# China’s Pulp and Paper Industry

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# Forest Statistics

# Forest Statistics

**Table 1.3 China's national forest inventory surveys**

| Inventory survey | Year | Forest area (million ha) | Standing stock volume (billion $m^3$) | Forest coverage (%) |
|---|---|---|---|---|
| 1st | 1973-1976 | 121.9 | 9.5 | 12.7 |
| 2nd | 1977-1981 | 115.3 | 9.0 | 12.0 |
| 3rd | 1984-1988 | 124.7 | 9.1 | 13.0 |
| 4th | 1989-1993 | 133.7 | 10.1 | 13.9 |
| 5th | 1994-1998 | 158.9 | 11.3 | 16.6 |
| 6th | 1999-2003 | 174.9 | 13.6 | 18.2 |
| 7th | 2004-2008 | 195.5 | 14.9 | 20.4 |

Data Source: State Forest Administration (SFA) 2012

# Natural Forests Volume

| Forest land types | Forest Volume (billion m3) | Data Sources |
|---|---|---|
| **Forested land** | **10.2 - 13.0** | Chinese Centre for Agricultural Policy Research and James Butterworth 2003; Government of China 1997; Kun 2000; FAO 2001 as cited in Zhu Chunquan and Taylor 2003 |
| **Timber forest** | **6.6** | Xu et al 2003; Kunshan et al 1997 |
| **Economic volume** | | |
| **1995** | **3.5- 4.5** | Kunshan et al 1997; Bull et al 1998; Zhang-Hualing 1988 |
| **2000** | **2.2** | Shi and Xu 2000; Kunshan et al 1999 |
| **2004** | **~ 0** | |
| **2015** | **2.2** | Kunshan et all 1999 |

# Forest Age

| Age class | % in class |
|---|---|
| Young to middle age forest | 74 |
| Nearly mature forest | 10 |
| Mature forest | 10 |
| Over mature forest | 6 |

- Between 1950 and 1993 there was a 47% loss of the mature forest
- Age classes imbalances are an important indicator of short term wood supply avaibility

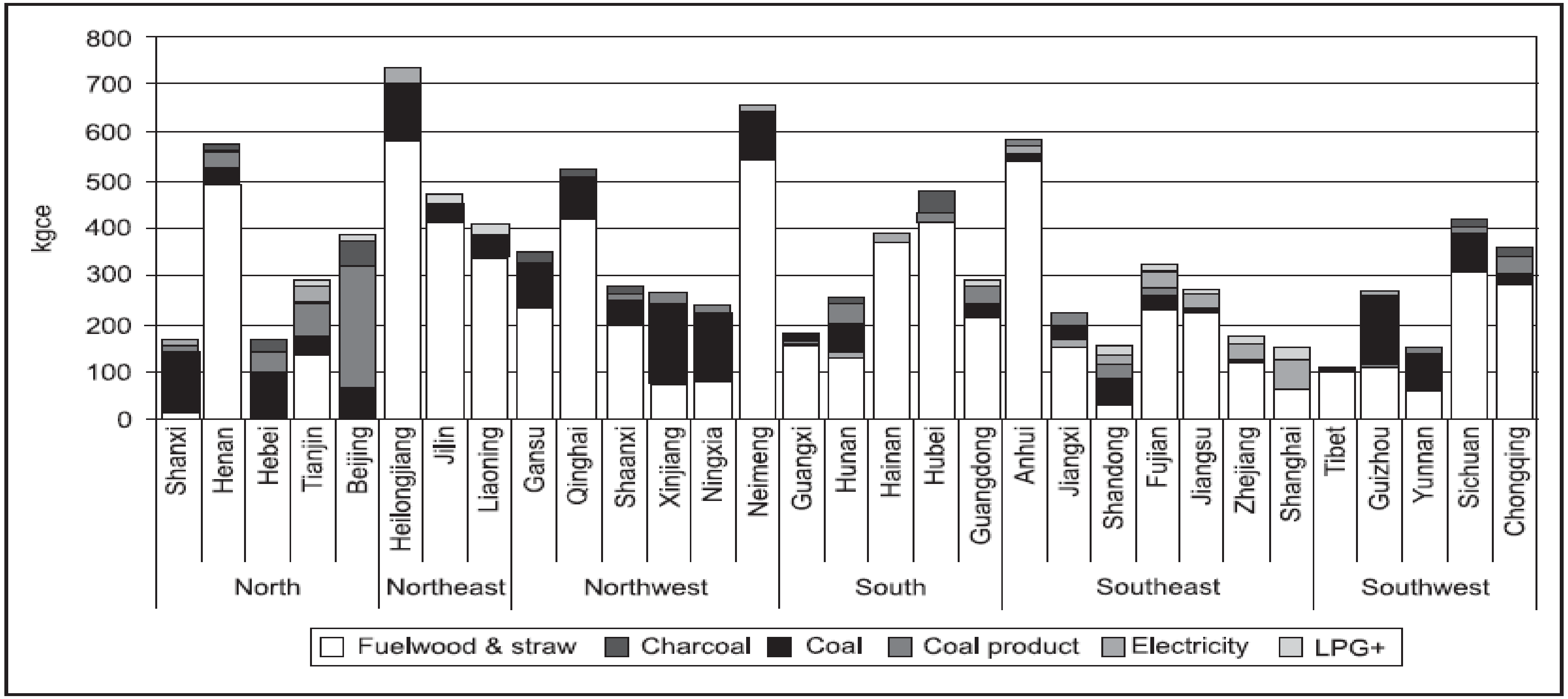
# Plantations

- Total plantation area 45 million ha
  - Fast growing high yielding 5
  - Slow growing/marginal 17
  - Non-commercial 23
- Estimated volume to be produced 50 million m3/yr on fast growing high yielding estate.
- There is a target of adding 15 million ha of more forest by 2020

# Recent Statistics -Demand

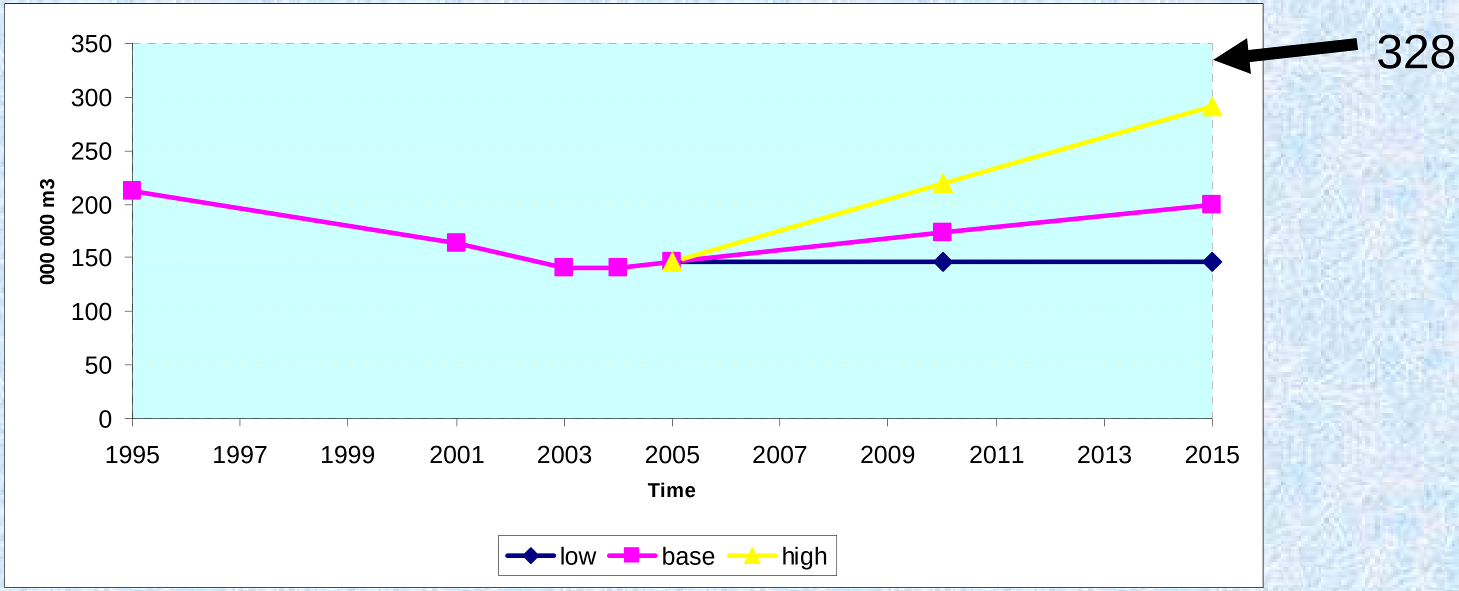


FIGURE 1 *Per capita energy use of rural households by province.*




Source: IIASA

# China's Industrial Roundwood Removal




Official forecasts

- Natural forest = **195** million m3
- Plantation (fast growing) <u>= **133** million m3</u>
- Total industrial roundwood removal = **328** million m3

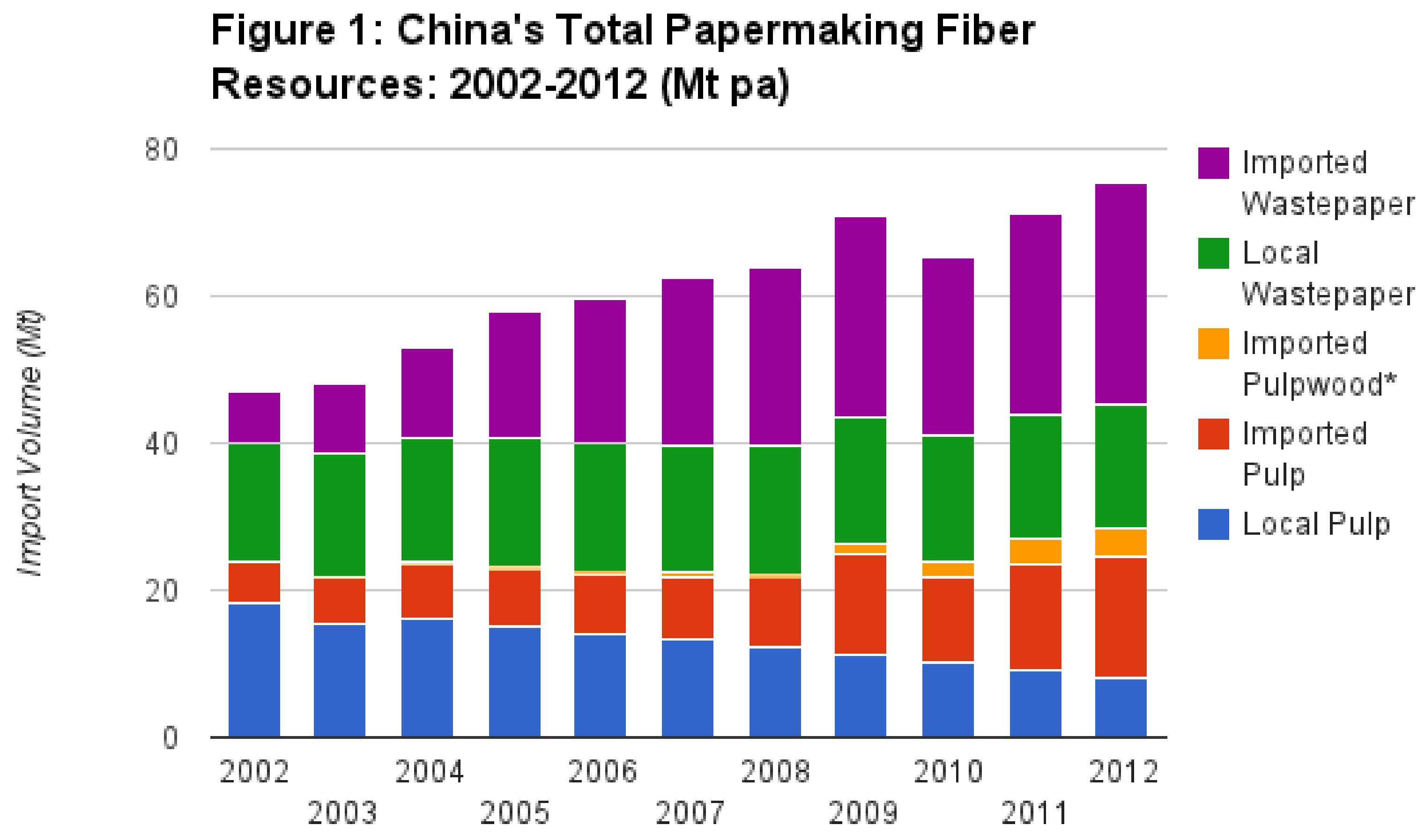
Sources: Zhou 2001, Bull and Nilsson 2004

# Conclusions at this point

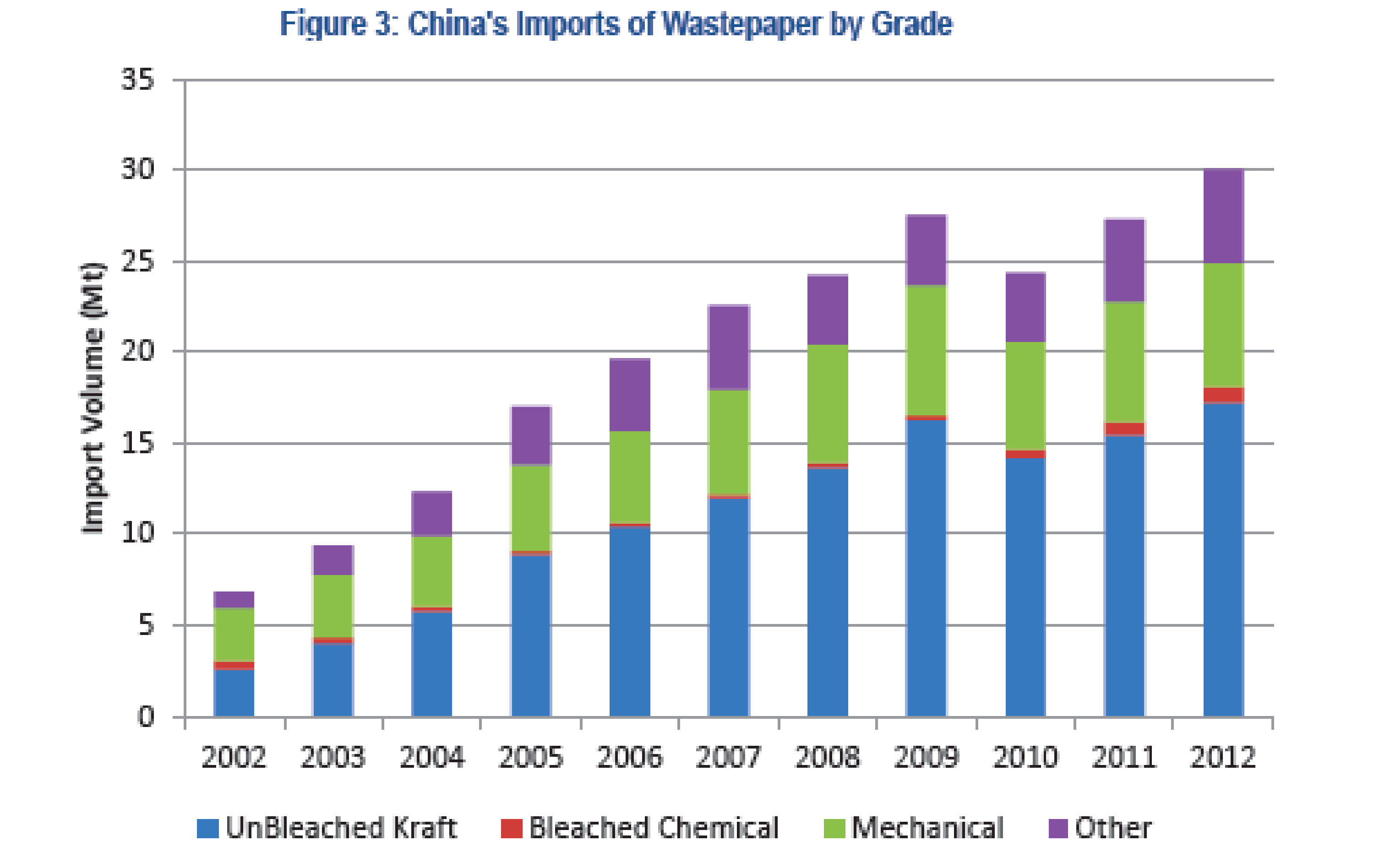
- Natural forest is either in a state of decline or very young
- Plantation forests have underperformed thus far
- Other domestic fibre will likely not fill supply gap
- Given the size of the pulp industry, they will continue to import pulp and pulpwood for an indeterminate amount of time

# Industry Statistics

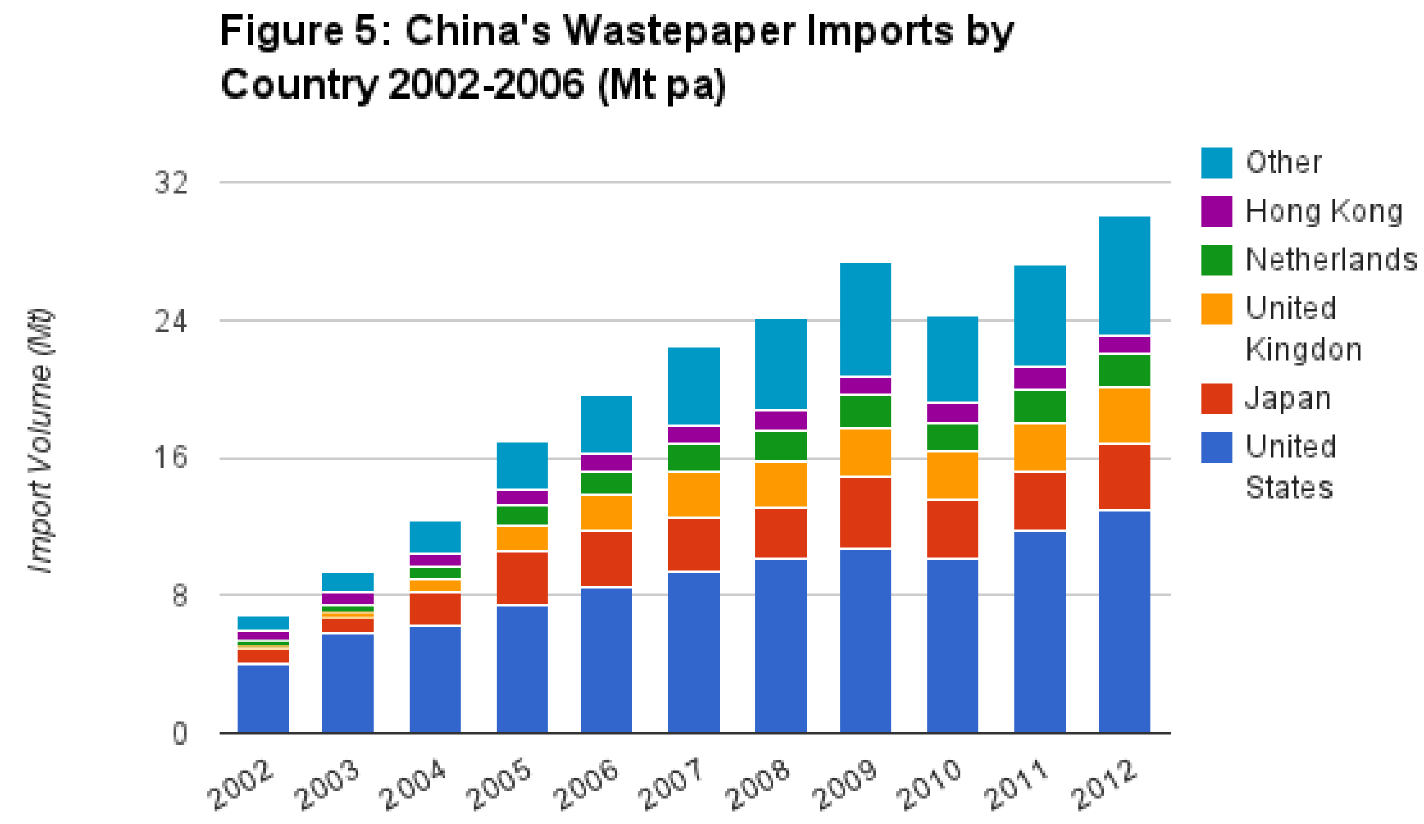
# Sources of Fibre



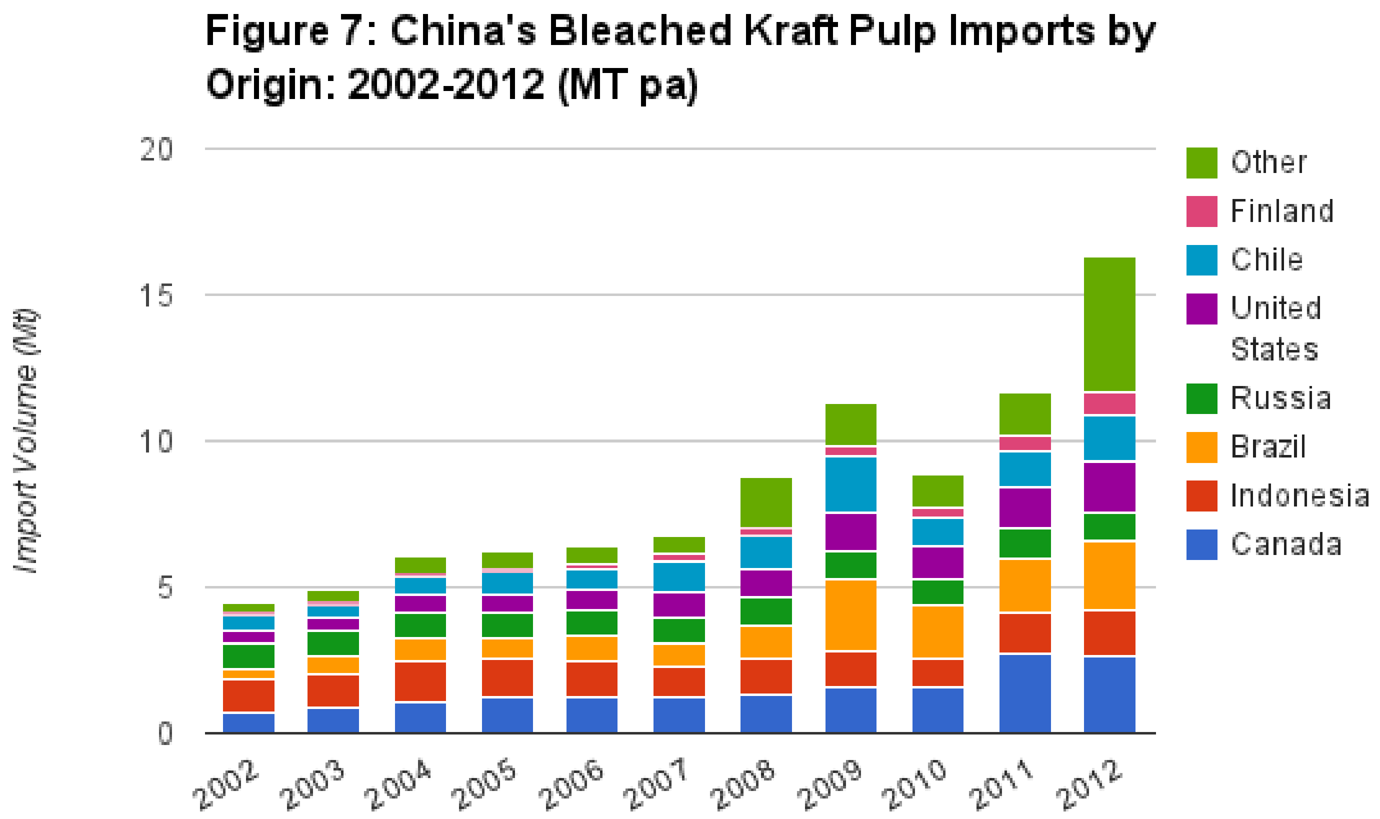
# Import of Wastepaper by Grade



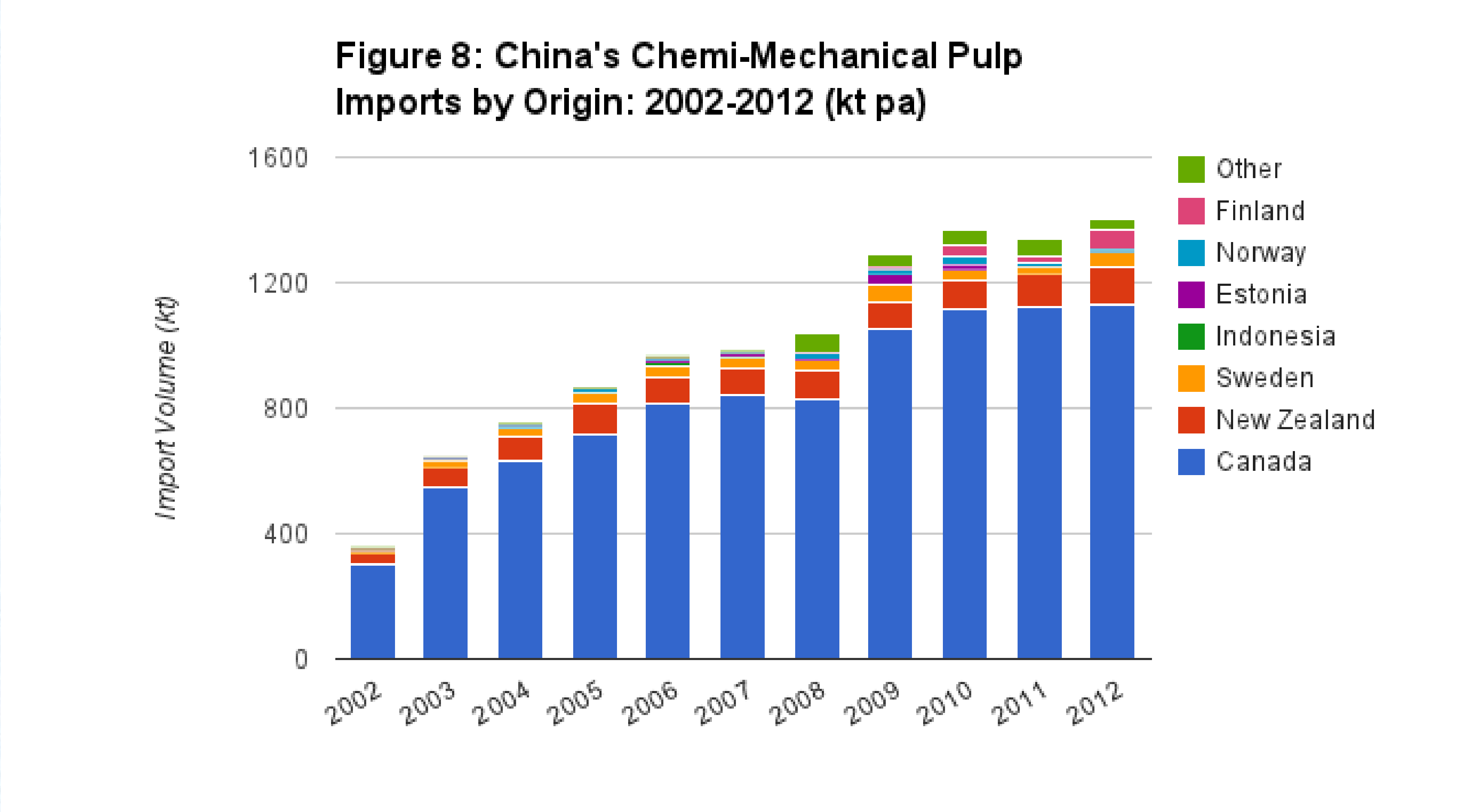
# Wastepaper sources



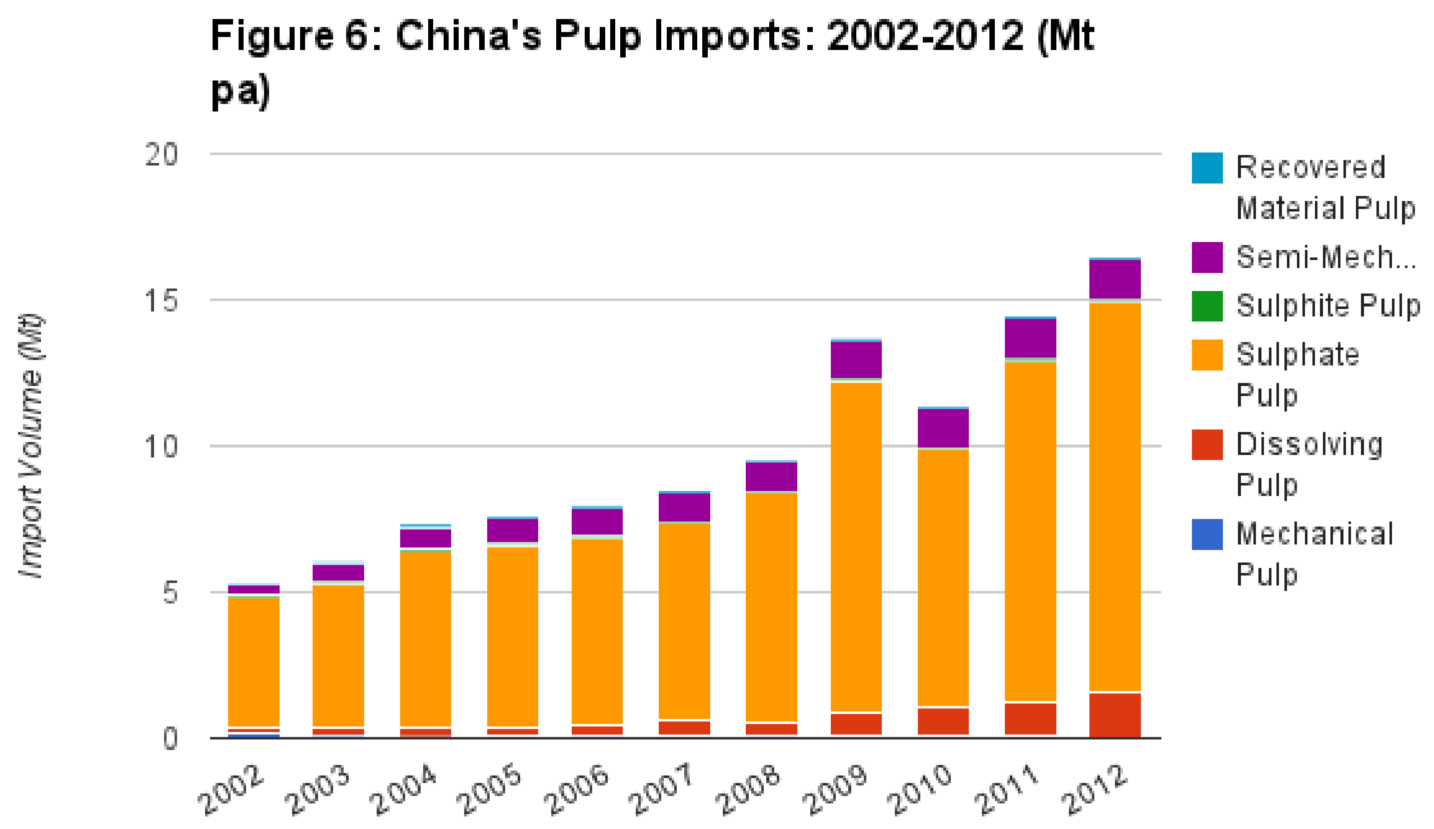
# China's Bleached Kraft Pulp



# Chemi-Mechanical Pulp

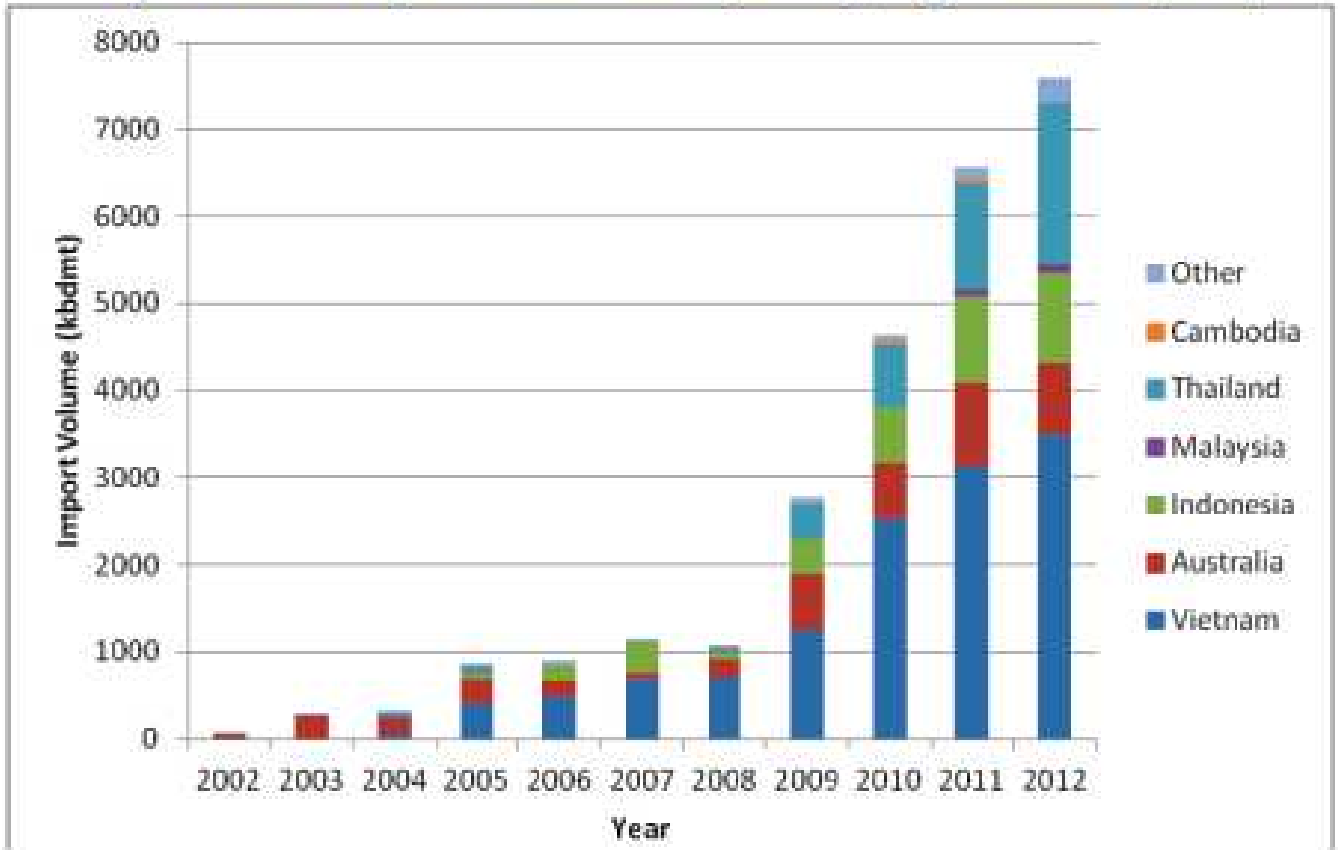


# Pulp Imports

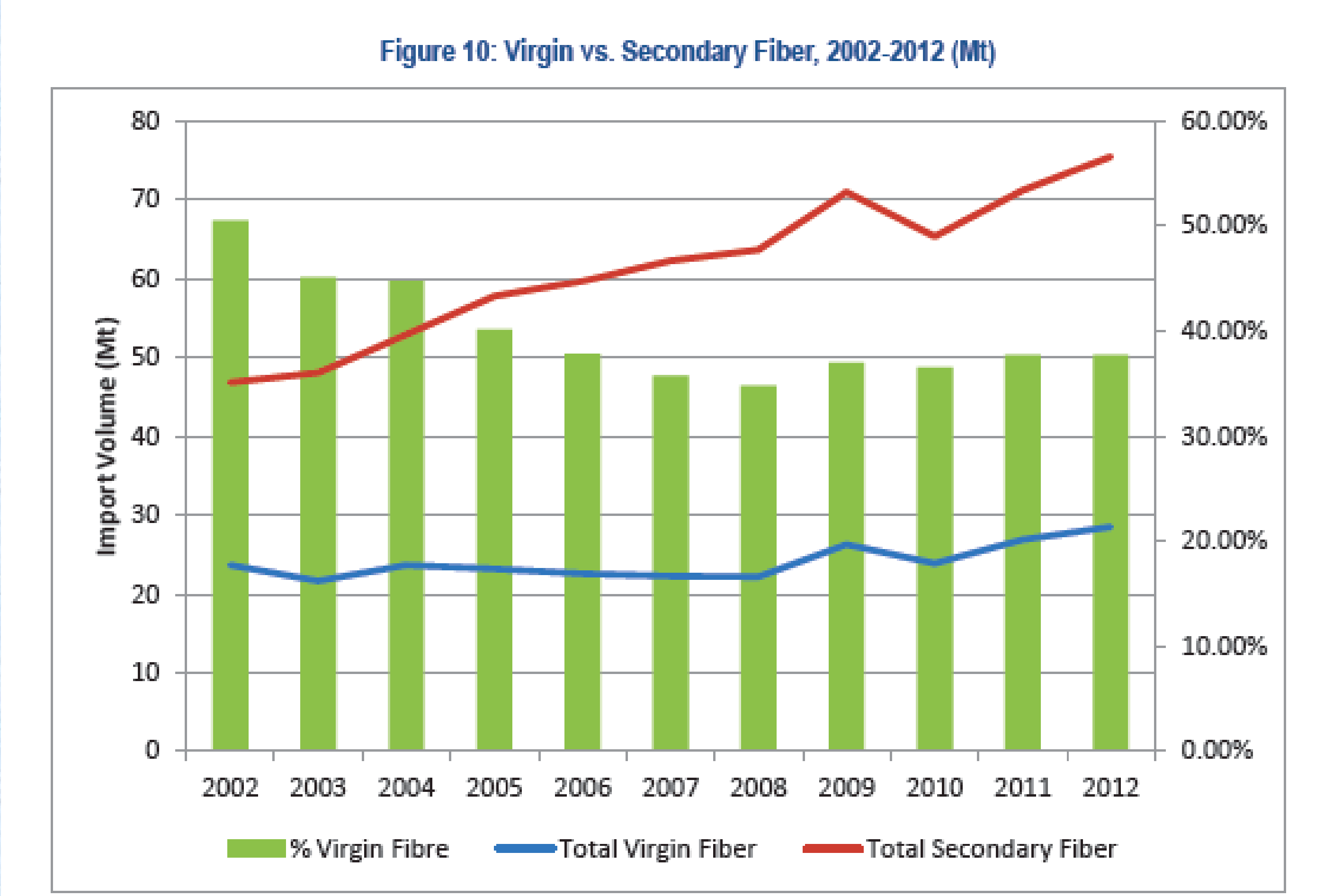


# Pulpwood Imports

Figure 9: China's Imports of Hardwood Pulpwood by Origin: 2002-2012 (kbdmt)



# Virgin vs. Secondary Fibre 2002-2012 (Mt)

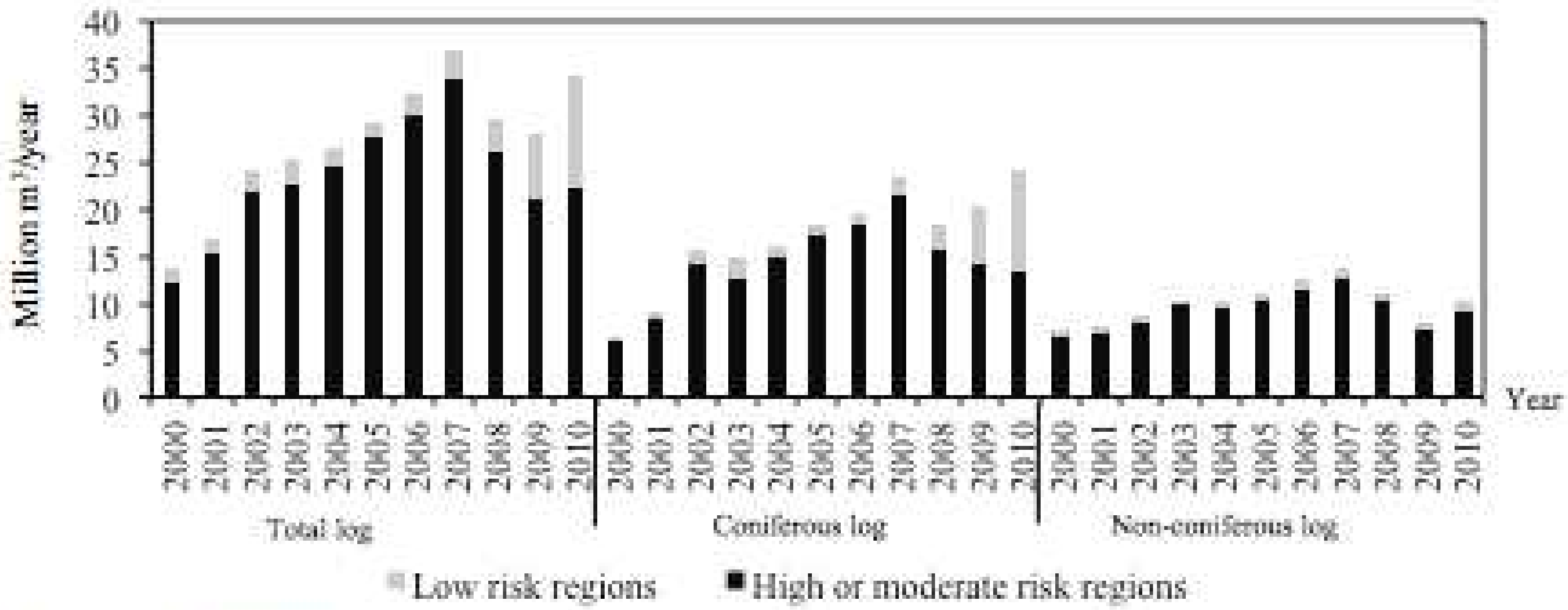


# China’s Wood Furniture Industry

Following is an example of a study of legal compliance in China of the furniture industry

# Log Imports

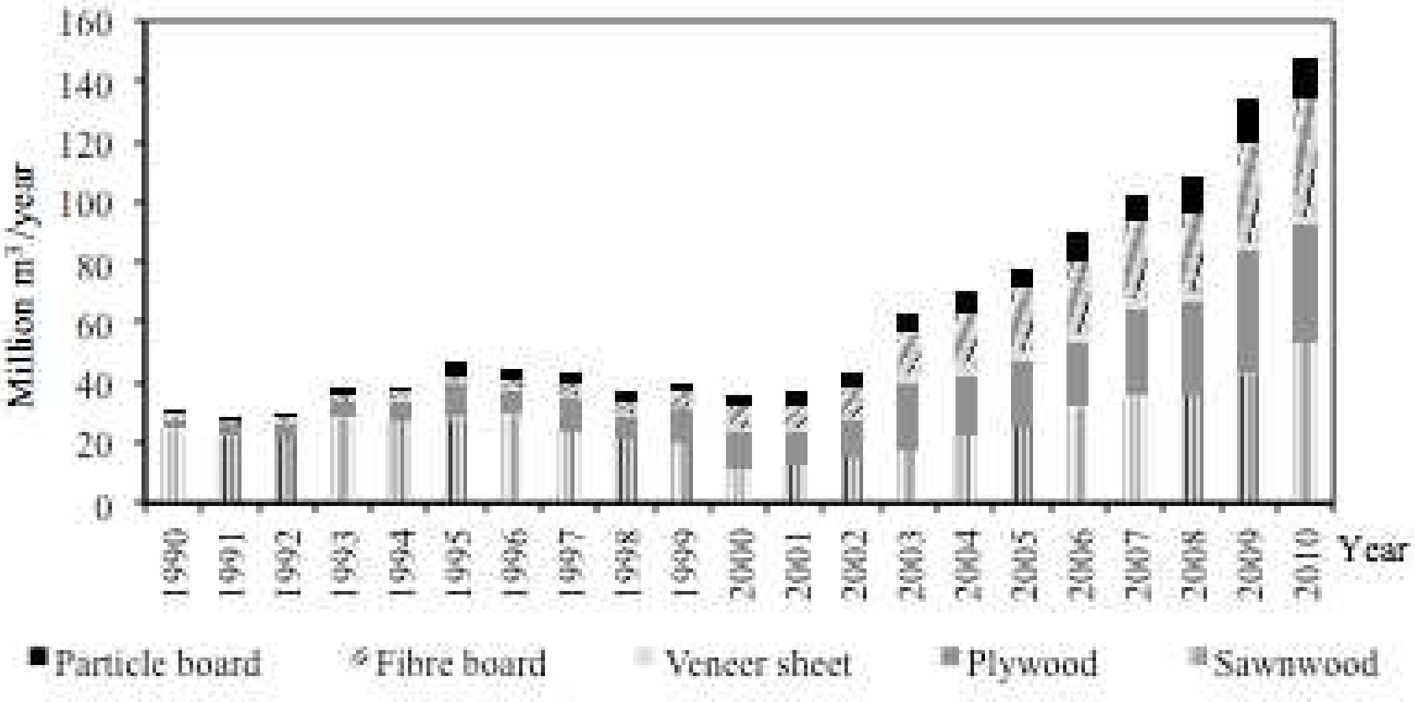
**Figure 1.3 China's sawlog and veneer log import**




Data Source: UN Comtrade 2012

# Furniture Industry

**Figure 1.2 China's wood products consumption**



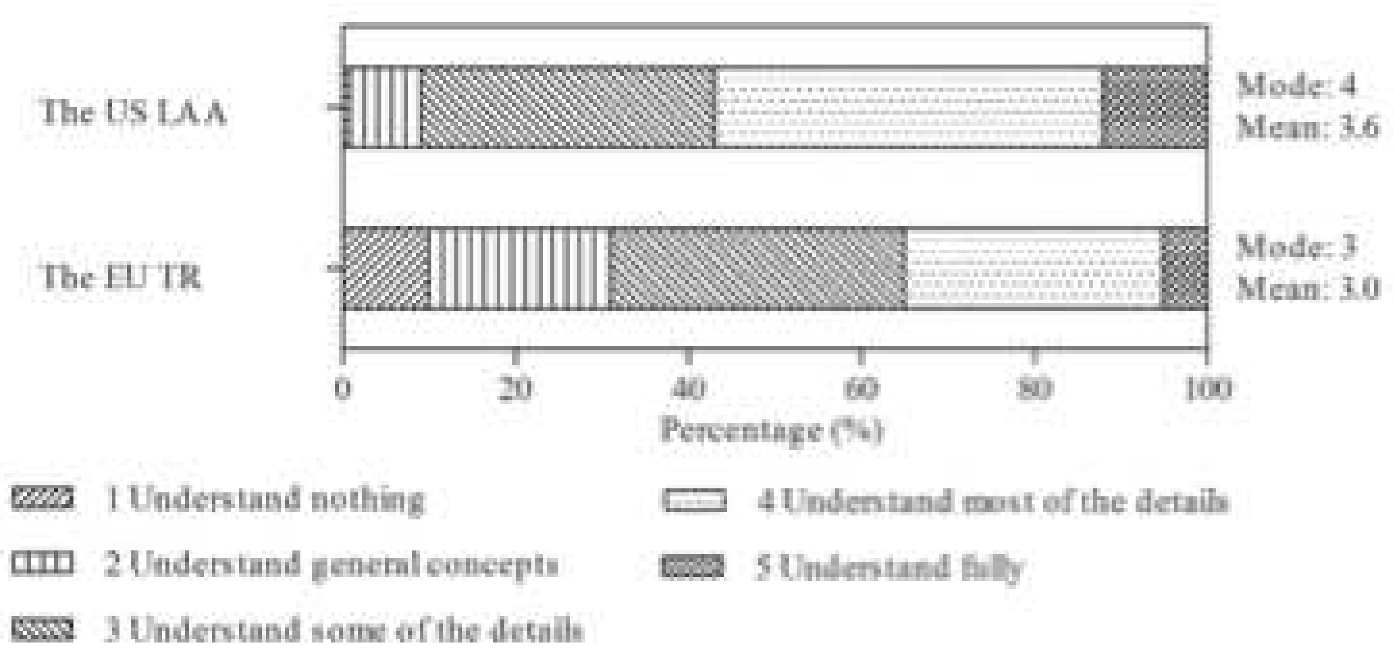

Data Source: FAOSTAT 2012

# Compliance in Wood Furniture Industry

Evaluate factors that affect a firm's legality compliance with the US Lacey Act Amendment and the EU Timber Regulation

# Awareness of Legality

**Figure 2.3 Awareness of legality requirements**



# Legal Compliance Correlation in Furniture Sector

| Variable | Correlation | Variable | Correlation |
|---|---|---|---|
| **Information process and awareness** | | **Opportunities** | |
| •Learning activeness | -0.528** (S) | •General opportunity | -0.369** (M) |
| •Legality awareness | 0.415** (M) | •CSR awareness increase | 0.369** (M) |
| **Subjective norms** | | •Furniture price increase | -0.108 (N) |
| •Firm goal | 0.233* (V) | •Export volume increase | 0.164 (N) |
| •Client pressure | 0.205* (V) | •Domestic market | 0.102 (N) |
| •Association pressure | 0.192* (V) | •Other overseas market | 0.190* (V) |
| **Perceived behaviour control** | | •SCM improvement | 0.617** (S) |
| •Firm size | 0.562** (S) | | |
| •Export experience | 0.325** (M) | **Challenges** | |
| | | •Export barrier | 0.243* (V) |
| •Firm location | 0.241 (N) | | |
| •Export proportion | 0.172 (N) | •Certification cost increase | 0.384** (M) |
| •Import proportion | 0.173 (N) | | |
| •Certified proportion | 0.177 (N) | •Export cost increase | -0.055 (N) |
| •Wood proportion | 0.020 (N) | •SCM cost increase | -0.230* (W) |
| •CoC status | 0.288** (W) | •Shift cost increase | 0.097 (N) |
| •RPP | 0.258** (W) | •Raw material cost increase | -0.142 (N) |
| •ISO14001 | 0.249** (W) | | |

Note: **significant when α=0.01; * significant when α =0.05; S-strong; M-medium; W-weak; V-very weak; N-no correlation

# Wood furniture sector compliance

**In summary, eight factors had strong or medium correlation with legal compliance.**

**Implications**

- Need more learning ‘activeness’ and ‘legality awareness’
- Need more support for small/medium firms
- Need more support for firms with less export experience
- Need to describe the potential longer-term benefits

# Adoption of Chain of Custody Certification

Identify key factors that affect a firm's decision to adopt Chain of Custody certification

# 3. CoC Certification Statistics 2011

| Country/Region | | PEFC* | FSC▲ |
|---|---|---|---|
| Low risk regions | USA | 354 | 3,714 |
| | Canada | 183 | 1,016 |
| | EU-27 | 7,236 | 9,905 |
| | Norway | 32 | 31 |
| | Switzerland | 54 | 492 |
| | Australia | 201 | 253 |
| | New Zealand | 19 | 142 |
| | Japan | 210 | 1,130 |
| | South Africa | 1 | 84 |
| | Total | 8,290 | 16,767 |
| High or moderate risk regions | China | 155 | 1,827 |
| | Russia | 2 | 128 |
| | Papua New Guinea | 0 | 3 |
| | Malaysia | 171 | 132 |
| | Other | 179 | 3,022 |
| | Total | 507 | 5,112 |
| World total | | 8,797 | 21,879 |

*Data source: *PEFC 2012 ▲FSC 2012*

# Correlation with Adoption Decision

| Variable | Correlation | Variable | Correlation |
|---|---|---|---|
| **Information process and awareness** | | **Perceived behaviour control** | |
| •Learning activeness | 0.412** (M) | •Firm location | 0.102 (N) |
| | | •Export proportion | 0.264** (W) |
| •CoC certification awareness | 0.216* (V) | •Import proportion | 0.262** (W) |
| | | •Certified proportion | 0.177 (N) |
| **Subjective norms** | | •Wood proportion | -0.083 (N) |
| •Firm goal | 0.289** (W) | | |
| | | •RPP | 0.367** (M) |
| •Client pressure | 0.586** (S) | •ISO14001 | 0.325** (M) |
| | | | |
| •Association pressure | 0.227* (V) | **Attitudes on cost and benefit** | |
| | | •Cost assessment | -0.134 (N) |
| **Perceived behaviour control** | | | |
| •Firm size | 0.332** (M) | •General benefit | 0.522** (S) |
| | | •Legality verification | 0.315** (M) |
| •Export experience | 0.298** (W) | | |

Note: **significant when α =0.01; * significant when α =0.05; S-strong; M-medium; W-weak; V-very weak; N-no correlation

# Barriers to Adoption of Legality Requirements

1. Mixture of tropical hardwoods and non-tropical hardwoods, are all poorly understood.
2. System(s) approach and statistics are usually very weak
3. Awareness level of managers in country is poor
4. Historically, there were many smaller firms in China in the wood products industry, this is changing and larger firms have an easier time with requirement demands
5. Certification costs increase is a barrier (real or perceived)
6. Little exporters experience
7. Supply chain management systems are deficient
8. Compliance management systems are frequently not in place
9. Client pressure is often weak

# Conclusions

- China will continue to heavily rely on imported material in pulp and paper production
- More effort needs to be made to get China’s industry into legal compliance. The good news is the new producers in the pulp and paper industry should be easier to get into compliance.