

PIMA INTERNATIONAL LEADERSHIP CONFERENCE

COMPETITIVE CHANGES IN CONTAINERBOARD MANUFACTURING
FROM NEW GEOGRAPHIC SUPPLY AND PRODUCTS
THE TIMES THEY ARE A-CHANGIN'

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Sr. Product Manager

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RISI Benchmarking Services

Our People

Core group of six professionals, supported in part by extensive reach of RISI

Over 100 total years of industry experience

Total group specific experience of over 50 years

Diverse work backgrounds from US pulp mill engineering and production to Asian mill operations to European mill process engineering to global paper machine process control systems to competitor industry consulting

Educational backgrounds include chemical engineering, mechanical engineering, MBA

RISI Benchmarking Services

Our Work

Competitive manufacturing cost benchmarking information for the global pulp, paper & board and wood products industries

35 grade studies ranging from bleached softwood kraft (market) pulp to Asian newsprint to retail tissue to wood products with a total of six containerboard and five cartonboard studies

Containerboard studies include virgin and recycle grades, linerboard and medium, and coverage in North America, Europe, Asia, Oceania, Africa, and Latin America

Coverage of over 1000 global mills

Analytical Cornerstone – the user-friendly model and database that “powers” the benchmarking information

Scenario Manager – provides the user with the ability to interact with the database for “what if” scenarios

THE SEVEN NATURAL EXPENSE CATEGORIES

Fiber

- Roundwood
- Chips
- Purch. Pulp
- Recycled



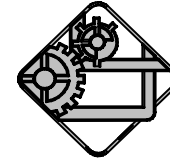
Hourly Labor

- Operators
- Maintenance

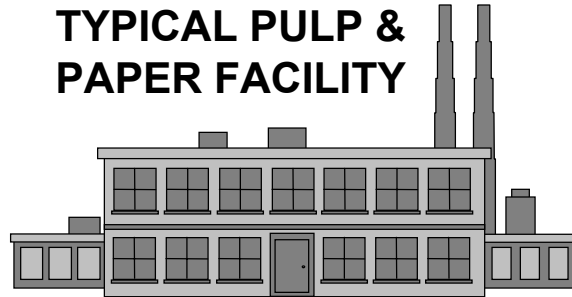


Salaried Labor

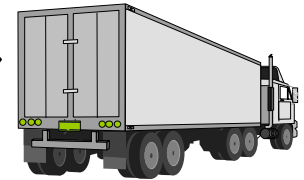
Materials



TYPICAL PULP & PAPER FACILITY

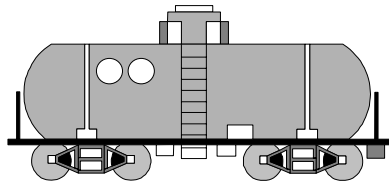


Finished Product



Chemicals

- Pulping
- Bleaching
- Papermaking
- Coating
- Water Treatment

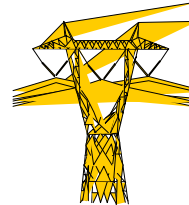


Fuels

- Oil
- Coal
- Gas
- Other



Electricity



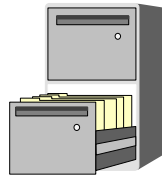
Our Methodology

- News Releases
- Magazine Articles
- Capacity Data
- Directories
- Trip Reports
- Outside Consultants
- Internal Data
- Personal Knowledge
- Internet

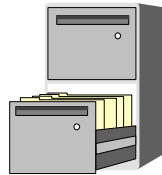
- Equipment Suppliers
- Technical Studies
- Engineering Studies
- Experience

- Governmental Reports
- Wage & Benefit Data
- Suppliers
- Consultants
- Periodicals

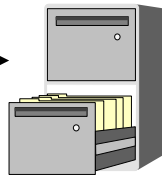
Mill
Data Files



Consumption
Data Files



Unit Cost
Data Files



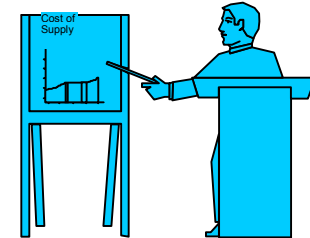
Mass & Energy
Balance



Cost
Calculations



Review &
Analysis



- Competitive Benchmarking
- Facility Optimization Studies
- Conversion Studies
- Acquisition/Merger Analysis
- Industry Analysis
- Other

Feedback

Overview of Containerboard Benchmarking

Major Inputs – Natural Expense Categories

What is included

Fiber – wood, recovered paper, market pulp

Chemicals – pulping, bleaching, stock prep, paper machine, effluent

Energy – fuel, electricity, steam

Labor – hourly and salaried, including benefits

Miscellaneous – maintenance materials, operating supplies, contract maintenance, contract maintenance materials

What is not included

S. G. & A, Taxes, insurance, corporate overhead, depreciation

Overview of Containerboard Benchmarking Linerboard and Corrugating Medium

Linerboard

Kraft, recycled, whitetop (NA and Europe only)

North America, Europe, Latin America, Africa, Asia, Oceania

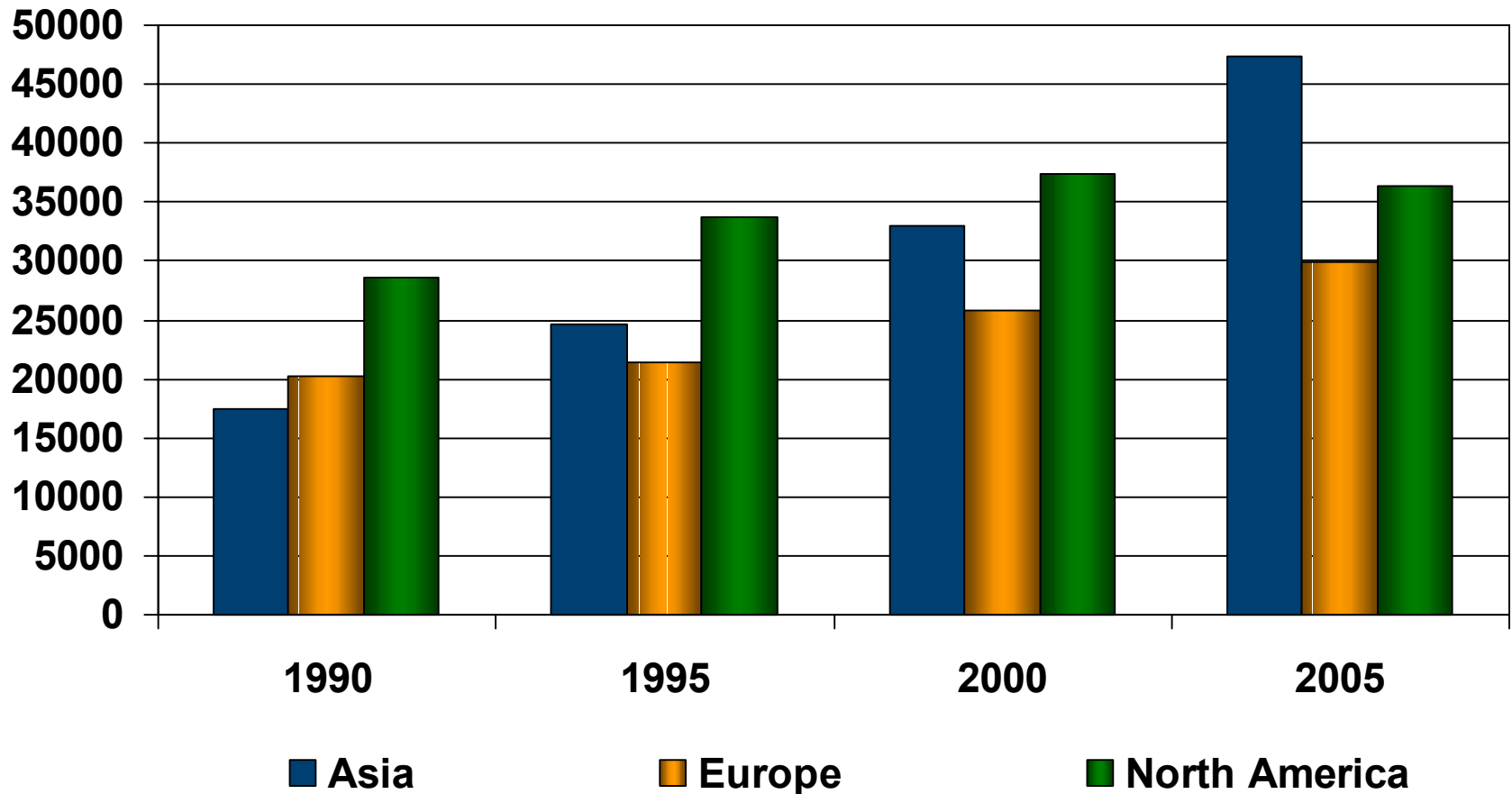
Corrugating Medium

Semi-chemical (NSSC), recycled

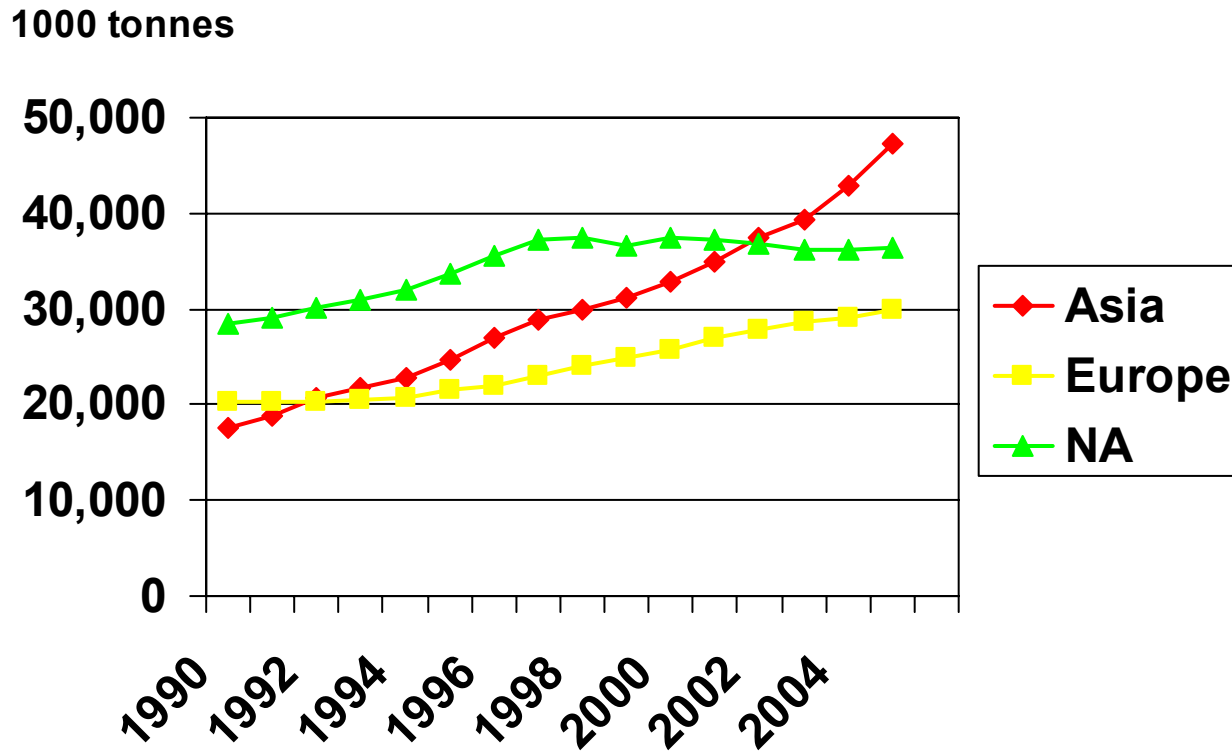
North America, Europe, Latin America, Africa, Asia, Oceania

Global Containerboard Capacity (1990-2005)

1000 Tonnes

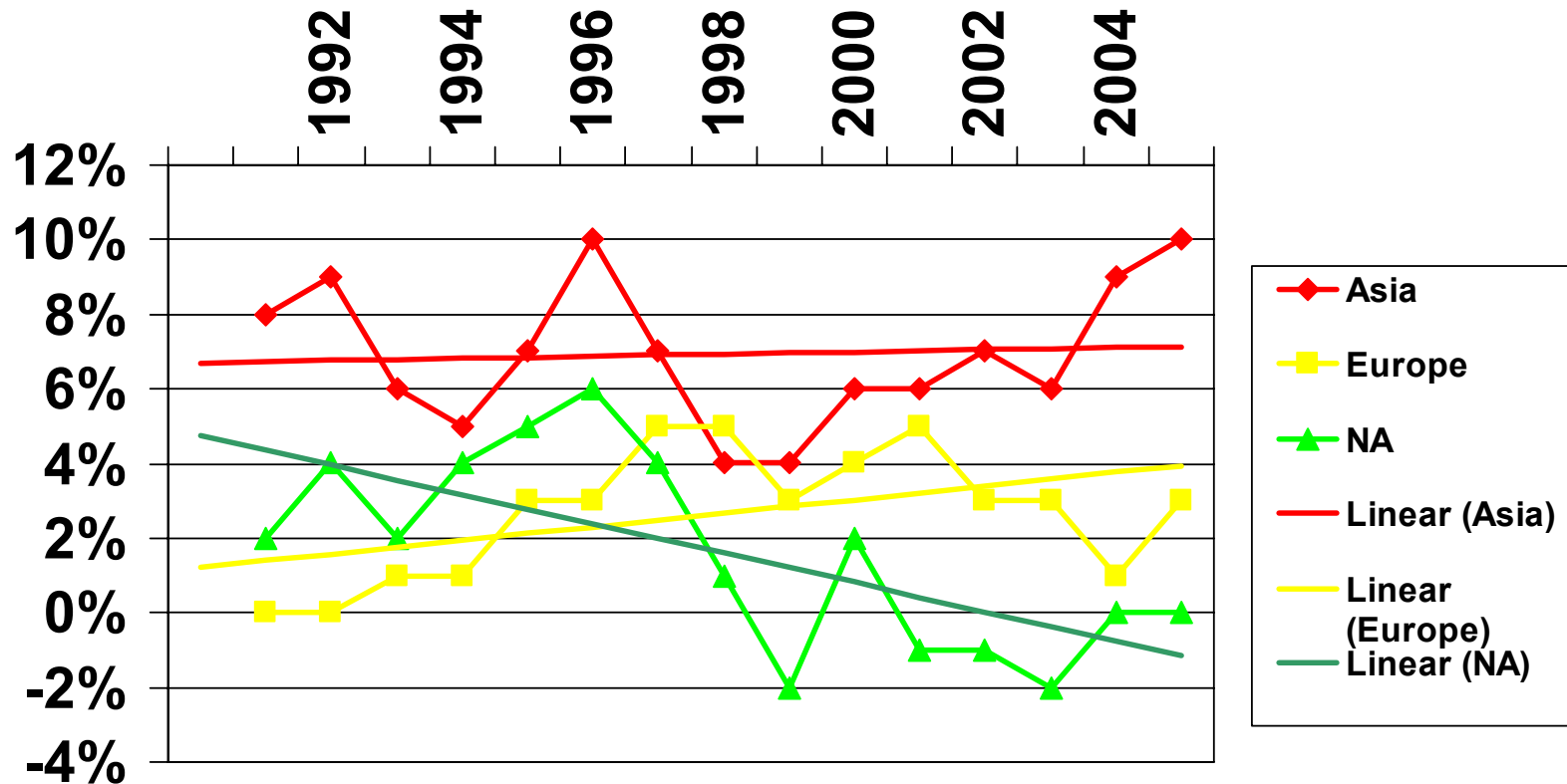


Global Containerboard Capacity 1990-2005

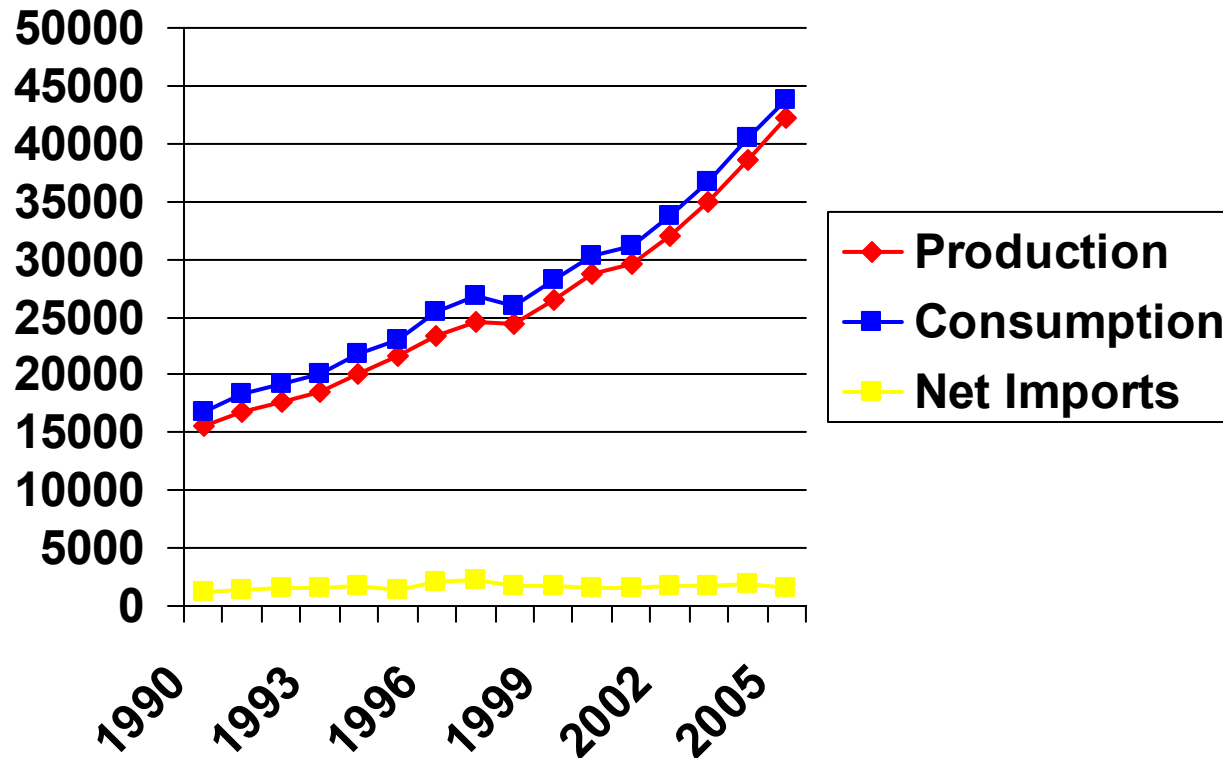


Global Containerboard Capacity 1990-2005

% Growth

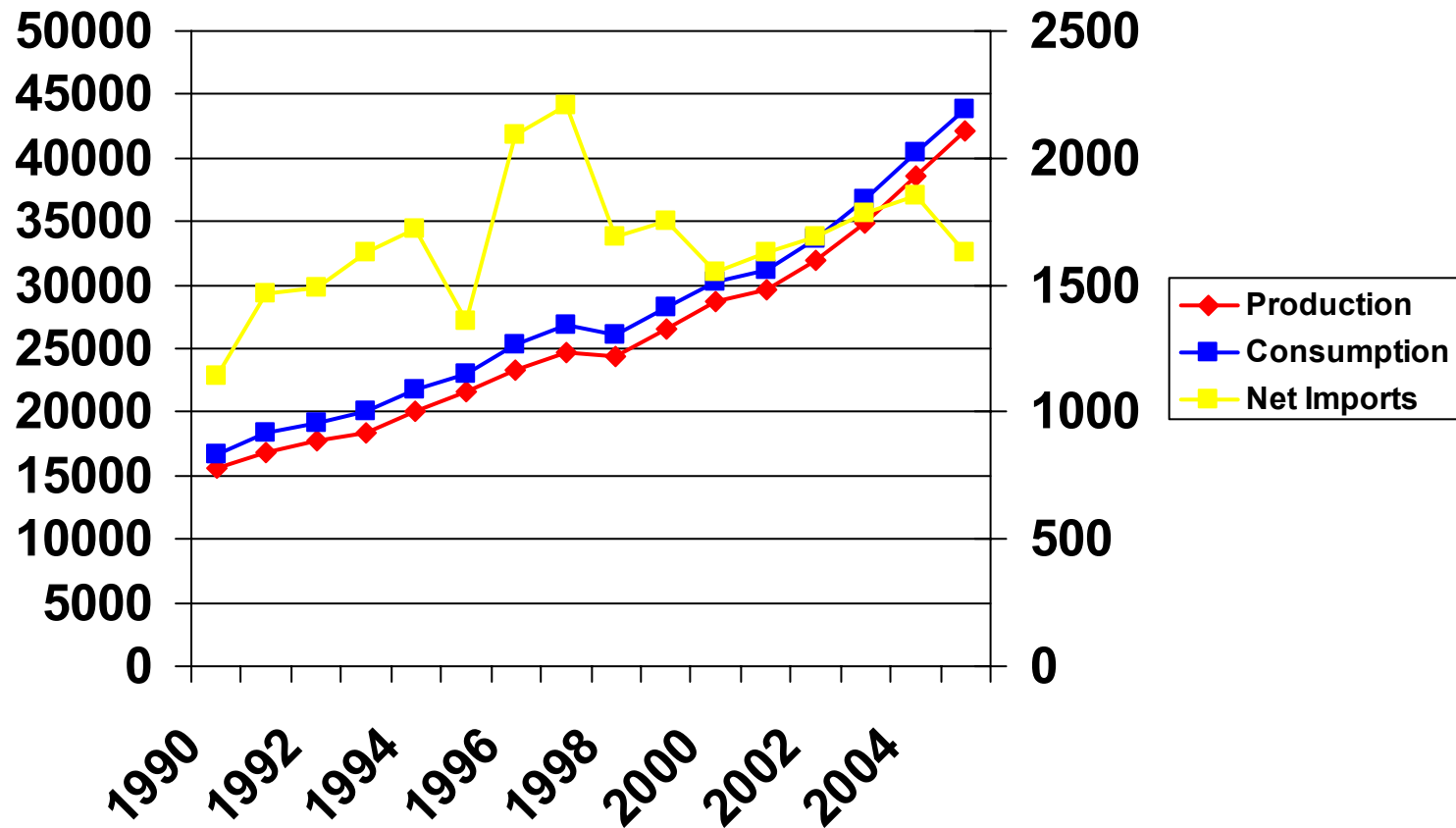


Asian Containerboard Production/Capacity/Imports 1990-2005 1000 MT/Y



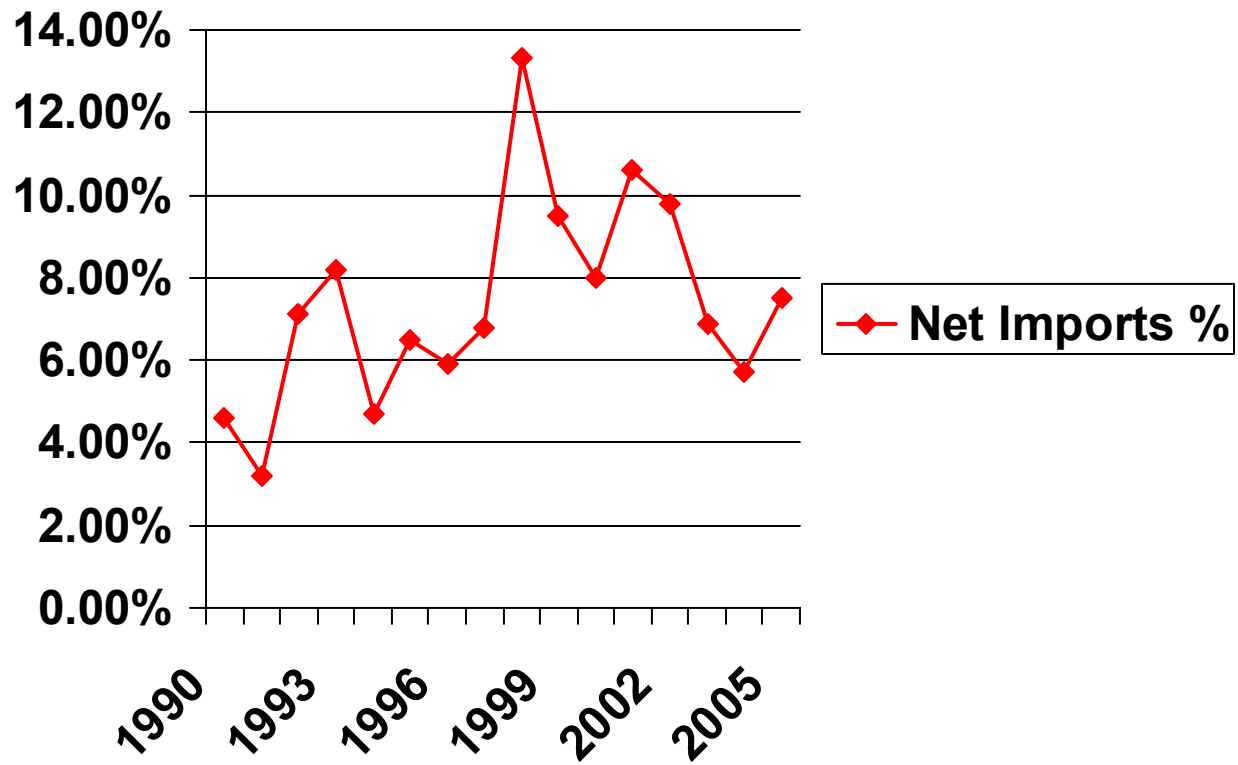
Asian Containerboard Production/Capacity/Imports 1990-2005

1000 MT/Y



Asian Containerboard 1990-2005

Net Imports / Consumption



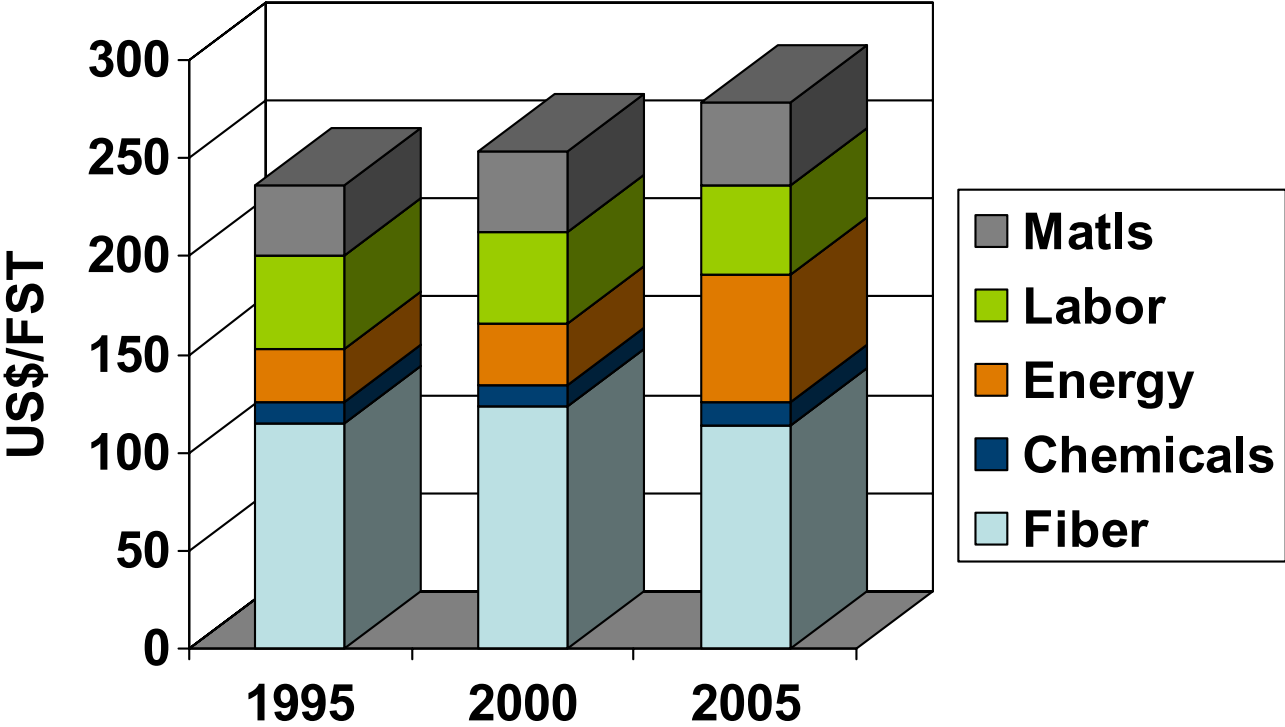
Global Unbleached Liner Cash Cost

		US\$/ FMT					
	Capacity MM tons	Fiber	Chems	Energy	Labor	Matls, Etc.	Totals
Asia	15.49	189	11	56	22	33	310
Europe	10.16	109	13	68	43	42	276
NA	22.05	126	13	72	50	47	307
Totals	47.70	143	12	66	39	41	301

Global Unbleached Liner Cash Cost Delivered to Shanghai

		US\$/ FMT		
	Capacity MM tons	Cash Cost	Delivery	Delivered Cost
Asia	15.49	310	42	352
Europe	10.16	276	160	436
NA	22.05	307	98	405
Totals	47.70	301	93	395

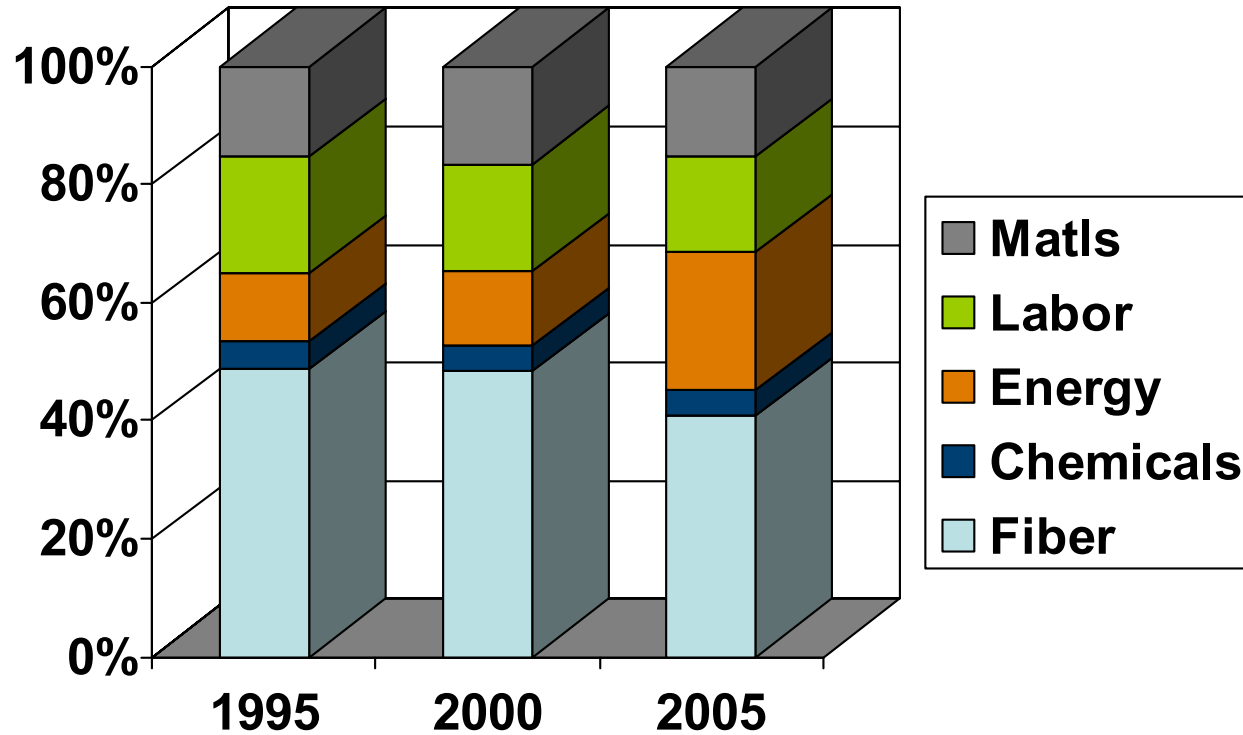
NA Unbleached Linerboard US\$/FST



NA Unbleached Linerboard Average US\$/FST

	Fiber	Chems	Energy	Labor	Misc	Total
1995	115	11	27	47	36	235
2000	123	11	32	46	42	254
2005	114	12	65	45	43	275

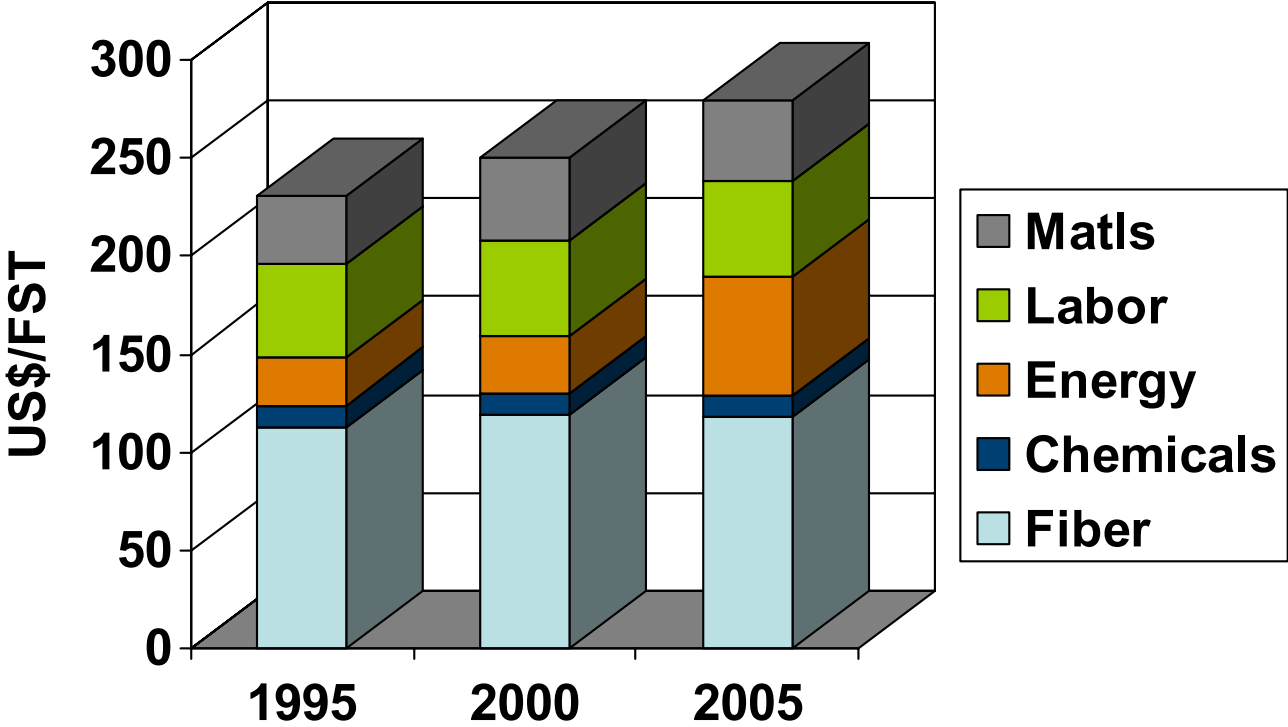
NA Unbleached Linerboard % of Total Cost



NA Unbleached Linerboard % of Total Cost

	Fiber	Chems	Energy	Labor	Misc
1995	49%	5%	11%	20%	15%
2000	48%	4%	13%	18%	17%
2005	41%	4%	23%	16%	16%

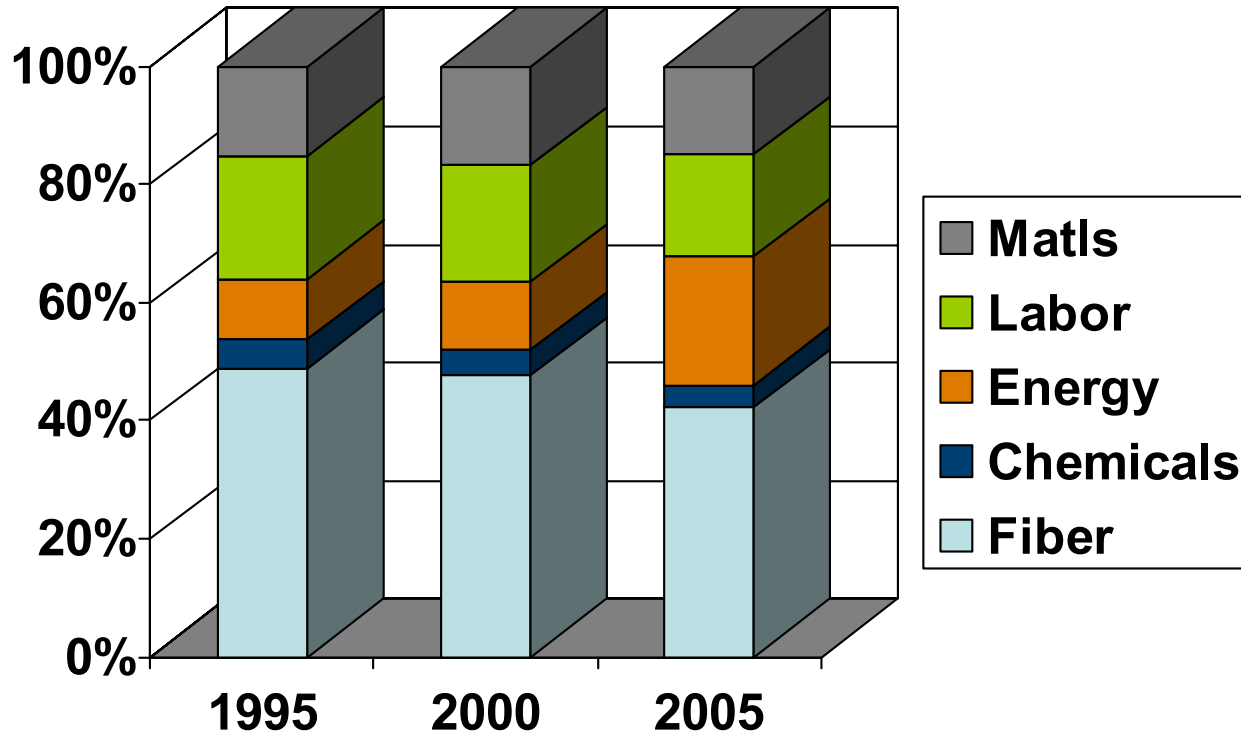
NA Integrated Linerboard US\$/FST



NA Integrated Unbleached Linerboard Average US\$/FST

	Fiber	Chems	Energy	Labor	Misc	Total
1995	113	11	24	48	35	231
2000	129	11	29	49	42	260
2005	118	11	61	48	42	281

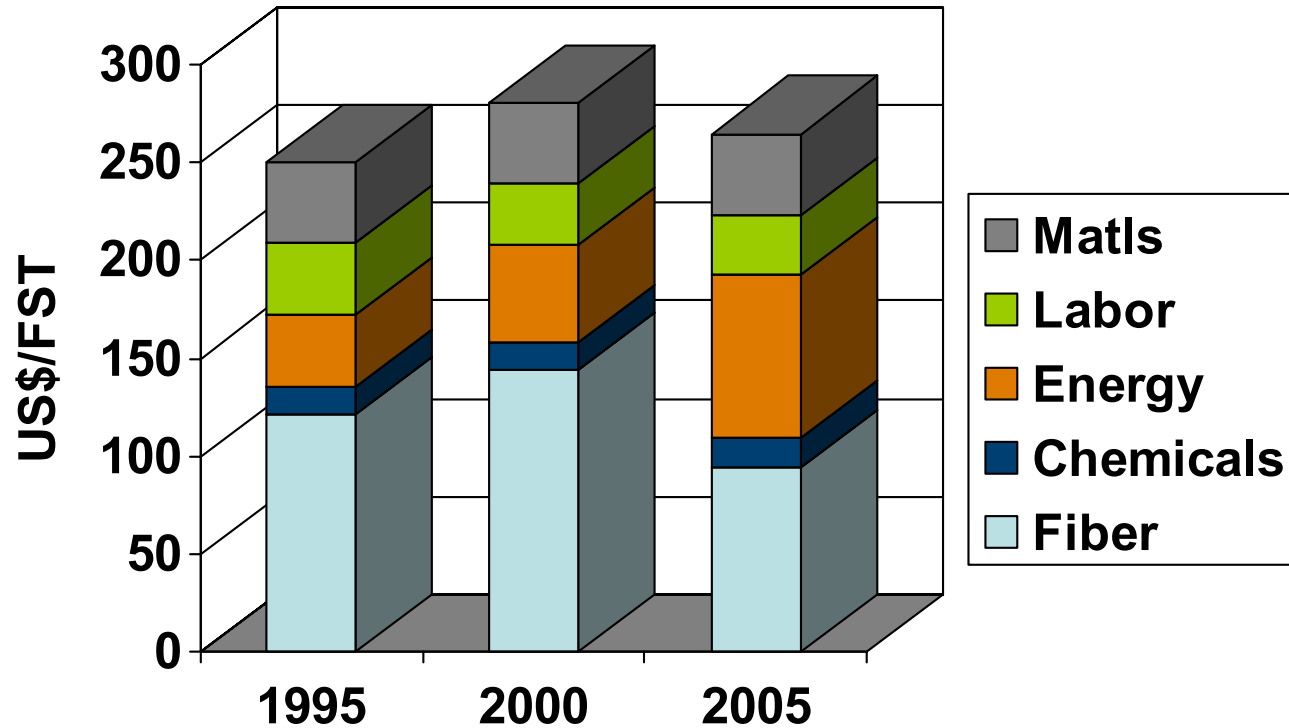
NA Integrated Linerboard % of Total Cost



NA Integrated Unbleached Linerboard % of Total Cost

	Fiber	Chems	Energy	Labor	Misc
1995	49%	5%	10%	21%	15%
2000	50%	4%	11%	19%	16%
2005	42%	4%	22%	17%	15%

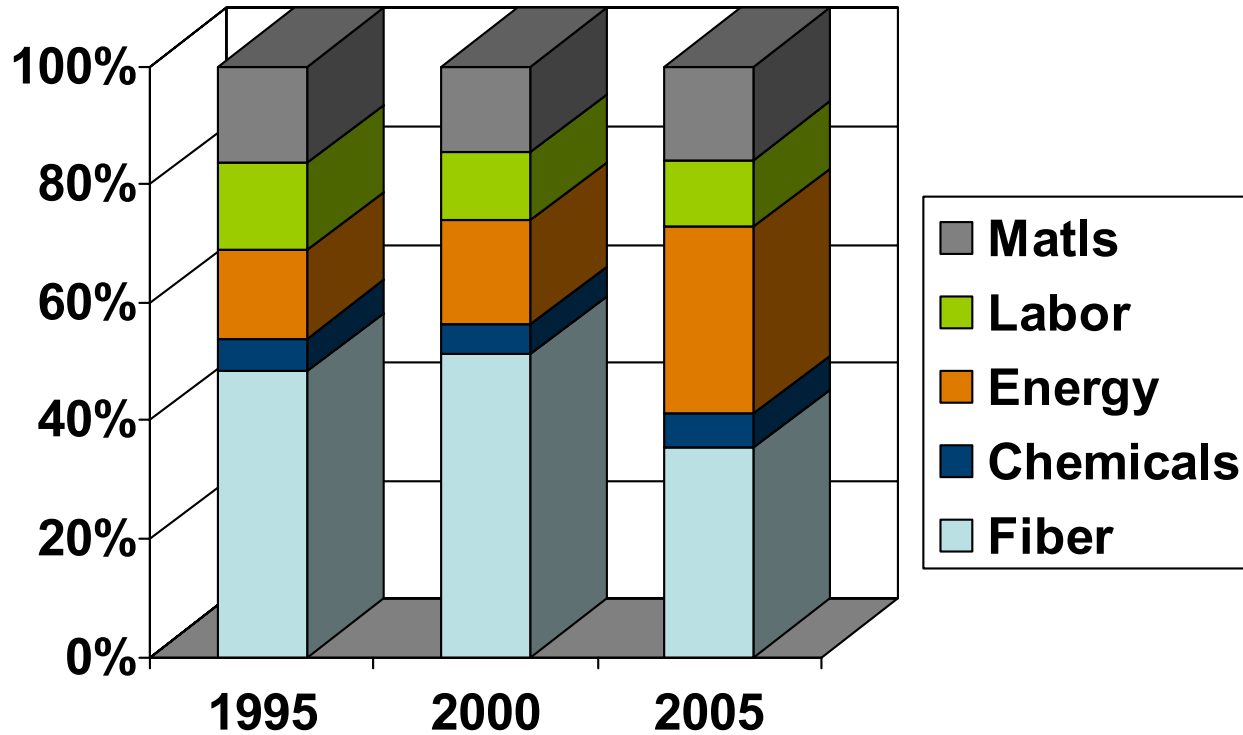
NA Recycled Linerboard US\$/FST



NA Recycled Unbleached Linerboard Average US\$/FST

	Fiber	Chems	Energy	Labor	Misc	Total
1995	121	14	37	37	41	250
2000	144	14	50	32	41	280
2005	94	15	84	30	42	267

NA Recycled Linerboard % of Total Cost

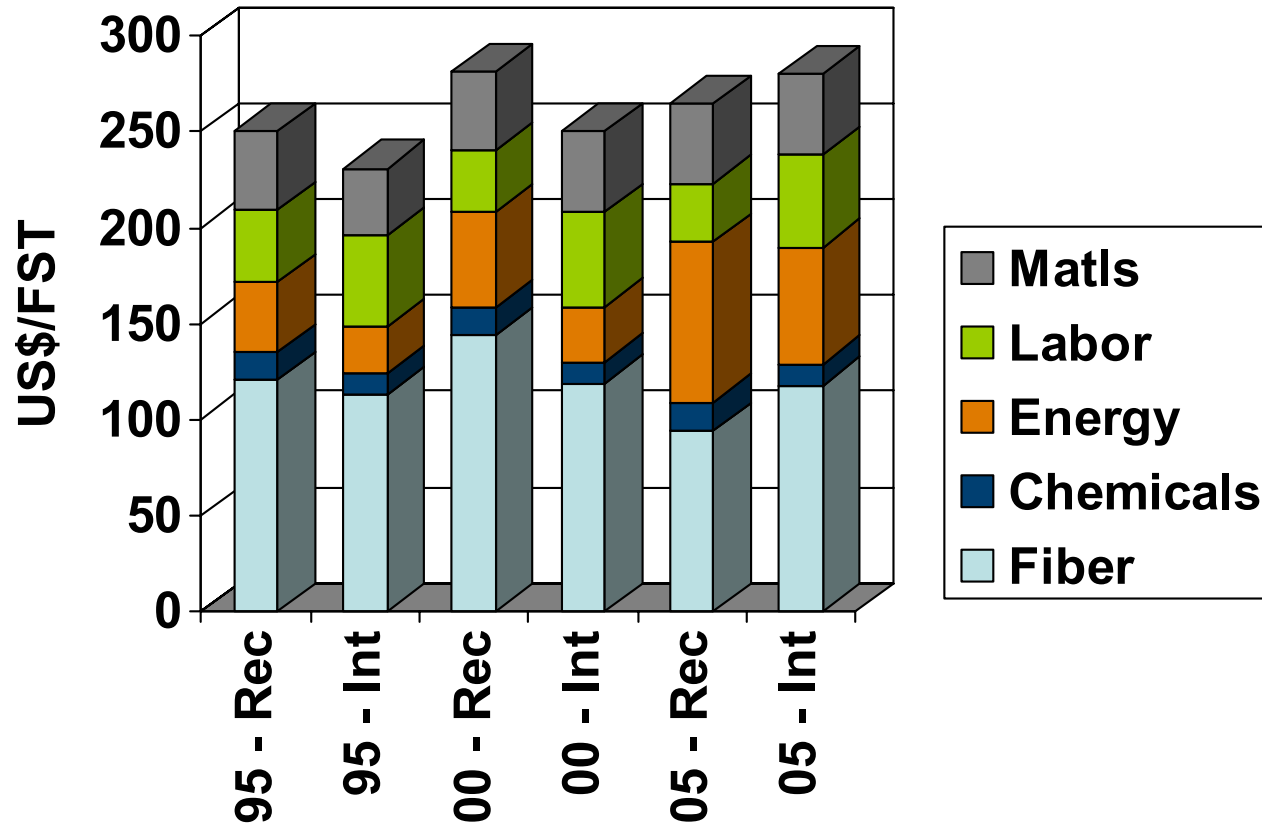


NA Recycled Unbleached Linerboard % of Total Cost

	Fiber	Chems	Energy	Labor	Misc
1995	48%	6%	15%	15%	16%
2000	51%	5%	18%	11%	15%
2005	35%	6%	31%	11%	16%

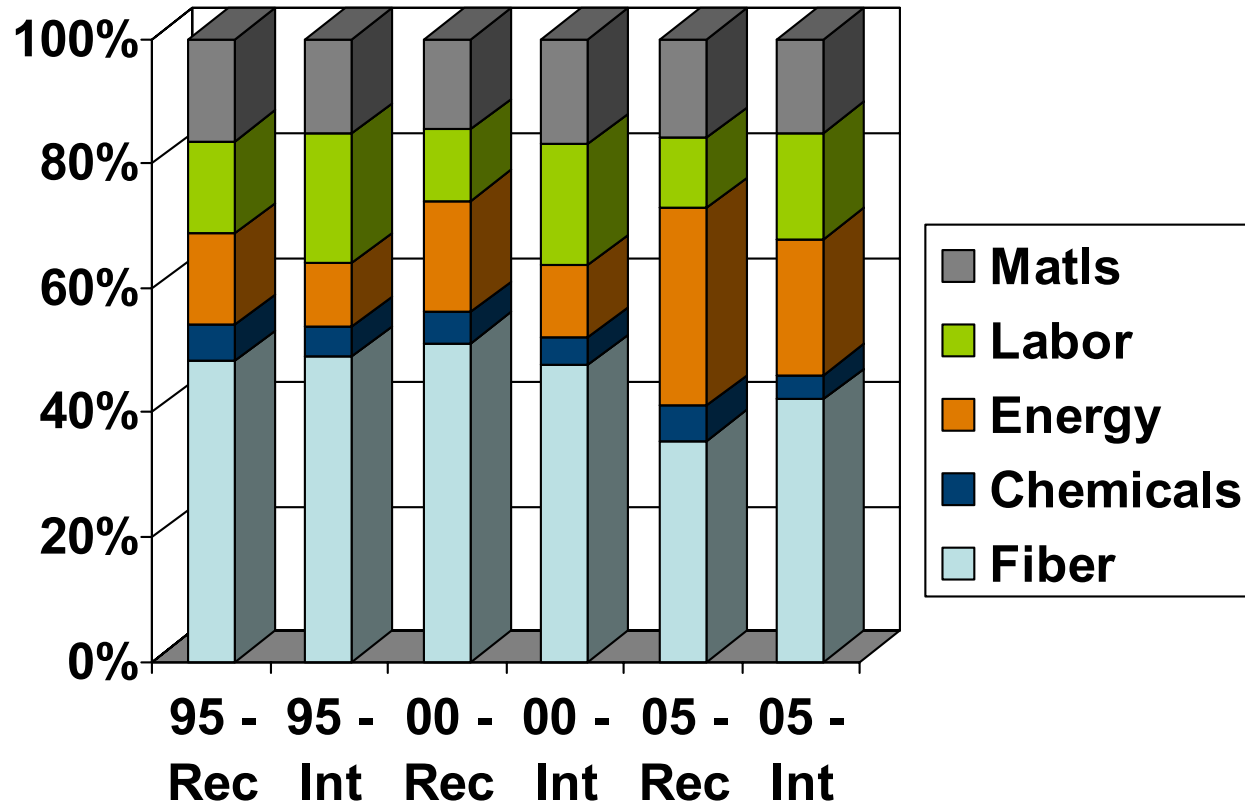
NA Linerboard 1995-2005

US\$/FST

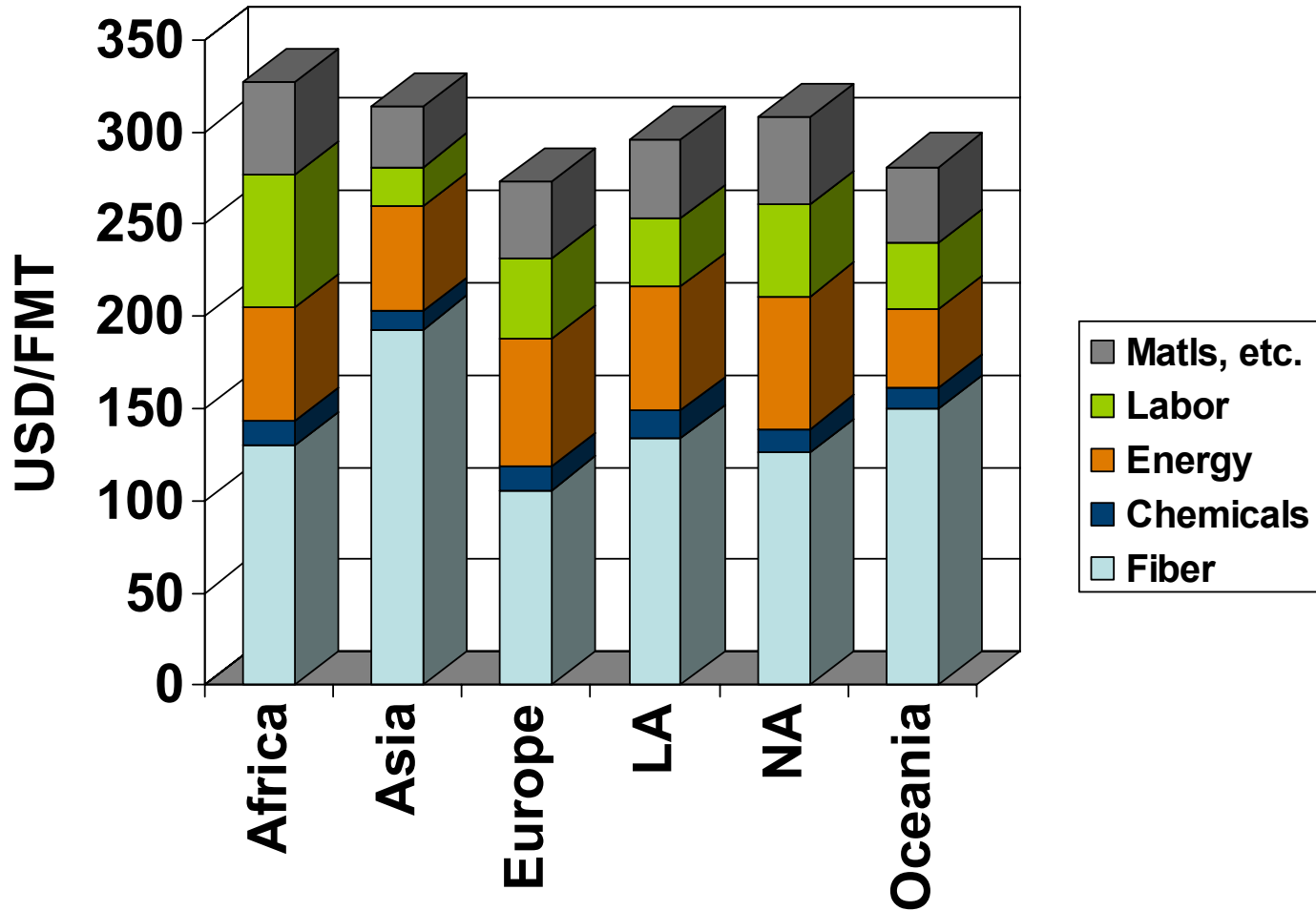


NA Linerboard 1995-2005

% of Total Cost



2005 Global Unbleached Linerboard Manufacturing Cost Comparison – US\$/FMT



Conclusions – The times they are a-changin’

Asia emerging more and continuing to grow

Asia not as viable an outlet for other producers and will be less so going forward except perhaps for kraft liner and semi-chemical medium grades.

Energy costs have become much more important in the manufacture of containerboard and will remain so for the foreseeable future.