Credit Lyonnais Securities Europe

Paper & Packaging
Russia

Russian Pulp & Paper Industry

"Happy people are ignoramuses and glory is nothing else but success, and to achieve it one only has to be cunning".

Mikhail Lermontov in 'A Hero of Our Time' (1840).

- Yielding investment opportunity for Western capital as well as local entrepreneurs.
- Illustrating the futility of Western attempts to control selling prices by market consolidation.
- Therefore knowledge of Russian costs and capacity essential for interpretation of the paper cycle.
- Focus on International Paper's success at Svetogorsk and the impact of Russian market pulp, newsprint, uncoated woodfree and containerboard exports.

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(Source for statistical tables – Credit Lyonnais Securities).

Summary

Failure has created new opportunity...

- The Russian Pulp and Paper Industry is all too often depicted in terms of the expensive failures suffered by Tetrapak at Svetogorsk, Herlitz at Volga Newsprint and AssiDomän at Segezha.
- The real perspective is the opportunity such failures and the greater failure of the whole Communist system has provided to local management. Vigorous, young talent has revived the once bankrupt forest product combines. It has acquired assets cheaply and re–established profitable production.
- In cash terms the breakeven point of the Russian forest product combines is low. Cash measurement is what matters as historic debt and depreciation have been written off – a salutary experience for those who went in too early and underestimated the problems.
- Despite its large wood resources Russia is not yet a particularly large paper producer. Total output in 2000 was 5.2m tonnes of paper and board and 2.0m tonnes of market pulp.

...manifested in low cost production skilfully exploiting export markets...

- Rather the significance is the Russian paper industry's relative exposure to exports, where thanks to its low capital cost position it is highly competitive.
- In 2001 Russia exported 1.15m tonnes of market pulp (BHK/BSK). It can breakeven on exports at US$400 per tonne, approximately US$75 per tonne below the normal pain threshold of Western mills burdened by depreciation and debt.

...as has happened in pulp...

- Russian ability to switch on and focus market pulp tonnage when Western prices lose touch with reality was amply demonstrated in 2000. Russia took advantage of the price spike in China, a market where it has the benefit of interior lines of communication and therefore much faster delivery times than Western suppliers. Thus the West learned the consequences of supply and demand projections that failed to take account of Russian costs and capacity.
- Put this experience in the context of Western confidence about their ability to control prices in paper markets through consolidation.

...and will increasingly occur in paper grades...

- Take, for example, containerboard. As with market pulp Russian producers can break–even at some US$75 per tonne below the Western pain threshold – as low as US$350 per tonne.
- Hence the importance of realising that Russian exports of paper and board are likely to increase from 2.3m tonnes in 2000 to 3.0m in 2003.

...exploiting Western complacency...

- Complacent Western suppliers, who talk of poor Russian quality and reliability, would do well to heed how arrogant their own customers now find them, how alienated aggressive consolidation has made them and how keen they are to develop new sources of supply.
- This is a void which Russian producers are exploiting not least through independent paper agents well able to provide the necessary interface.

...providing both pitfalls for the unwary and gains for wiser folk...

- Take just one example. In 2000 Russia exported 200,000 tonnes of newsprint to Western Europe. Russian exports would exceed 700,000 tonnes by redirecting tonnage from Asia (attracted by the price spike of 2000) and taking advantage of additional capacity coming on stream. This would be equivalent to two large machines, starting up at exactly the same time in a 10m tonne market, so apparently in the grips of a few suppliers.

- Profit by what is happening provided you are prepared to proceed with circumspection and **build the necessary relationships**, hence our analysis below of International Paper's success.

...with more ownership changes to come and even IPO's, setting a benchmark for valuations

- Expect further ownership changes – at least one large combine is currently for sale – and moves towards tapping Western capital through the IPO route. Alas the Investor Relations Officer, albeit in disguised form, has threatened to make an appearance in the Russian pulp and paper industry. Farewell the pioneering age as **the honest words of Lermontov** give way to the banal rituals of power point presentations!

- **Ignore what is happening at your peril.**

Summary of Russian Pulp and Paper Exports

Year End December	2000 (000 tonnes)	2003E (000 tonnes)	
Market Pulp			
Hardwood	450	500	
Softwood	700	750	
Total	**1,150**	**1,250**	**+9%**
Paper and Board			
Newsprint	1,100	1,500	(1)
Uncoated Woodfree	350	500	(2)
Sack Kraft	100	200	(3)
Unbleached Kraft Liner	571	700	(4)
White Top	81	100	
Total	**2,302**	**3,000**	**+30%**

1) Kondopoga PM10 (2002).
Solikamsk PM2 (2001).

2) Incremental tonnage at Syktyvkar and Svetogorsk.

3) Rebuild of Segezha PM10 (2001)
and PM11 (2002).

4) Rebuild of Archangel PM1 (2001)
and swing tonnage from Segezha PM11.

The big export sectors are bleached pulp (both BHK and BSK), newsprint and unbleached kraft liner. More recently uncoated woodfree exports have grown thanks to Syktyvkar and Svetogorsk (International Paper).

Production of Key Russian Pulp and Paper Mills

Year End December 2000	(000 tonnes) Market Pulp	Paper and Board	Total
Ilim (3 mills)	651	776	1,427
Archangel	218	450	668
Syktyvkar	–	547	547
Svetogorsk*	45	268	313
Kondopoga	–	552	552
Volga	–	555	555
Solikamsk	–	355	355
Ust–Ilimsk	506	–	506
Segezha	–	192	192
Baikal	166	–	166
Solombala	178	–	178
Others	236	1,544	1,780
Total	**2,000**	**5,239**	**7,239**

* *International Paper.*

11 groups were responsible for 75% of total production of 7.2m tonnes in 2000, of which Ilim is the largest with three mills and 20% of industry output. Ust–Ilimsk, Baikal and Solambala are purely in market pulp.

Analysis of Key Russian Paper Machines in 2000

Grade	Group	Location	Machine	Installation/ Rebuild	2000 Production (000 tonnes)
Newsprint	Kondopoga	Karelia	No. 8: 8.4m	1981	200e
	Volga	Balakhna	No. 5: 5.6m	1982	100
			No. 8: 9.0m	1994	240
	Syktyvkar	Syktyvkar	No. 5: 8.4m	1985	152
Uncoated Woodfree	Syktyvkar	Syktyvkar	No. 1: 6.3m	1969 (99)	) 447
			No. 4: 8.4m	1985 (00)	)
	International Paper	Svetogorsk	No. 4: 8.4m	1983 (98)	203
Sack Kraft	Segezha	Segezha	No.10: 6.3m	(01)	80e
Containerboard	Archangel	Archangel	No. 1: 6.3m	1960s (01)	225e
	Ilim	Bratsk	6.3m		154
	Syktyvkar	Syktyvkar	No. 2: 6.3m	1969 (86)	100*
Total			**11 machines**		**1,901**

* *Including FBB and LPB.*

11 paper machines operated to Western standards and accounted for over 35% of Russian paper production in 2000.

Key Facts on Key Russian Paper Machines

Syktyvkar is the best – invested mill in Russia

- The eleven machines listed above had a total production in 2000 of some 1.9m tonnes, which represented over 35% of Russian paper and board output of 5.2m tonnes.
- Four of these ten machines belonged to Syktyvkar, which produced in 2000 547,000 tonnes of paper and board. Recent capex has been US$ 160m.
- PM4 at Svetogorsk (International Paper) reached operating efficiency in early 2001 approaching the world class level of 85% (see Appendix One below).
- PMI at Archangel is the largest containerboard machine in Russia with an output in 2000 of 225,000 tonnes of unbleached kraft liner. The rebuild in 2001 cost US$18m – shoe press plus increasing speed from 500 to 600m/m. Average grammage is 145 and electrical energy consumption is 570KWH per tonne of paper. The number of operating days in 2000 was 333 and a further 350 hours was allowed for planned maintenance.
- Two newsprint machines are under construction: Kondopoga PM 10 and Solikamsk PM 2 with a total capacity of some 350,000 tonnes. The two largest and most efficient newsprint machines in 2000 were Kondopoga PM8 and Volga PM8.

Appendix One:
Visit to the Svetogorsk Mill of International Paper

"....The whole life here is most extraordinary. Highway robbery in daylight in the main streets. If I go out to dinner at night I carry a revolver loose in my coat pocket & never take my hand off it! Fancy in London if you walked from Hyde Park Hotel to Belgrave Square and were ready to shoot without a word anyone who approached you. It's all so comic that it makes me laugh – only it's all so sad to see a great nation brought to such a state.

They are now taking over all houses. The state gets half the rent – the city council the other half – (that is if anyone can be made to pay rent!) and the owner as compensation gets a flat free for his life – all the money to one's credit in the banks over RS 25,000 is forfeited. All shares in companies are taken, in fact there is nothing you can imagine that can't or won't happen...."

F.C. Poole – Letter home –
Petrograd (now St. Petersburg) 31st January 1918.

- Decision to invest predicated on the belief that the rule of law prevails over anarchy in Russia.
- Expectation that a return to shareholder can be made commensurate with the risks.
- Results to date vindicate the purchase of Svetogorsk and justify further investment.

Introduction

On target

International Paper has achieved its initial objective since acquiring the Svetogorsk mill in 1998 of sustaining "efficient and reliable production". It has avoided spending large sums of capital. It has recognised that solid foundations for the future can only be laid by making what is already there perform. It has now started to plan the mill's medium term development from a position of strength.

Armchair Strategists

The incantations of the armchair strategists, who know little and achieve even less

It is easy for armchair strategists to enthuse about all the advantages of Svetogorsk, such as:

i) Abundant and low cost fibre – both hardwood and softwood. The guidance is that wood costs are around half the US South, which means some US$15–20 per solid cubic metre (debarked) at the mill. The lack of opportunity for papermaking expansion in the Nordic area is emphasised by the presence of rail wagons bearing wood imports from Russia.

ii) The favourable location both for export (through proximity to the Finnish border and Southern Finnish ports) and for the home market. Svetogorsk is on the isthmus of Karelia and thus close to St. Petersburg and within reach of Moscow, the two largest Russian markets. The other main indigenous market is Nizhny Novgorod (formerly Gorki) on the Volga at the eastern extreme of "European" Russia.

iii) The lack of indigenous competition for cut size and offset papers pace Syvtyvkar. The only other white papermakers are Ilim and Archangel, which operate at the bottom end of the quality spectrum and have focussed on other grades.

iv) Relatively low capital costs and tax losses through having acquired the mill from a forced seller. The mill came with both hardwood and softwood chemical pulp capacity, relatively modern machines and other relevant infrastructure – energy, environmental and the like. There are ten batch digesters for softwood with a daily capacity of 500 tonnes and one continuous digester for hardwood with a similar capacity. The two recovery boilers have a daily capacity of 800 tonnes. The power boilers burn indigenous gas, which is the cheapest form of fossil fuel available in Russia. Half the steam and half the electrical energy requirement is generated internally through the recovery and power boilers.

The Real Issues

The realities of operating a business in Russia today, such as bureaucracy

Consider now the real issues:

i) The Russian bureaucracy is everywhere. Crossing the frontier from Finland, where the expatriate Western management generally lives, is a tiresome and laborious process. The documentation required for importing raw materials and supplies and exporting pulp and paper is complex and intricate. There are no short cuts.

...local politics...

ii) The demands of the town of Svetogorsk, which has 16,000 people and no other source of serious wealth generation are evident. The town looks to the mill to provide basic necessities, such as heating and secure employment, and an important contribution to municipal finances in the form of taxes and other levies.

...labour...

iii) A labour force that has known fear and insecurity under Communism and the even worse conditions that followed with the first taste of capitalism. Contrast the Western "open plan" style with the secrecy and locked doors that represent an inbuilt part of the Russian system. Think of the problem of gaining the co–operation, enthusiasm and support of workers that have grown used to corruption, graft, waste and inefficiency. Even after some three years of ownership International Paper has security barriers at each area of the mill complex to check that only authorised persons can enter and to ensure that no property is unlawfully removed.

...and shortcomings in the infrastructure of Russia...

iv) The shortcomings of Russia's infrastructure, which are subject to further testing through the extremes of the climate. Think of deficiencies in the supply of purchased electrical power, of the shortage of flat cars to move goods by rail, the absence of the maintenance, support and technical services that are taken for granted in the West, and such like.

...and the mill itself

v) The inadequacy of the original infrastructure inherited at the mill. Refurbishing mills even in the West is a lengthy, painstaking business – David S. Smith took ten years at Kemsley to reach upper quartile levels of performance. Put this in the context of the Russian climate, the language and other deep set cultural issues in an integrated mill, where there are volatile items of equipment like recovery boilers that can fail and take life and limb.

Getting the Right People at the Top

Finding the right leadership to tackle the problems...

The key to understanding International Paper's transformation of the Svetogorsk mill lies in the team at the top. The key appointments have been:

i) Brian McDonald as General Director – a thruster with a record of delivery in situations that would have defeated lesser men. His credentials were established in three successful turnround situations in the USA, including the Sprague mill inherited from Federal. Sprague combined all the ingredients of a papermaker's nightmare – being an anomalous part of the acquired portfolio, recycled paperboard as opposed to the core area of SBS; having an old–fashioned board–making configuration (Inverform); suffering from poor relations with the local municipality and labour force. Typical of McDonald's response was putting cameras on the machine so that what was happening could be viewed and analysed and the necessary changes made to rebuild efficiency and quality levels. Likewise McDonald's handling of the municipality: define the problem, make promises that could be fulfilled and deliver against those pledges. Similarly persuading by example and reward the labour force that it was worth their while to co–operate fully. All good training for Svetogorsk.

ii) John Anderson as First Deputy General Director and Chief Operating Officer, who brings the firmness, patience and experience of a life time in the industry – he rose after twenty five years service to running a large Union Camp papermaking complex. He was one of the unsung, but valuable assets of the Union Camp take–over by International Paper.

Below McDonald and Anderson a powerful group of Western expatriates has been assembled to provide the expertise in key areas, such as:

i) Alan Boyle the Fine Paper Production Technical Co–ordinator, who combines experience and expertise of papermaking with the gift of communicating complex ideas in simple and arresting fashion. One observation in a discussion about operating speeds being, "If you are not having paper breaks in newsprint you are either running too slowly or using too expensive a furnish".

ii) Kari Kangas, Marketing and Sales Director (Fine Paper), who provides the understanding and knowledge of fine paper markets required to gain customer confidence essential to successfully establishing a branded cut size paper business.

...and to unlock the local management talent

Under this expatriate leadership Russian management talent is being nurtured and developed that will in due course be capable of running the mill. One such appointment has been Oleg Rybnikov, who is responsible for the Fine Paper Machine. His promotion recognised success in running the Converting Department, where his position has been given to his former deputy. What comes across in the Russian management is a high level of technical education, keenness to learn and growing confidence borne of successful endeavour.

Progress Achieved

A visit to the fine paper machine confirmed the progress achieved.

Year End December	Annual Production (000 tonnes)	Daily Production (tonnes)	Days Operated (p.a.)	Av. Speed (Indexed m/m)	Efficiency (Indexed %)	Net Cut Size Production (Indexed tonnes)
1998	146	424	344	100	100	(see text below)
1999	169	479	353	104	n.a.	
2000	202	581	345	109	118	
2001E	220	648	340	112	126	

Dryness before dry end:	(See text below)	
Steam consumption:	Tonnes per tonne of paper*	(Q1 01)
Electricity consumption:	KWH per tonne of paper*	(Q1 01)
Employees:	(2000)*	
	(2001E)*	
Moisture content:	Offset	*
	Copier	*
Filler content:	20% (40,000 tonnes app. of PCC etc.)	
Pulp furnish:	80% hardwood; 20% of softwood	
Fibre ratio per tonne of pulp:	Hardwood	3.7 cu metres (debarked)
	Softwood	5.0 cu metres (debarked)
Basis weight:	Copier	80 gsm
	Reels	65–100 gsm

* *Information witheld for competitive reasons.*

Available Monthly Production (3/01)	**(000 tonnes)**	
Gross	22/25,000	
Net to warehouse	20/22,000	
Losses (trim, waste and rejects)	2/3,000	(10/15%)
Available/Gross Production	85/90%	(Ratio A)

Time Efficiency (3/01)			
Minutes lost	)	5/10%	
No. of minutes available	)		
Availability/total time		90/95%	(Ratio B)

Resulting Efficiency				
Av. Production (Ratio A)	**x**	**Availability (Ratio B)**	**=**	**Efficiency**
85/90%		90/95%	=	80/85%

Closing the gap with world class performance...

These performance statistics are impressive:

i) Operating efficiency of 80/85% is a dramatic improvement on the level achieved in 1998 and close to the world class level of around 85%.

ii) The growth in cut size production from a negligible level in 1998 to over 100,000 tonnes in 2000 (of which 50% was exported) demonstrates the transformation in quality.

...the reward of painstaking endeavour, vindicating the quality of the team assembled

Underlying these performance statistics is the progress made in:

i) Improving the whole production chain from the woodyard through the pulp mill and the associated kraft recovery system to papermaking and conversion. Likewise also the wood supply with the focus on suppliers prepared to learn.

ii) The successful establishment of a culture aimed at proactive and preventive maintenance. The number of days when the mill operates has **not increased** but the proportion of time spent on production has risen – the labour force has learned to follow a structure of routines that cover all aspects of the mill's performance so that it knows what to look at and thus how to anticipate problems before they arise and take appropriate corrective action in a timely and efficient manner.

iii) The general improvement in the infrastructure and support services, such as in the volume and range of engineering stores, obviating the delays and bureaucracy of sourcing from Finland. The number of SKU's has been increased to 10,000 and is planned to reach 30,000 including motors, bearings, pumps, valves, fan belts, pressure and temperature gauges – "Anything that is going to wear out."

Medium Term Development

Where the money has been spent so far

Capital investment so far has centred on:

i) Making the mill safe – hence refurbishment of the two recovery boilers (inspection, refurbishment, distributive control and emergency shut down system) and the electrical system. A failure in the external power supply once brought the whole mill to a halt before it could switch over to internally generated energy.

ii) Improvements to the fine paper machine, essential to faster, more efficient and higher quality production. The size press (? synsizer) was installed in 1998 and the new head box and screen system in January 2001.

iii) The converting department – a new building with three lines (folio, A4 and A3 in 2001) for cut size production.

Essential areas of future capital spending

Future capital spending must include:

i) Further improvements to the infrastructure – pipes, sewers, ducts, cabelling and the like. Essential repairs currently demand a cold shut of 12/15 days or three times what is required in the USA.

iii) Dealing with TRS emissions. The effluent treatment is adequate with primary and secondary (aerobic) systems. A bark burner is being installed, which will reduce by a third the need for purchased gas to generate heat. A further advantage is that the bark burner will also burn the mill's sludge, currently combusted in an older boiler that does not form part of the power generation system.

The options on pulp capacity

A decision has to be made about how to expand pulp capacity, which is currently constrained by the existing recovery boilers. The only slack in the system to permit increased paper production is the integration of some 45,000 tonnes of market pulp currently available. Increased chemical pulp production would involve not only investment in recovery boiler capacity but also in the associated lime kiln/causticizer system and no doubt other areas of the pulp complex. It could be highly capital intensive.

An option on pulp expansion would be CTMP. Granted its disadvantage of high electrical energy costs, CTMP nevertheless offers the benefit of:

i) Developing the board business at Svetogorsk, paralleling the success achieved by Stora Enso in improving product quality and reducing basis weight.

ii) Freeing up chemical pulp that would otherwise be needed for the board machine and thus allowing either increased fine paper production or market pulp sales.

The case for co–generation

Installation of a CTMP mill might also involve a CHP plant to provide the necessary electrical energy. A CHP or co–generation facility could be a desirable option as:

i) In contrast to purchased electrical energy the gas supply to the mill is freely available. Russian gas is also currently relatively cheap.

ii) It could produce a surplus of electricity for external sale, which given the deficiencies in supply could be an attractive option.

Options for papermaking

On the papermaking side:

i) The existing Fine Paper machine has little scope for further improvement without major investment. It is now running close to the maximum achievable with the present drive of 1,000 m/m. In parenthesis, the drive limitation explains why a shoe press has not been installed. The shoe press would raise the dryness of the paper after the wet end, but the opportunity for increased operating speed could not then be realised.

ii) Further investment may be desirable on the board machine or else additional capacity could be introduced. Then advantage could be taken of any CTMP capacity to develop multi–layer board and build on the mill's embryo presence with Tetrapak.

Conclusion

A success story

Svetogorsk is a success story that speaks well of International Paper and is in marked contrast to other Western experience this challenging environment. International Paper has benefited from its initial East European experience gained through the Kwidzyn mill in Poland and has drawn sensibly on its considerable resources of management and expertise. It is now poised for even greater success in Russia.

Addendum

Total employees 3,200 (inc. production 1,000 and maintenance 1,500), resulting in production per person of market pulp and paper of approaching 100 tonnes, hence the opportunity to improve productivity.

Total wood consumption of 1m cu metres (debarked), of which softwood 50% and hardwood 50%. Aspen content 10%. Aspen half the price of other hardwoods.

Pulp furnish of board machine 20% hardwood and 50% of softwood, reverse of fine paper machine.

Appendix Two: Pathfinder Tables on the Russian Pulp and Paper Capacity

- Ilim the market leader: 20% of total market pulp and paper production, based on three mills – Kotlas (North Russia), Bratsk (Siberia) and St. Petersburg.
- Archangel the second largest producer: nearly 10% of total market pulp and paper production, based on Archangel mill (North Russia).
- Syktyvkar the most profitable producer: partially owned by Mondi through Frantschach.
- Svetogorsk the text book for Western companies seeking to invest in the Russian pulp and paper industry (see Appendix One).
- The dedicated newsprint producers: Kondopoga, Volga and Solikamsk.
- The sack kraft producer: Segezha (ex–AssiDomän).
- The dedicated chemical pulp producers: Ust–Ilimsk (Siberia), Baikal (Siberia) and Solombala (North Russia).

Analysis of Russian Pulp and Paper Production

Year End December 2000	Pulp (Total)	Market Pulp	Paper (All Grades)	Newsprint	Board (All grades)	Containerboard
	(000 tonnes)					
Ilim						
Kotlas	829	293	231	–	229	229
Bratsk	574	358	–	–	154	154
St. Petersburg	–	–	–	–	162	–
Sub–Total	**1,403**	**651**	**231†**	**–**	**545**	**383**
Archangel	699	218	59	–	391	389
Syktyvkar	436	–	447	152	100	67
Svetogorsk*	319	45	203	–	65	65**
Kondopoga	107	–	552	540	–	–
Volga	–	–	555	542	–	–
Solikamsk	–	–	355	349	–	–
Ust –Ilimsk	545	506	–	–	–	–
Segezha	202	–	192††	–	–	–
Baikal	194	166	–	–	–	–
Solombala	186	178	–	–	–	–
Others	868	236	742	114	802	412
Total	**4,959**	**2,000**	**3,336**	**1,697**	**1,903**	**1,316****

* *International Paper.*
** *Industry total includes 100% of production of the Svetogorsk (International Paper) board machine.*
† *Including Sack kraft.*
†† *Sack kraft production (including swing capacity for kraft liner), which is classified as paper.*

Production statistics are for the year ended December 2000.

Pulp

Total production of pulp (chemical papermaking grades) 5m tonnes, of which market pulp 2m tonnes.

Paper

Total production of paper 3.3m tonnes, of which newsprint 1.7m tonnes, uncoated woodfree 0.8m tonnes, sack kraft 0.3m tonnes and all other grades 0.5m tonnes.

Board

Total production of board 1.9m tonnes, of which containerboard 1.3m tonnes and all other grades 0.6m tonnes.

Analysis of Russian Chemical Pulp Production

Year End December 2000	(000 tonnes) Total Production	Market Pulp	Exports
Ilim			
Kotlas	829	293	200
Bratsk	574	358	300
Sub–Total	**1,403**	**651**	**500**
Archangel	699	218	200
Ust – Ilimsk	545	506	400
Syktyvkar	436	–	50
Svetogorsk*	319	45	
Segezha	202	–	
Baikal	194	166	
Solombala	186	178	
Kondopoga	107**	–	
Others	868	236	
Total	**4,959†**	**2,000**	**1,150**

* *International Paper.*
** *Sulphite pulp for newsprint.*
† *Excluding dissolving pulp at Kotlas (approx. 0.1m tonnes).*

Bleached production is concentrated amongst a few players, which are boxed in the table above.

Key Facts on Russian Bleached Pulp Capacity

How bleaching capacity has been directed

- Bleached market pulp is produced by Ilim at Kotlas and Bratsk, Ust–Ilimsk, Archangel and Baikal.
- Syktyvkar and Svetogorsk have used bleached pulp capacity to integrate forward. They are the only producers of bleached board and dominate the top end of the uncoated woodfree market.
- Archangel's kraft liner machine is fed by an unbleached line. Likewise the Kotlas containerboard and sack kraft machines.
- Segezha would like to have a bleaching plant; it currently makes only brown paper.

Analysis of Russian Market Pulp Production by Grade

Year End December 2000	(000 tonnes) BSK	BHK	Sulphite	UK	Total
Ilim					
Kotlas	–	233	–	60	293
Bratsk	358	–	–	–	358
Sub–Total	**358**	**233**	**–**	**60**	**651**
Ust–Ilimsk	451	–	–	55	506
Archangel	–	218	–	–	218
Solombala	–	–	–	178	178
Baikal	119	–	–	47	166
Svetogorsk*	–	45	–	–	45
Others	5	9	215	7	236
Total	**933**	**505**	**215**	**347**	**2,000**

* *International Paper*.

BSK and BHK accounted for 1.4m tonnes of Russian market pulp production of 2.0m tonnes in 2000.

Estimated Analysis of Russian Market Pulp Exports

Year End December 2000	(000 tonnes) BSK	BHK	Total	Key Market
Ilim				
Kotlas	–	200	200	Europe
Bratsk	300	–	300	China
Sub–Total	**300**	**200**	**500**	
Ust–Ilimsk	400	–	400	China
Archangel	–	200	200	Europe
Others	Neg.	50	50	
Total	**700**	**450**	**1,150**	

Exports in 2000 were 0.7m tonnes of BSK and 0.45m tonnes of BHK.

Key Facts on Russian Market Pulp Capacity

The natural markets are China (BSK from Siberia) and Europe (BHK from North Russia)

- Total production of chemical pulp (all grades) was 5m tonnes in 2000, of which market pulp was 2m tonnes and exports 1.15m tonnes.
- The principal market pulp exporters are Ilim, Archangel and Ust–Ilimisk, accounting for some 90% of total volume.
- Production is primarily BSK in Siberia, where the key mills are Ust–Ilimsk (purely in market pulp) and Bratsk (Ilim). Their main outlet is China, which they can supply with a two–week delivery period compared with up to two months from South America. Their exports to China exceeded 0.3m tonnes in 2000.
- Production is primarily BHK in North Russia, where the key mills are Kotlas (Ilim) and Archangel. Their exports were about 0.4m tonnes in 2000, mainly to Europe.
- The only other significant bleached chemical pulp producers are Syktyvkar (wholly integrated) and Svetogorsk, a minor open market supplier.
- Smaller mills produce about 0.2m tonnes of sulphite and 0.3m tonnes of unbleached kraft pulp for the domestic market.

Analysis of Russian Newsprint Capacity

Group	Location	Machine	Installation/Rebuild	2000 Production (000 tonnes)	
Kondopoga	Karelia	No. 1: 4.2m	1929 (84)	40)	540
		No. 4: 6.7m	1963	100)	
		No. 7: 6.7m	1965	100)	
		No. 8: 8.4m	1981	200)	
		No. 9: 6.7m	1978	100)	
		(No.10: 8.4m	2002		200)
Volga	Balakhna	No. 5: 5.6m	1982		100
		No. 6: 6.7m	1965 (82)	)	200/205
		No. 7: 6.7m	1965 (82)	)	
		No. 8: 9.0m	1994		240
Solikamsk	Perm	No. 1: 6.7m	1965 (91)	)	349
		No. 3: 6.7m	1970	)	
		No. 4: 6.7m	1971	)	
		(No. 2: 6.7m	2001		150)
Syktyvkar	Syktyvkar	No.5: 8.4m	1985		152
Kamski	Krasnokamsk				74
Others*					40
Total					**1,697**

* *Principally Krasnoyarsk in Siberia*

Output should exceed 2m tonnes with the addition of PM10 at Kondopoga (2002) and PM2 at Solikamsk (2001).

Key Facts on Russian Newsprint Capacity

65% of Russian newsprint production is exported

- Total production in 2000 was 1.7m tonnes, of which exports were 1.1m tonnes.
- Key machines serving the export market are Kondopoga PM 8 and 9 and Volga PM 8 (twin of Steyrermühl machine).
- Total production should reach 2.0m tonnes in 2003 with start up of Kondopoga PM 10 and Solikamsk PM 2.
- Export volume should reach 1.5m tonnes in 2003. The domestic market is static.
- Russian newsprint exports to Western Europe may increase from some 200,000 tonnes in 2001 to over 500,000 tonnes in 2003. Europe is the natural outlet for Kondopoga and Solikamsk may direct tonnage there if the Asian market remains depressed.
- The Kondopoga PM10 project, costing US$90m, is to replace the sulphite mill with TMP and complete the machine originally due to start up in 1994.
- The Solikamsk PM2 project is to restart the former PM10.

Analysis of Russian Uncoated Woodfree Paper Capacity

Group	Location	Machine	Installation/Rebuild	2000 Production (000 tonnes)
Syktyvkar	Syktyvkar	No.1: 6.3m No.4: 8.4m	1969 (99) 1985 (00)	447
International Paper	Svetogorsk	No.4: 8.4m	1984 (98)	203
Ilim	Kotlas	No.5: 4.2m No.6: 4.2m		100e
Archangel	Archangel	No.3: 4.2m No.4: 4.2m		59
Total				**809**

Excellent indigenous hardwood fibre is being used to make uncoated woodfree.

Key Facts on Russian Uncoated Woodfree Capacity

Watch Syktyvkar and Svetogorsk

- Total production of uncoated woodfree paper was 0.8m tonnes in 2000, excluding minor mills purely serving the domestic market.
- The key producers are Syktyvkar and Svetogorsk, both making a high quality paper now well–established in the European export market, which is based on local BHK pulp and conversion into sheets (folio, A3 and A4).

Analysis of Russian Sack Kraft Capacity

Group	Location	Machine	Installation/Rebuild	2000 Production (000 tonnes)
Segezha	Segezha	No.9: 6.3m No.10: 6.3m No.11: 6.3m	1975) 1976 (01)) 1980s (02))	192
Ilim	Kotlas	No.1: 4.2m No.2: 4.2m	)	70e
Total				**262e**

Segezha has returned to life.

Key Facts on Russian Sack Kraft Capacity

- Total production of sack kraft was some 0.25m tonnes in 2000, excluding small quantities of lower quality grades made by minor mills serving the domestic market.

Segezha has exciting plans

- The key producer is Segezha, which in 2000 produced some 70,000 tonnes of sack kraft for the domestic market and exported 100,000 tonnes of sack kraft and 20,000 tonnes of kraft liner. Over the next five–years it plans to double production to 400,000 tonnes. PM 10 was rebuilt in 2001, raising its speed from some 500 to 700 m/m. PM11 is to be rebuilt in 2002. PM11 produces the kraft liner. The mill uses 100% long fibre pulp, though like most North Russian mills it could also make short fibre pulp.

Analysis of Russian Containerboard Capacity

Group	Location	Machine	Installation/ Rebuild	Grade	2000 Production (000 tonnes)
Archangel	Archangel	No.1: 6.3m	1960s (01)	KLB	225
		No.2: 6.3m	1960s	SC/liner	164
					389
Ilim	Kotlas	No.3: 4.2m	1960s)	KLB)	171
		No.4: 4.2m	1960s)	SC/liner)	58
	Bratsk	6.3m	1980s	KLB	154
					383
Syktyvkar	Syktyvkar	No.2: 6.3m	1969 (86)	White Top	67
				(LPB/FBB	33)
International Paper	Svetogorsk	No.2: 4.2m	1970s (96)	White Top/LPB	65
Others*					412
Total					**1,316**

* *Primarily serving domestic market.*

Unbleached production is dominated by Archangel and Ilim. The two bleached producers are Syktyvkar and Svetogorsk (International Paper).

Key Facts on Russian Containerboard Capacity

Note the rebuild of PM1 at Archangel, Russia's most efficient containerboard machine, and swing tonnage from Segezha

- Total production of containerboard in 2000 was 1.3m tonnes of which kraft liner was some 0.9m tonnes and S–c/other linerboard grades (typically twin ply with a kraft pulp top and semi – chemical bottom) was some 0.4m
- Unbleached kraft liner production was about 750,000 tonnes, of which exports amounted to 571,000 tonnes (some 75%).
- The predominant unbleached kraft liner exporters are Ilim through Kotlas and Bratsk (focused on China) and Archangel, accounting for over 75% of total exports.
- The geographical split of unbleached kraft liner exports in 2000 was Asia 276,000 tonnes, Europe 223,000 tonnes and other 72,000 tonnes.
- White top kraft liner production was some 0.1m tonnes, of which exports amounted to 81,000 tonnes. Syktyvkar and Svetogorsk mills each have a board machine with swing capacity for white top.
- Incremental capacity growth is coming through from Archangel PM1 and Segezeha (swing tonnage of 100,000 tonnes in unbleached kraft liner).

Estimated Analysis of Russian Kraft Liner Production and Exports

Year End December 2000	(000 tonnes) Unbleached Production	White Top Production	Unbleached Exports	White Top Exports
Archangel	225	–	175	–
Ilim	325	–	265	–
Syvtyvkar	–	67	–	81
Svetogorsk*	–	65**	–	
Others	200	–	131	–
Total	**750**	**132****	**571**	**81**

* *International Paper.*
** *Industry total for containerboard includes 100% of production of Svetogorsk board machine.*

In 2000 exports represented some 75% of unbleached production and 60% of bleached production.

Analysis of Russian Unbleached Kraft Liner Exports

Year End December 2000	(000 tonnes) Ilim (Bratsk)	Ilim (Kotlas)	Archangel	Other	Total
Asia					
China	123	7	4	34	168
Iran	–	22	4	8	34
Turkey	–	–	19	5	24
Israel	–	8	6	2	16
Other	–	5	7	22	34
Sub–Total	**123**	**42**	**40**	**71**	**276**
Europe					
Germany	–	15	30	17	62
Other	1	56	76	28	161
Sub–Total	**1**	**71**	**106**	**45**	**223**
Other	1e	27e	29e	15e	72
Total	**125e**	**140e**	**175e**	**131e**	**571**

* *Industry statistics classify production of Segezha as paper, though some kraft liner is produced.*

The principal exporters are Ilim (notably to China from Bratsk) and Archangel (especially to Europe).

Appendix Three: Pathfinder Tables on Russian Production Costs

Наим. Статей	**Name of Positions**
Древесина	Wood
Химикаты	Chemicals
Вспогат. Материалы	Substance materials
Топливо	Fuel
Услуги стор. организаций произв. хар–ра	Service from other firms for production
Зарплата с отчислениями	Salary with contributions
Амортизация	Amortization
Налоги (отн. на себест.)	Taxes (to the product cost)
Прочие расходы	Miscellaneous costs

- Find out the cash cost of production using the above terminology as a guide and the tables below as a working framework.
- Estimate the cost of delivery to the customer including export tax at 10% on FOB price.
- The resulting total shows the competitive position of the mill concerned.

Summary of Key Issues

Strength	Weakness
Currency Depreciation	Indigenous Cost Inflation
Low Labour Costs	Endemic Over–Manning
Low Wood Costs	High Cost of Imports (Chemicals, Materials etc)
Low Historic Capital Costs	Need for Reinvestment
Low Gas Costs	High Coal/Oil Costs
New Generation of Managers	Russian Bureaucracy
Growth Potential	Lack of Capital
Increasing Customer Base Overseas	High Indigenous Taxes, Export Tax and Delivery Costs

A check list of strengths and weaknesses.

Integrated Forest Product Complexes

Syktyvkar	)	
Ilim (Kotlas/Bratsk)	)	
Archangel	)	Remote locations.
Kondopoga	)	Lack of other employers.
Solikamsk	)	Difficulty of reducing labour.
Ust–Ilimsk (market pulp)	)	Syktyvkar the lowest cost producer.
Segezha	)	
Baikal (market pulp)	)	
Solombala (market pulp)	)	

Mills Without Forest Product Integration

Svetogorsk*	Integrated back to chemical pulp, but not to forestry.
Volga	Newsprint production, based on mechanical pulp.
Ilim (St. Petersburg)	Recycled fibre/purchased pulp.

* *International Paper*.

The industry is largely based on integrated forest product complexes with associated lumber and woodlands operations plus extensive engineering/maintenance capability. There tends to be a considerable welfare fabric, such as a school, a swimming pool and even a sanitorium. Given the lack of infrastructure in the economy, the huge distances and extremes of climate, being self–sufficient is only prudent.

Ilim: Illustration of Manning Levels

Mill	Employees	Principal activity	2000 Production (000 tonnes)
Kotlas	10,500	Pulp Paper Board Woodlands Packaging	829 (incl. Market 293) 231 229 4.5m cu metres
Bratsk	13,500	Pulp Board Woodlands Lumber Plywood	574 (inc. market 358) 154 3.0m cu metres 300,000 cu metres 150,000 cu metres
St Petersburg	2,500	Board (WLC) Cartons	162 (2x 4.2m machines) 50
Total	26,500	Market pulp Paper and Board Woodlands Conversion/ancillary	651) 1,427 776) 7.5m cu metres

Ilim's manning levels are typical.

Key Facts on Manning Levels at Ilim

Labour is cheap, but difficult to shed. Productivity is low

- Kotlas employs 10,500 or approximately 25% of the local population. Each family is connected with the mill.
- Average pay is 7,000 Roubles per month gross (4,000 net), hence 91,000 Roubles per year including an extra month of bonus pay. This equates at an exchange of Roubles 30 to some US$3,000 p.a. or US$ 31.5m p.a. in total.
- Kotlas has a similar labour force to Archangel, a comparable forest products complex.
- Very difficult to reduce numbers because of lack of other employment elsewhere.
- Productivity is low – Ilim required 26,500 people to achieve external sales of pulp and paper/board of some 1.5m tonnes plus supportive forestry and conversion operations.

Russian Energy Sources: Principal Components

	Source of energy			
Group	**Gas**	**Oil**	**Coal**	**Kraft Recovery**
Ilim				
Kotlas	*			*
Bratsk				*
St Petersberg	*			
Archangel		*		*
Syktyvkar	*			*
Svetogorsk				*
Kondopoga	*			
Solikamsk	*			
Ust–Ilimsk				*
Segezha		*	*	
Baikal				*
Solombala		*		

Oil: US$70 per tonne
1 tonne per tonne of paper

Electricity: US$ 17 per MWH
(Total electricity consumption at Volga 167MW)

The lucky ones feed off indigenous gas, which is cheap.

Key Facts on Russian Energy Sources

Investment needs to be made in recovery and biomass boilers

- Mills using gas have a significant advantage over those consuming oil and coal. Indigenous gas is cheap and plentiful.
- Recovery boilers in kraft pulp mills tend to be old and inefficient.
- Relatively little progress has been made with bark/biomass boilers.
- The cost of purchased electricity is relatively low. This favours Volga, which makes newsprint from TMP and groundwood and consumes 2.7MWH per tonne of paper. Note Kondopoga is to replace its sulphite mill with TMP.
- Syktyvkar and some other mills sell surplus electricity to the grid.

Syktyvkar: Competitive Advantages

Wood Cost (Debarked at mill)	US $13–16 versus $18–20 industry av. per cu metre
Employees	5,000 overall, down from 9,000. 2,500 at mill (219 tonnes of paper per man)
Paper machine speed	1,000 m/m av.
Energy Source	Gas (80%) Kraft Recovery (20%)
Power Station	Internal Consumption 230MW Sale potential 190MW Total Capacity 420MW
Age of Plant	Two oldest machines 1969 Other two 1984/85 $160m recent modernisation. Most other complexes are much older and less well–invested.

Syktyvkar has become the lowest cost producer in Russia, pace Svetogorsk (said to be one of International Paper's most profitable mills).

Russian Pulp and Paper Cash Production Costs

Grade	US$ tonne
Bleached Softwood Kraft Pulp	250
Unbleached Kraft Liner	200
Newsprint (high)	200
Newsprint (low)	150
Uncoated woodfree	240
Bleached Board	240

The financial focus at mills is on the cash cost of production. Worked examples follow of total cash costs, including delivery and export tax, for pulp and kraft liner.

Siberian Pulp Production and Delivery Costs to Southern China

Abbreviated Profit and Loss	**BSK to Southern China (US$ tonne)**
Delivered price	480
Marketing expenses	(30)
Delivery cost to Southern China	(70)
10% export tax on FOB price	(35)
FOB price	**345**
Transport to border	(20)
Ex – mill price	**325**
Cash cost of production	(250)
Cash operating profit	**75**
Cash operating margin	**16%**

Cash Cost of Production		
Wood	100	(40%)
Chemicals	30	(12%)
Packaging/other furnish materials	20	(8%)
Energy	20	(8%)
Maintenance	25	(10%)
Labour	30	(12%)
Other	25	(10%)
Total	**250**	**(100%)**

Export Tax/Total delivery cost (inc. marketing)	155
Cash production costs	250
Total cash operating cost	**405**

In cash terms Siberian pulp producers can break even on exports to Southern China of BSK at about US$400 tonne.

Russian Kraft Liner Production and Delivery Costs: Close Port Proximity

Abbreviated Profit and Loss	**175gsm to Western Europe (US$ tonne)**	
Delivered price	460	
Agent's profit margin	(20)	
Financing cost	(20)*	
Loading and delivery	(25)	
CIF price	**395**	
Freight and Insurance	(50)	
10% export duty on FOB price	(31)	
FOB price	**314**	
Transport to port	(10)	(25 for an inland location)
Ex – mill price	**304**	
Cash cost of production	(200)	
Cash operating profit	**104**	
Cash operating margin	**23%**	

Cash Cost of Production			
Wood	92		(46%)
Chemicals	) 108	)	
Packaging/other furnish materials	)	)	
Energy	)	)	
Maintenance	)	)	
Labour	)	)	
Other	)	)	
Total	**200**		**(100%)**

Export Tax/Total delivery cost (inc. agent)	156
Cash production costs	200
Total cash operating cost	**356**

* *Funding payment to mill at port of origin against 60 day credit to customer.*

In cash terms North Russian brown kraft liner producers can break even on exports to Western Europe at about US$350–400 per tonne. Thus they can make a living assuming, for example, that the UK kraft liner price falls by September 2001 to US$400 per tonne. It has already declined by US$100 to US$450 per tonne since the peak in 2000.