

The OCC Shortage

Increasing demand, rising prices

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Today's Topics

- Global industry overview
- Increased paper recovery
- Price pressure
- Future outlook





Global Industry Overview



Industry Shift to Recovered Paper in 1990s

- Initial low prices due to increased recycling
- Environmental consciousness
- Improved technology
- Rising demand for containerboard
- Lower cost than virgin fiber
- Aggressive investment in new technology in China

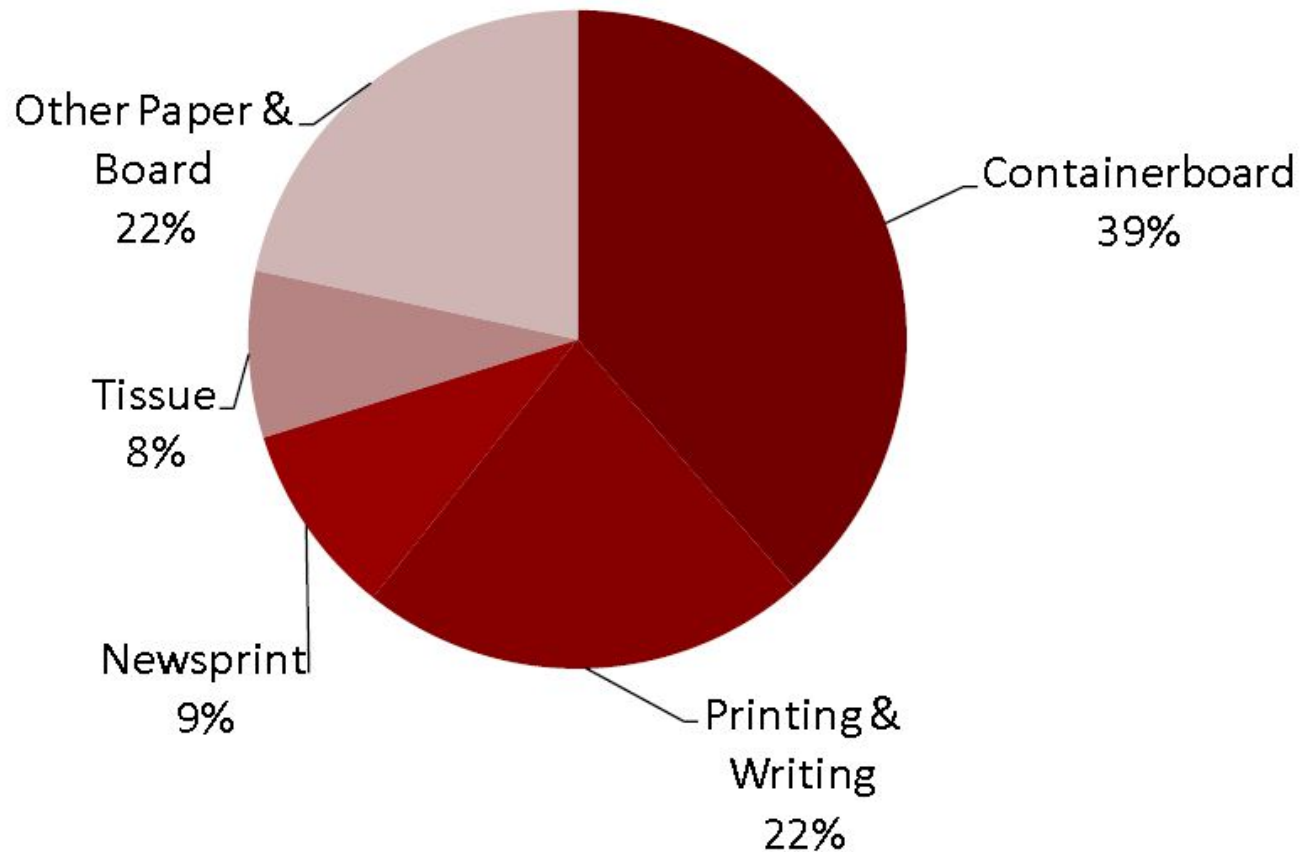


Fiber Consumption Today

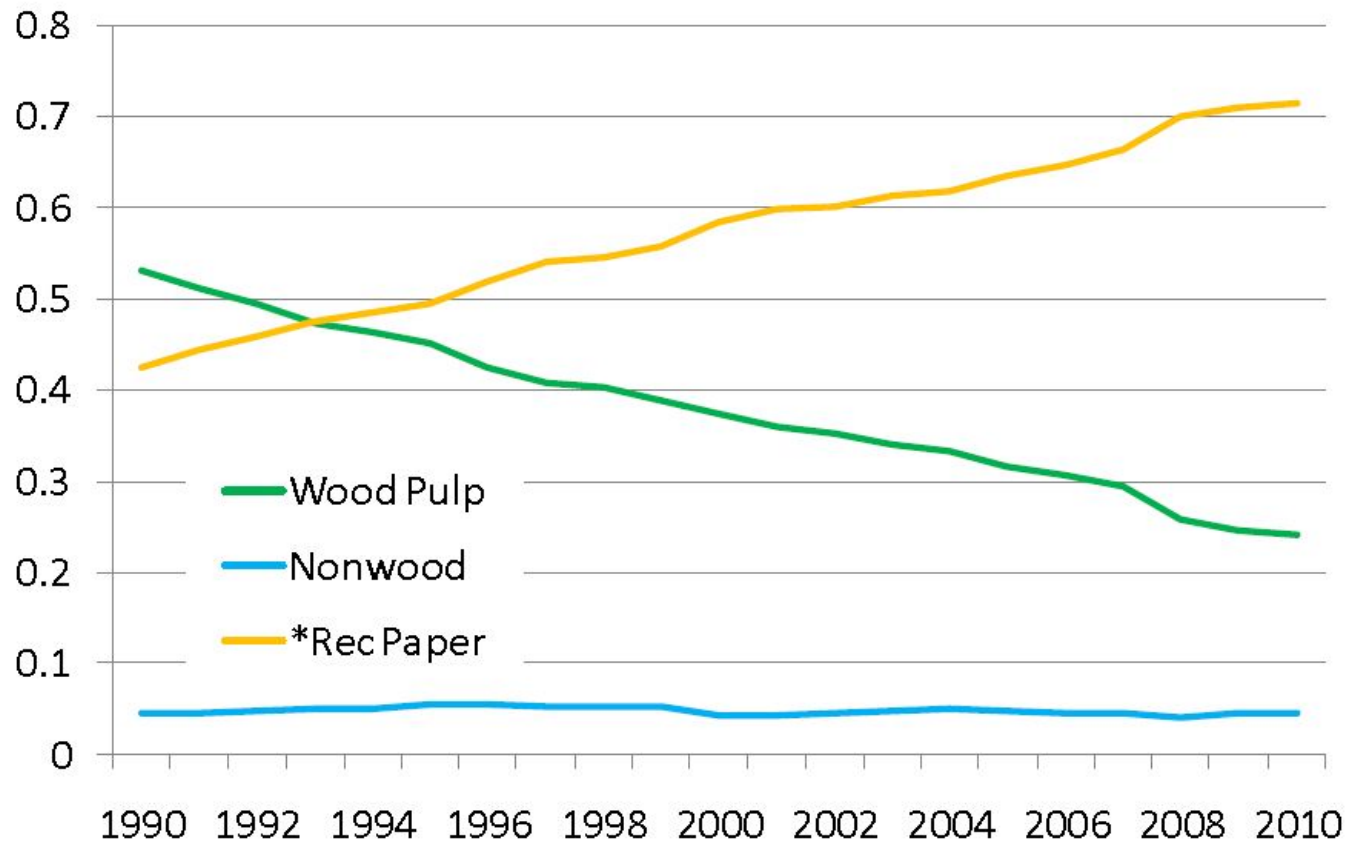
- 2010 worldwide consumption: 402 million tonnes
 - 164 million tonnes of wood pulp
 - 218 million tonnes of recovered paper
- Containerboard is biggest consumer of fiber in P&B Industry

2010 World Fiber Consumption by Paper and Board Grade

402 million tonnes



Furnish Shares of World Containerboard Production



*Net of fiber loss



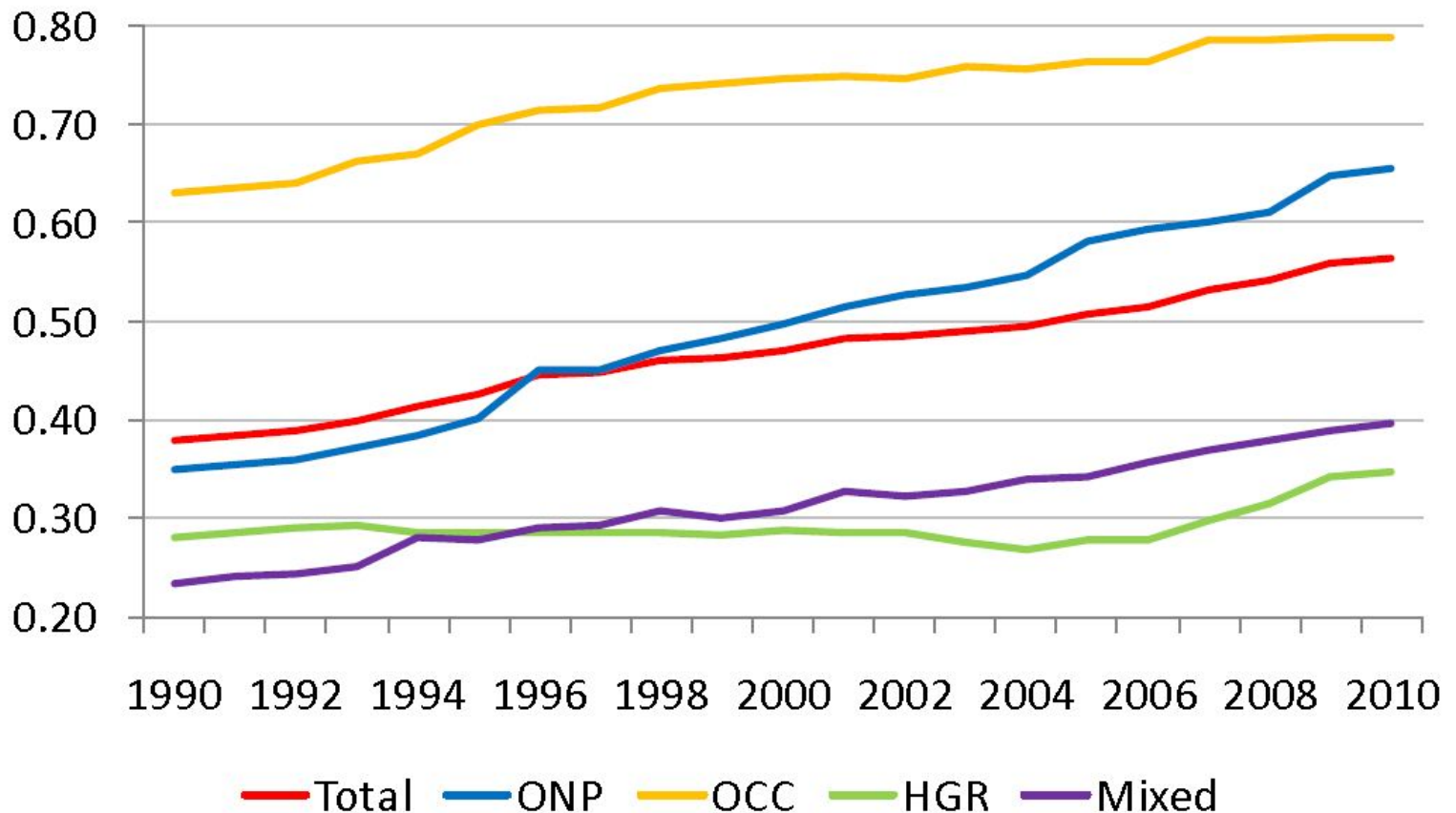
Increased Paper Recovery

Rapid Growth of Recovered Paper

- World recovery rate for all grades hit 56 percent in 2010
 - OCC hit 79 percent
 - Mixed reached 40 percent
 - High grade topped 35 percent



World Recovery Rates for Major Recovered Paper Grades



Record Paper Recovery Rates

- Highest in developed regions
 - Japan leads at 80 percent paper recovery rate
 - Oceania and Western Europe right behind

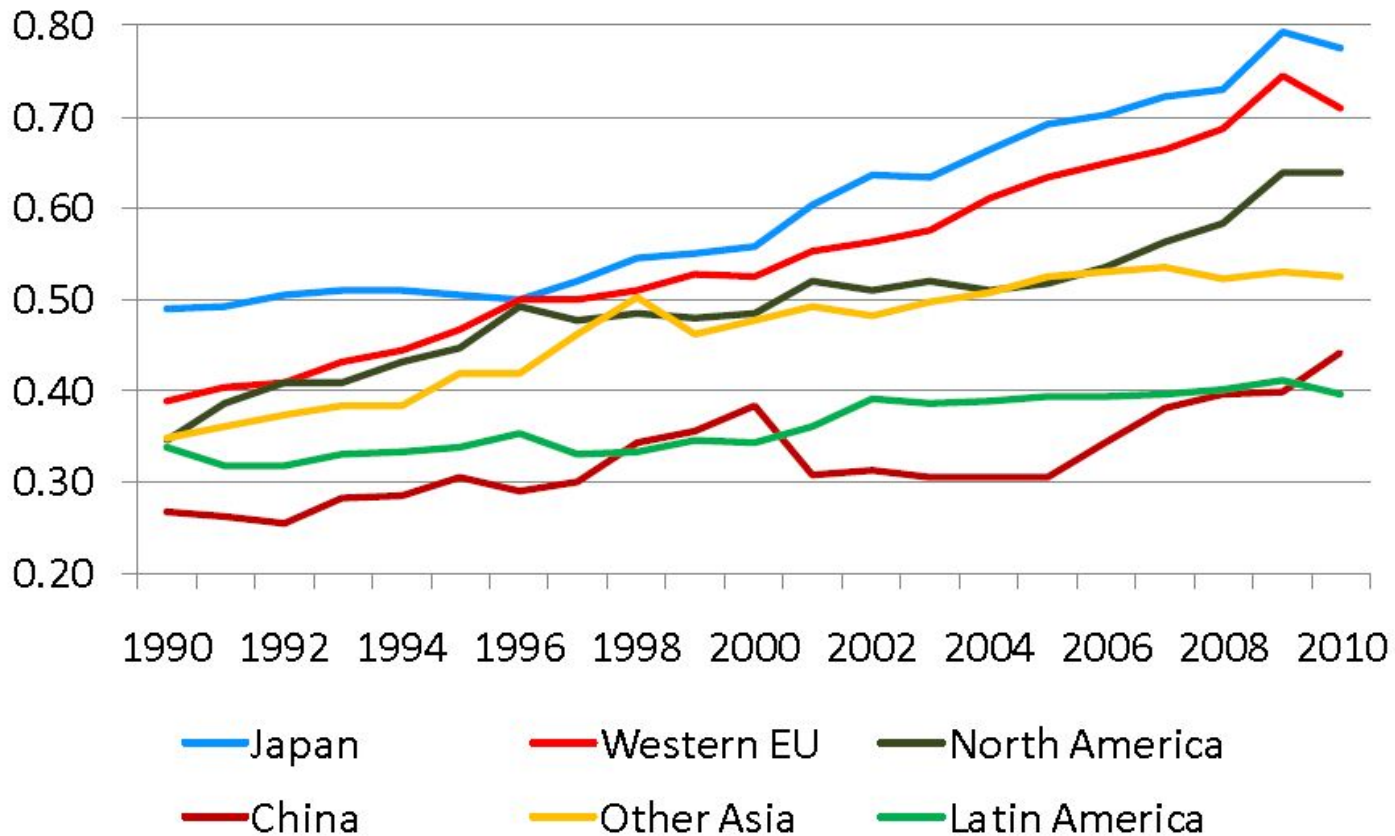




U.S. OCC Recovery Rate

- After a 2009 decline, U.S. purchases of containerboard rebounded in 2010 to 31.7 million short tons
- OCC recovery within the U.S. rose 11.2 percent in 2010 to an overall rate of 85.1 percent driven by:
 - Domestic demand
 - Exports

Paper Recovery Rates in Major World Regions

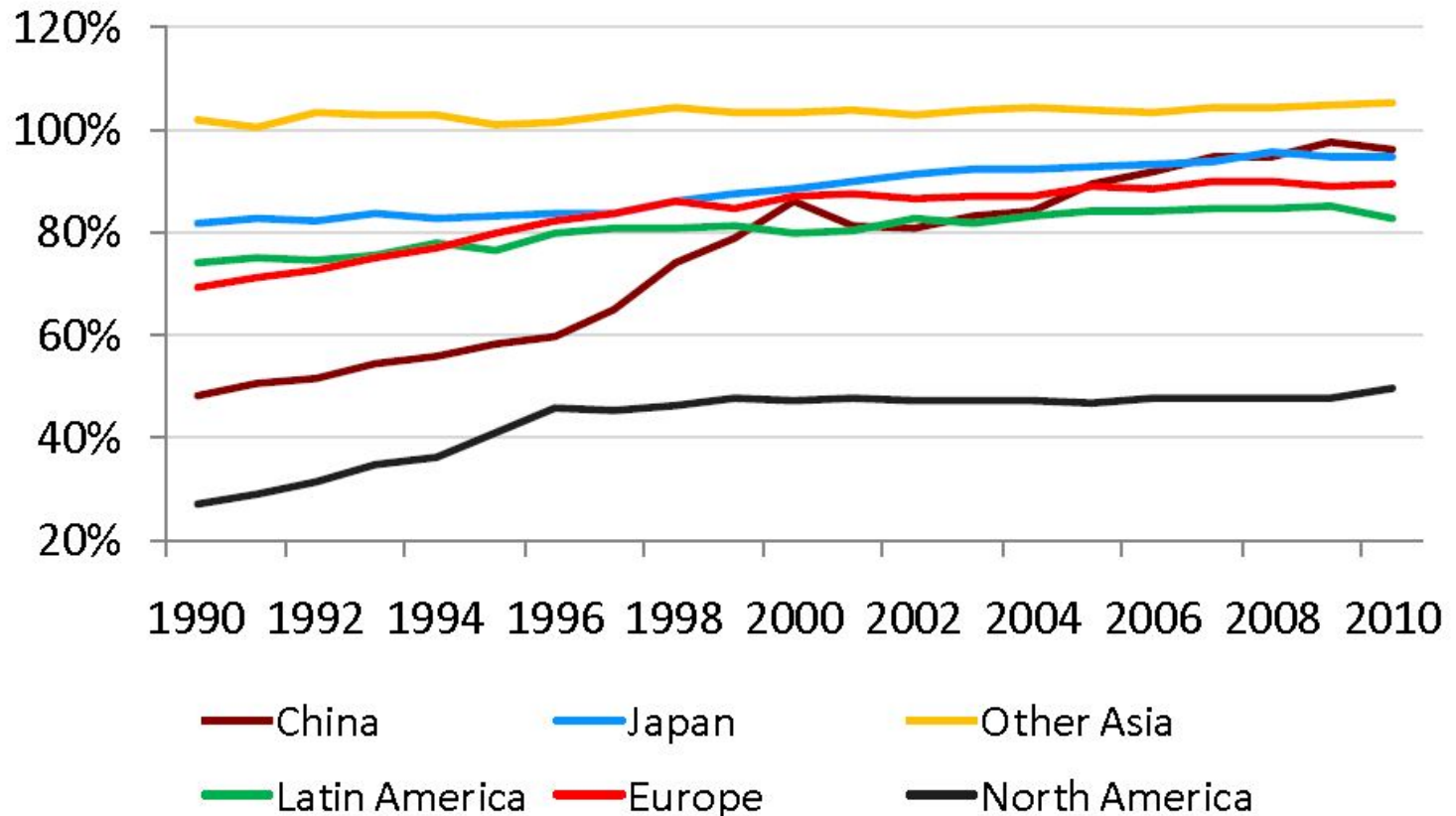


Who are the Largest Recovered Paper Consumers?

- China uses the most recovered paper
- Developing regions are heavy users
- Developed regions lag behind
 - Greater use of virgin fiber



Recovered Paper Share of Containerboard Furnish by Region





Price Pressure

Rising Prices

- Steady climb during past 10 years
 - Tightness in markets
 - Rising costs as we dig deeper into the waste stream
 - Processing lower quality materials
 - Expanding geographic footprint



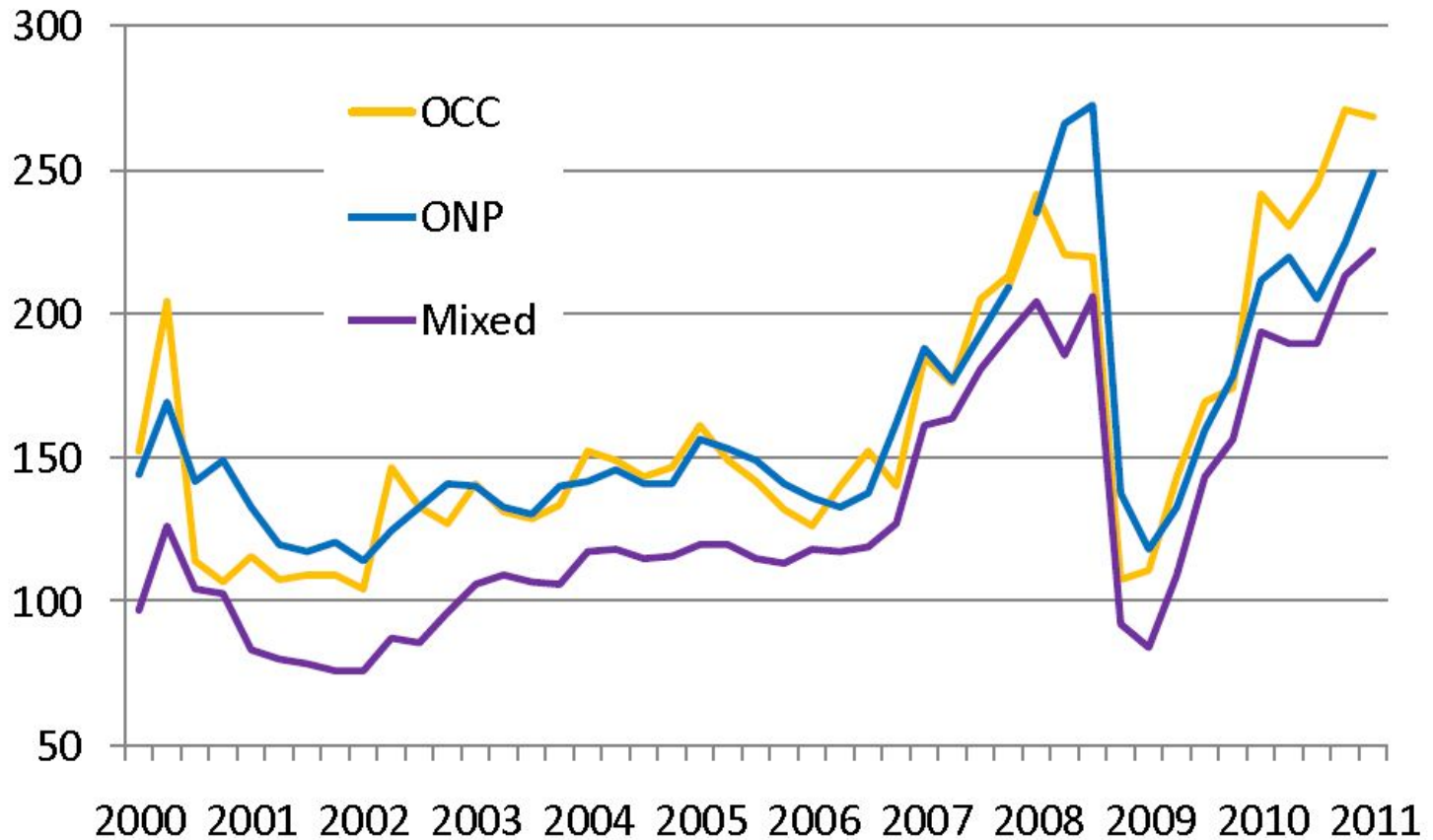


China Drives Recovered Paper Market

- OCC prices lower than virgin fiber
- Low energy costs
- Latest technology
- Lower capital costs

Price for Major Bulk Grades Delivered to China

(US\$/Tonne)

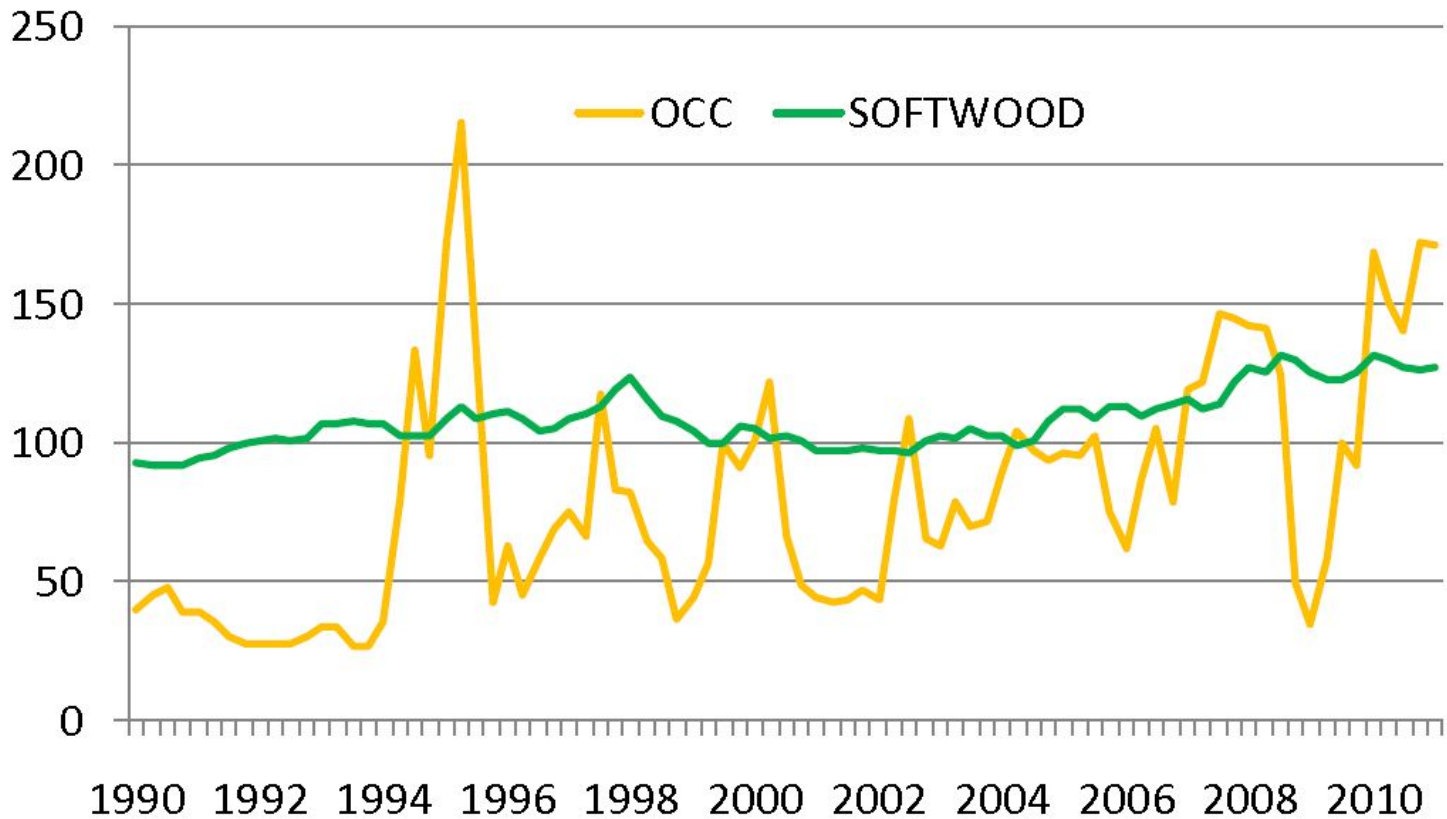


Recovered Paper vs. Virgin Fiber

- Recovered prices higher than virgin in some regions
 - Southern U.S. is best example
 - Depressed wood products business
 - Chinese set recovered paper prices
 - Virgin fiber prices set regionally



U.S. OCC Price vs. Softwood Fiber for Southern Kraftliner Mill (US\$/Tonne)





Future Outlook



World Containerboard Demand will Track Global Economy

- Industrial production will slow relative to GDP
- Lighter weights of containerboard will slow tonnage growth
 - Higher fiber prices
 - Improving paper mill technology
 - Environmental concerns



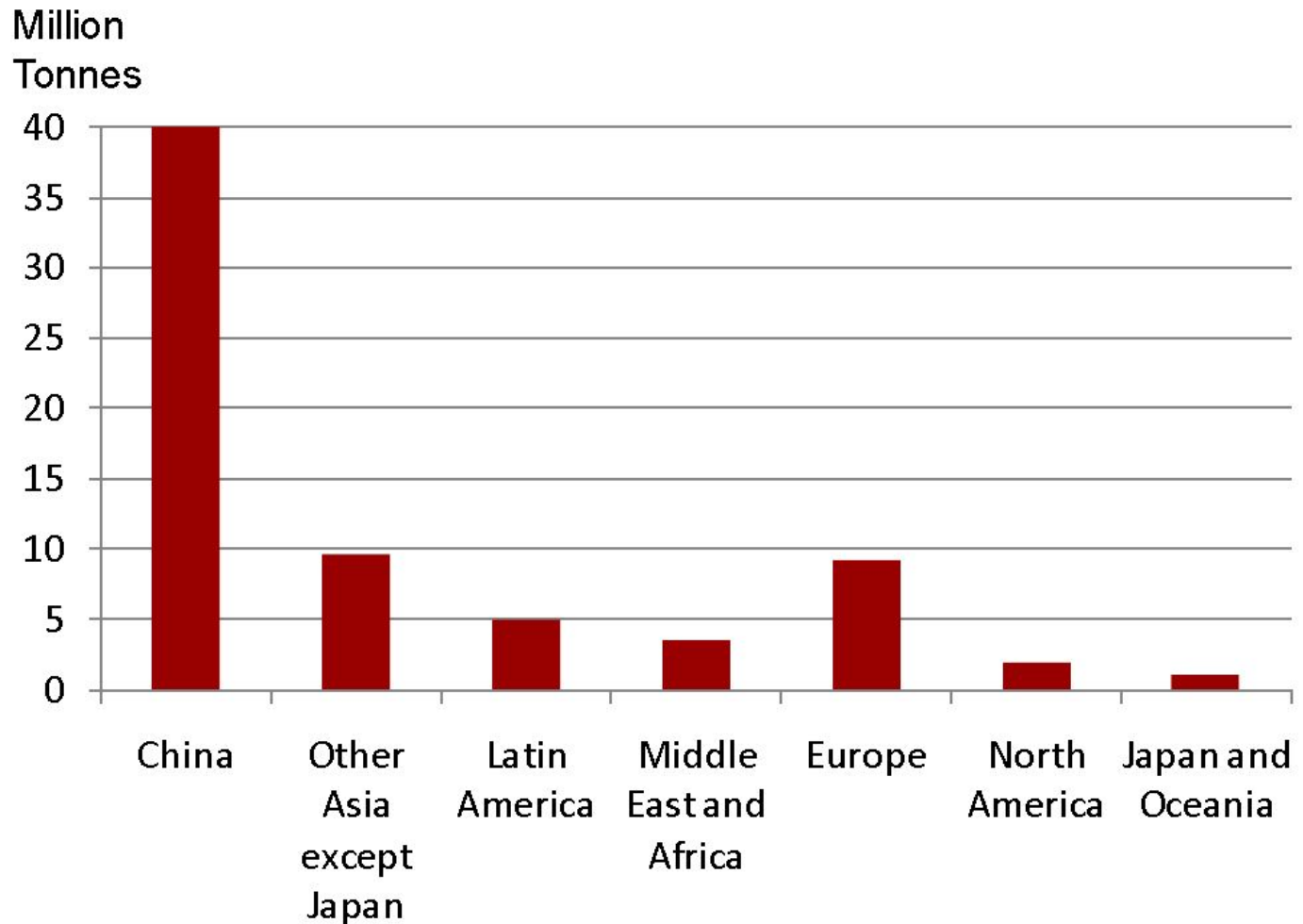
Growth in Developing Regions

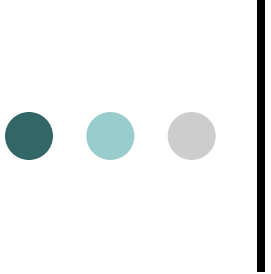
- Strong economic growth
- High share of industrial production
- Limited by
 - Shift to service-based economy
 - Higher prices for containerboard/corrugated boxes
 - Increased environmentalism



Growth in Containerboard Demand by Major Region

(2010-2020)





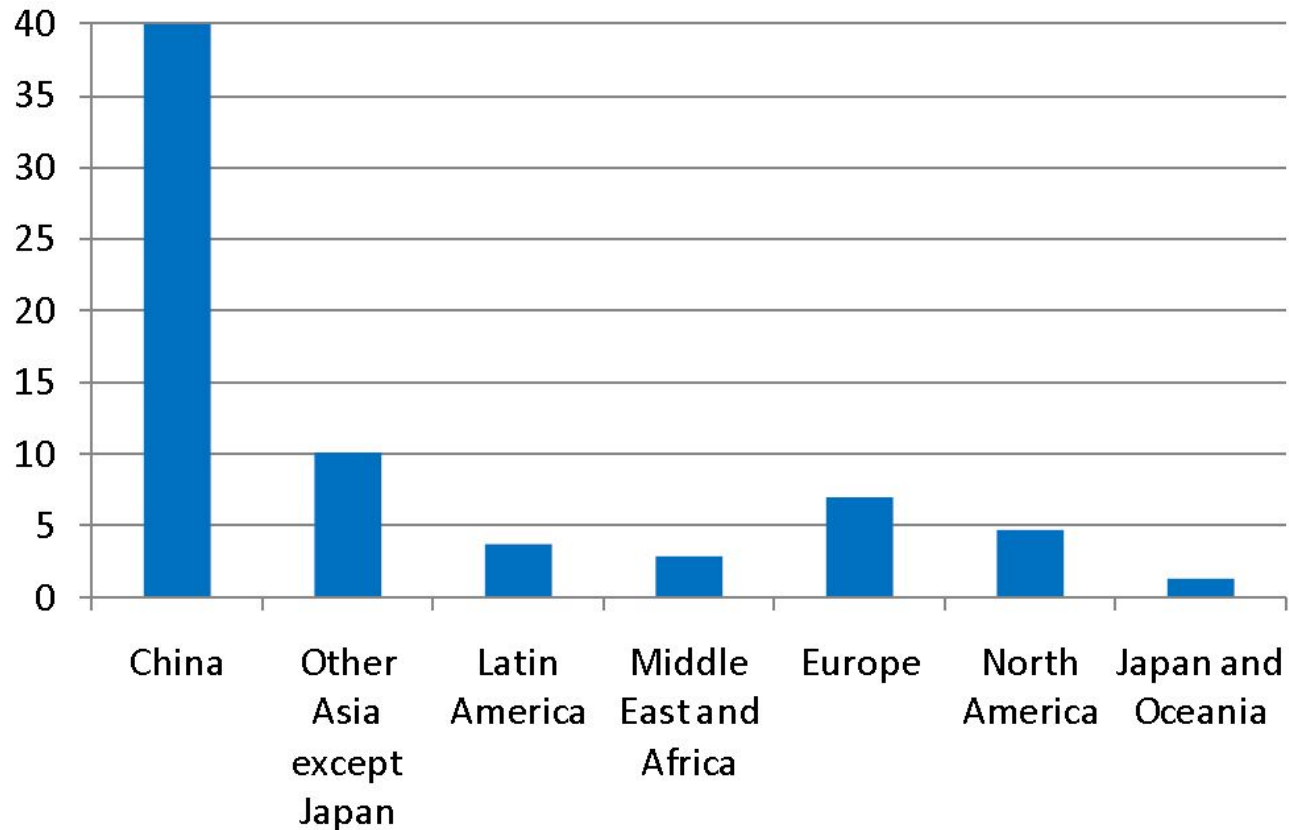
Containerboard Production will Follow Regional Demand

- Quality products from recovered paper
- Pressure for shorter lead times
- High transport costs between regions

Growth in Containerboard Production by Region

(2010-2020)

Million
Tonnes



Chinese Production Based on Recovered Paper

- Costs will rise relative to virgin
- Aggressive efforts to expand domestic collection
- Other developing regions will remain dependent on recovered paper
 - Lack of virgin fiber
 - Economics of building new capacity
 - Nonwood fiber as alternative



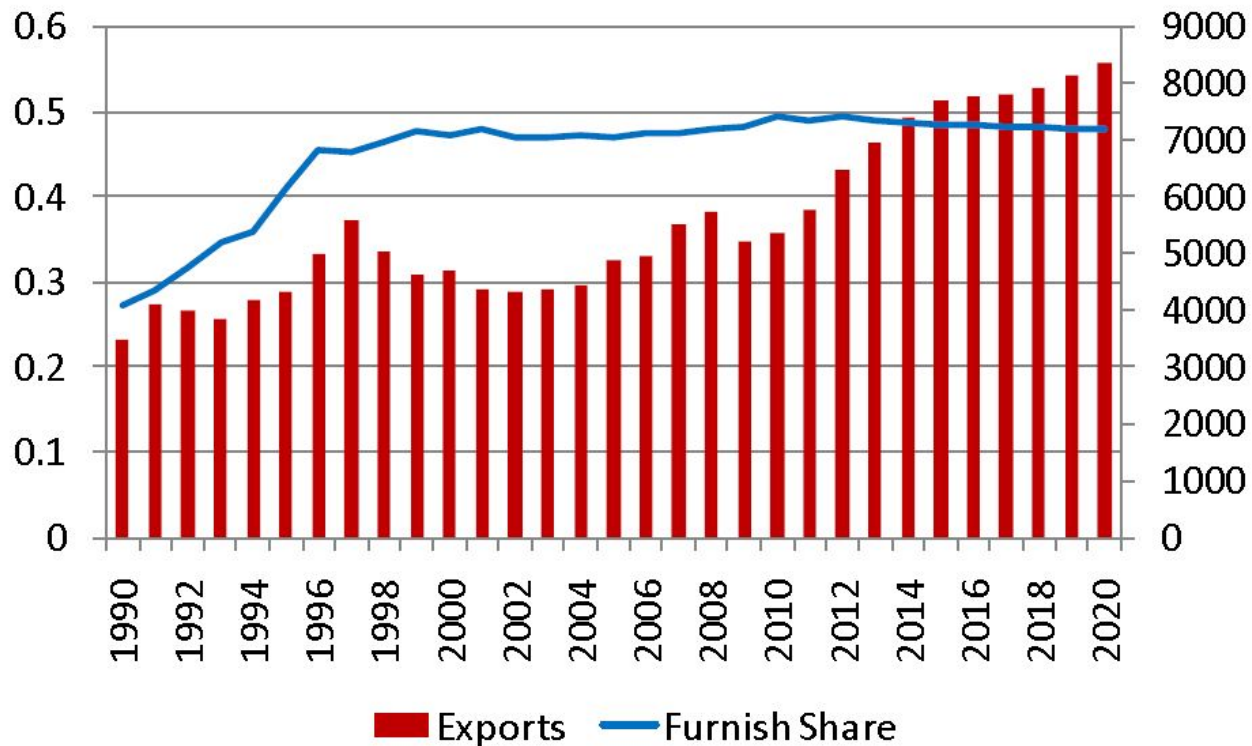


Upward Pressure on Recovered Paper Prices

- Virgin fiber will become attractive alternative
- North America will see rising virgin share of furnish
- Virgin Share will be constrained
 - Need to install new recovery boiler capacity
 - Environmental credentials of recycled product

Recovered Paper Share of North American Containerboard Fiber Furnish and Containerboard Exports

(Thousand Tonnes)



European Outlook

- Limited virgin supplies in west
- Accelerated move toward lightweight recycled products
- Increase demand for recycled containerboard
- Investment in virgin capacity in Russian Far East

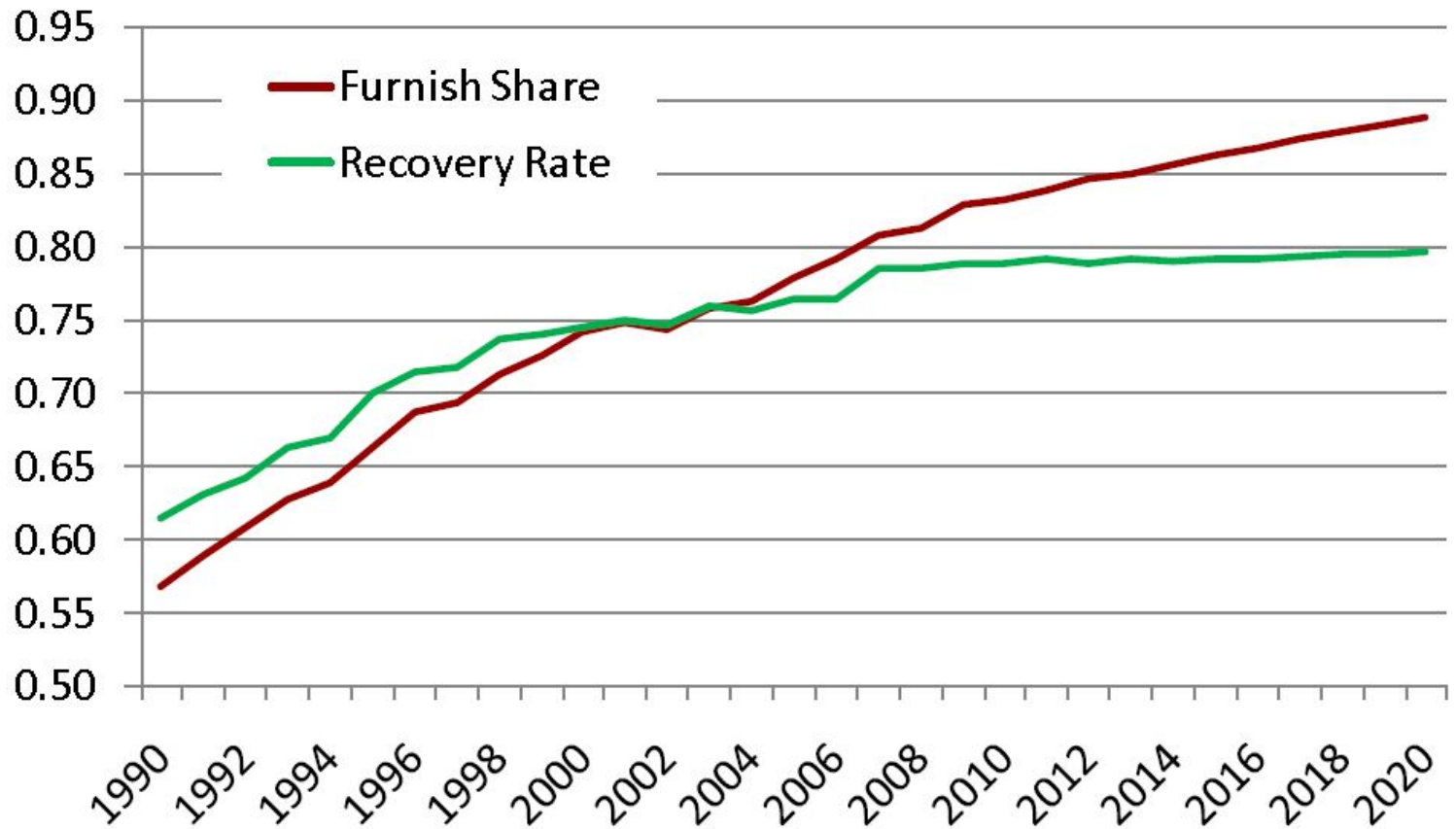




Recovered Paper Share of Containerboard Fiber Furnish Worldwide

- Recovery rate of OCC at critical level
 - At 80 percent worldwide
 - Little room for further increases

Recovered Paper Share of World Containerboard Furnish and OCC Recovery Rate





Questions to Consider

- How can we improve papermaking technology?
- Can we develop a cost-effective nonwood pulping technology?
- Will OCC price pressure make virgin containerboard less expensive than recycled product?



Sources

- Rod Young, Chief Economic Advisor, RISI
- Hannah Zhao, Economist, Recovered Paper, RISI
- Ken Waghorne, Vice President, Packaging, RISI
- American Forest & Paper Association