that 10T/ha		Top quality with barrel ageing (lower than 10 T/ha)		Benchmark 5			
18,5	Red		Red		Red		Red	Red	Joven Tinto		Crianza	
	€/lt	%	€/lt	%	€/lt	%	€/lt	%				
Average cost of grape	**0,226**	**44,52%**	**0,284**	**43,31%**	**0,284**	**31,71%**	**0,443**	**13,22%**	0,13	22,4%	0,6	40,3%
Oenological materials	**0,053**	**10,43%**	**0,087**	**13,22%**	**0,205**	**22,96%**	**0,222**	**6,61%**	0,29	50,0%	0,73	49,0%
Cost of bulk	**0,080**	**15,80%**	**0,136**	**20,75%**								
Barrels							2,224	**66,34%**				
Labour	0,074	**14,45%**	0,074	**11,23%**	0,099	**11,05%**	0,099	**2,95%**	0,16	27,6%	0,16	10,7%
Energy	0,029	**5,71%**	0,029	**4,43%**	0,029	**3,21%**	0,029	**0,86%**				
Outside services	0,001	**0,19%**	0,001	**0,15%**	0,112	**12,48%**	0,112	**3,33%**				
Maintenance	0,014	**2,71%**	0,014	**2,10%**	0,004	**0,46%**	0,004	**0,12%**				
Technical losses + other expenses	0,009	**1,71%**	0,009	**1,33%**	0,035	**3,91%**	0,034	**1,02%**				
Depreciation	0,023	**4,48%**	0,023	**3,48%**	0,127	**14,22%**	0,186	**5,56%**				
Cost production of bulk	**0,509**	**100,00%**	**0,655**	**100,00%**	**0,894**	**100,00%**	**3,353**	**100,00%**	**0,58**	**100,0%**	**1,49**	**100,0%**
Cost production of bulk	0,509	54,44%	0,655	55,78%	0,894	53,14%	3,353	65,30%	0,58	63,7%	1,49	68,7%
Bottle	0,232	24,88%	0,243	20,72%	0,286	16,99%	0,886	17,26%	0,33	36,3%	0,68	31,3%
Cork	0,031	3,32%	0,051	4,37%	0,081	4,84%	0,188	3,67%				
Cap	0,012	1,27%	0,025	2,12%	0,030	1,76%	0,301	5,87%				
Label + Back	0,054	5,79%	0,103	8,80%	0,148	8,79%	0,151	2,93%				
Case + other packaging	0,065	6,99%	0,065	5,57%	0,110	6,55%	0,122	2,37%				
Costs of packaged bottle	*0,395*	*42,25%*	*0,488*	*41,59%*	*0,655*	*38,93%*	*1,648*	*32,10%*				
Screw Cap	0,022	2,39%	0,022	1,95%								
BIBs	0,216	26,33%	0,216	22,35%								
Other packing materials, MDL/Lt												
Labour	0,021	2,28%	0,021	1,81%	0,083	4,93%	0,083	1,62%				
Depreciation	0,010	1,04%	0,010	0,83%	0,050	2,99%	0,050	0,98%				
Cost of bulk	**0,509**		**0,655**		**0,894**		**3,353**					
Cost of bottle (€/lt)	**0,934**	**100,00%**	**1,174**	**100,00%**	**1,683**	**100,00%**	**5,134**	**100,00%**	**0,91**		**2,17**	

From this Benchmark, it is difficult to make comparable prices of finished bottled wines.

However, prices of bulk could be compared and it appears that Moldova is competitive against Joven (young) wines from Rioja, if the yield per ha is higher than 12 tons per hectare. If Moldova is producing at a lower yield, then costs of production in Moldova is no longer competitive.

5.2.6 Benchmark 6. Comparison with New Zealand wine growers (See Annex G)

The benchmark survey on New Zealand costs of wine production is based on the 2013 Survey conducted by Deloitte and the New Zealand Winegrowers association.
This survey is analysing the profitability of the industry based on a group of companies that represents 50% of the New Zealand wine export in value.
This survey splits companies into five size categories based on total revenue.
The summary of the revenue analysis is the following and is showing that the companies analysed are mostly selling bottled wines:

Table 27 –Wine and grape revenues of New Zealand group of companies (Source 2013 Survey – Deloitte)

2013 Survey	$0-$1,5 m NZ$	$1,5-$5 m NZ$	$5-$10 m NZ$	$10-$20 m NZ$	>$20 m NZ$
Net cases sales revenue	71,8%	81,1%	83,5%	85,2%	90,8%
Bulk wine sales domestic	9,4%	5,1%	4,1%	1,6%	1,4%
Bulk wines sales export	0,0%	0,0%	2,4%	7,3%	5,5%
Grapes sales	13,3%	5,5%	0,0%	0,7%	0,3%
Other revenues	5,4%	8,3%	10,0%	5,2%	2,0%

The financial data provided through this survey is giving ratios and values based on sales revenues. We then had to recalculate the actual Costs of production based on quantity of wine produced, in order to make the analysis comparable with the rest of the benchmark provided in this Report. Only the percentage of the "Wine making costs Clusters" could be compared

Table 28 – Comparison of costs of production of grapes and wines between New Zealand and Moldova in % (Source 2013 Survey – Deloitte)

€/Lt							New Zealand - Benchmark 6				
Exchange rate €/MDL	Lower quality (>12T/ha)	Medium quality (between 12 and 10 T/ha)	Top quality without barrel ageing Lower that 10T/ha	Top quality with barrel ageing (lower than 10 T/ha)			< $1,5 m NZ$	$1,5 - $5 m NZ$	$5 - $10 m NZ$	$10 - $20 m NZ$	>$20 m NZ$
18,5	Red	Red	Red	Red			% of cost	% of cost	% of cost	% of cost	% of cost
	%	%	%	%							
Average cost of grape	**44,52%**	**43,31%**	**31,71%**	**13,22%**	Costs of grapes	$NZ/ton	70,62%	na	76,48%	86,16%	78,09%
Oenological materials	**10,43%**	**13,22%**	**22,96%**	**6,61%**	Winemaking supplies		13,59%	na	11,95%	4,71%	5,05%
Labour	**14,45%**	**11,23%**	**11,05%**	**2,95%**	Winemaking labour		15,79%	na	11,57%	9,14%	16,86%
Cost production of bulk	**100,00%**	**100,00%**	**100,00%**	**100,00%**			**100,00%**	**100,00%**	**100,00%**	**100,00%**	**100,00%**
Cost production of bulk	54,44%	55,78%	53,14%	65,30%			45,97%	na	63,68%	66,99%	59,55%
Costs of packaged bottle	*42,25%*	*41,59%*	*38,93%*	*32,10%*	Total bottling costs		12,00%	na	7,61%	9,46%	1,16%
Other packing materials, MDL/Lt					Other packaging		25,26%	na	17,92%	18,18%	34,11%
Depreciation	1,04%	0,83%	2,99%	0,98%	Depreciation		16,77%	na	10,80%	5,37%	5,19%
Cost of bottle (€/lt)	**100,00%**	**100,00%**	**100,00%**	**100,00%**			**100,00%**	**0,00%**	**100,00%**	**100,00%**	**100,00%**

The main conclusions drawn from this Survey and that could usefully be compared with Moldova, are that (1) New Zealand wine growing companies are spending a high percentage of their costs into packaging other than the classical dry goods: 25% to 34% of the cost of production of a bottles wine is attributed to packaging other than the dry goods (bottle, cork, cap, etc…). It is only 2 to 7% in Moldova. (2) The wine making materials account for 4.71% to 13.59% of the cost of bulk wines, compared to 6.61% to 22.96% in Moldova.

6 Sources of improvement of efficiency and cost cuttings for the production of wines in Moldova

From this benchmarking exercise, the following conclusions and recommendations could be formulated to improve efficiency and identify possible cost cuttings for the production of wines in Moldova:

i. Grape production costs

Results of the benchmarking exercise on efficiency of Moldova for grape growing

- When the yield of grape production in Moldova is higher than 12 tons per ha, costs of grape production in Moldova (in Euro per Kg of grape, or in Euro per liter of wine produced), appears to be lower than in the other countries analysed: average cost of production in Moldova is around 0.226€ per liter of wine produced, compared with 0.49€ per liter for IGP producers.
- However, when Moldovan producers are harvesting at less than 10 tons per hectare, the costs of production are increased to 0.443€ per liter of wine produced, compared with 0.49€ per liter for IGP producers. It then makes Moldova no longer competitive with foreign countries conducting mechanical harvesting at <10 tons/ha and reaching an average cost of production of 0.36€ per liter. It should be noticed that, when foreign producers are harvesting manually at 10 tons per ha, their costs of production is higher than Moldova, but not by much (0.45€/lt of wine produced compared with 0.443€ per liter in Moldova).
- Unfortunately, as stated, it is very usual in Moldova to experience yield of grape production lower than 10 tons per ha.

Why Moldovan grape growers are facing difficulties ?

- Our field observations and through discussion with the local grape growers and oenologists, it seems that Moldova, due to its continental weather pattern, has to face some specific weather conditions that have a direct influence on its grape production efficiency:
  - Yield of kg of grapes per ha could heavily fluctuate from one year to another one: harvest at less than 5 to 6 tons per hectare in Moldova, instead of the normal 10 to 12 tons per ha in other countries, is not unusual.
  - The high temperature prevailing during summer is, on many occasions, giving favourable conditions for a high level of sugar in grapes, but also generating hydric stress on vines. If the high level of sugar could be interpreted as a sign of ripeness of grapes (that is referred as the “physiological ripeness”), the hydric stress is on the contrary blocking the maturation of the skin and the seeds of the grapes (referred as the “phenolic maturity”) and then could lead to strong green tannins and harsh bitterness tastes.
  - Most of the harvests in Moldova are taking place during the day, at temperature over 25°C, in addition to being at some distance from the winery. This high temperature is increasing the possible oxidation of primary

aromas in grapes, leading to reducing aromatic characteristics of the varietals. In addition, transportation of grapes, if not handled with care, is also increasing oxidation of aromatic components and then contributing to devaluation of grapes capacities to contribute to aromatic qualities in finish wines.

ii. Bulk wine production costs

Results of the benchmarking exercise on efficiency of Moldova for bulk wine production

- When Moldova is harvesting at more than 12 tons / ha, the cost of production of bulk red wine is cheaper than French red IGP (cost of bulk is 0.655€/lt in Moldova compared with 0.74€ /lt for IGP).
- It is however no longer the case when the harvest is lower than 10 tons per ha: French IGP bulk wine produced with grapes harvested between 10 and 12 tons per ha is cheaper (0.74€/lt) than bulk produced from Moldova (0.894€/lt).
- Similar conclusions can be drawn when compared with AOP wine production. The cost of Moldovan bulk is more competitive if it is produced with red grapes harvested at more than 10 tons / ha. But if the yield is lower than 10 tons per ha, then Moldovan bulk is still competitive but the difference in costs (0.894€/lt for Moldova and 0.952€/lt for AOP) is no longer that obvious.
- It also appears that Moldova is competitive against Joven (young) wines from Rioja, if the yield per ha is higher than 12 tons per hectare. But, once again, if Moldova is producing at a lower yield, then costs of production of bulk in Moldova is no longer competitive.

Why Moldovan bulk wine producers are facing difficulties?

- Based on the current analysis and field observations, the reasons of the decrease of competitiveness for bulk wine production in Moldova, have been identified as the followings:
  - The cost of oenological products and services are very high in Moldova. As far as we could analyse, it is not the unit prices of products used that are excessive. It is the quantity used. Moldovan wine producers seem to add a lot of oenological products (tannins, gelatine, oak chips, PVPP, acids, special yeasts, nutriments, bentonite, etc…), to compensate for the lack of phenolic maturity, good sanitary conditions or lack of aromatic expression in the harvested grapes. This is noticeable both for red and white grapes.
  - As stated before, due to the high temperature prevailing during summer, hydric stress could generate green and harsh tastes in the red wines, that are compensated by the oenologists by adding tannins, gelatine and other products, increasing therefore costs of production.

- In addition, due to harvesting at temperature over 25°C, white grapes need additional protection to avoid oxidation and require additional work after pressing to express the varietal aromas, leading to increased expenses.
- In Moldova, outside consultants are often contracted for assisting in producing high quality wines, but also for bulk production. As the costs of the Consultant services are allocated evenly to the whole production, it increases production costs of bulk wines. The influence of outside services on costs production is even higher when the Consultant is also providing wine analysis in foreign laboratories.
- As a result, and according to this benchmark exercise, it appears that foreign companies are spending on oenological products plus oenological consultants and external analysis, around 0.03 to 0.05€/l of wine produced, when Moldova is spending 5 to 10 times more.
- The cost of labour for wine making in Moldova also appears high compared with other countries. This benchmark exercise is showing that on average, foreign wine companies are spending 0.38 hour to 0.5 hour per hl (100litres) vinified. Our observation seems to indicate that Moldovan wine companies are spending much more time and we would strongly recommend Moldovan companies to calculate how many hours are spend for wine making and compare the result with this ratio.

iii. Finished bottle wine production costs

Results of the benchmarking exercise on efficiency of Moldova for finish wine production

- Costs of materials used for bottling (bottle, corks, caps, labels, etc…) appear to be very competitive in Moldova, very often less expensive than in foreign countries.
- It appears that Moldova, when producing wine without barrel ageing at less than 10 tons per ha, is more competitive than similar AOP wines.
- However, the use of new barrels and the additional costs generated by improving the packaging of the finish bottle is making Moldova loose it competitiveness: AOP wines aged in new barrels has a cost of production of 4.6857€/lt compared with 5.134€/lt in Moldova.
- Moldova appears to have significant competitive advantage in white wine production compared with AOP white wine production in France. A bottle of French white AOP costs 3.0513€/lt to be produced, compared to 1.674€/lt for top quality wines produced in Moldova harvested at yield below 10 tons per ha.
- Cost of labour involved in bottling seems to be relatively high in Moldova. We would recommend comparing the efficiency of the labour used for bottling, with the data given by the benchmark exercise, indicating that, an average, around 50 hours of work are necessary to bottle 100hl.

- The amount and ratio of depreciation of buildings and equipment that was supplied to us by Moldovan producers were quite different from what was usually found from data originating from foreign countries. It then makes it difficult to dress conclusions on prices of finish product sold.
- To assist Moldovan wine companies in analysing their costs of production and compare their efficiency with foreign wine companies, we summarize under some key criteria extracted from the benchmark exercise:

Table 29 – Key efficiency criteria extracted from the benchmark exercise

Cost clusters		IGP	AOP Bulk	AOP red Bottled	AOP White bottled
Density	Vine par ha	4 000	3 333	3 333	4 164
Cost of vineyard and mecanical harvest	Per ha	3 917€	3 862€	5 633€	6 888€
Manual harvest	€ per ha H per ha	896€ 65h		2 100€ 50h	2 100€ 50h
Oenological materials	Cost to process 100hl	88€	285€	293€	507€
Barrels	Cost per litre			1.06€	
Labour for wine making	Cost for producing 100hl	33.5 hours	50 hours	50 hours	38 hours
	€ per h	Permanent: 14.28€ Seasonal: 13.64€	Permanent: 23€ Seasonal: 17€	Permanent: 23€ Seasonal: 17€	Permanent: 23€ Seasonal: 17€
Energy	Cost for producing 100hl	66€	159€	163€	95€
Outside Services (Lab + consultant)	Cost for producing 100hl	342€	233€	277€	1013€
Labour for wine bottling	Cost per liter	0.04€/lt		0.2€/lt to 0.69€/lt	
Bottle	Average unit price	0.25€ to 0.47€			
Cork		0.13€ to 0.23€			
Cap		0.03€			
Labels		0.10€ to 0.12€			
Cases		0.08€			
BIB		0.13€/lt			

Annex A - Cost of wine grapes in Moldova

We have computered the prices of grapes for two different years:

- 2013, which was considered as a difficult year due to bad weather conditions, a lot of rainfall and poor yields.
- 2014, which was a more "normal" year, with higher yield, even if a severe attack of mildew was noticed in almost all part of the country.

We have also been able to value the grapes using two different approaches:

- Wine grapes harvested, valued at cost of production
- Wine grapes sold, valued at market prices

Table A1 – Average price of wine grapes in Moldova (2013 and 2014)

	Harvested*		Bought**	
MDL/Kg	**2014**	**2013**	**2014**	**2013**
Aligoté	2,516	2,302	2,630	3,744
Bianca	2,867	3,727		
Cabernet Sauvignon	2,964	5,938	2,290	2,931
Cabernet franc	3,157	2,659		
Merlot	2,914	4,459	2,350	2,942
Muscat white	2,590	2,499		
Muscat blue	3,343	5,120		
Muscat de Hambourg	2,988	2,778		
Italian Muscat	3,343	1,991		
Muscat ottonel	2,987	3,629		
Muscat petit grain	2,997	2,098		
Petit verdot	3,157	5,137		
Pinot Noir	2,914	3,368		
Pinot blanc	3,125	7,350		
Pinot gris	3,263	5,176		
Saperavi	3,343	7,603		
Silvaner	2,867	4,141		
Syrah	2,899	4,204		
Sauvignion	2,937	3,066		3,75
Traminer	2,854	8,066		
Ugni blanc	2,779	5,023		
Malbec			2,000	
Chardonnay	2,734	4,300	2,320	3,00
Rkatsiteli				3,691
Average per year	**2,979**	**4,302**	**2,318**	**3,273**
Bought vs Harvested			**-28,5%**	**-31,4%**
Average 2013 / 2014	**3,640**		**2,796**	
Bought vs Harvested			**-30,2%**	
* Valued at production cost				
** Valued at market prices				

Comment:

Through our analysis, it appears that in Moldova, it is almost 30% cheaper to buy grapes from outside suppliers rather than producing and harvesting own grapes. This observation however does not take in consideration the differences in quality of grapes and mostly companies involved in low quality wine production would find a competitive advantage in buy grape at market prices rather than investing in their own vineyards and producing their own grapes.

Annex B : Benchmark 1. Producer of red IGP at 10 to 12 tons per ha.

- Country: France
- Source: Chambre d'Agriculture du Vaucluse

Annex C : Benchmark 2. Producer of red AOP at 8 to 10 tons per ha. Selling bulk

- Country: France
- Source: Chambre d'Agriculture de la Gironde

Annex D : Benchmark 3. Producer of red AOP below 8 tons per ha. Selling in bottle

- Country: France
- Source: Chambre d'Agriculture de la Gironde

Annex E : Benchmark 4. Producer of white AOP between 8 to 10 tons per ha. Selling in bottle

- Country: France
- Source: Chambre d'Agriculture des Pays de la Loire

Annex F : Benchmark 5. Producer of Joven Tinto and Crianza in PDO Rioja (Spain). Selling in bottle

- Country: Spain
- Source: Francisco Guillermo Cervantes Medina (2015)

Annex G : Benchmark 6. New Zealand wine growers

- Country: New Zealand
- Source: Deloitte and New Zealand winegrowers