

The product data is as follows:

	Current VCB	Adjusted 30 ì bag	80 ì bag	Paper bag
Bag dimensions	Current	600 X 480	520 x 420	420 x(305 + 165)
Product mix	Current	One type	One type	80g paper
Weighted average thickness	14.24	30	80	-
Mass of bag (avg weighted)	5.87g	16.6g	34.4	32.6
HDPE proportion	85%	75%	0	-
LLDPE proportion	10%	20%	20	-
LDPE proportion	0%	0%	75	-
Masterbatch proportion	5%	5%	5	-
Cost/1000 bags	71.56	225.46	467.30	340

8.6.2 Change in the supply-and-demand balance

30ì situation

Plastic bags – 35% reduction in demand, of which 5% is due to paper increasing market share

Retailer category	Bags demand (billion)	Average weight per bag (g)	Cost to retailer R million	Conversion, exports and imports (units and tonnage)	Polymer usage tonnes	
Large retailer groups	1.658	16.6	373.96	Domestic 86 579 t (5 214 m bags) Exports 0 Imports 0	HD-PE	64 936
Smaller retailers Printed bags	1.504	16.6	339.116		LLD-PE	17 315
Smaller retailers Unprinted	2.052	16.6	462.838		LD-PE	0
Total	5.214		1175.914		Masterbatch	4328
						86 579

Paper bags – capture 5% market share

Retailer category	Bags demand (billion)	Average weight per bag (g)	Cost to retailer R million	Conversion, exports and imports (units and tonnage)
Large retailer groups	0.127	32.6	43.3	Domestic 13 079t (401 m bags)
Smaller retailers printed	0.115	32.6	39.3	
Smaller retailers Unprinted	0.157	32.6	53.6	
Total	0.401		136.4	

Key changes to the supply and demand balance is as follows:

- Total demand for bags reduce to 5.6 billion from just over 8 billion.
- The total cost to the retailer increases from R 571 million to R 1.2 billion.

80i situation

Plastic bags – 15% reduction in demand due to efficiency gains, and paper captures 35% market share

Retailer category	Bags demand (billion)	Average weight per bag (g)	Cost to retailer (R million)	Conversion, exports and imports (units and tonnage)	Polymer usage tonnes	
Large retailer groups	1.276	34.4	614.521	Domestic 138 012 t (4 012 m bags) Exports 0 Imports 0	HD-PE	0
Smaller retailers	1.157	34.4	517.211		LLD-PE	27 602
Printed bags					LD-PE	103 509
Smaller retailers Unprinted	1.579	34.4	760.446		Masterbatch	6 900
Total	4.012		1.932			138 012

Paper bags – capture 35% of the market

Retailer category	Bags demand (billion)	Average weight per bag (g)	Retailer spend (R million)	Conversion, exports and imports (units and tonnage)
Large retailer groups	0.893	32.6	303	Domestic 91 554 t (2 807 m bags)
Smaller retailers printed	0.809	32.6	275	
Smaller retailers Unprinted	1.105	32.6	375	
Total	2.807		954	

Key changes to the supply and demand balance is as follows:

- Total demand for bags reduce to 6.8 billion from just over 8 billion.
- The demand for plastic bags reduce to 4 billion, and paper bags increase to 2.8 billion
- The total cost to the retailer increases from R 571 million to R 2.8 billion.

8.6.3 Impact on the upstream sector

The table below depicts the changes in demand for the two products for scenario B.

	Current Situation Actual demand	30 micron scenario Changes in demand	80 micron scenario Changes in demand
HDPE Demand	37,000	+27,936	-37,000
LLDPE Demand	4,760	+12,555	+22,842
LDPE Demand	0	0	+103,509
Masterbatch	1,740	+2,588	+5,160

In summary the implications for each situation are:

30-micron scenario:

- Demand for all polymers increases with the increase in demand for HDPE being particularly significant

80-micron scenario:

- Demand for HDPE changes significantly with HDPE no longer being used for bag manufacture
- Demand for LLDPE and LDPE increases significantly with the increase for LDPE being very larg

8.6.4 Analysis of the impact on the upstream sector

Impact on HDPE

HDPE demand increases by 27,936 tons per annum in the 30 micron scenario. As before the first 10,000 tons will be able to be supplied from the current HDPE capacity surplus of 10,000 tons. This will have a positive impact on the profitability of DOW Chemicals since the production will be sold into the domestic market as opposed to exported.

- The remaining 17,936 tons will have to be imported will all the associated negative impacts of importing polymer as mentioned before in scenario A.

In the 80 micron scenario we would see all the 37,000 tons currently being sold to the VCB market having to be sold into the international market at significantly lower margins than is current. The impacts again are as per scenario A.

Impact on LLDPE

For both the 30 micron and the 80 micron scenario, there is an increase in demand for LLDPE ranging from +12,555 to +22,842 tons per annum. There is currently a shortage of locally produced LLDPE in South Africa and all of the increased demand will have to be imported.

Impact on LDPE

There is only an increase in LDPE demand in the 80 micron scenario. The increase in demand is 103,509 tons per annum. There is currently a shortage of locally produced LDPE in South Africa and all of the increased demand will have to be imported.

8.6.5 Impact on Upstream Investments

In the case of LLDPE, the scenario indicates an increase in demand from +12,555 to +22,842 tons per annum. The upper figure would clearly have an influence on any investment decision. In the case of LDPE demand in the 80 micron scenario there is increased demand of 103,509 tons per annum. A world scale plant would be required to supply this demand domestically with the same ramifications as described in scenario A.

8.6.6 Impact on the VCB conversion (plastic) industry

Production, capacity , and technology implications

The implications for production at 30i for this scenario are similar to the previous scenario, namely that the production process remains essentially the same, the raw material mix will change as specified, and that that conversion of existing technologies is possible, but there will be a cost implication.

The implications for production at 80i for this scenario where paper captures 35% of the market share are again that a vest type carrier bag cannot be manufactured at 80i and that the type of bag will change. The raw material mix will change as identified, and conversion of current equipment is technically impossible.

Available capacity	Current VCB	30 i	80 i
Total currently available	48 000 t		
Required capacity		65 000 ³⁷ t	138 013 t
Capacity shortfall/ (excess)		17 000 t	90 013 t

The shortfall in capacity for both the 30 and 80i situation will require capital investment.

Required capital investment

The capital investment required for the 30i situation is calculated in a similar fashion to the calculations in the previous scenario's. The results are as follows:

The following can therefore be concluded:

- The capital investment required by the VCB industry to adapt to an 30 i situation and meet the existing demand would be R 84 million (R 35 million to compensate in reduction in throughput speed, R 34 million to increase capacity because of increased demand and R 15 million for modifications)
- The capital investment required by the VCB industry to adapt to an 80 i situation and meet the existing demand, would be approximately R 241 million. (R 61 million to compensate in reduction in throughput speed, and R 180 million to replace and increase capacity because of increased demand.

³⁷ The required capacity is not the same as the polymer tonnages. The additional tonnages are because the product is thicker, but over 30i the throughput rate does not change. It is assumed that equipment modifications are done once

The issues around the ability of companies to recapitalise is the same as previously mentioned, namely that recapitalisation in the plastic conversion industry will probably not take place if a 80i thickness is specified.

8.6.7 Impact on the paper bag manufacturing industry

Production, capacity, and technology implications

Although incomplete data was received from the paper manufacturing industry, the following is estimated:

- The technology to manufacture paper shopping bags is available in South Africa
- The availability of raw material (paper) is not a production constraint.

The bag manufacturing industry at present have limited capacity available for the production of “shopper bags”, and spare capacity equates to approximately 200 million bags (7000 tonnes) per annum.

The demand for paper bags under a 30i situation would exceed current capacity by approximately 7000 tonnes. This is not substantial, and will require an investment of R 10 million.

The increase from current demand for paper bags would be substantial under the 80i situation (92 500 tonnes, and 2.8 billion bags). Considering the limited capacity available, it would require significant capital investments in excess of R 120 million from the paper manufacturing industry.

It was pointed out to the study team that the upstream paper manufacturing industry could supply the raw material, but it would probably be material that is currently being exported.

8.6.8 Impact on the retail industry and the consumer

The total cost of bags under the proposed regulations, assuming current demand, is summarised below.

Retailer category	Current spending (R million)	Future required spending - 30i		Future required spending - 80i	
		(R million)	% change to current	(R million)	% change to current
Large retailer groups	202	417.35	205	954	451
Smaller retailers Printed bags	181.09	378.454	205	832	451
Smaller retailers Unprinted	188.45	516.524	277	1 136	609
Total	571.54	1 312.329		2 887	

The above analysis indicates that under the 30i the efficiency improvements of a larger bag and improved packaging practices are largely offset by the increase in the cost of the bag due to its increase in dimensions. The implications are that much higher efficiency gains will have to be achieved if the cost to the retailer, who will inevitably pass it on to the consumer, is to be minimised. Whether efficiency increases additional to those assumed in this scenario can be achieved is debatable.

The impact of cheaper paper bags as a substitute product to a 80i plastic bag still produces increased costs to the retailer in the region of 400% and more. The conclusion is therefore regardless of efficiency gains, or the utilisation of paper bags as an alternative, there are substantial cost implications to the retailer, who will pas it on to the consumer. (R 500 million for a 30i situation and in excess of R 2 billion for a 80i situation.

8.6.9 Impact on the waste management industry, including recycling

For a 30i specification the impact on the waste management industry, and specifically the recycling industry, is similar to that identified in the first scenario, namely that unless additional markets are created, a maximum of 15% of VCB's produced can be realistically expected to be recycled.

Under the 80i situation, where paper bags capture a significant portion of the market, the waste management of paper should be considered. Although not researched in depth, paper recyclers indicated that less than 10% of domestic paper waste is currently recycled, and that it will be even lower for paper grocery bags. The percentage of post consumption paper bags that will end up in landfill could not be determined, and the cost of paper disposal in landfills is unknown.

8.6.10 Impact on labour and the society

The assumptions and associate social economic impact are to those stated under the previous scenario.

Scenario B, 30 Microns: Adjusted Upper Boundary (35% reduction in demand, paper takes 5% of the market)	
Change in polymer conversion	New tonnage of polymer converted: 86,579 tonnes. However, increase in size of bags in this scenario means that the effective tonnage in polymer use for calculations using labour productivity is 64,465 tonnes. Increase in polymer conversion: 20,465 tonnes
Employment area	Bases for calculation of change in employment
Upstream (Note 1).	Increase in polymer conversion < 100,000 tonnes. Therefore no change in employment.
VCB manufacturing	Increase in employment Upper limit to job creation (Notes 3 and 6) New jobs in the High Productivity VCB companies: 72.2% of 20,465 tonnes at productivity of 41.5 tonnes per employee = 356 new jobs. New jobs in the Low Productivity VCB companies: 27.8% of 20,465 tonnes at productivity of 12.7 tonnes per employee = 448 new jobs Total new jobs = 804 Lower limit to job creation (Notes 3 and 6) 100% of 20,465 tonnes at productivity of 46.7 tonnes per employee = 438 new jobs Total new jobs = 438
Paper bag manufacturing	Estimated paper bag market is R13,640,800. Estimated number of jobs created (Note 9) = 28
Plastic recycling (Note 10)	Estimated range of plastic recycling: 0 – 30,000 tonnes Higher limit to job creation: Jobs in recycling plants: 30,000 tonnes at 84 tonnes per employee = 357 new jobs Jobs in collecting plastic: 30,000 tonnes at 7 tonnes per worker = 4,286 Total higher estimate of job creation = 4,643 Lower limit to job creation = 0 (non of available extra polymer is recycled)
Retail	No change (Note 12)

Total impact on employment of Scenario B, 30 microns

Industry	Lower Limit to Employment Change	Higher Limit to Employment Change
Upstream	0	0
High Productivity VCB industry	+438	+356
Low Productivity VCB industry	0	+448
Paper bag manufacturing	+28	+28
Plastic Recycling (plants)	0	+357
Plastic Recycling (collectors)	0	+4,286
Retail	0	0
Total	+466	+5,475

Direct Socio-economic Impact of Scenario B, 30 microns

Change in Employment	Number of Workers (from previous table)		Number of people effected by change in income (note 13)	
	Lower Estimate	Higher Estimate	Lower Estimate	Higher Estimate
High Productivity Segment of VCB industry. (Also upstream and paper bag manufacturing industries). (Note 13)	+466	+384	3,448	2,842
Low Productivity Segment of VCB industry. (Also recycling jobs in plants and retail packing jobs.) (Note 13)	0	+805	0	4,267
Informal jobs in collecting plastic for recycling. (Note 13)	0	+4,286	0	12,858
Total	+466	+5,475	3,448	19,967

Scenario B, 80 Microns: Adjusted Upper Boundary (50% reduction in demand, paper takes 35% of the market)	
Change in polymer conversion	New tonnage of polymer converted: 138,013. (Note 2) Increase in polymer conversion: 94,013 tonnes
Employment area	Bases for calculation of change in employment
Upstream (Note 1)	Increase in polymer conversion < 100,000 tonnes. Therefore no change in employment.
VCB manufacturing	<p>Upper limit to job creation (Notes 2 and 6)</p> <p>Jobs in the High Productivity VCB companies producing at 46.7 tonnes per employee: 138,013 tones at 46.7 tonnes per employee = 2,955</p> <p>Minus existing jobs in the High Productivity Segment (766) = 2,189</p> <p>Minus existing jobs in the Low Productivity Segment (1,700) = 489</p> <p>Total new jobs = 489</p> <p>Lower limit to job creation (Notes 2 and 6)</p> <p>Jobs in the High Productivity VCB companies producing at 46.7 tonnes per employee: 138,013 tones at 46.7 tonnes per employee = 2,955</p> <p>Minus existing jobs in the High Productivity Segment (766) = 2,189</p> <p>Minus existing jobs in the Low Productivity Segment (2,000) = 189</p> <p>Total new jobs = 189</p>
Paper bag manufacturing	Estimated paper bag market is R95,485,600 Estimated number of jobs created (Note 9) = 199
Plastic recycling (Note 10)	Estimated range of plastic recycling: 0 – 50,000 tonnes
	<p>Higher limit to job creation:</p> <p>Jobs in recycling plants: 50,000 tonnes at 84 tonnes per employee = 595 new jobs</p> <p>Jobs in collecting plastic: 50,000 tonnes at 7 tonnes per worker = 7,143 new jobs</p> <p>Total higher estimate of job creation = 7,738</p> <p>Lower limit to job creation = 0 (non of available extra polymer is recycled)</p>
Retail	At 80 microns returns from retail questionnaire indicated an estimated 5,223 packers would loose their jobs in the small and medium retail section (Note 12). However, this contradicts the assumptions on this scenario in which reduced VCB usage is a result of more efficient packaging and use of paper bags – which, it is presumed, would not effect the number of packers. To maintain the integrity of the scenario it is, therefore, assumed that there is not impact on retail jobs.

Total impact on employment of Scenario B, 80 microns

Industry	Lower Limit to Employment Change	Higher Limit to Employment Change
Upstream	0	0
High Productivity VCB industry	+2,189	+2,189
Low Productivity VCB industry	-2,000	-1,700
Paper bag manufacturing	+199	+199
Plastic Recycling (plants)	0	+595
Plastic Recycling (collectors)	0	+7,143
Retail	Assume 0	Assume 0
Total	+388	+8,426

Direct Socio-economic Impact of Scenario B, 80 microns

Change in Employment	Number of Workers (from previous table)		Number of people effected by change in income (note 13)	
	Lower Estimate	Higher Estimate	Lower Estimate	Higher Estimate
High Productivity Segment of VCB industry. (Also upstream and paper bag manufacturing industries). (Note 13)	+2,388	+2,388	17,671	17,671
Low Productivity Segment of VCB industry. (Also recycling jobs in plants and retail packing jobs.) (Note 13)	-2,000	-1,105	(10,600)	(5,857)
Informal jobs in collecting plastic for recycling. (Note 13)	0	+7,143	0	21,429
Total	+388	+8,426	7,071	33,243

8.7 Scenario C: Limited retailer spend

The previous scenario's both assumed that retailer spend (and therefore the cost to the consumer) is unlimited. The following scenario reflects the situation if current retailer spending is unchanged.

8.7.1 Assumptions and product data

The scenario is based on the following assumptions:

- The demand is determined by the current retailer spend
- Paper, as a substitute product becomes a factor. Under a 30 ì situation the share of paper bags in the VCB industry increases from 1% to 5³⁸%. This increase is not due to paper becoming a cost-effective alternative. It is because switching costs (the difference between the cost of paper and plastic bags) are reduced. More companies who want to switch for reasons other than cost, e.g. environmental reasons, will make the switch.

Under a 80 ì scenario it is estimated that 35% of market share will shift from plastic to paper. This is based on the rationale that although paper becomes a cheaper alternative, its application has limitations, and the cost difference is not that substantial that it will result overnight in a massive shift towards paper bags. The paper manufacturing is of the opinion that the market-share could eventually stabilize at 50%, but this is a long-term scenario.

- The plastic bag dimensions do not change. Due to lower volumes of bags, there is no incentive to optimize bag dimensions
- There are no efficiency gains at the retailer (or consumer) side, i.e. the retailer (or consumer) makes no attempt to use less bags. (There would be no incentive since costs remain the same)

The product data is as follows:

	Current VCB	30 ì bag	80 ì bag	Paper bag
Bag dimensions	Current	No change	520 x 420	420 x(305 + 165)
Product mix	Current	No change	One type	80
Weighted average thickness	14.24	30	80	-
Mass of bag (avg weighted)	5.87g	12.36g	34.4	32.6
Retail spending	Total retail spending is curtailed at current limit of R 5.745 million, plus or minus the switching costs			
HDPE proportion	85%	75%	0	-
LLDPE proportion	10%	20%	20	-
LDPE proportion	0%	0%	75	-
Masterbatch proportion	5%	5%	5	-
Cost/1000 bags	71.56	167.87	467.30	340

³⁸ This is an estimate generally agreed on by the paper industry

8.7.2 Change in the supply-and-demand balance

30i situation

Plastic bags – retain 95% market share, limited retail spending

Retailer category	Available spending on bags R million	Average weight per bag (g)	Bags consumed (billion)	Conversion, exports and imports (units and tonnage)	Polymer usage tonnes	
					HD-PE	LLD-PE
Large retailer groups	191.52	12.36	1.141	Domestic 39952 t (3 232 m bags) Exports 0 Imports 0	LD-PE	7990
Smaller retailers Printed bags	179.02	12,36	1.066		0	0
Smaller retailers Unprinted	172.08	12.36	1.025		Masterbat ch	1998
Total	542.62		3.232			39952

Paper bags – capture 5% market share

Retailer category	Available spending on bags R million	Average weight per bag (g)	Bags consumed (billion)	Conversion, exports and imports (units and tonnage)
Large retailer groups	10.080	32.6	0.060	Domestic 5 546 t (170 m bags)
Smaller retailers printed	9.442	32.6	0.0561	
Smaller retailers Unprinted	9.057	32.6	0.0539	
Total	28.579		0.17	

The key changes to the supply and demand balance are as follows:

- The total number of bags available for consumption, as determined by current retailer spend reduces from just over 8 billion to 3.3 billion
- Although the number of bags reduces significantly the capacity requirements for the VCB conversion industry, as well as for polymer, reduces only slightly.

80i situation**Plastic bags – retain 65% market share – limited retail spending**

Retailer category	Available spending on bags R million	Average weight per bag (g)	Bags consumed (billion)	Conversion, exports and imports (units and tonnage)	Polymer usage tonnes	
Large retailer groups	131.040	34.4	0.272	Domestic 26 529 t (770 m bags) Exports 0 Imports 0	HD-PE	0
Smaller retailers Printed bags	122.489	34.4	0.254		LLD-PE	5304
Smaller retailers Unprinted	117.748	34.4	0.244		LD-PE	19890
					Masterbatc h	1326
Total	371.277		0.77			26520

Paper bags – capture 35% of the market

Retailer category	Available spending on bags R million	Average weight per bag (g)	Bags consumed (billion)	Conversion, exports and imports (units and tonnage)
Large retailer groups	70.56	32.6	0.146	Domestic 13 533 t (413 m bags)
Smaller retailers printed	69.95	32.6	0.136	
Smaller retailers Unprinted	63.40	32.6	0.131	
Total	203.91		0.413	

Key changes to the supply and demand balance for an 80i situation are as follows:

- The total number of bags available for consumption reduces from just over 8 billion to just over 1 billion
- The required VCB manufacturing capacity reduces from 44 000 to 26 520 tonnes per annum.

8.7.3 Impact on the upstream sector

The table below depicts the changes in demand for the two products for scenario C.

	Current Situation Actual demand	30 micron scenario Changes in demand	80 micron scenario Changes in demand
HDPE Demand	37,000	-7,036	-37,000
LLDPE Demand	4,760	+3,230	+544
LDPE Demand	0	0	+19,890
Masterbatch	1,740	258	-414

In summary the implications for each situation are:

30-micron scenario:

- Demand for HDPE declines by approximately 20%
- Marginal increase in demand for LLDPE and Masterbatch

80-micron scenario:

- Demand for HDPE changes significantly with HDPE no longer being used for bag manufacture
- Marginal increase in demand for LLDPE
- Significant increase in demand for LDPE but not nearly as large as for previous scenarios

8.7.4 Analysis of the impact on the upstream sector

Impact on HDPE

Demand for HDPE declines in all scenarios. In the 30 micron scenario, demand declines by 7,036 tons per annum and in the 80 micron scenario by 37,000 tons per annum. All of this product will have to be sold into the international market with the profit impact to DOW Plastics being a decline of R13m to a decline of R70m per annum.

Impact on LLDPE

For both the 30 micron and the 80 micron scenario, there is an increase in demand for LLDPE ranging from +544 to +3,230 tons per annum. There is currently a shortage of locally produced LLDPE in South Africa and all of the increased demand will have to be imported.

Impact on LDPE

There is only an increase in LDPE demand in the 80 micron scenario. The increase in demand is 19,890 tons per annum which is not insignificant. There is currently a shortage of locally produced LDPE in South Africa and all of the increased demand will have to be imported.

8.7.5 Impact on Upstream Investments

In the case of LLDPE, the scenario indicates a small increase in demand which is unlikely to influence any investment decision. In the case of LDPE demand in the 80 micron scenario there is increased demand of 19,890 tons per annum which could have a small influence on a currently planned upstream investment.

8.7.6 Impact on the VCB conversion (plastic) industry

Production, capacity, and technology implications

The implications for production at 30i for this scenario are in some respects similar to the previous scenario, namely that the production process remains essentially the same, the raw material mix will change as specified, and that that conversion of existing technologies is possible, but there will be a cost implication.

It is however different in that the required capacity will go down (40 000 tonnes). This does not mean that there will be no need for additional capacity. There will be a need for additional capacity because of a reduction in throughput speed, as previously explained.

The implications for production at 80i for this scenario where paper captures 35% of the market share are first of all that a vest type carrier bag cannot be manufactured at 80i and that the type of bag will change. The raw material mix will change as identified, and conversion of current equipment is technically impossible. The demand for bags comes down significantly to 26 500 tonnes per annum, and capital expenditure will relate to partial replacement of the industry with equipment to manufacture as required.

Should converters wish to continue production with existing equipment, it will have to be for markets other than VCB's (which means the bag making equipment will become redundant), or for VCB export markets. It is highly unlikely that any manufacturers except for the two largest manufacturers will be able to pursue export markets. The barriers to entry into the export markets relate to minimum volumes, extensive warehousing facilities, and sufficient cash flows. The small and medium sized manufacturers will not meet these requirements.

Required capital investment

The capital investment required for the 30 i situation will therefore relate to:

- The upgrade of existing capacity to produce at 30i – R 15 million
- The investment in additional capacity to compensate for a 40% loss in throughput speed, but also considering that there is 48 000 tonnes available in the industry. – R 19 million

The capital investment requirements under the 80i situation will relate to:

- Investment in new equipment to produce 26 500 tonnes per annum – R 54 million

The issue as to whether companies will make the required capital investments required remains the same. It can be expected that the majority of manufacturers will make the investment under the 30 i situation, but it can be expected that most, especially the smaller manufacturers will not make the investments under the 80 i situation. Small and medium sized companies indicated that they rather try and find alternative markets (in most cases markets for HD film), and if not successful exit the industry altogether.

8.7.7 Impact on the paper bag manufacturing industry

Production, capacity, and technology implications

Although incomplete data was received from the paper manufacturing industry, the following is estimated:

- The technology to manufacture paper shopping bags is available in South Africa
- The availability of raw material (paper) is not a production constraint.
- The bag manufacturing industry at present has limited capacity available for the production of “shopper bags”, and spare capacity equates to approximately 200 million bags (7000 tonnes) per annum.

Capital investment requirements

- For the 30% specification under the curtailed retailer spend scenario, where paper captures 5% of the market, there is available capacity, and no capital investment would be required
- For the 80% specification under the curtailed retailer spend scenario, where paper captures 35% of the market, there will be a capacity shortage of approximately 7000 tonnes (200 million bags). The capital investment required to fulfil the demand would be approximately R 10 million.

8.7.8 Impact on the retail industry and the consumer

The key impact under this scenario would be that there are limited numbers of bags available to the retailer (curtailed spend implies limitation on the number of bags).

Retailer spending (R million)		Current consumption (bag units, billions)	Maximum bag consumption 30% - billions			Maximum bag consumption - 80% -		
			Plastic bags	Paper bags	% reduction	Plastic bags reduction	Paper bags	%
Large retail	203.44	2.552	1.14	0.06	53	0.27	0.14	84
Small printed	184.86	2.314	1.06	0.056	51	0.25	0.13	83
Small unprinted	188.45	3.158	1.02	0.053	64	0.24	0.13	88
Total	571.54	8.024	3.23	0.17	58	0.77	0.41	85

The key question is, will retailers be able to meet the demand of their customers with fewer bags available to provide free of charge? It is a critical question, which cannot be answered comprehensively as part of this study, but the following should be considered.

If retailers cannot meet their customer demand, they will probably have to change to the completely opposite side, and make no free packaging available. It is questionable whether retailers can realistically have a situation where free bags are limited. From their perspective it must be either free checkout bags, or customer must pay.

Under the 30% regulation it will require substantial increases (58%) in packing efficiencies for retailers to still provide bags free of charge (The next scenario will investigate the impact of realistic efficiency gains)

Under the 80% regulation it will become impossible for retailers to provide customers with bags, free of charge. The implication is that retailers will either have to make consumers pay for bags (a scenario which the large retailer groups view as unacceptable since it reduces customer service as well as customers' disposable income), or consumers will have to bring their own bags. Regardless of the direction the retailers follow, two points are of cardinal importance

- It will have a negative effect on consumer spending power
- The current VCB industry will cease to exist unless exports (not viable for small and medium converters) can be pursued, or manufacturing re-directed into alternative products. The latter is also unlikely unless there is presently un-served demand. This then translates to the worst case scenario, which is dealt with elsewhere in the report

8.7.9 Impact on the waste management industry, including recycling

There is no impact on the market since the total tonnages of waste is very similar to what is currently experienced, for the introduction of paper to the waste stream. The implications thereof have been discussed under the previous scenario.

8.7.10 Impact on labour and the society

The assumptions and associate social economic impact are to those stated under the previous scenario.

Scenario C, 30 Microns: Limited Retailer Spending (Retailer spend remains the same, paper takes 5% of the market)	
Change in polymer conversion	New tonnage of polymer converted: 39,953 tonnes. Decrease in polymer conversion: 4,048 tonnes
Employment area	Bases for calculation of change in employment
Upstream (Note 1)	Decrease in domestic polymer conversion. Therefore no change in employment.
VCB manufacturing	Decrease in employment (Note 7) Jobs lost in the High Productivity VCB companies: 72.2% of 4,048 tonnes at productivity of 41.5 tonnes per employee = 70 job losses Jobs lost in the Low Productivity VCB companies: 27.8% of 4,048 tonnes at productivity of 12.7 tonnes per employee = 89 jobs lost Total jobs lost = 159
Paper bag manufacturing	Estimated paper bag market is R13,640,800. Estimated number of jobs created (Note 9) = 28
Plastic recycling	Decrease in polymer used in VCBs. No change in employment.
Retail	No change (Note 12)

Total impact on employment of Scenario C, 30 Microns

Industry	Lower Limit to Employment Change	Higher Limit to Employment Change
Upstream	0	0
High Productivity VCB industry	-70 (54 not re-employed, Note 4)	-70 (54 not re-employed, Note 4)
Low Productivity VCB industry	-89 (75 not re-employed, Note 4)	-89 (75 not re-employed, Note 4)
Paper bag manufacturing	+28	+28
Plastic Recycling (plants)	0	0
Plastic Recycling (collectors)	0	0
Retail	0	0
Total	-101	-101

Direct Socio-economic Impact of Scenario C, 30 Microns

Change in Employment	Number of Workers (from previous table)		Number of people effected by change in income (note 13)	
	Lower Estimate	Higher Estimate	Lower Estimate	Higher Estimate
High Productivity Segment of VCB industry. (Also upstream and paper bag manufacturing industries). (Note 13)	-26	-26	(192)	(192)
Low Productivity Segment of VCB industry. (Also recycling jobs in plants and retail packing jobs.) (Note 13)	-75	-75	(398)	(398)
Informal jobs in collecting plastic for recycling. (Note 13)	0	0	0	0
Total	-101	-101	(590)	(590)

Scenario C, 80 Microns: Curtailed Retailer Spending (Retailer spend remains the same, paper takes 35% of the market)	
Change in polymer conversion	New tonnage of polymer converted: 26,520 Decrease in polymer conversion: 17,480 tonnes
Employment area	Bases for calculation of change in employment
Upstream (Note 1)	Decrease in domestic polymer conversion. Therefore no change in employment.
VCB manufacturing	<p>Decrease in employment (Notes 2, 7 and 8)</p> <p>Upper limit to job losses</p> <p>12,220 tonnes of reduced conversion is taken up by the closure of the Low Productivity Segment of the industry.</p> <p>Jobs lost = 1,150 (higher estimate of employment in Low Productivity Segment)</p> <p>5,260 tonnes of reduced conversion is taken up by the High Productivity Segment of the industry.</p> <p>5,260 tonnes at 41.5 tonnes per employee = 127 jobs lost</p> <p>Total jobs lost = 1,277</p> <p>Lower limit to job creation</p> <p>12,220 tonnes of reduced conversion is taken up by the closure of the Low Productivity Segment of the industry.</p> <p>Jobs lost = 962 (lower estimate of employment in Low Productivity Segment)</p> <p>5,260 tonnes of reduced conversion is taken up by the High Productivity Segment of the industry.</p> <p>5,260 tonnes at 41.5 tonnes per employee = 127 jobs lost</p> <p>Total jobs lost = 1,089</p>
Paper bag manufacturing	Estimated paper bag market is R95,485,600 Estimated number of jobs created (Note 9) = 199
Plastic recycling	Decrease in polymer used in VCBs. No change in employment.
Retail	At 80 microns returns from retail questionnaire indicated an estimated 5,223 packers would lose their jobs in the small and medium retail section (Note 12).

Total impact on employment of Scenario C, 80 Microns

Industry	Lower Limit to Employment Change	Higher Limit to Employment Change
Upstream	0	0
High Productivity VCB industry	-127 (107 not re-employed, Note 4)	-127 (107 not re-employed, Note 4)
Low Productivity VCB industry	-962 (814 not re-employed, Note 4)	-1,150 (973 not re-employed, Note 4)
Paper bag manufacturing	+199	+199
Plastic Recycling (plants)	0	0
Plastic Recycling (collectors)	0	0
Retail	-5,228	-5,228
Total	-5,950	-6,109

Direct Socio-economic Impact of Scenario C, 80 Microns

Change in Employment	Number of Workers (from previous table)		Number of people effected by change in income (note 13)	
	Lower Estimate	Higher Estimate	Lower Estimate	Higher Estimate
High Productivity Segment of VCB industry. (Also upstream and paper bag manufacturing industries). (Note 13)	+92	+92	681	681
Low Productivity Segment of VCB industry. (Also recycling jobs in plants and retail packing jobs.) (Note 13)	-6,042	-6,201	(32,023)	(32,865)
Informal jobs in collecting plastic for recycling. (Note 13)	0	0	0	0
Total	-5,950	-6,109	(31,342)	(32,184)

8.8 Scenario D: Worst-case scenario

The worst-case scenario, which is where the total VCB manufacturing industry ceases to exist, could happen for two reasons.

- Converters are unable or unwilling to recapitalise their equipment to manufacture at the proposed minimum thickness, and exit the industry. The domestic supply would become zero and all packaging needs will have to be imported.
- The cost of bags increases to a point where retailers and consumers are unable to, or unwilling to buy bags. The demand for bags therefore ceases to exist.

The impact of the scenario will be as follows:

Impact on the upstream sector

- Revenue loss for the local manufacturers of polymer, who will have to divert to the less profitable export market for all polymer currently supplied to the domestic VCB industry
- Negative impact on international investor confidence due to the negative impact on the international polymer supplier

Impact on the VCB conversion industry

- The industry will be lost to South Africa
- In the case of manufacturers not re-capitalising, bags will be imported, which has a negative impact on South Africa's broader economy
- Unrealised capital investment in excess of R 50 million
- Significant job losses – see separate section on the impact on employment
- Loss in export revenue of R 81 million per annum
- The current VCB industry has low barriers of entry to SMME's, as demonstrated by the large number of SME's. Opportunity for SME development, which is an integral part of South Africa's growth strategy will be lost

Impact on the retailers and consumer

- If domestic VCB manufacturers exist the market, 30 or 80 ì bag will have to be imported, or substitute products used. The increased cost of bags (imported or substitute) will not be avoided and passed on to the consumer. It will be the low-income consumer who will be impacted most.
- If retailers stop supplying bags, there will be a cost to the consumer to supply their own bag. Although consumers will seek out the lowest cost alternative, it will always be higher than the current cost to the consumer, which is zero.

8.8.1 Impact on labour and the society

The assumptions and associated social economic impact are similar to those stated under the previous scenario.

Scenario D.1: Closure of Domestic Industry – VCB Bags are imported	
Change in polymer conversion	New tonnage of polymer converted: 0 Decrease in polymer conversion: 44,000 tonnes
Employment area	Bases for calculation of change in employment
Upstream(Note 1)	Decrease in domestic polymer conversion. Therefore no change in employment.
VCB manufacturing	<p>Decrease in employment (Notes 7 and 8)</p> <p>Upper limit to job losses</p> <p>Closure of High Productivity Segment = 766 jobs lost</p> <p>Closure of Low Productivity Segment = 1,150 jobs lost (highest estimate of jobs in Segment)</p> <p>Total jobs lost = 1,728</p> <p>Upper limit to job losses</p> <p>Closure of High Productivity Segment = 766 jobs lost</p> <p>Closure of Low Productivity Segment = 1,150 jobs lost (lowest estimate of jobs in Segment)</p> <p>Total jobs lost = 1,916</p>
Paper bag manufacturing	VCBs imported. Assume no change in market.
Plastic recycling	VCBs imported. Assume no change in employment.
Retail	No change (Note 12)

Total impact on employment of Scenario D.1

Industry	Lower Limit to Employment Change	Higher Limit to Employment Change
Upstream	0	0
High Productivity VCB industry	-766 (587 not re-employed, Note 4)	-766 (587 not re-employed, Note 4)
Low Productivity VCB industry	-962 (814 not re-employed, Note 4)	-1,150 (973 not re-employed, Note 4)
Paper bag manufacturing	0	0
Plastic Recycling (plants)	0	0
Plastic Recycling (collectors)	0	0
Retail	0	0
Total	-1,401	-1,560

Direct Socio-economic Impact of Scenario D.1

Change in Employment	Number of Workers (from previous table)		Number of people effected by change in income (note 13)	
	Lower Estimate	Higher Estimate	Lower Estimate	Higher Estimate
High Productivity Segment of VCB industry. (Also upstream and paper bag manufacturing industries). (Note 13)	-587	-587	(4,344)	(4,344)
Low Productivity Segment of VCB industry. (Also recycling jobs in plants and retail packing jobs.) (Note 13)	-814	-973	(4,314)	(5,157)
Informal jobs in collecting plastic for recycling. (Note 13)	0	0	0	0
Total	-1,401	-1,560	(8,658)	(9,501)

Scenario D.2: Closure of Domestic Industry – VCB Bags Replaced by Paper Bags	
Change in polymer conversion	New tonnage of polymer converted: 0 Decrease in polymer conversion: 44,000 tonnes
Employment area	Bases for calculation of change in employment
Upstream (Note 1)	Decrease in domestic polymer conversion. Therefore no change in employment.
VCB manufacturing	<p>Decrease in employment (Notes 7 and 8)</p> <p>Upper limit to job losses</p> <p>Closure of High Productivity Segment = 766 jobs lost</p> <p>Closure of Low Productivity Segment = 1,150 jobs lost (highest estimate of jobs in Segment)</p> <p>Total jobs lost = 1,728</p> <p>Upper limit to job losses</p> <p>Closure of High Productivity Segment = 766 jobs lost</p> <p>Closure of Low Productivity Segment = 1,150 jobs lost (lowest estimate of jobs in Segment)</p> <p>Total jobs lost = 1,916</p>
Paper bag manufacturing	Value of paper bag market R272,816,000 Estimated number of jobs created (Note 9) = 569
Plastic recycling	VCB replaced by paper bags. Assume no change in employment.
Retail	No change (Note 12)

Total impact on employment of Scenario D.2

Industry	Lower Limit to Employment Change	Higher Limit to Employment Change
Upstream	0	0
High Productivity VCB industry	-766 (587 not re-employed, Note 4)	-766 (587 not re-employed, Note 4)
Low Productivity VCB industry	-962 (814 not re-employed, Note 4)	-1,150 (973 not re-employed, Note 4)
Paper bag manufacturing	+569	+569
Plastic Recycling (plants)	0	0
Plastic Recycling (collectors)	0	0
Retail	0	0
Total	-832	-991

Direct Socio-economic Impact of Scenario D.2

Change in Employment	Number of Workers (from previous table)		Number of people effected by change in income (note 13)	
	Lower Estimate	Higher Estimate	Lower Estimate	Higher Estimate
High Productivity Segment of VCB industry. (Also upstream and paper bag manufacturing industries). (Note 13)	-18	-18	(133)	(133)
Low Productivity Segment of VCB industry. (Also recycling jobs in plants and retail packing jobs.) (Note 13)	-814	-973	(4,314)	(5,157)
Informal jobs in collecting plastic for recycling. (Note 13)	0	0	0	0
Total	-832	-991	(4,447)	(5,290)

Scenario D.3: Closure of Domestic Industry – Consumers shift to own bags (e.g. ‘bags for life’)	
Change in polymer conversion	New tonnage of polymer converted: 0 Decrease in polymer conversion: 44,000 tonnes
Employment area	Bases for calculation of change in employment
Upstream (Note 1)	Decrease in domestic polymer conversion. Therefore no change in employment.
VCB manufacturing	<p>Decrease in employment (Notes 7 and 8)</p> <p>Upper limit to job losses</p> <p>Closure of High Productivity Segment = 766 jobs lost</p> <p>Closure of Low Productivity Segment = 1,150 jobs lost (highest estimate of jobs in Segment)</p> <p>Total jobs lost = 1,728</p> <p>Upper limit to job losses</p> <p>Closure of High Productivity Segment = 766 jobs lost</p> <p>Closure of Low Productivity Segment = 1,150 jobs lost (lowest estimate of jobs in Segment)</p> <p>Total jobs lost = 1,916</p>
Paper bag manufacturing	No increase in market for paper bags. Therefore, no change in employment
Plastic recycling	Assume no change in employment.
Retail	Assumed that all packers would be retrenched as their jobs become superfluous if customers bring their own bags. This would lead to a tentatively estimated loss of 70,000 jobs (Notes 5 and 12).

Total impact on employment of Scenario D.3

Industry	Lower Limit to Employment Change	Higher Limit to Employment Change
Upstream	0	0
High Productivity VCB industry	-766 (587 not re-employed, Note 4)	-766 (587 not re-employed, Note 4)
Low Productivity VCB industry	-962 (814 not re-employed, Note 4)	-1,150 (973 not re-employed, Note 4)
Paper bag manufacturing	0	0
Plastic Recycling (plants)	0	0
Plastic Recycling (collectors)	0	0
Retail	-70,000	-70,000
Total	-71,401	-71,560

Direct Socio-economic Impact of Scenario D.3

Change in Employment	Number of Workers (from previous table)		Number of people effected by change in income (note 13)	
	Lower Estimate	Higher Estimate	Lower Estimate	Higher Estimate
High Productivity Segment of VCB industry. (Also upstream and paper bag manufacturing industries). (Note 13)	-587	-587	(4,344)	(4,344)
Low Productivity Segment of VCB industry. (Also recycling jobs in plants and retail packing jobs.) (Note 13)	-70,814	-70,973	(375,314)	(376,157)
Informal jobs in collecting plastic for recycling. (Note 13)	0	0	0	0
Total	-71,401	-71,560	(379,658)	(380,501)