Title/Titre : **Pira Ciba Life Cycle Assessment for Wine Packaging**

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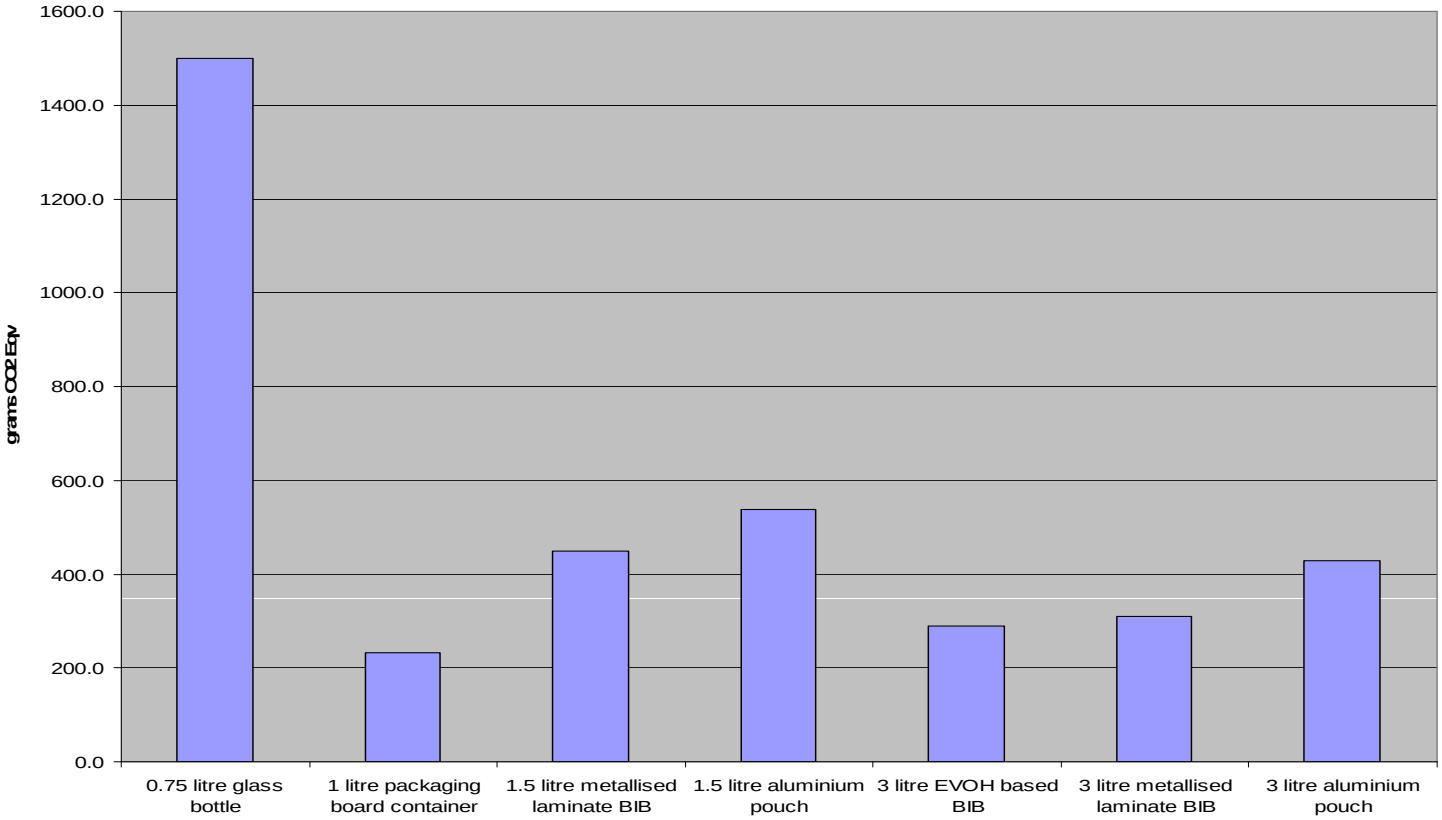
Bag-in-box v Non reusable alternatives for Wine

The impact assessment on wine containers considered 7 different packaging alternatives across all 10 Impact Categories

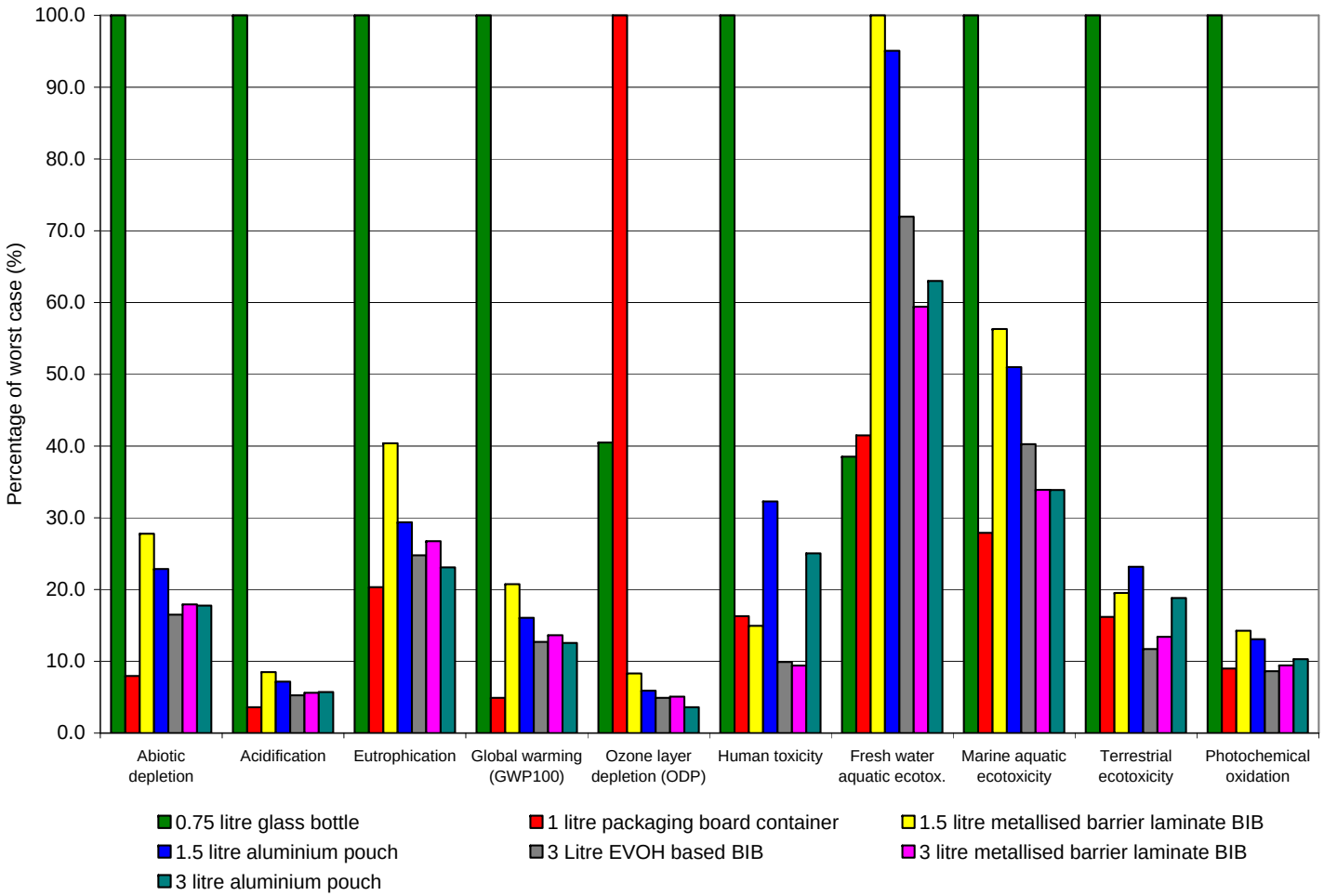
- **2 x 1.5 Litre Metallised Laminate Bag-in-Box**
- **2 x 1.5 Litre EVOH based Bag-in-Box**
- **A 3 Litre Metallised Laminate Bag-in-Box**
- **4 x 0.75 Litre Glass Bottle**
- **3 x 1 Litre Liquid Packaging Board Container**
- **2 x 1.5 Litre Aluminium Pouch**
- **A 3 Litre Aluminium Pouch**

The basic hierarchy for carbon footprint results from the 2009 Pira Ciba study is as shown below:



Note: with adjustment of Pouch to include secondary packaging)

Pira Ciba concluded (based upon an examination of 10 impact categories) that: *"The overall results indicate a general pattern of the glass bottle as the worst option, followed by the low capacity containers (1.5 litres) and then a close result between the 3 litre BIB and pouch options."*



Summary of Results

- Resource efficiency was the defining factor for wine containers comparison

- Glass bottles performed particularly badly due to its weight - worse in eight of the ten categories including acidification and global warming

- The liquid packaging board container was worse in terms of ozone layer depletion, but it was the best option in five of the ten impact categories

- Transportation played an important factor, with BIB options being superior at low distribution distances

- Overall bag-in-box containers were superior to the other packaging and competitive with the liquid packaging board. The bigger bag-in-box packs gave even greater benefits per litre packed.

Carbon Calculator

- Additional Tool based on the original data collected by PIRA
- Excel based sheet that gives the ability to alter some of the inputs such as packaging weight and transport distance and then re-calculate the Carbon Effect.
- Presents results in tabular form with text explanation of changes.

Carbon Calculator Output

Carbon Footprint for the delivery of 3 litres of wine in each packaging format (g CO2 eq.) ORIGINAL DATA

	0.75 litre glass bottle	1 litre packaging board container	1.5 litre metallised laminate BIB	1.5 litre aluminium pouch	3 litre EVOH based BIB	3 litre metallised laminate BIB	3 litre aluminium pouch
Materials & component manufacture	1651.109	-20.865	297.153	279.272	172.863	192.470	215.833
Manufacture	0.000	0.000	19.879	12.073	11.578	12.303	12.597
Transportation	496.263	20.061	49.478	17.842	33.853	34.416	14.008
End-of-life	12.863	107.160	81.857	38.030	56.071	55.575	28.615
Total	**2160.2**	**106.4**	**448.4**	**347.2**	**274.4**	**294.8**	**271.1**
Original total	**2160.2**	**106.4**	**448.4**	**347.2**	**274.4**	**294.8**	**271.1**
Change	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**

POUCH TRANSPORT PACKAGING INCLUDED

	0.75 litre glass bottle	1 litre packaging board container	1.5 litre metallised laminate BIB	1.5 litre aluminium pouch	3 litre EVOH based BIB	3 litre metallised laminate BIB	3 litre aluminium pouch
Materials & component manufacture	1651.109	-20.865	297.153	377.679	172.863	192.470	297.839
Manufacture	0.000	0.000	19.879	12.073	11.578	12.303	12.597
Transportation	496.263	20.061	49.478	54.996	33.853	34.416	44.967
End-of-life	12.863	107.160	81.857	93.105	56.071	55.575	74.511
Total	**2160.2**	**106.4**	**448.4**	**537.9**	**274.4**	**294.8**	**429.9**
Original total	**2160.2**	**106.4**	**448.4**	**347.2**	**274.4**	**294.8**	**271.1**
Change	**0.00%**	**0.00%**	**0.00%**	**54.90%**	**0.00%**	**0.00%**	**58.61%**