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違法伐採対策取組強化事業

Timber Industry, Timber Trade

and Timber Legality in China

中国における木材、木材製品の
合法証明の確立に関する動向調査
報告書（英語版）

March, 2017

平成 **29**（**2017**）年 **3** 月

Japan Federation of Wood Industry Associations

(JFWIA)

一般社団法人全国木材組合連合会

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1. Basic Information on International Timber Trade of China in 2015

In 2015, economic development was confronted with a lot of pressure on two fronts. Internationally, global economic growth slowed down, and demand was sluggish. International trade registered a negative growth and the price of commodity products was low. Domestically, China's economic development embraced new normal. The government continued the deleveraging and de-capacity momentum, bringing down demands and investment. Therefore, 2015 marked the most difficult year for China's timber trade in recent years. In particular, it witnessed a slump in timber import and an overall decline of timber prices.

Overview of China's Forest Products Trade in 2015

In China, forest products consist of wood forest products (WFP, generally called timber products) and non-wood forest products (NWFP).

In 2015, the total trade value of forest products in China decreased year-on-year and its proportion in the total trade value of products nationwide also went down. The same held true for both export and import, even though there was a bigger trade surplus. Specifically, the trade value of forest products in China in 2015 was 123 billion USD, a regression to the 2011 level and a 10% year-on-year decline. Its proportion in the total trade value of goods that year was 3.11%, 0.15 percentage points lower than that in 2014 (please refer to Figure 1-1).

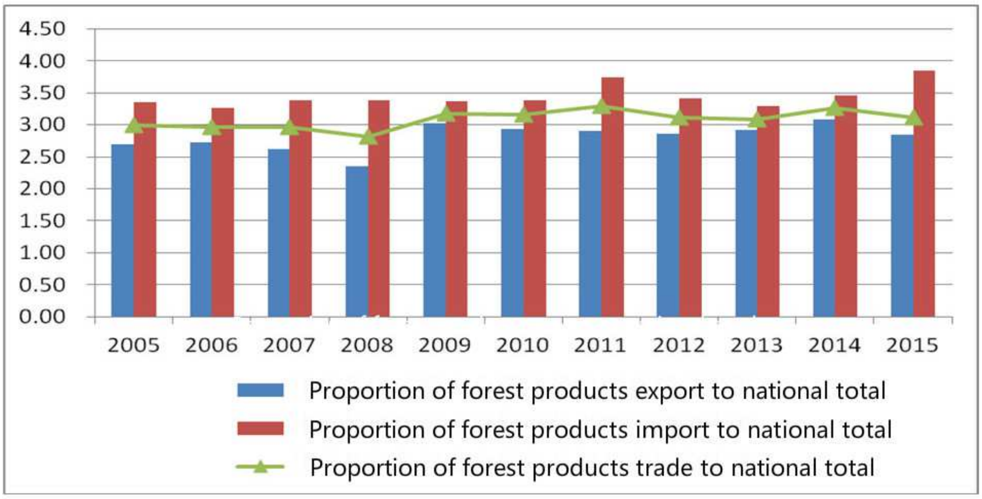


Figure 1-1: Proportion of China's trade value of forest products in the total value of all goods between 2005 and 2015
(unit: %)

Among the total, export value was 64.8 billion USD, a yearly drop of 6%, taking up 2.85% of the total export value, 0.23 percentage points lower than the rate in 2014. Import value was 58.2 billion USD, a yearly drop of 15%, occupying 3.85% of the total import value, 0.39 percentage points higher than the rate in 2014 (please refer to Figure 1-2).

The import value fell much more than the export value. The heavy decline of the import value of forest products was the major factor behind the reduction of total trade value of forest products.

The trade surplus was 6.6 billion USD, a 50% year-on-year increase, compared to 4.4 billion USD in 2014 (please refer to Figure 1-2).

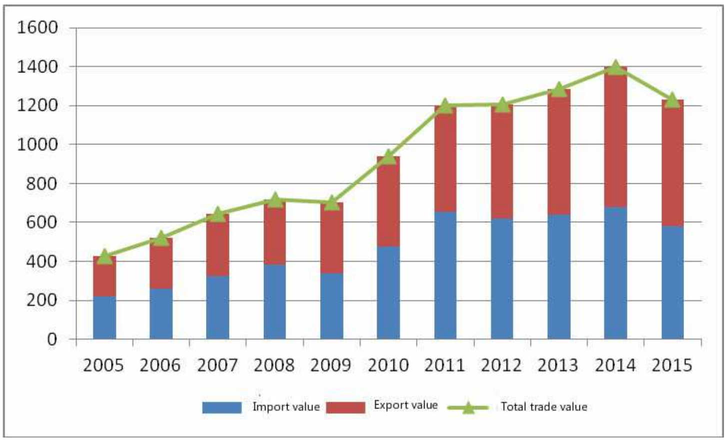


Figure 1-2: Trade value of forest products in China from 2005 to 2015
(unit: 100 million US$)

In 2015, among all forest products, wood products saw their trade value fall dramatically. But they still were an absolute majority of the total, with an increasing proportion of export value and a leveling up import proportion. For example, the trade value of wood products was 93.9 billion USD, a decline of 11 % year-on-year, taking up 76% of the total trade value of forest products which was 5 percentage points higher than the previous year. Among that value, the export value of wood products was 54.5 billion USD, a decline of 7% year-on-year, taking up approximately 84% of the total export value of all forest products which was 10 percentage points higher than the previous year. The import value was 39.4 billion USD, a sharp drop of 17%, accounting for 68% of total import value of all forest products which was 1 percentage point higher than the previous year (please see Table 1-1). The trade surplus stood at 15 billion USD.

Table 1-1: Overview of China's trade in forest products in 2015
(unit: 100 million USD)

	Value	Yearly	Wood products	NWFP

		compari son (%)	Value	Yearly comparison (%)	Proportion (%)	Value	Yearly comparison (%)	Proportion (%)
Export value	648	-6	545	-7	84	103	-1	16
Import value	582	-15	394	-17	68	187	-11	32
Total trade value	1230	-10	939	-11	76	291	-8	24

In 2015, the NWFP trade value in China was 29.1 billion USD, a decrease of 8% year-on-year, accounting for 24% of the total trade value of forest products. Among that number, import value stood at 18.7 billion USD, a yearly decline of 11 % and taking up about 32% of total import value of forest products. On the other hand, export value was 10.3 billion USD, a slight decrease of about 1 % year-on-year and accounting for around 16% of total export value of all forest products. By that calculation, trade deficit of NWFP in 2015 was 8.4 billion USD (please see Table 1-2).

Table 1-2: Overview of the import and export of major wood products in China in 2015

No.	Import value (100 million USD)					Export value (100 million USD)				
	2014		2015		Yearly compa rison (%)	2014		2015		Yearly compariso n (%)
1	Wood pulp	121	Wood pulp	127	5	Wooden furniture	221	Wooden furniture	225	2
2	Log	118	Log	81	-31	Paper, paperboard and paper products	178	Paper, paperboard and paper products	187	5
3	Sawnwo od	81	Sawnwoo d	74	-8	Plywood	58	Wood products	59	7
4	Waste paper	53	Waste paper	52	-3	Wood products	55	Plywood	55	-5

5	Paper, paperboard and paper products	43	Paper, paperboard and paper products	40	-7	Fibreboard	16	Fibreboard	14	-14
6	Wood chip	15	Wood chip	17	13					
Total		431		391	-9		528		540	2
Import and export value of WFP		474		394	-17		585		545	-7
Proportion in all WFP		91		99			90		99	
Proportion in total value		63		67			77		83	

2015 was the worst year for China's timber import, with all sorts of WFP having seen their imports decline to varied degrees. The total import value of WFP was 39.4 billion USD, a sharp drop of 17 % year on year, accounting for 68% of total import value of all forest products. Meanwhile, the import of WFP was dominated by pulp, log, sawnwood, waste paper, paper, paperboard and paper products, wood chips and other raw materials whose total import value totaled 35.8 billion USD and which took about 91% of total import value of all WFP and 62% of all forest products. As to WFP prices, almost all went down to various degrees, with the exception of wood chips remaining unchanged. The biggest decline of average price was as high as 21% for logs (please refer to Table 1-3).

Table 1-3: Overview of the import of major WFP in China in 2015

Products	Unit	Import value	Yearly comparison (%)	Import value (100 million USD)	Yearly comparison (%)	Proportion of import value	Average unit price (US dollar/ m3)	Yearly comparison of unit price
WFP				394	-17			

Pulp	10000 t	1978	10	127	5	32	644	-5
Log	10000 m^3	4422	-14	80	-31	21	182	-21
Sawnwood	10000 m^3	2566	0	74	-8	19	288	-9
Waste paper	10000 t	2893	5	52	-3	13	180	-7
Paper, paperboard and paper products	10000 t	297	1	40	-7	10	1360	-7
Wood chips	10000 t	961	8	17	13	4	170	0
Total				391	-9	99		

In 2015, the export value of WFP was 54.5 billion USD, a minor yearly increase of 2%. Among that, wooden furniture (41%), paper, paperboard and paper products (34%), wood products (11%), plywood (10%) and fiberboard (3%) were the primary forces behind export increase, taking up about 99 % of total import value of WFP and 83% of export value of all forest products. The average unit prices of major WFP were climbing up to different degrees, except fiberboard whose price edged down by 2% (please see Table 1-4).

Table 1-4: Overview of China's export of major WFP in 2015

Products	Unit	Export value	Yearly comparison (%)	Export value (100 million USD)	Yearly comparison (%)	Proportion of export valuve	Average unit price (US dollar)	Yearly comparison of unit price (%)
Timber products				545	2	100		
Wooden furniture	100 million pieces	3.2	2	225	2	41		
Paper, paperboard and paper products	10000 m^3	922	-4	187	5	34	2028	9

Wood products	10000t	216	3	59	7	11	2736	1
Plywood	10000 m^3	1070	-8	55	-5	10	510	2
Fiberboard	10000t	402	-10	14	-12	3	356	-2
Total				540	2	99		

1.1 Overview of Import of Timber Products in 2015

In the import value in 2015, the import of wood-based panel increase by 64% while that of logs decreased by 14% and that of sawnwood leveled up basically. But the import value of pulp, wood chips, waste paper, paper, paperboard and paper products went up by 10%, 8%, 5% and 1% respectively (please Figure 1-3).

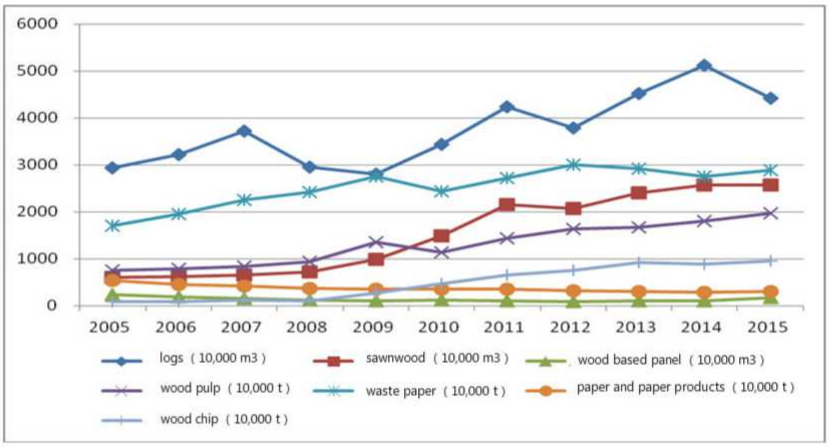


Figure 1-3: Import value of major timber products in China from 2005 to 2015

The import value of WFP markedly dropped by 17% and it could be boiled down to the 31% decline of the import of logs. The import value of wood chips and pulp went up by 13% and 5% respectively while that of sawnwood, paper, paperboard and paper products, and waste paper went down by 8%, 7% and 3% respectively. As to the proportion of pulp, log, sawnwood, wastepaper, paper an paper products, wood chips and others among the import value of WFP, they were 32%, 21%, 19%, 13%, 10%, 4% and 1% respectively (please see Figure 1-4).

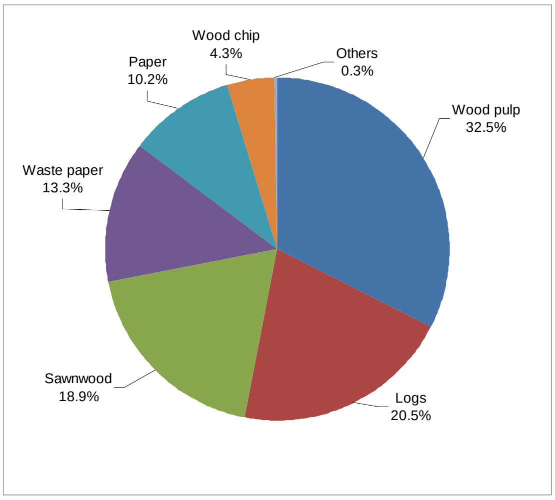


Figure 1-4: Proportion of the import value of major timber products in 2015

1.1.1 Import of logs

In 2015, the total import value of various types of logs was 44.22 million m3 at a value of 8 billion USD, a decrease of 14% and 31% respectively year-on-year. For details, the import value of coniferous logs was 29.91 million m3, contributing 68% to the total import value of logs and a decrease of 17% year-on-year. Another 14.31 million m3 of broad-leaved logs were imported, taking up 32% of the total imported logs and a decrease of 7% year-on-year. The import value of coniferous logs declined much more than that of broad-leaved logs.

To break down the imported broad-leaved logs, the import value of tropical logs was approximately 8.71 million m3 at a value of 2.8 billion USD, a yearly decrease of 12% and 32% respectively. It occupied about 20% of the total import value of logs. Its average unit price registered 327 dollars per m3, a significant fall of 23% year-on-year.

(1) Major logs importing countries

New Zealand remains the country where China imports the largest value of logs, about 10.85 million m^3, but a yearly decrease of 8% was witnessed in 2015. Russia ranks the second at about 10.42 million m^3, a decrease of 8% as well. As to the import value, yearly comparison and proportion in other countries, please refer to Table 1-5 and Figure 1-5.

Table 1-5: Top 10 logs importing countries of China

Order	Country	Import value of logs (10,000 m^3)			Unit price of logs (USD/ m^3)	
		2015	Yearly comparison (%)	Proportion （%）	2015	Yearly comparison (%)

1	New Zealand	1085	-8	25	113	-21
2	Russia	1042	-8	24	121	-11
3	US	399	-35	9	203	-9
4	PNG	301	-9	7	213	-12
5	Australia	283	20	6	102	-23
6	Canada	235	-23	5.3	158	-19
7	Solomon Islands	213	-3	4.8	202	-6
8	Ukraine	97	-41	2.0	129	-6
9	France	66	-9	1.50	204	-3
10	Equatorial Guinea	64	29	1.45	275	-23
	Total of top 10	3786	-12	86	144	-15
	Total	4422	-14	100	182	-21

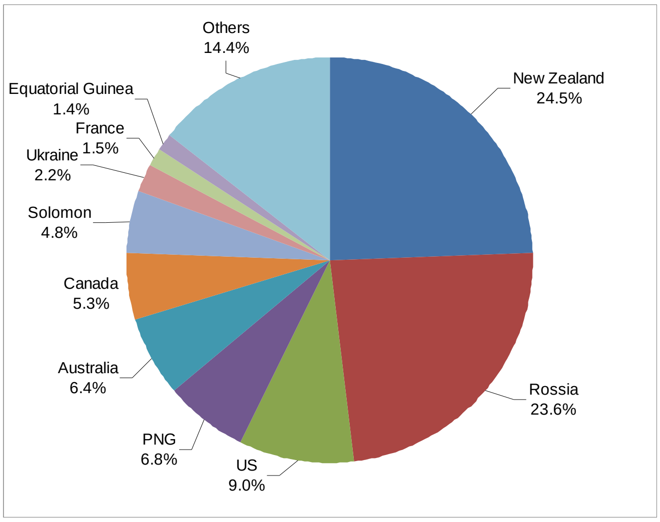


Figure 1-5: Proportion of major log importing countries

Table 1-6: Top 10 countries where China imported coniferous logs

Order	Country	Imported value (10000 m^3)			Unit price (dollars per m^3)		
		2015	Yearly comparison (%)	Proportion (%)	2014	2015	Yearly comparison (%)
1	New Zealand	1081	-8	36	144	113	-22

2	Russia	885	-12	30	131	115	-12
3	US	341	-38	11	200	165	-18
4	Australia	248	16	8.3	130	98	-25
5	Canada	232	-23	7.8	193	156	-19
6	Ukraine	85	-45	2.9	132	116	-12
7	Japan	43	40	1.4	137	124	-9
8	Belarus	19	33	0.6	124	110	-11
9	France	13	-58	0.42	158	122	-23
10	DPRK	12	37	0.40	119	118	-1
	Total of top 10	2959	-15	98.82	152	122	-20
	Total	2991	-17	100	152	122	-20

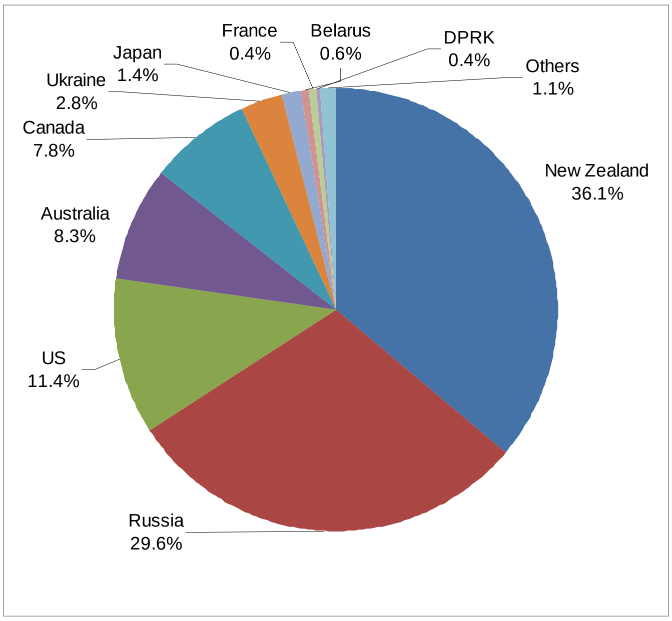


Figure 1-6: Proportion of major coniferous logs importing countries in 2015

Table 1-7: Top 10 countries where China imported broad-leaved logs

Order	**Country**	**Imported value (10,000 m^3)**			**Unit import price (dollars/ m^3)**		
		2015	**Yearly comparison (%)**	**Proportion (%)**	**2014**	**2015**	**Yearly comparison (%)**

1	PNG	301	-9	21	243	213	-12
2	Solomon	213	-3	15	215	202	-6
3	Russia	158	15	11	172	158	-8
4	Equatorial Guinea	64	29	4.5	355	275	-23
5	Cameroon	59	22	4.09	389	337	-13
6	Nigeria	58	15	4.07	689	627	-9
7	US	58	4	4.05	454	431	-5
8	France	54	26	3.8	248	224	-10
9	Mozambique	53	-14	3.7	548	552	1
10	Republic of Congo	50	-12	3.5	420	344	-18
	Total of top 10	1068	2	74.71	300	271	-10
	Total	1431	-7	100	413	308	-25

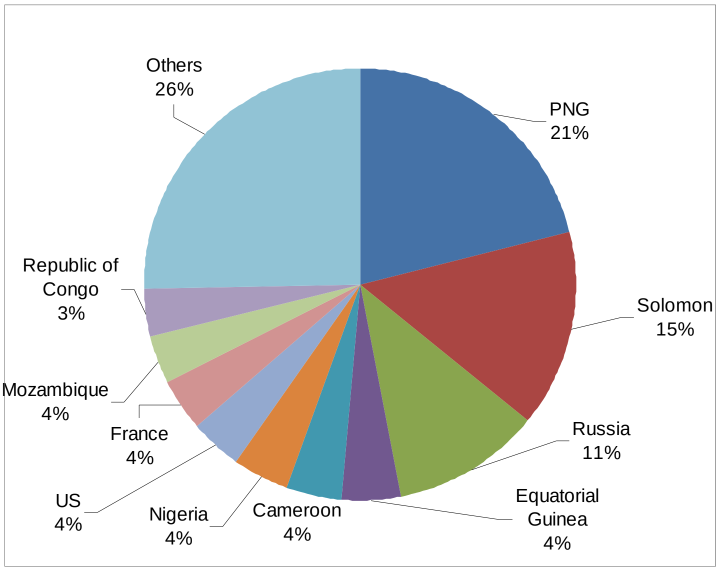


Figure 1-7: Proportion of major broad-leaved importing logs countries in 2015

China mainly imports tropical logs from Papua New Guinea (35%), Solomon Islands (24%), Equatorial Guinea (7%), Cameroon (7%), Nigeria (7%) and Republic of Congo (6%). The imported value of tropical logs from top ten countries constitutes about 93% of the total (see Table 1-8 and Figure 1-8). In 2015, the unit import price of tropical logs from the majority of countries fell, such as Laos (-25%), Equatorial Guinea (-23%), Republic of Congo (-18%), Cameroon (-13%), Liberia (-13%), Papua New Guinea (-12%), which was directly associated with the decrease of import value of tropical logs led by a slowing down of domestic economy.

Table 1- 8: Top 10 countries where China imports tropical logs

Order	Country	Import value (10000 m^3)			Unit import price (dollar/ m^3)		
		2015	Yearly comparison (%)	Proportion (%)	2014	2015	Yearly comparison (%)
1	PNG	301	-9	35	243	213	-12
2	Solomon Islands	213	-3	24	215	202	-6
3	Equatorial Guinea	64	29	7	355	275	-23
4	Cameroon	59	22	7	389	337	-13
5	Nigeria	58	15	7	689	627	-9
6	Republic of Congo	50	-12	6	420	344	-18
7	Laos	26	-43	3	1706	1279	-25
8	Malaysia	20	-47	2	339	334	-1
9	Liberia	13	27	1	312	271	-13
10	Surinam	8	-22	1	355	319	-10
Total top 10	859	813	-5	93	373	301	-19
Total	986	871	-12	100	423	327	-23

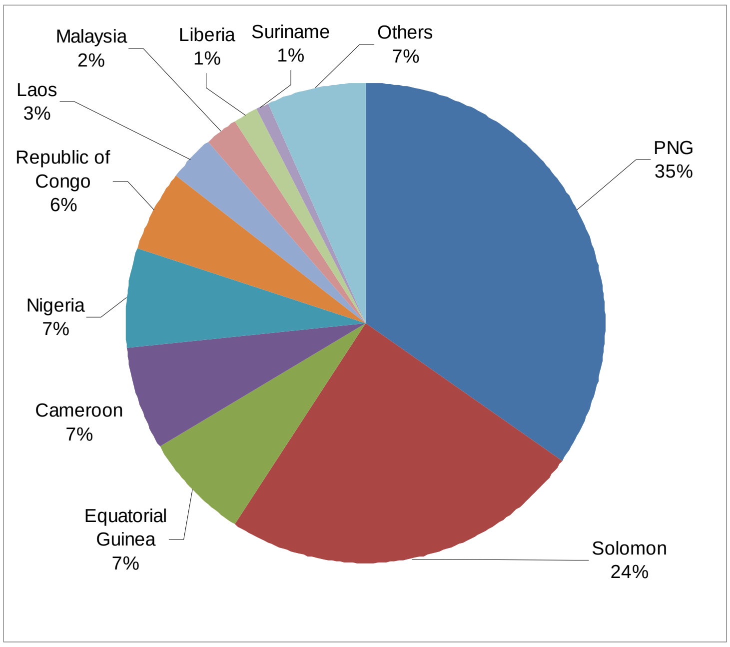


Figure 1-8: Proportion of major tropical logs importing countries in 2015

(2) Monthly changes of imported logs between January and December

The import value of logs peaked in March 2015 at 4.45 million m^3 when the import value of coniferous logs also capped at 3.04 million m^3. The monthly changes of imported values of logs were consistent with those of coniferous logs. For the broad-leaved logs, their monthly changes did not vary much at about 1 million m^3 all year round. In April, the monthly value peaked at 1.5 million m^3 (Figure 1-9).

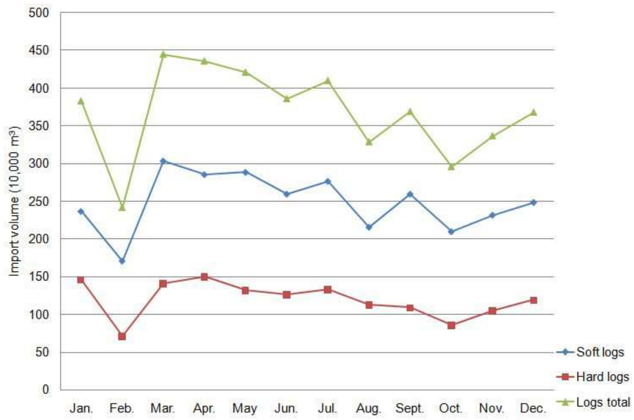


Figure 1-9: Monthly changes of imported logs in 2015 in China

The import value of coniferous logs peaked in March at 3.04 million m^3, after that time it was on a downward trend with October at the lowest 2.1 million m^3, a decrease of 31%. There were rebounds in July, September and December, mainly because of *pinus radiata*, whose import value declined from 1.5 million m^3 in March to 0.8 million m^3 in October, a decrease of 47% (Figure 1-10).

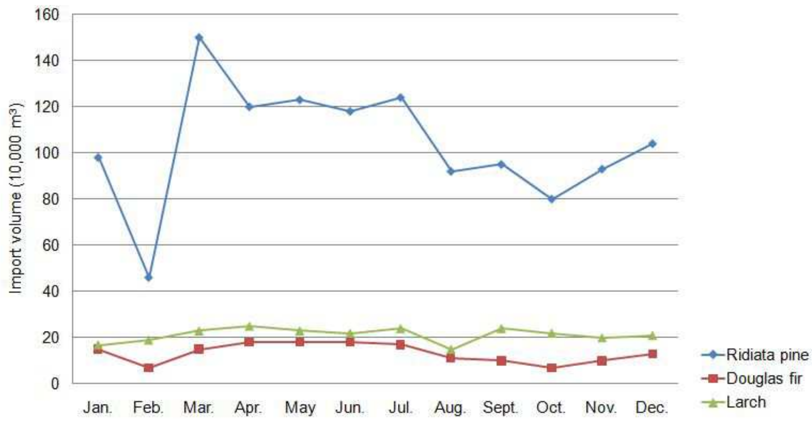


Figure 1-10: Monthly changes of the import value of major varieties of coniferous logs in 2015 in China

In 2015, the import value of broad-leaved logs remained at a monthly level of 1 million m^3. The yearly minimum came in February at 0.71 million m^3, because of traditional

Chinese New Year. Then in April, the value peaked at 1.5 million m^3, after that, it kept declining until October at 0.86 million m^3, a decrease of 43%. But July and December saw rebounds. In general, in 2015, the import value of both coniferous and broad-leaved logs dropped, but that of broad-leaved logs was only reduced by 7% while that of coniferous logs went down by 17% (Figure 1-10 and 1-11).

In 2015, *aucoumea klaineana*, a broad-leaved variety, was imported at a large value, shaping the trend of import value of all broad-leaved logs.

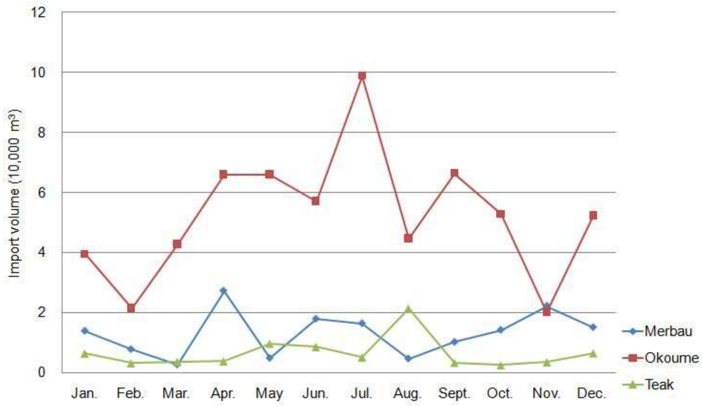


Figure 1-11: Monthly changes of the import value of major broad-leaved varieties

(3) Major customs involved in logs import

In 2015, the customs involved in the import of coniferous logs included Nanjing (36%), Qingdao (21%), Manzhouli (13%), Harbin (9%), Xiamen (7%) and Shanghai (3%). The import value of coniferous logs through the above six customs took up 89% of the total. Among them, Nanjing, Qingdao and Xiamen were the three major customs involved in the import of *pinus radiata* (see Table 1-9 and Figure 1-12).

Table 1-9: Major customs involved in the import of coniferous logs in 2015 in China

No	Customs	Import value			Unit price of import (USD/ m^3)		
		Value (10000 m^3)	Yearly comparison (%)	Proportion (%)	2014	2015	Yearly comparison (%)
1	Nanjing Customs	1085	-3	36	167	127	-24
2	Qingdao Customs	628	-18	21	156	125	-20
3	Manzhouli Customs	376	-23	13	132	120	-9

4	Harbin Customs	272	-4	9	118	106	-11
5	Xiamen Customs	199	-29	7	138	109	-21
6	Shanghai Customs	104	-44	3	152	124	-18
	Other customs	326.84		11			
	Total	2990.84	-16.55	100	152	122	-20

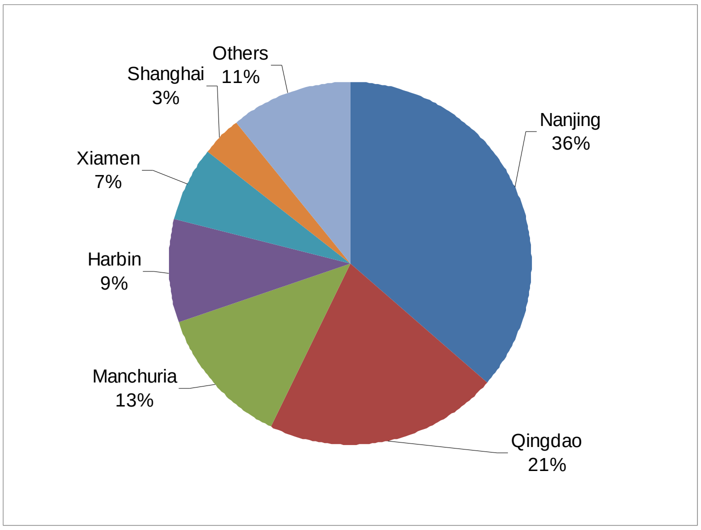


Figure 1-12: Major customs involved in the import of coniferous logs in 2015

Nanjing Customs dealt with half of total imported broad-leaved logs (54%). Other customs involved were Shanghai (9%), Harbin (9%), Huangpu (6%) and Qingdao (5%). The import value of broad-leaved logs through the above five customs occupied 82% of the total. Besides, Shandong, Fujian, Jiangsu and Shanghai were the principal provinces for the import of broad-leaved logs, and Inner Mongolia was the principal province for the import of *pinus sylvestris*. These broad-leaved logs were mainly imported for usage in Yangtze River Delta and Pearl River Delta areas which enjoyed well-developed furniture and wood product industries.

Table 1-10: Major customs involved in the import of broad-leaved logs in 2015

Order	Customs	Import value			Unit import price (USD/ m^3)		
		Value	Yearly comparison (%)	Proportion (%)	2014	2015	Yearly comparison (%)
1	Nanjing	771	-3	54	269	244	-9

	Customs						
2	Shanghai Customs	133	-28	9	714	507	-29
3	Harbin Customs	113	6	8	185	174	-6
4	Huangpu Customs	80	-42	6	861	773	-10
5	Qingdao Customs	72	27	5	237	193	-19
	Other customs	261		18			
	Total	1431		100			

1.1.2 Import of swnwood

In 2015, China imported in total 25.66 million m^3 of sawnwood, the same level with the value last year (Figure 1-13). The import value stood at 7.4 billion USD, a decrease of 8% year-on-year. In details, the import of coniferous sawnwood was 13.83 million m^3, taking up about 54% of the total and a decrease of 5% year-on-year. The import of broad-leaved sawnwood was 11.83 million m^3, accounting for 46% of the total and an uptake of 6% year-on-year.

Among the broad-leaved sawnwood, China imported 4.72 million m^3 of sawn tropical timber, occupying 18% of the total and an increase of 14% year-on-year. The import value came at 2.1 billion dollars, a decrease of 6%. As to the unit price of imported sawnwood, it was 436 dollars / m^3, a decrease of 18% year-on-year.

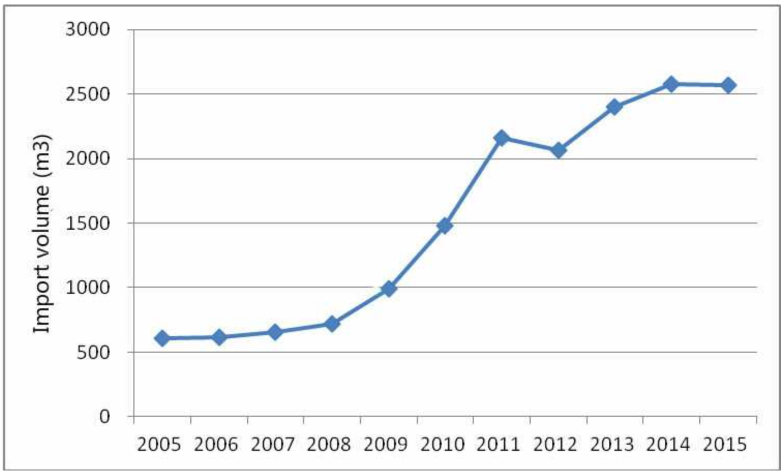


Figure 1-13: Import volue of sawnwood in China from 2005 to 2015

China mainly imported sawn coniferous timber from Russia (52%) and Canada (30%), making up 82% of the total. Between the two countries, the import value from Russia (7.19 million m^3) exceeded that from Canada (4.21 million m^3). For the information about the top ten countries where China imports its sawn coniferous timber and their proportion, please refer to Figure 1-14.

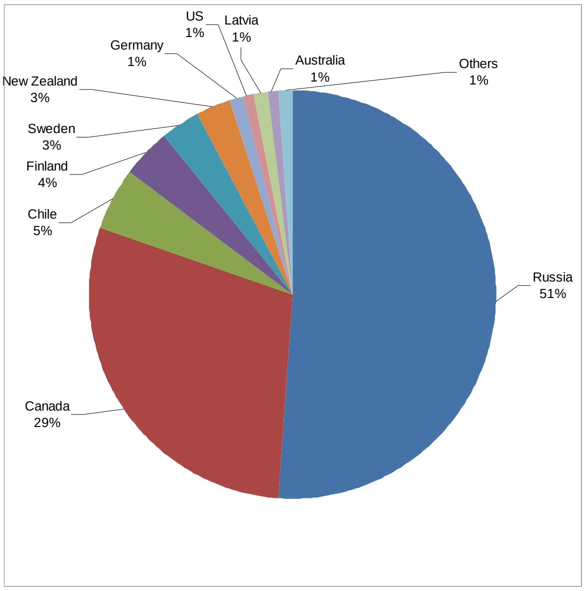


Figure 1-14: Proportion of imported coniferous sawnwood from major countries in 2015

In 2015, the monthly peak of the import value of sawnwood was in April at 2.63 million m^3. Meanwhile, for coniferous sawnwood, the peak mont was May at 1.47 million m^3. The monthly changes of the import value of sawnwood were consistent with those of coniferous sawnwood. By contrast, in 2015, the import value of broad-leaved sawnwood did not vary much every month, although in general, there was increases year-on-year. Throughout the year, the monthly value maintained the level of about 1 million m^3 with the peak at 1.2 million m^3 in April (Figure 1-15).

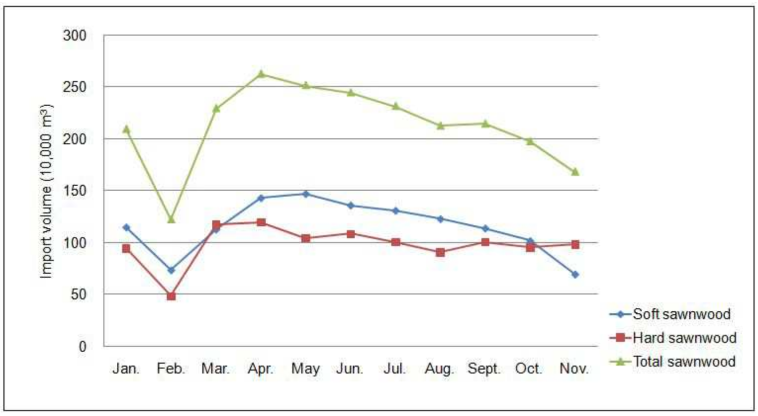


Figure 1-15: Monthly changes of the import value of sawnwood in 2015

In 2015, the prices of imported coniferous sawnwood witnessed year-on-year decline. In January, the peak price came at 221 dollars/m^3. In October, the price declined to the lowest at 181 dollars/m^3 (Figure 1-16).

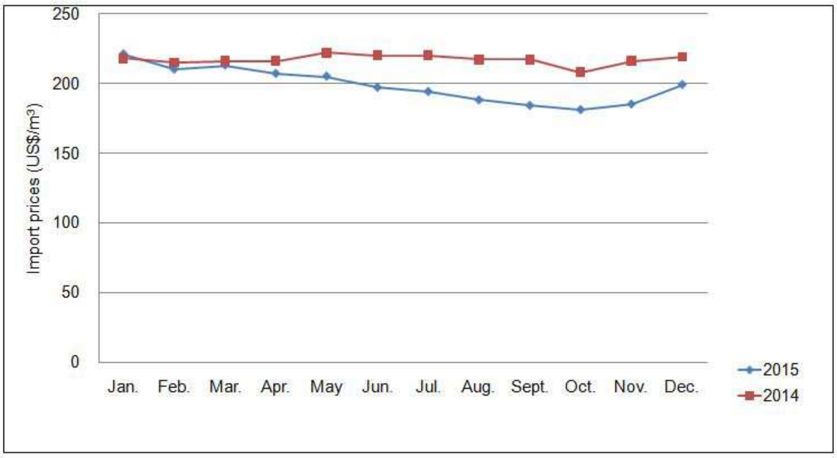


Figure 1-16: Monthly changes of the import prices of coniferous sawnwood in 2015

In 2015, the average price of broad-leaved sawnwood dropped by 12% year-on-year. In January, the peak price was 443 dollars/m^3 while the lowest came in October at 374 dollars/m^3 (Figure 1-17).

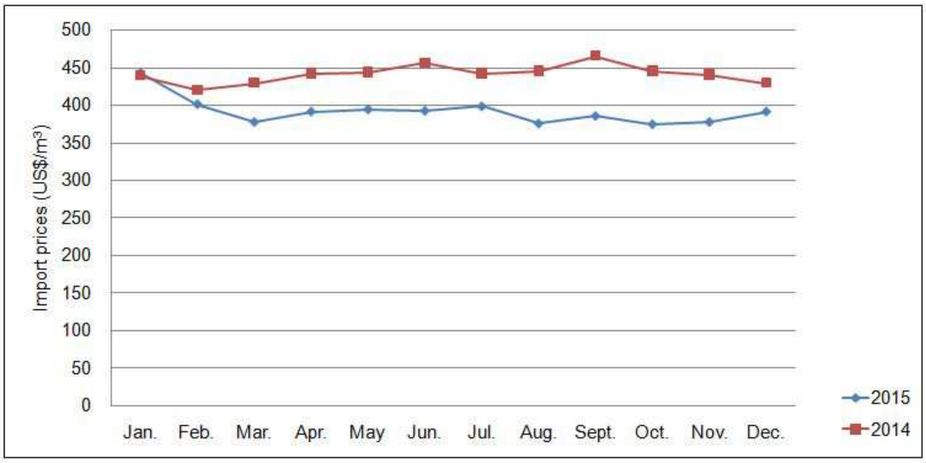


Figure 1-17: Monthly changes of the import prices of broad-leaved sawnwood in 2015

China imported its broad-leaved sawnwood mainly from Thailand (25%), the U.S. (22%), Russia (17%) and Canada (9%) (Figure 1-18).

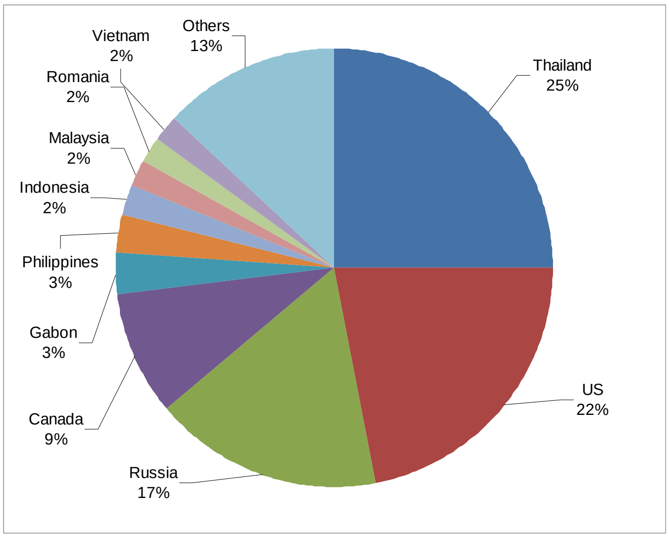


Figure 1-18: Proportion of imported broad-leaved sawnwood from major countries in 2015

The import of broad-leaved sawnwood went through the customs of Guangzhou (22%), Shanghai (18%), Shenzhen (16%), Manzhouli (7%), Harbin (7%), Qingdao (6.6%), Nanjing (4.9%), Tianjin (3.4%), Jiangmen (2.8%) and Ningbo (2.6%). The import value through the above ten customs took up about 90% of the total import value.

1.1.3 Import of wood-based panel

(1) Import of plywood

In 2015, the total import of various kinds of plywood reached 730,000 m^3 worth 220 million dollars, which increased by 308% and 70% year-on-year. The plywood was mainly imported from Canada and Russia with import value and import value accounting for 63% and 44% of the total. Import value and import value from Canada registered at 300,000 m^3 and 40.97 million dollars and those from Russia at 180,000 m^3 and 44.22 million dollars.

In recent years, the booming plywood industry in China could meet domestic demand. However, the inelastic demand for high-quality plywood still exists.

(2) Import of particleboard

In 2015, the total import of particleboard reached 620,000 m^3 worth 140 million dollars, which increased by 8% and slight decreased by 2% year-on-year respectively. The major importers were Malaysia (180,000 m^3), Thailand (140,000 m^3) and Romania (130,000 m^3). Import value and value from the three countries accounted for 72% and 64% of the total. With a booming real estate market in China, demand for wooden furniture made by particleboard has increased.

(3) Import of fiberboard

In 2015, the total import of fiberboard reached 290,000 t worth 110 million dollars, which decreased by 2% and 3% respectively. The fiberboard were mainly imported from New Zealand (31,900 t), Australia (26,500 t), Germany (22,900 t), Thailand (18,000 t) and Belgium. The import value and value from the five countries accounted for 73% and 70% of the total respectively.

1.1.4 Import of wood pulp and waste paper

(1) Import of wood pulp

In 2015, China imported wood pulp of 19.78 million t worth 12.7 billion dollars, which increased by 10% and 5% respectively. The pulp was mainly imported from the U.S. (30%), Canada (13%) and Brazil (8%) (Figure 1-19).

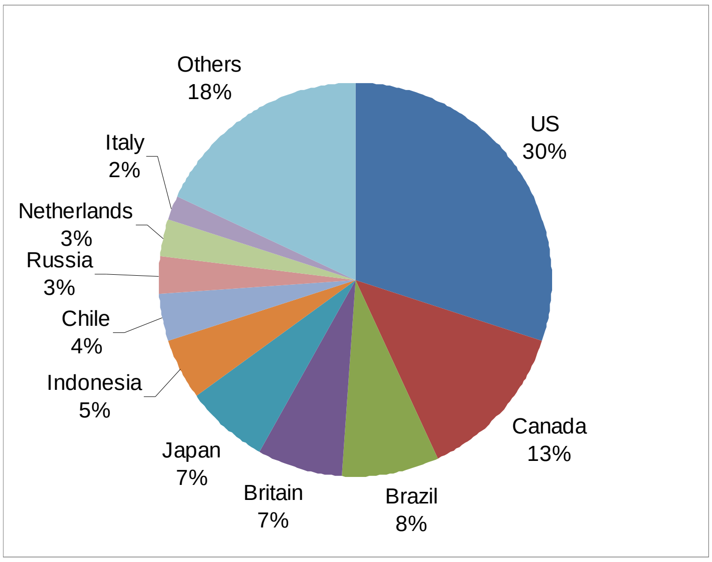


Figure 1-19: China's major importing countries of wood pulp in 2015

(2) Import of waste paper

In 2015, various kinds of imported waste paper reached 28.93 million t worth 5.2 billion dollars, increased by 5% and decreased by 3% year-on-year respectively.

1.1.5 Import of paper, paperboard and paper products

In 2015, the total import of paper, paperboard and paper products reached 2.97 million t worth 4 billion dollars, which increased by 1% and decreased by 7% year-on-year respectively.

Paper and paperboard were mainly imported from the U.S. (0.72 million t), Sweden (0.37million t), Chinese Taipei (0.24 million t), Indonesia (0.21 million t), Japan (0.2 million t) and ROK (0.2 million t). Import value from the six countries and regions accounted for 65% of the total.

1.1.6 Import of wood chip

In 2015, China imported wood chip of 9.61 million t worth 1.3 billion dollars, which increased by 8% and 13% respectively. They were mainly imported from Vietnam (43%), Australia (27%), Thailand (13%), Indonesia (10%) and Chile (4%), altogether accounting for 97% of the total.

1.1.7 Import of wooden furniture

Better living standard and the depreciation of the US dollar boosted the import of wooden furniture in China. In 2015, a total of 10.03 million pieces of wooden furniture were imported, an increase of 2%. Their imported value of 870 million dollars has decreased by 2% year on year. The furniture were mainly imported from Poland (2.18 million pieces), Vietnam (1.9 million pieces), Thailand (1.02 million pieces) and Italy (0.83 million pieces), altogether accounting from 60% of the total.

1.2 Overview of Export of Timber Products in 2015

1.2.1 Export of wooden furniture

In 2015, 320 million pieces of wooden furniture were exported, worth 22.5 billion dollars, a year-on-year increase of 2%. They were mainly exported to countries and regions including the U.S. (48%), the U.K. (9%), Germany (7%) and Australia (6%) (Figure 1-20).

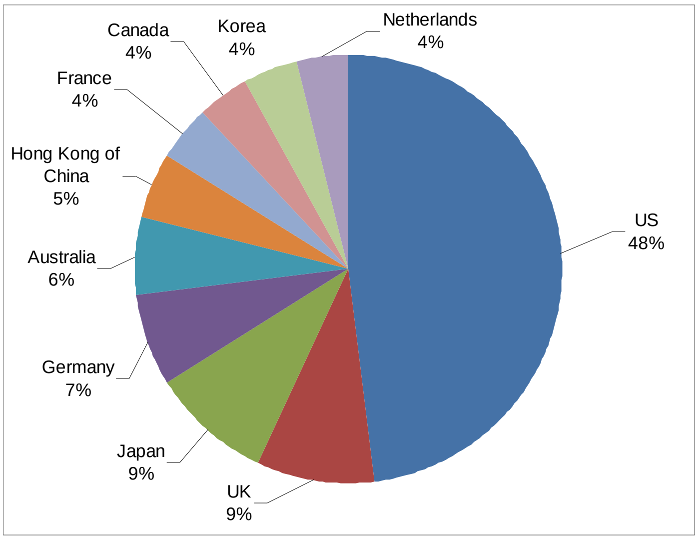


Figure 1-20: Major exporting countries of Chinese furniture in 2015

Customs involved were in Shenzhen (26%), Shanghai (19%), Fuzhou (9%), Ningbo (9%), Qingdao (8%) and Xiamen (7%) (Figure 1-21).

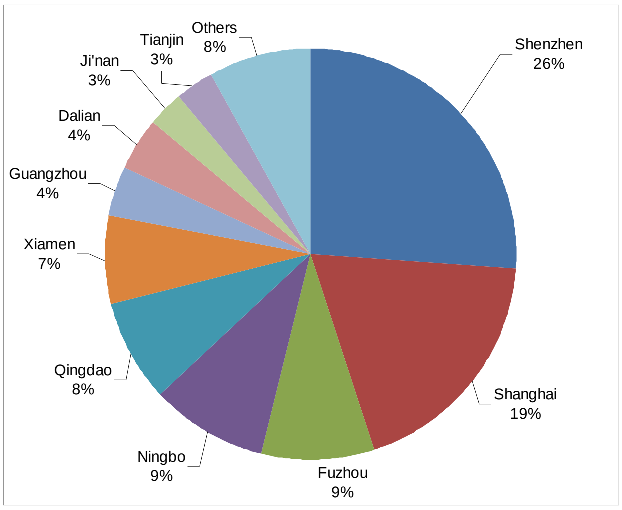


Figure 1-21: Major ports for exported Chinese furniture in 2015

1.2.2 Export of paper, paperboard and paper products

In 2015, exported paper, paperboard and paper products registered at 9.22 million t, a year-on-year decrease of 4%. Their exported value stood at 18.7 billion dollars, a year-on-year increase of 5%. They were mainly exported to the U.S. (12%), Hong Kong (7%) and Japan (7%) (Figure 1-22).

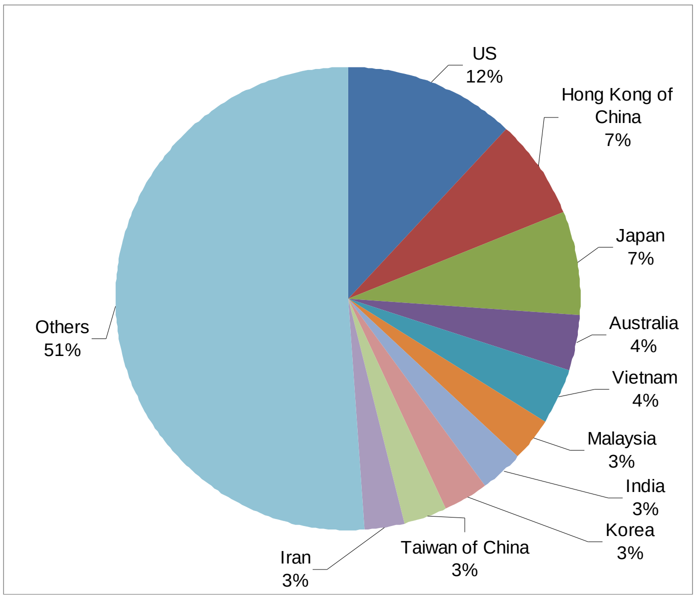


Figure 1-22: Major exporting countries and regions of Chinese paper, paperboard and paper products in 2015

1.2.3 Export of plywood

In 2015, China exported plywood of 10.7 million m^3 worth 5.5 billion dollars, which decreased by 8% and 5% respectively. They were exported to many countries, including the U.S. (17%), the United Arab Emirates (7%), the U.K. (7%), Japan (6%), ROK (6%), the Philippines (6%) and Saudi Arabia (7%). Export value of the top 10 countries accounted for 40% of the total (Figure 1-23). Plywood exported to developed countries in the European Union was used as wood veneer so their price per unit was higher. In previous years, the unit price of plywood exported to third world countries like United Arab Emirates, the Philippines and Saudi Arabia was relatively lower. But in 2015, the unit price of plywood exported to the three countries increased by 18%, 4% and 7% year on year. The unit price of plywood exported to the U.S., Japan and ROK, however, decreased to various extents (Table 1-11 and Figure 1-23).

Table 1-11: Major exporting countries and regions and unit price of Chinese plywood in 2015

Country	Export Value (10,000 m^3)				Unit Price (dollar/m^3)		
	2014	2015	Yearly comparison (%)	Share of total (%)	2014	2015	Yearly comparison (%)
US	168	182	9	17	764	749	-2
United Arab Emirates	70	73	5	7	367	432	18
UK	72	70	-2	7	489	498	2
Japan	83	67	-19	6	498	464	-7
Korea	71	66	-7	6	390	382	-2
Philippines	68	61	-11	6	429	445	4
Saudi Arabia	60	49	-18	5	309	332	7
Chinese Taipei	33	29	-10	3	379	368	-3
Vietnam	27	28	4	3	434	432	0
Israel	27	27	2	3	446	425	-5
Sub-total for the top 10	677	653	-4	61	504	516	2
Total	1168	1070	-8	100	498	510	2

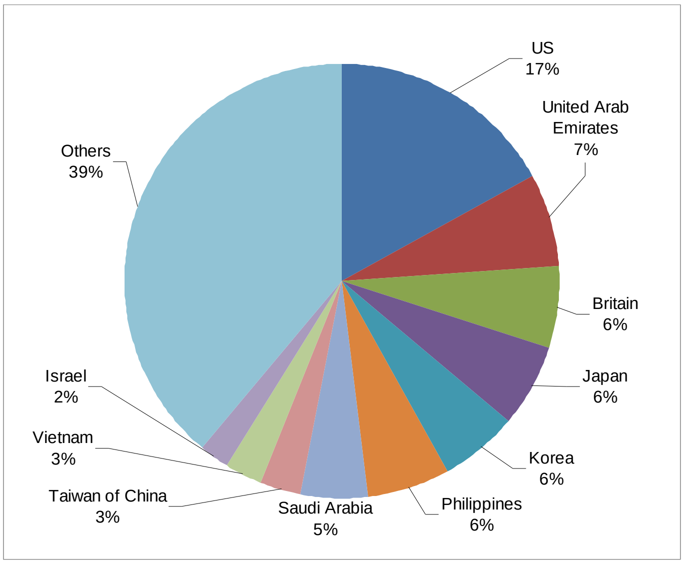


Figure 1-23: Value share of major exporting countries of Chinese plywood in 2015

Due to uneven production of plywood in China in terms of places, export value from different customs and their value increase vary greatly. Export of plywood concentrates in Nanjing (40%) and Qingdao (35%) customs, accounting for 75% of the total. Unit price of exported plywood from Tianjin customs increased dramatically by 65% and that from Shanghai increased by 6% (see Table 1-12). Unit price of most other customs all fell to some extent.

Table 1-12: Major customs and unit price of exported plywood in China in 2015

Customs	**Export value**				**Unit price (dollar/m^3)**		
	2014	**2015**	**Yearly comparison**	**Share of the total (%)**	**2014**	**2015**	**Yearly comparison (%**
Nanjing	482	429	-11	40	388	397	2
Qingdao	400	379	-5	35	422	417	-1
Nanning	58	56	-2	5	342	337	-1
Shanghai	59	51	-13	5	1227	1298	6
Dalian	41	37	-10	3	1595	1593	0
Shenzhen	16	18	8	2	528	513	-3
Jinan	11	16	47	2	392	377	-4
Jiangmen	17	15	-11	1	420	416	-1
Tianjin	24	12	-48	1	388	640	65
Zhanjiang	9	10	14	1	361	356	-1
Sub-total of top 10	1115	1023	-8	96	488	494	1
Total	1168	1070	-8	100	498	510	2

1.2.4 Export of fiberboard

In 2015, China exported fiberboard of 3.41 million m^3 worth 1.4 billion dollars, which decreased by 12% and 13% respectively. Fiberboard is the base material for laminate flooring. Its export was seriously affected by the toxic floor incident in the U.S. On March 1st 2015, 60 Minute of CBS reported that laminate floor produced by the largest floor company of the U.S., Lumber Liquidators, in Changzhou, Jiangsu province, released formaldehyde 6 to 7 times higher than the standard of California. See from Figure 1-24, export of fiberboard in March fell to the lowest of 160,000 m^3.

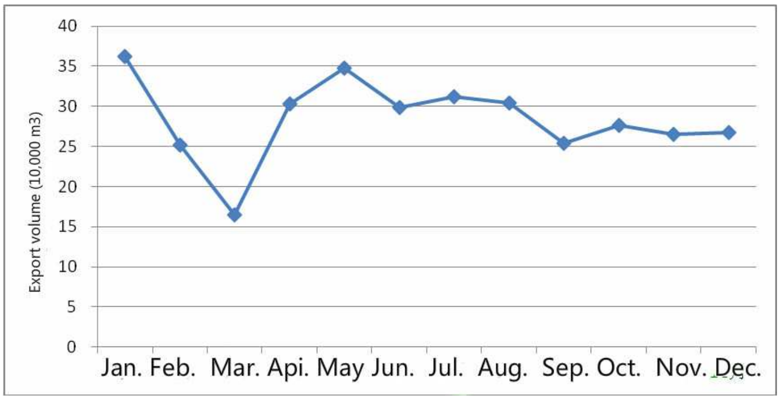


Figure 1-24: Monthly export of fiberboard in China

Fiberboard were mainly exported to countries like the U.S. (17%), Iran (10%) and Saudi Arabia (9%) (Figure 1-25). Affected by the toxic floor incident, export to countries with stricter standard for formaldehyde release like the U.S., Canada and Russia decreased dramatically by 19%, 34% and 68% respectively. Export to underdeveloped countries like Vietnam, Nigeria and Iran, however, increased to a large extent by 69%, 57% and 40% respectively.

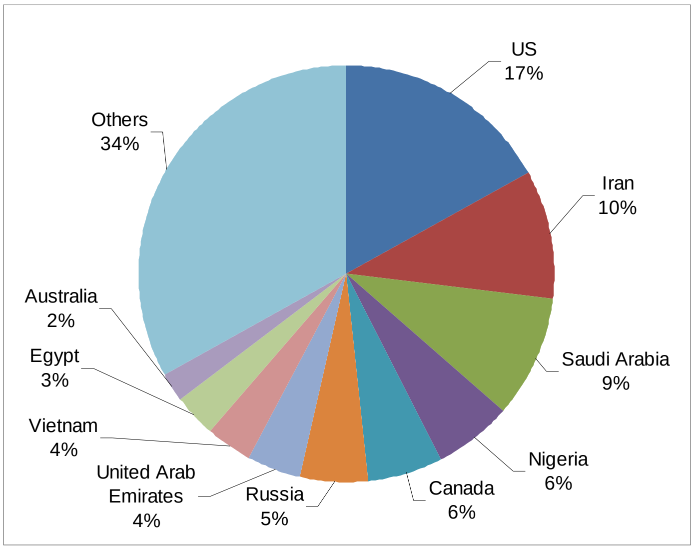


Figure 1-25: Major exporting countries of fiberboard in China in 2015

Customs exporting large value of fiberboard in China were Shanghai and Nanjing customs, accounting for 41% and 31% of the total respectively. The two together accounted for 72% of the total.

1.2.5 Export of particleboard

In 2015, China exported particleboard of 3.41 million m^3 worth 1.4 billion dollars, which decreased by 12% and 13% respectively. They were mainly exported to countries like Mongolia (20%) and India (11%) (Figure 1-26). Export value only increased in India and the U.S. by 75% and 30%. Export value to other countries all fell markedly. Export to Russia, Chinese Taipei, Malaysia, Egypt and ROK decreased by 86%, 64%, 39%, 21% and 15% respectively. The export unit price to Russia, Chinese Taipei and Egypt increased by 80%, 38% and 38%, which led to falling export value.

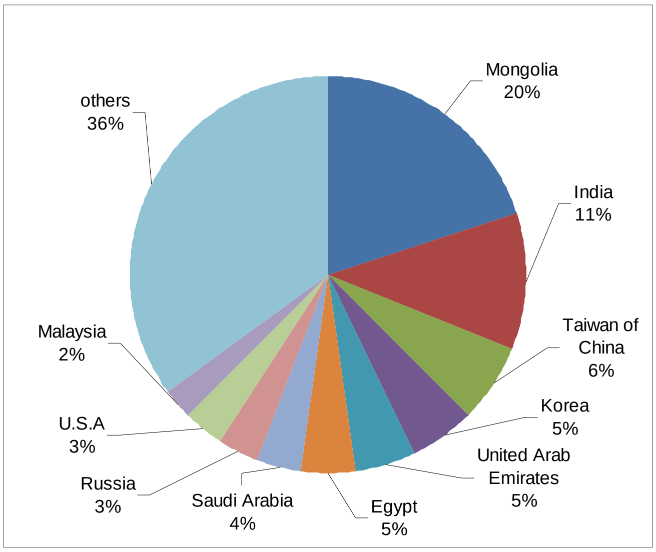


Figure 1-26: Major exporting countries of particleboard from China in 2015

Major customs for particleboard export were Qingdao, Hohhot and Nanjing, handling 36%, 20% and 16% of the total export.

1.3 Features of Timber Products Trade in China in 2015

1.3.1 Trade value of forest products and its share in the overall national trade in goods decreased and trade surplus increased year-on-year

In 2015, the total import and export value of forest products stood at 123 billion dollars, falling 10% year-on-year to the level of 2011. Its share in the overall national trade in goods was 3.11%, which decreased by 0.15 percentage points compared with 2014.

Their export registered at 64.8 billion dollars, falling 6% year-on-year. Its share in the overall national export trade in goods was 2.85%, which decreased by 0.23 percentage points compared with 2014.

Their import registered at 58.2 billion dollars, falling 15% year-on-year. Its share in the overall national import trade in goods was 3.85%, which decreased by 0.39 percentage points compared with 2014.

Their import fell greater than the export. Marked decrease of import value was the major reason for falling forest products trade value.

The trade surplus reached 6.6 billion dollars, increasing by 50%. The trade surplus of 2014 was 4.4 billion dollars.

1.3.2 Trade of WFP still played a dominant role but its value fell for the first time

In 2015, the total import and export value of WFP stood at 93.9 billion dollars, falling for the first time by 11% since 2009. Its share in the total trade value still played a dominant role at 76%. Its import stood at 39.4 billion dollars, falling by 17% year-on-year and accounting for 68% of the total import. Imported WFP were mainly wood pulp, log, sawnwood, waste paper, paper, paperboard and paper products. Export value was 54.5 billion dollars, falling by 7% year-on-year and accounting for 84% of the total export. Exported WFP were mainly wooden furniture, paper, paperboard, paper products, plywood, wood products and fiberboard.

Import value fell because import value of log decreased by 31% and that of sawnwood, paper, paperboard and paper products and waste paper decreased by 8%, 7% and 3% respectively. Export of fiberboard and plywood fell by 14% and 5%, which directly led to the reduced export of WFP.

1.3.3 Import value of main WFP fell but that of pulp and wood chip went up

Import value of log, sawnwood, paper, paperboard and paper products and waste paper fell by 31%, 8%, 7% and 3% respectively year-on-year. The import of pulp and wood chip, however, went up by 5% and 13%.

1.3.4 Import value of log declined sharply

Import of pulp, waste paper, paper, paper board and paper products rose by 10%, 5% and 1%, while import of log declined sharply by 14%.

1.3.5 Average importing price for major WFP all decreased with that of log decreased most significantly

The average importing price for pulp, log, sawnwood, paper, paper board and paper products went down by 5%, 21%, 9%, 7% and 7% with that of log dropping the most by 21%.

New Zealand was still the largest exporter of log to China. In 2015, New Zealand (10.85 million m^3) overtook Russia (10.42 million m^3) to become the largest supplier of log to China. However, China's import of log from New Zealand and Russia both fell by 8% year-on-year. Despite decreased log import from most suppliers, China's log import from Australia increased markedly by 20% year-on-year.

Import of log from Ukraine, the U.S. and Canada fell by 41%, 35% and 23% respectively.

1.3.6 Some exported forest products experienced lower value but higher unit price

Among all exported forest products, the export value of plywood, paper, paper board and paper products fell by 8% and 4% year-on-year. However, the average unit price for the two rose by 2% and 9%. Both experienced lower export value but higher unit price.

1.3.7 ASEAN is still an emerging market for China

2015 witnessed sound trade of forest products between China and the ASEAN emerging market, with average increase of 10%. Demand from South Africa grew the most by 83%. Export value to Mexico set a record high. For details, see Table 1-13.

Table 1-13: Forest products trade between China and emerging markets

Country	Import value	Yearly comparison	Export value	Yearly comparison	Import and export value	Yearly comparison
	10 million $	（%）	10 million $	（%）	10 million $	（%）
India	1.05	-35	11.22	21	12.27	13
South Africa	6.36	17	6.33	83	12.69	43
Mexico	41.13	16	16.18	15	57.32	16
Russia	24.78	21	4.25	17	29.03	20
Brazil	1.35	20	5.84	23	7.19	23

1.4 Main Problems

The year of 2015 witnessed declining trade of timber products. The main problems for the decline are:

(1) Overstock of log. Lackluster real estate market, marked increase of anti-dumping duty rate of solid wood composite floor imposed by the U.S. and standard of formaldehyde release for wooden furniture and laminate flooring led to substantial reduction of timber products export and production. Overcapacity of many industries and fierce competition led to the production and consumption of timber products, which created the overstock of logs.

(2) Large stock of sawnwood. Low consumption of sawnwood affected its import this year.

(3) Serious trade friction. Wooden furniture and flooring companies in China were repeatedly investigated for anti-dumping and anti-subsidy in the US and Europe. The investigation was frequent particularly in the US.

(4) Export orders and capacity of labor-intensive industry in China were relocated to surrounding countries because of rising cost of raw materials and labor. The rising cost of labor and land crippled the export competitiveness of wood products industry. The coastal area witnessed increasing labor cost for years. In 2015, the cost rose again by 10% to 15%. Now the cost was two to three times higher than neighboring countries like Vietnam, India and Cambodia.

(5) Export price of paneling varied greatly. For example, its unit price in provinces with large value of plywood export was only 300 to 500 USD, like Shandong, Jiangsu, Guangdong and Guangxi. It had increased by only 10% in the past five years. However, the unit price in provinces with small value of plywood export was on average over 1000 USD, like Liaoning, Jilin, Zhejiang and Shanghai.

1.5 Preliminary Analysis for Timber Products Trade in China for 2016

In 2016, timber processing industry and timber product trade will face complicated prospect domestically and internationally with both opportunities and challenges. They will be seen in the following aspects:

(1) Countries will face uneven economic recovery, and internal momentum will be insufficient. Demand from the U.S. and Europe will still be weak. With European debt crisis still ongoing, trade protectionism will worsen international trade environment.

(2) Rising cost of raw materials, weak export price, fluctuation of RMB exchange rate and increasing labor cost will be the many unstable factors that forest products export will face in 2016. The year 2016 may witness lower export increase.

(3) Timber import will be falling and overstock still serious. The year 2015 witnessed a dramatic drop in timber import. Domestic economy is growing at a medium rate. Overstock of wood will continue.

(4) The conflict between supply and demand of timber will be further deteriorated by prohibition of commercial logging of natural forests. From April 1 2015, Heilongjiang province and Jilin Forest Industry Group will kick off complete prohibition against commercial logging. Affected by the prohibition in Northeast China, conflict between supply and demand will be exacerbated and timber import will be fluctuated.

(5) China will still face challenges of anti-dumping and anti-subsidy investigation by developed countries and trade rules about timber legitimacy. Developed countries will continue to crack down on China’s forest products trade through anti-dumping and anti-subsidy investigation. Trade rules of the EU, the U.S. and Australia about timber legitimacy will continue to influence timber trade of China.

(6) China has huge consumption demand for mid-end and high-end forest products, especially for mid-end and high-end furniture and particleboard. Large number of commercial housing waiting for owners to live in and depreciation of Euro will continue to boost import. Moreover, more use of particleboard for furniture and compulsory standard for formaldehyde release of furniture set by the U.S. will boost the import of high-quality particleboard.

(7) Export of paneling faces various difficulties. Domestic furniture companies need ever increasing use of paneling, which leads to falling paneling export. Due to restrictions on formaldehyde release standard set by the U.S., export of medium density fiberboard and laminate wood flooring has decreased. Anti-dumping rate of 13.74% in the U.S. will affect and narrow the export of plywood and solid wood composite floor.

(8) The increase of wooden furniture export has fallen. Due to the economic slowdown of the EU and many emerging markets, demand for wooden furniture has decreased. Compounded by the depreciation of Euro and other currencies, the export value and value of wooden furniture in China face a much slower increase. However, rising demand from traditional furniture importing countries and the prosperous Asian market are important driving force for wooden furniture export in China.

Forest products trade in China is merging into the international market. In this process, domestic timber processing companies must be ready to embrace and handle possible difficulties. They must also speed up its upgrading, improve its product quality, expand domestic and foreign market, and actively deal with complicated domestic and global economic environment.

1.6 Basic Information on International Timber Trade of China in 2016 (soon)

1.7 Comparison of Timber Products Trade in China for 11 Years in 2005-2015

The following 24 figures show the year-to-year comparison of import and export volume and value of timber products in China for 11 years in 2005-2015.

1.7.1 Overview

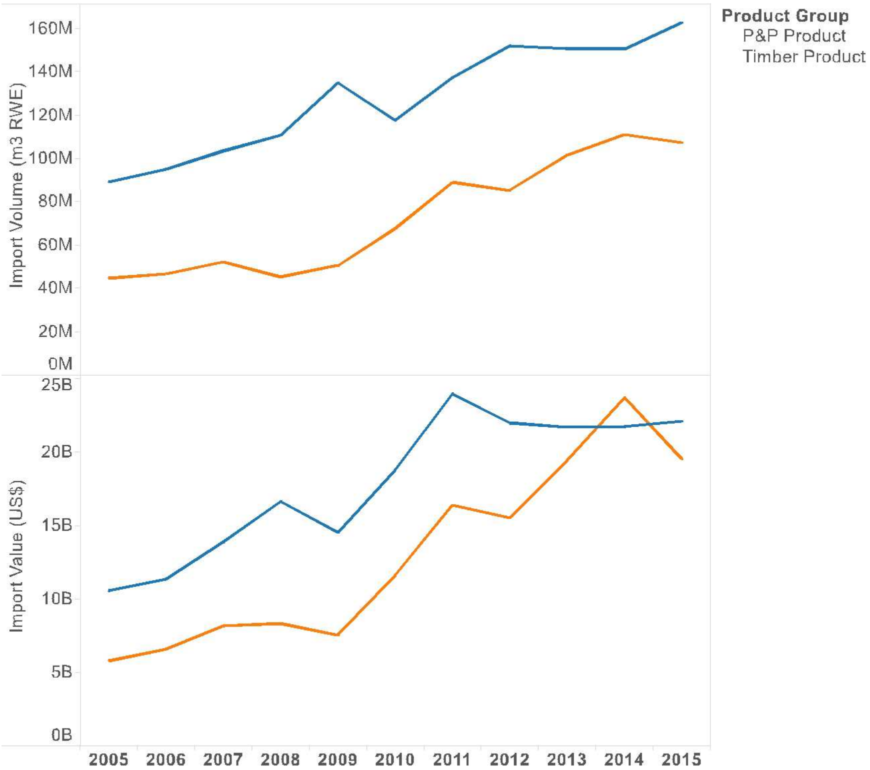


Figure 1-27: Forest Product Imports: Timber products vs. pulp and paper products (2005-2015)

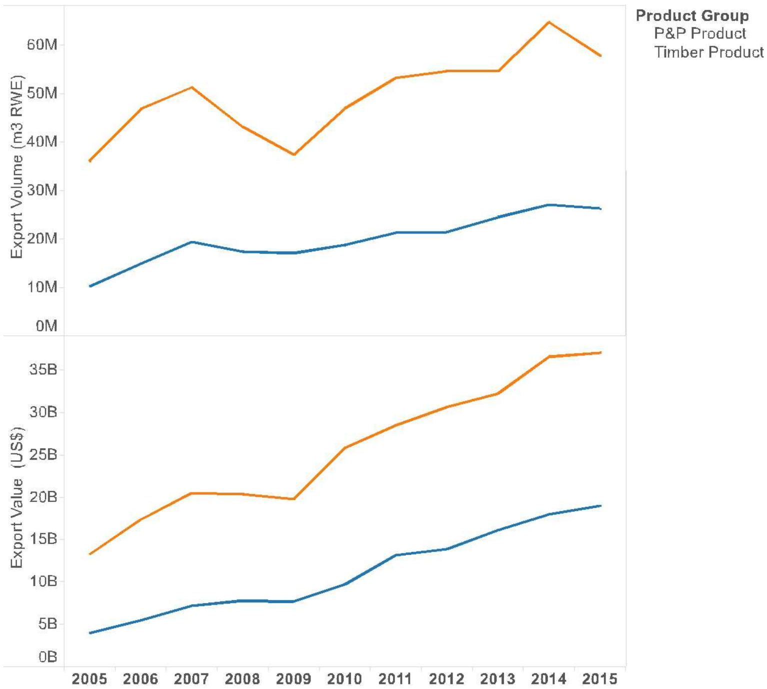
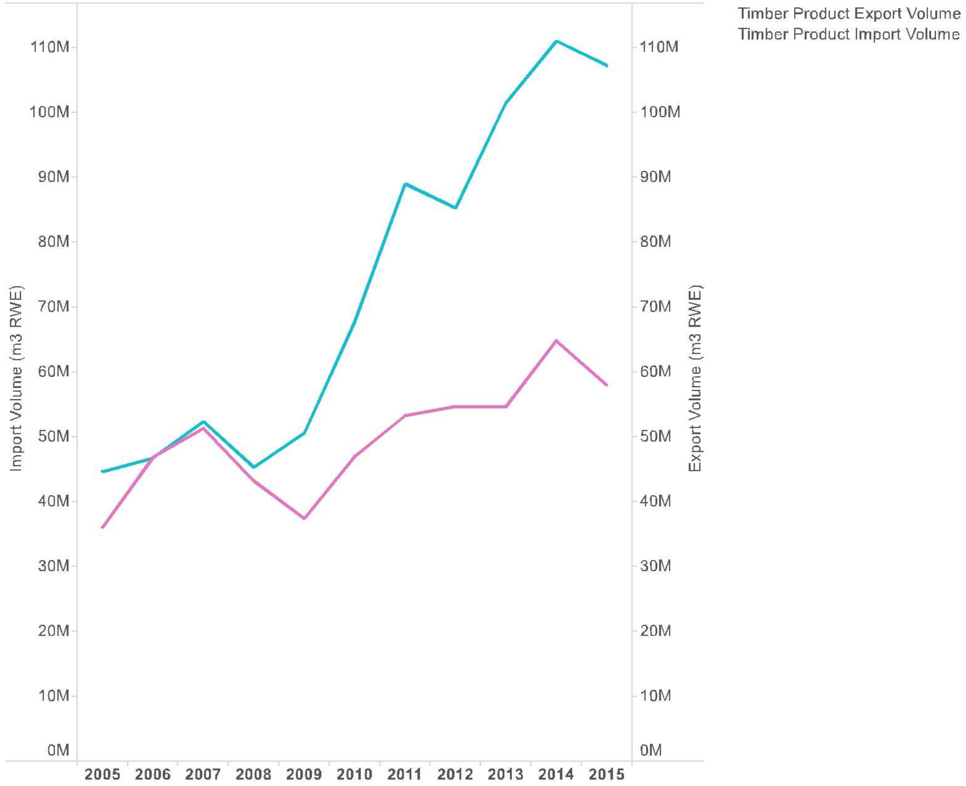


Figure 1-28: Forest Product Exports: Timber products vs. pulp and paper products (2005-2015)



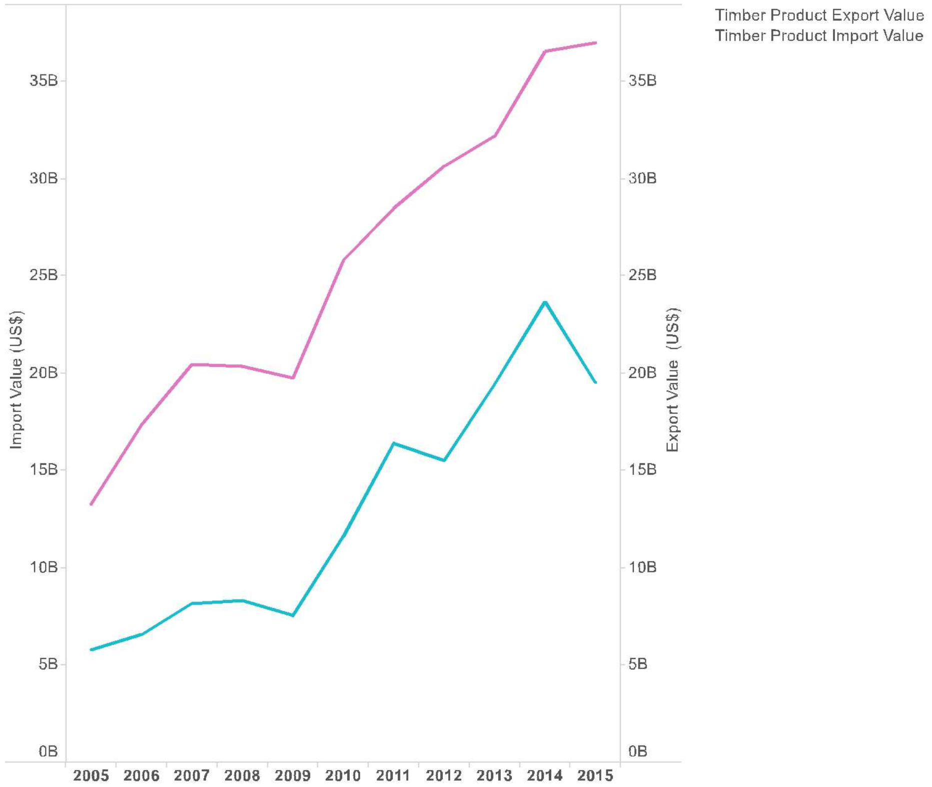


Figure 1-29: Timber Product Imports vs Exports (2005-2015)

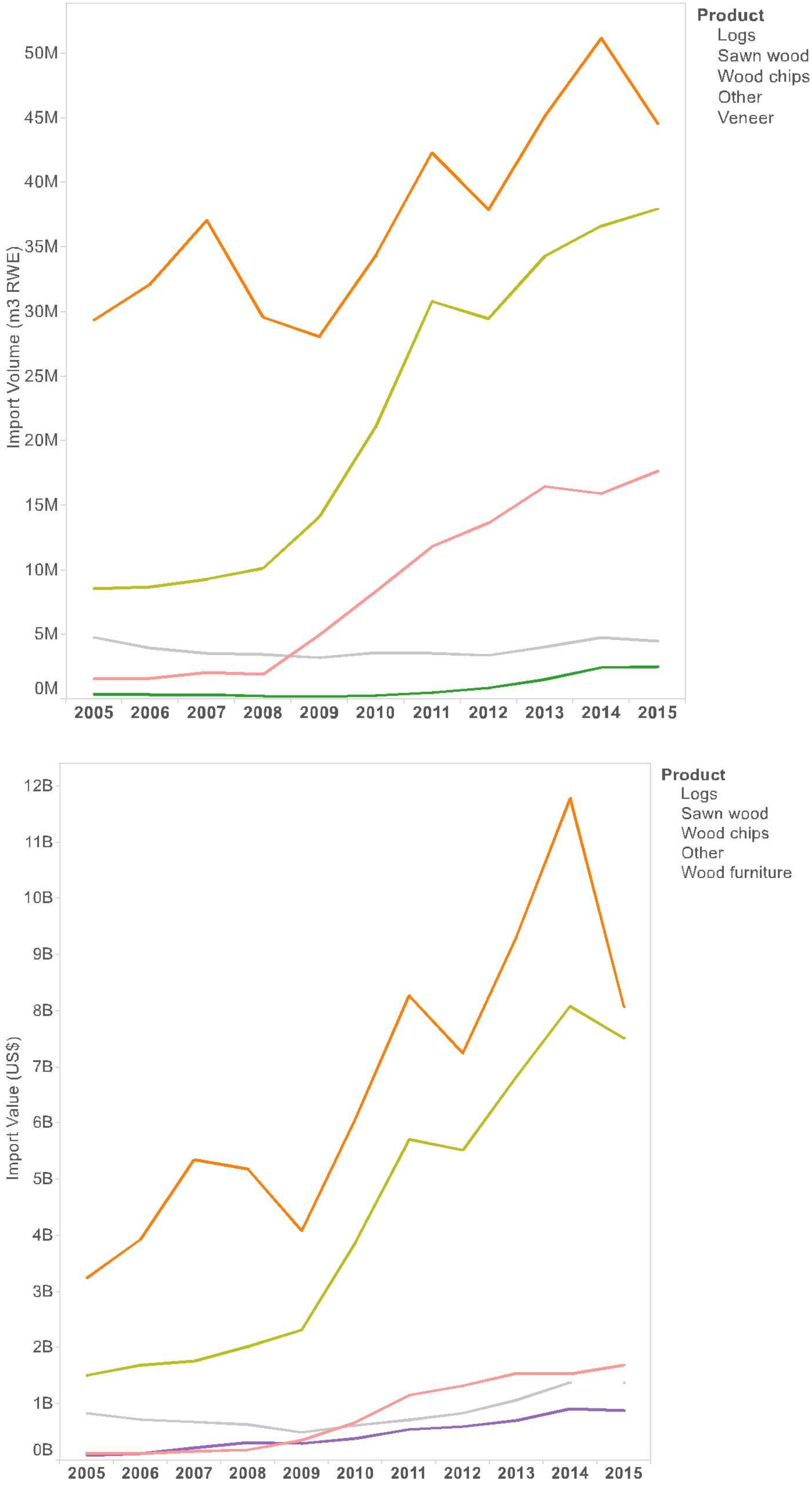


Figure 1-30: Timber Product Imports by Top 4 Products (2005-2015)

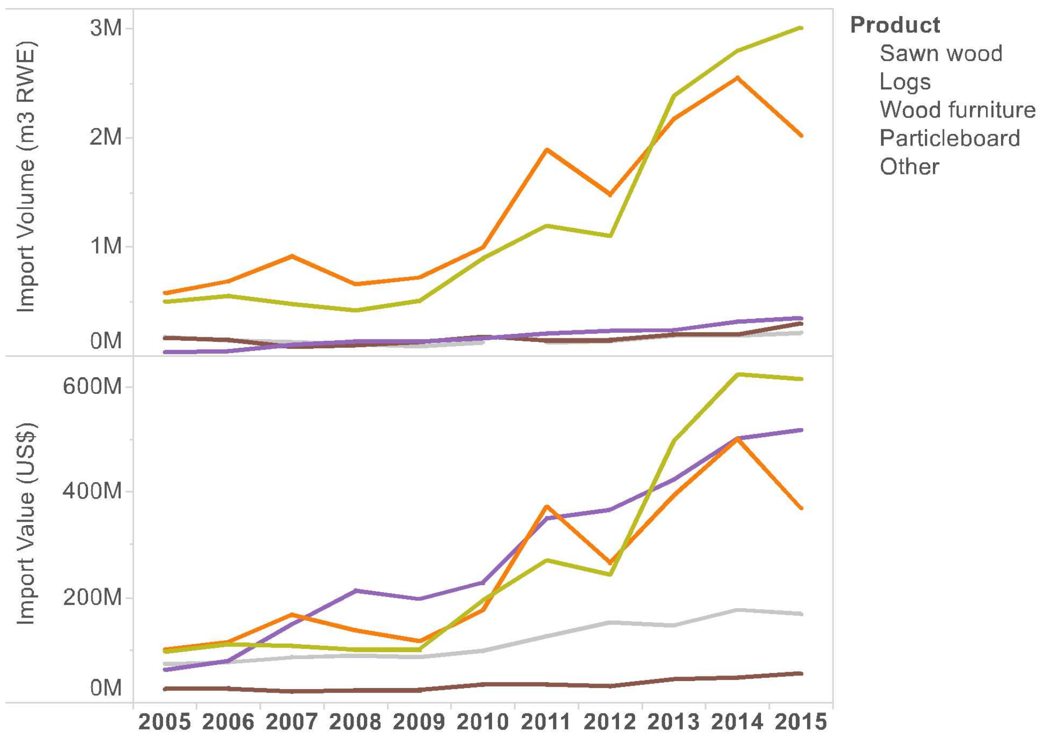
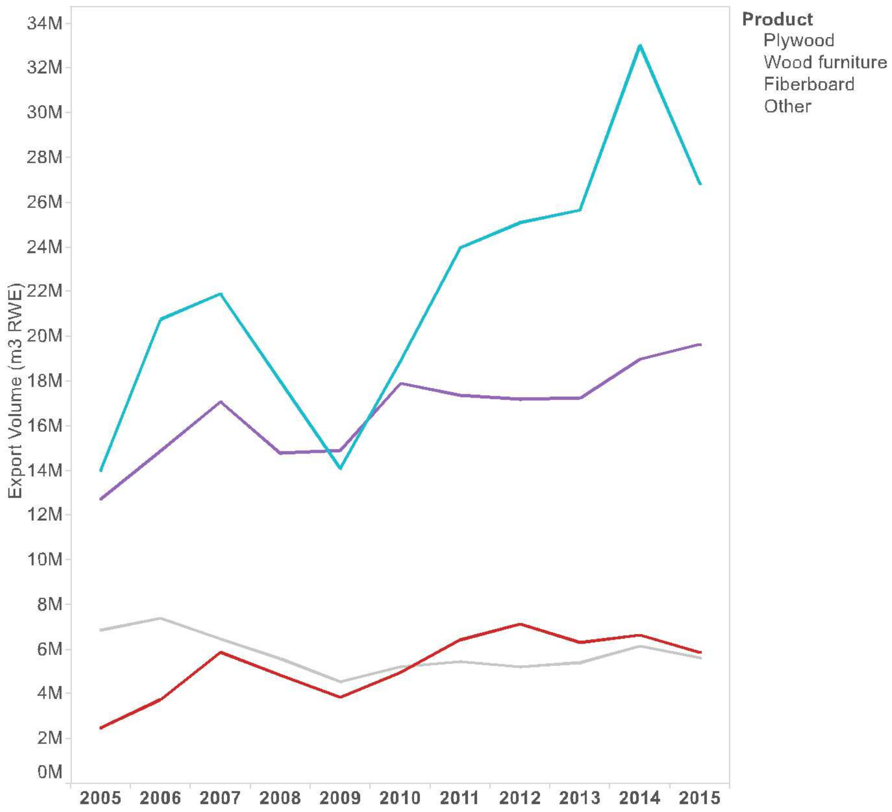


Figure 1-31: Timber Product Imports from the EU by Product (2005-2015)



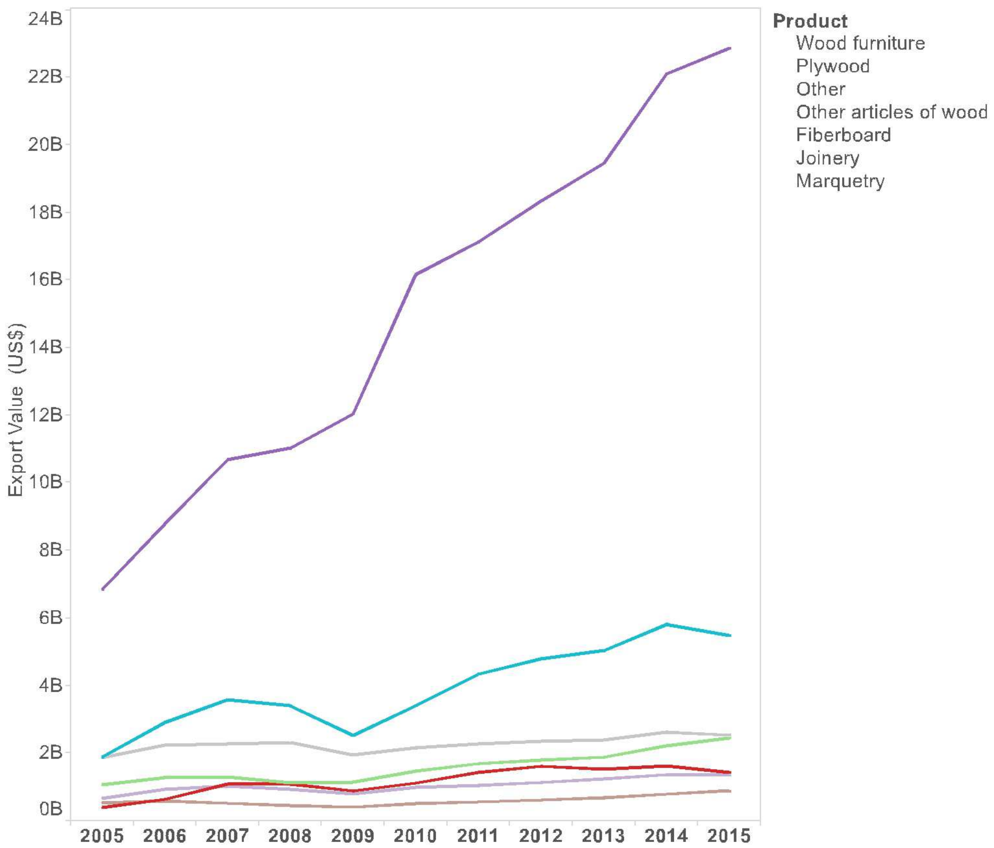


Figure 1-32: Timber Product Exports by Top Products (2005-2015)

1.7.2 Logs imports

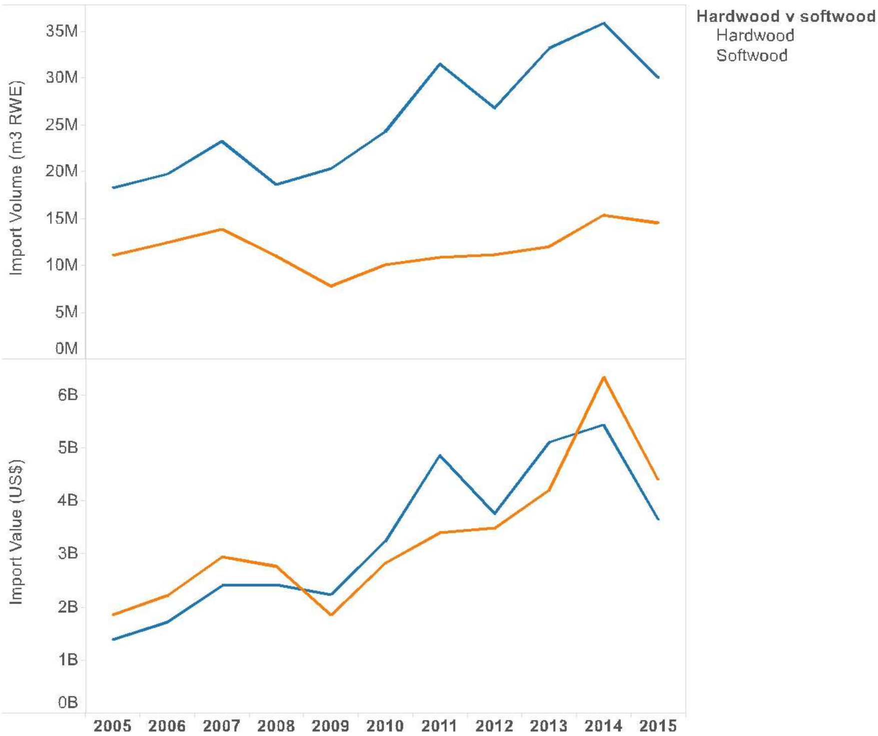


Figure 1-33: Hardwood vs. Softwood Log Imports (2005-2015)

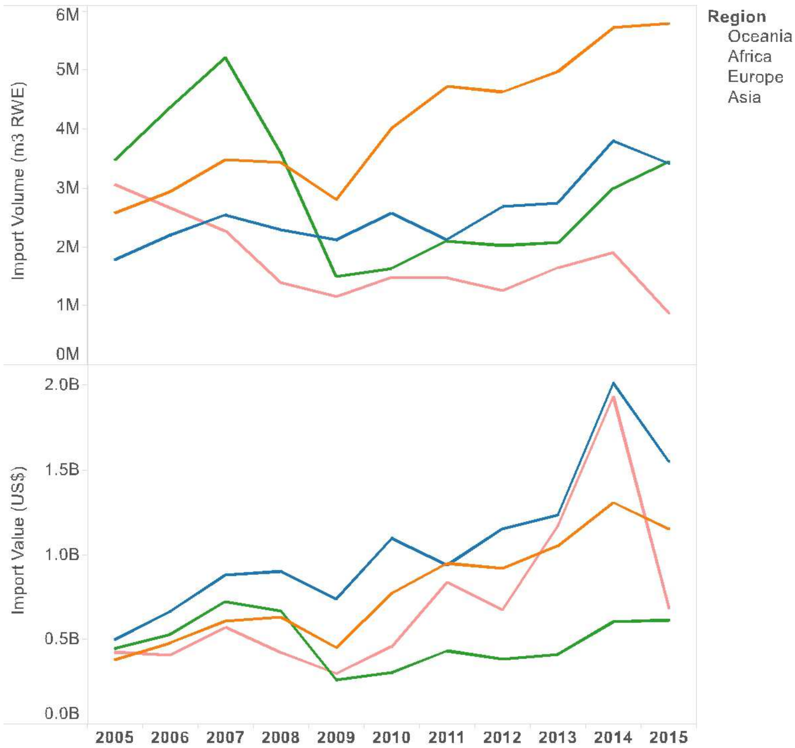
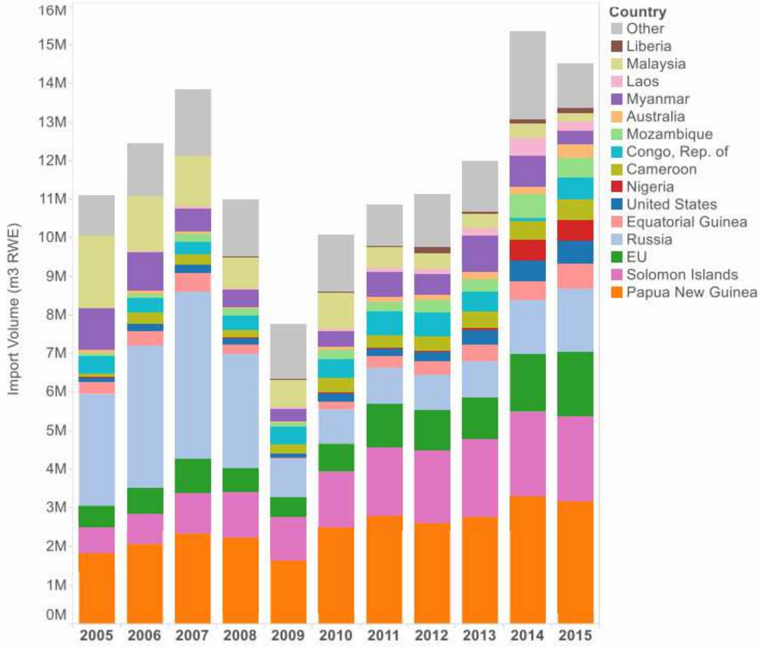


Figure 1-34: Hardwood Log Imports by Region (2005-2015)



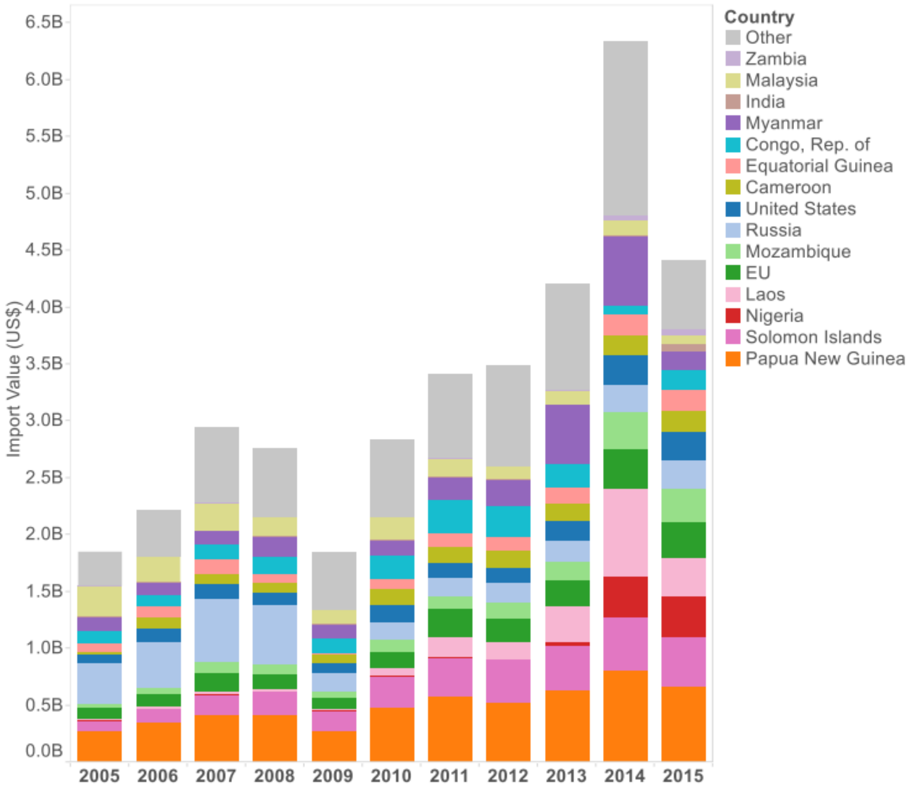


Figure 1-35: Hardwood Log Imports: Top 15 source countries and EU (2005-2015)

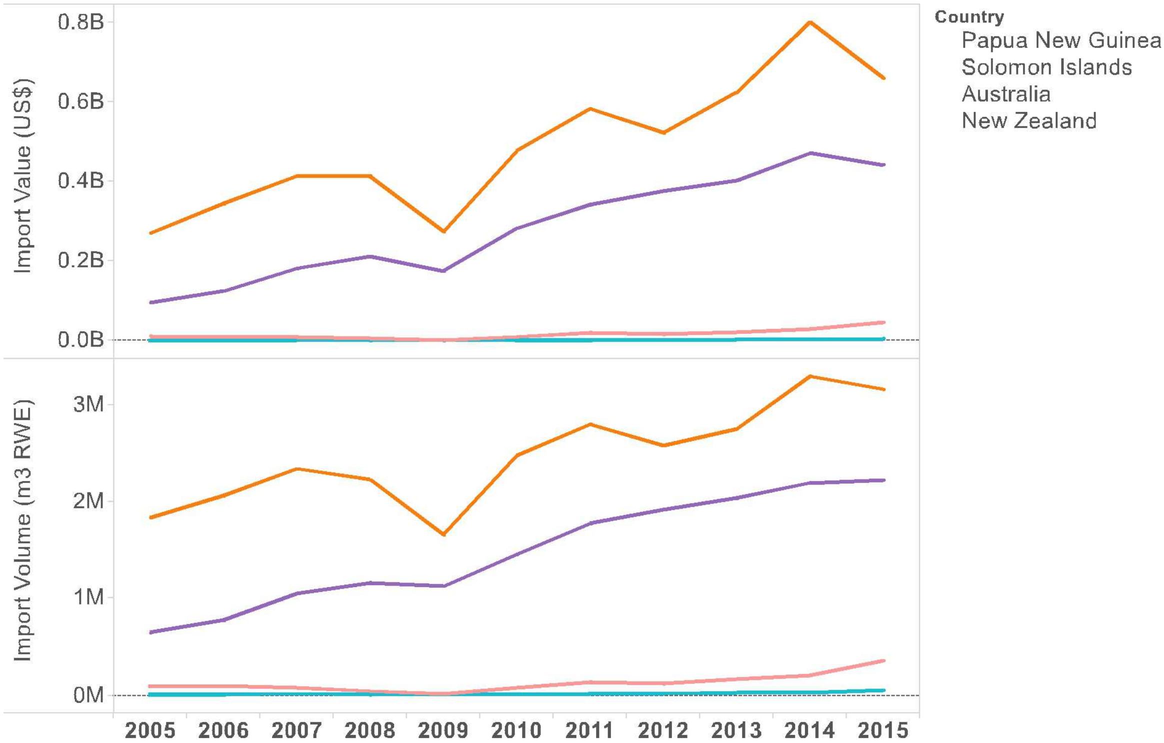
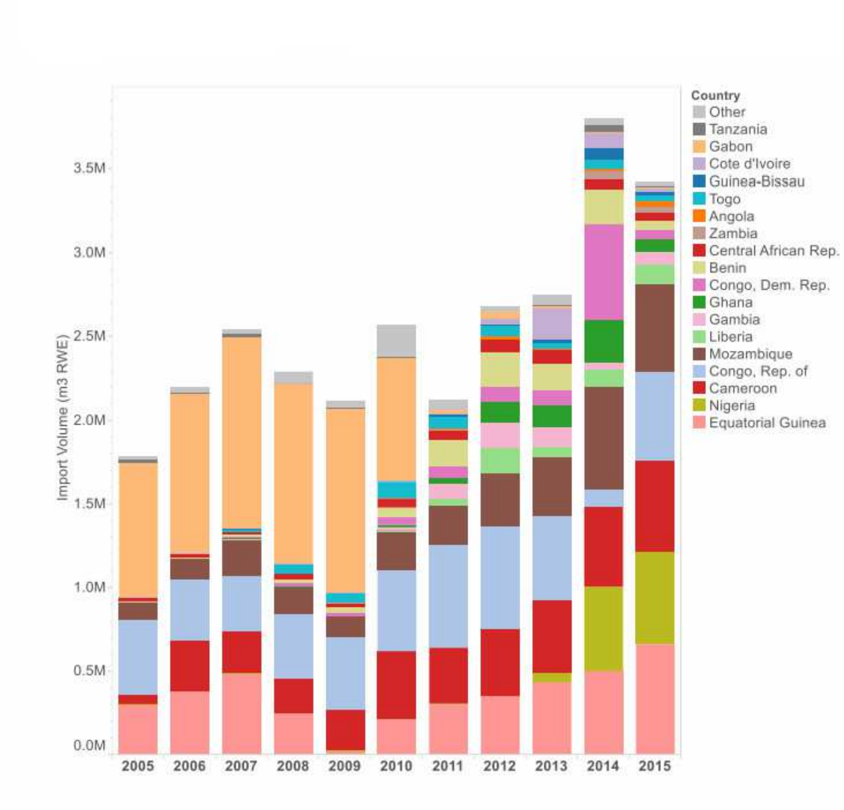


Figure 1-36: Hardwood Log Imports from Oceania: Top 4 Source Countries



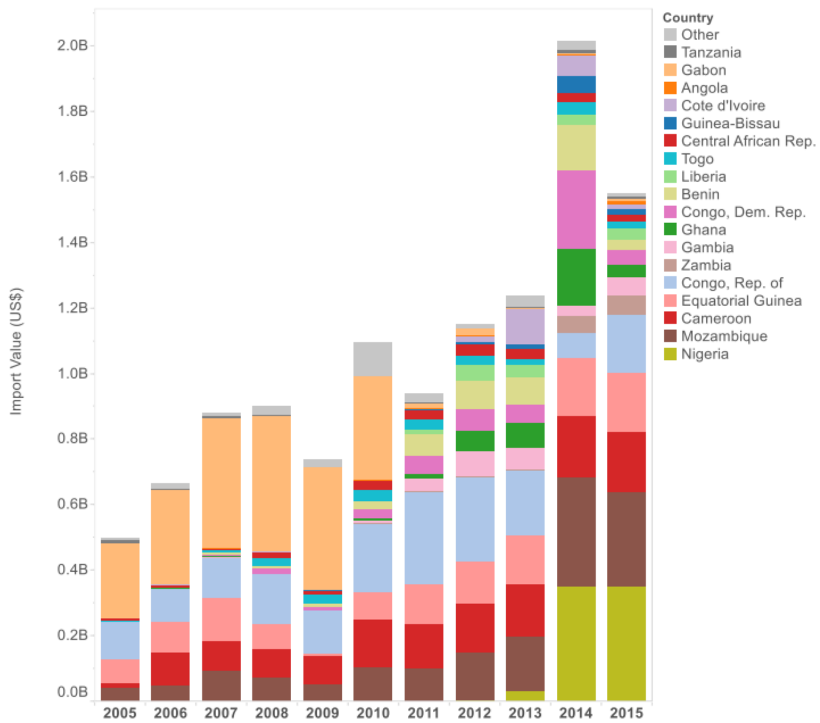


Figure 1-37: Hardwood Log Imports from Africa by Source Country (2005-2015)

1.7.3 Logs vs. sawnwood imports

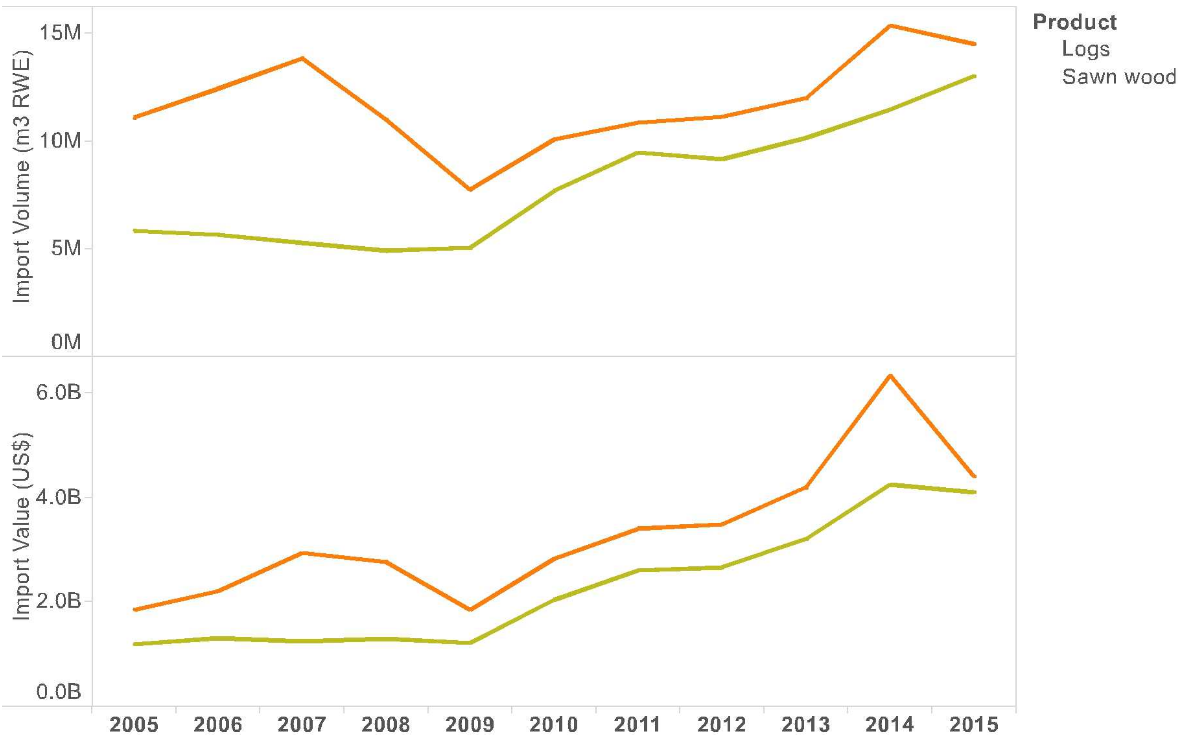


Figure 1-38: Hardwood Logs vs. Hardwood Sawn Wood Imports (2005-2015)

1.7.4 Sawnwood imports

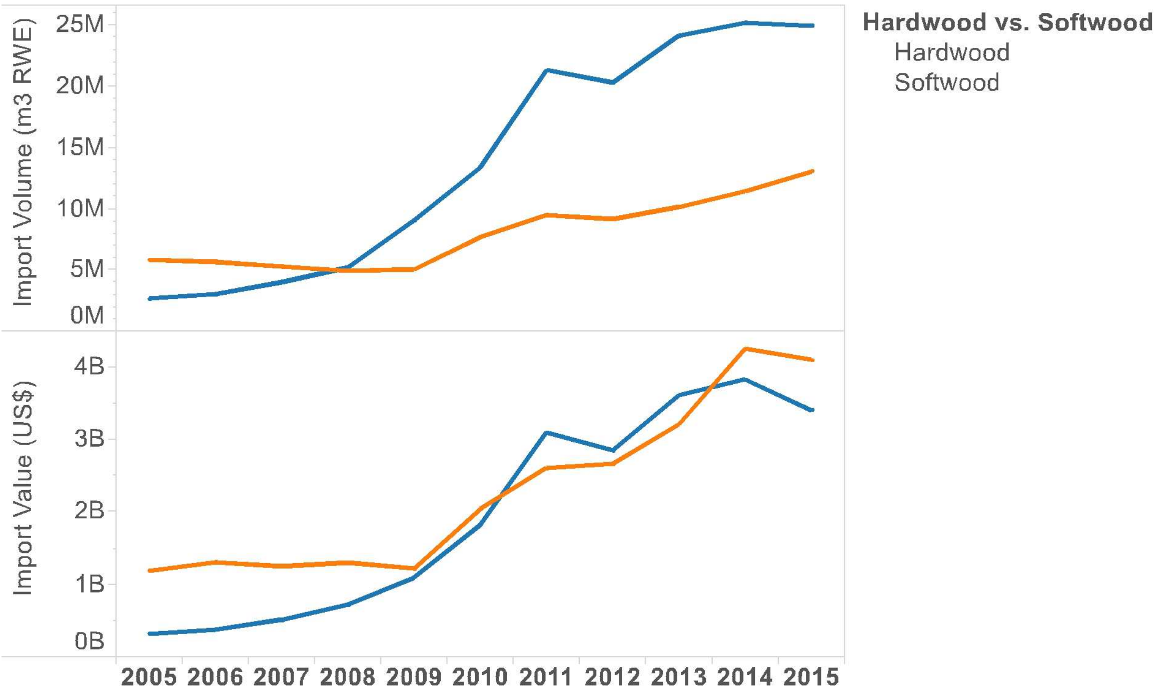


Figure 1-39: Hardwood vs. Softwood Sawn Wood Imports (2005-2015)

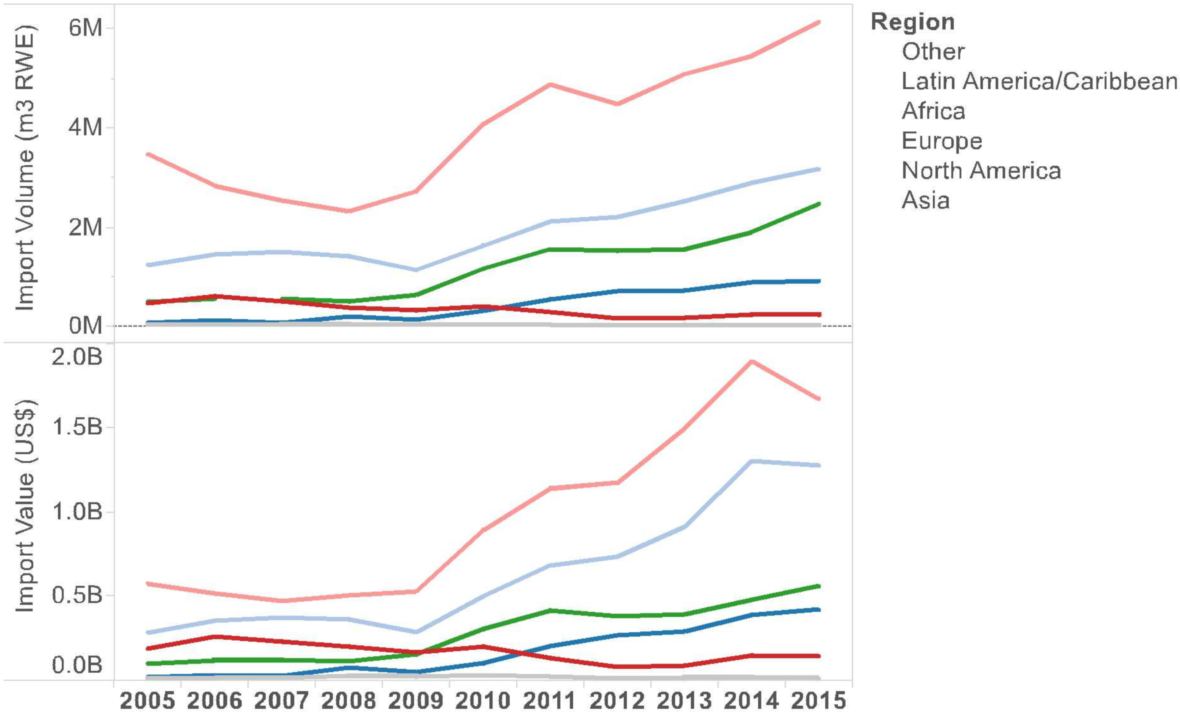
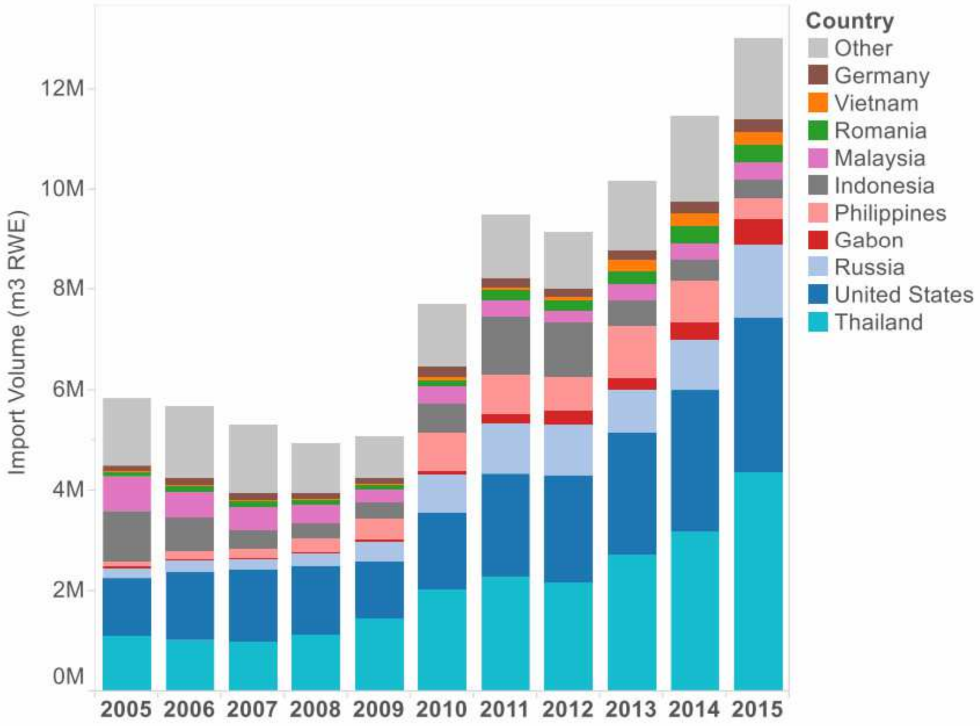


Figure 1-40: Hardwood Sawn Wood Imports by Source Region (2005-2015)



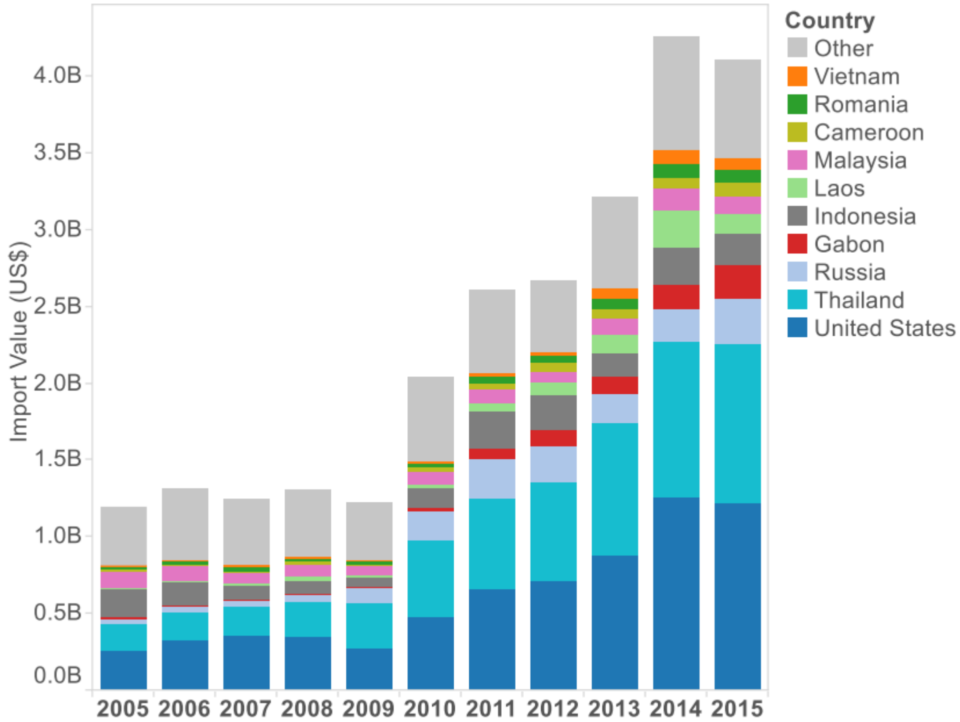
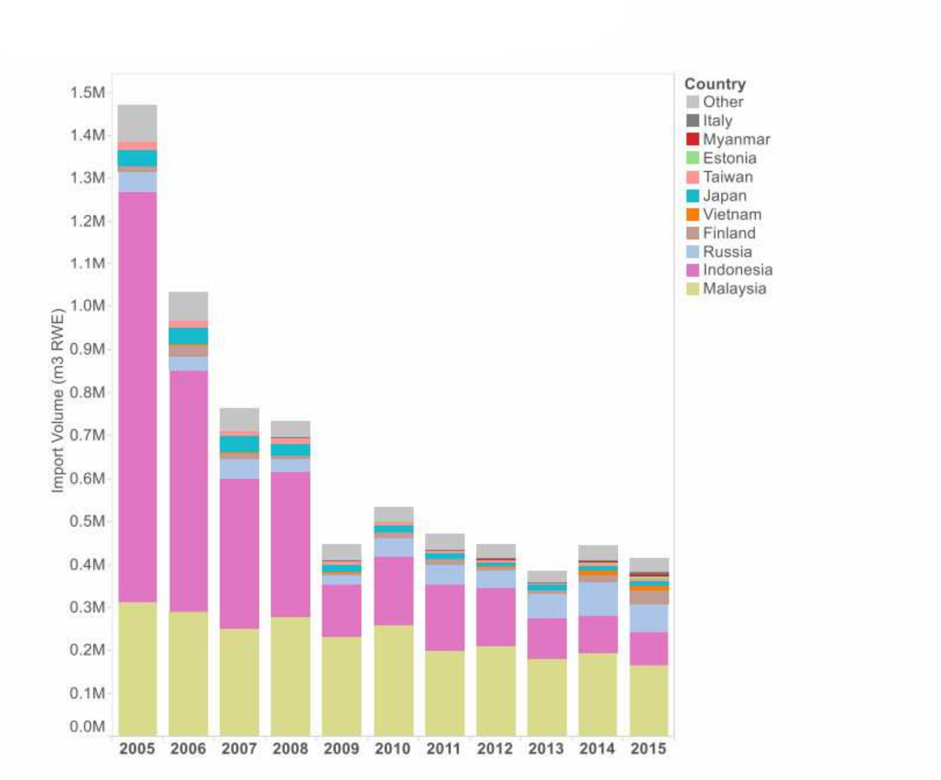


Figure 1-41: Hardwood Sawn Wood Imports: Top 10 source countries (2005-2015)

1.7.5 Plywood imports



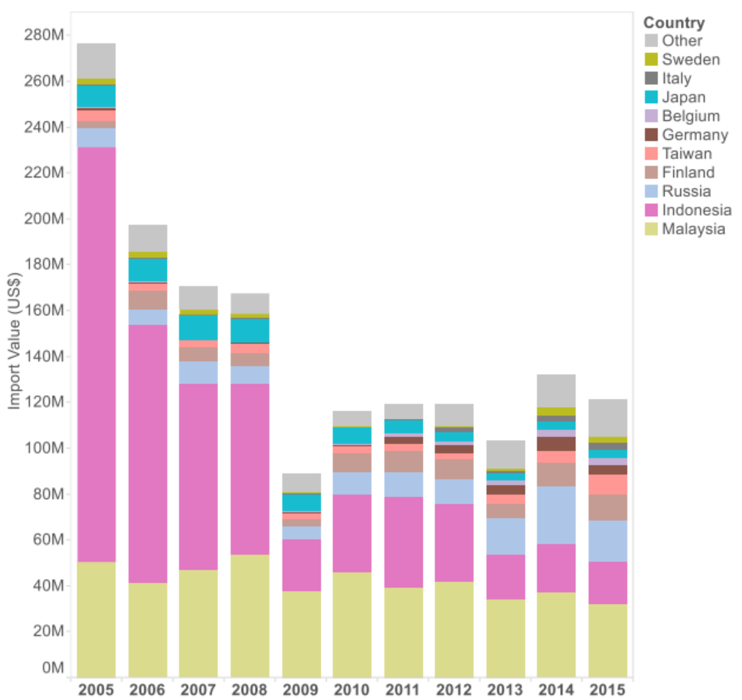
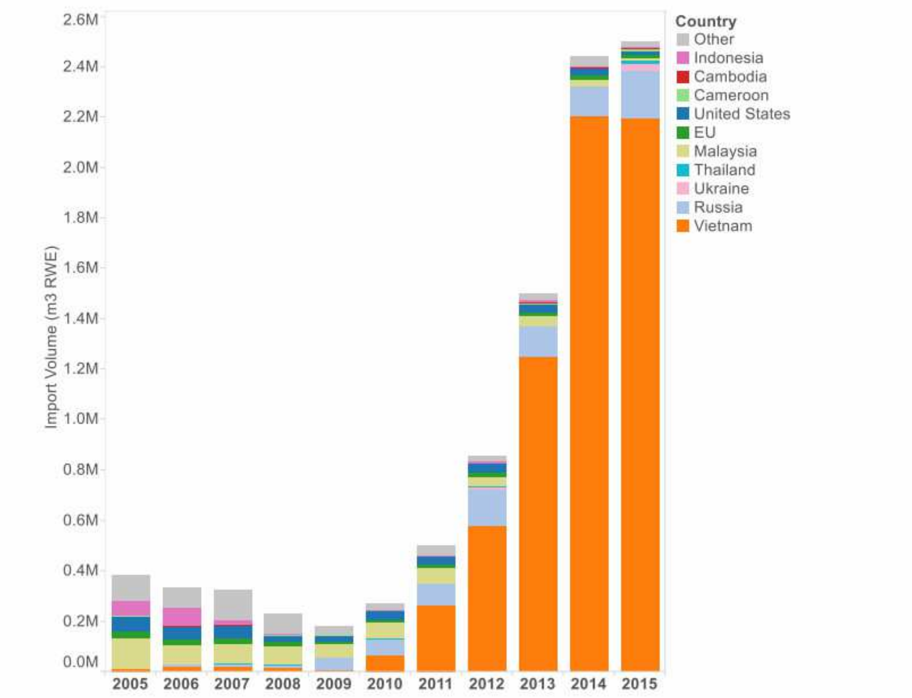


Figure 1-42: Plywood Imports by Source Country (2005-2015)

1.7.6 Veneer imports



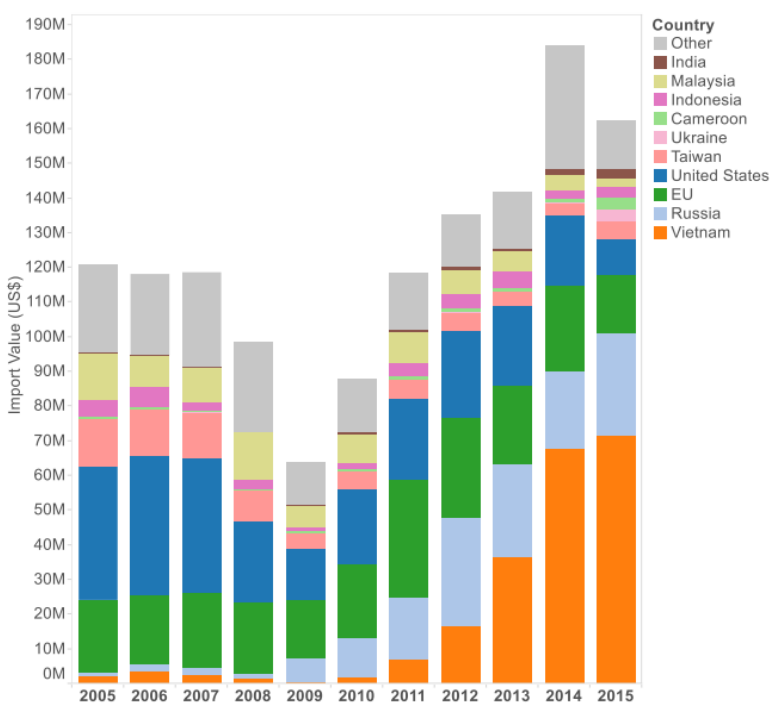


Figure 1-43: Veneer Imports by Source Country (2005-2015)

1.7.7 Wood chip imports

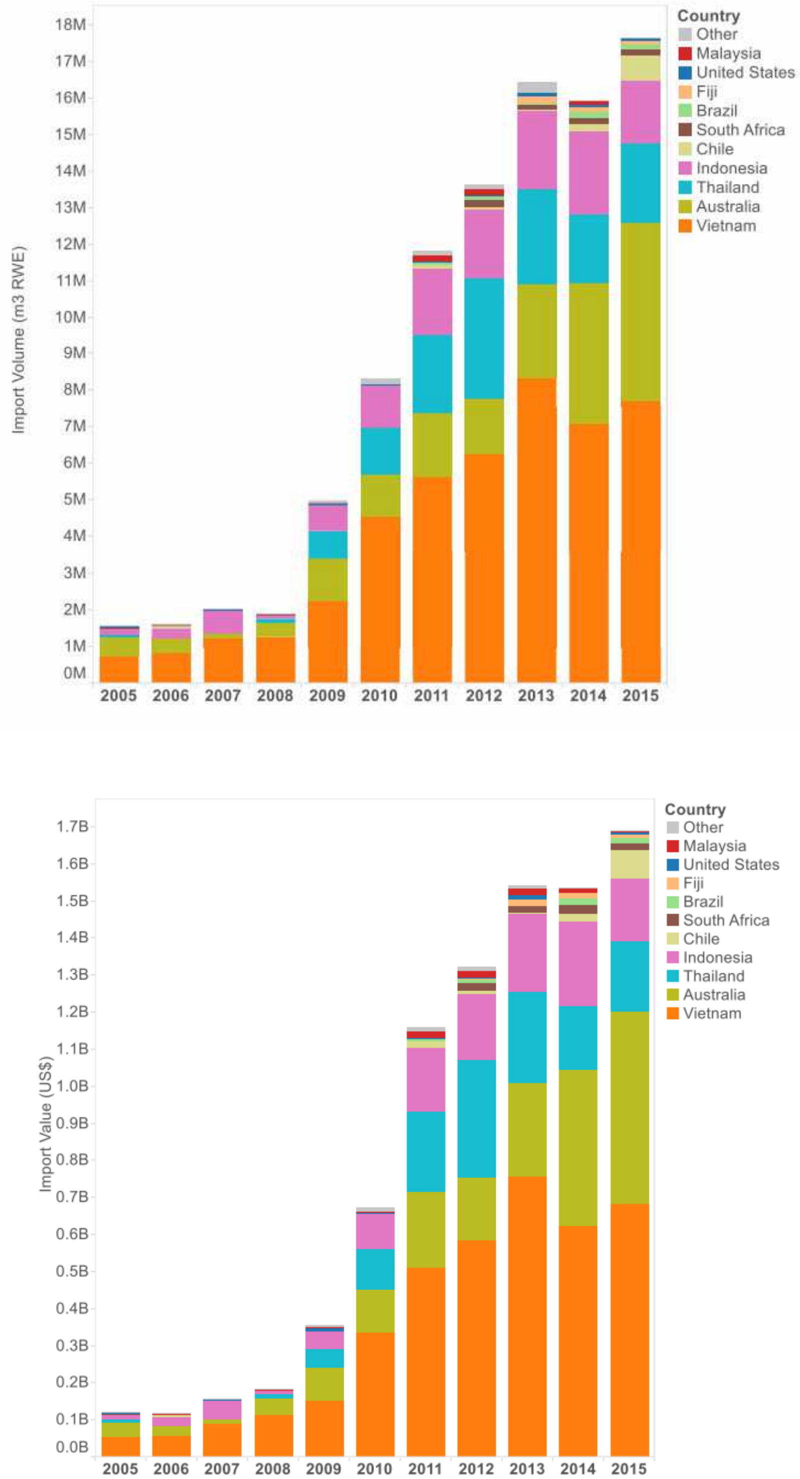
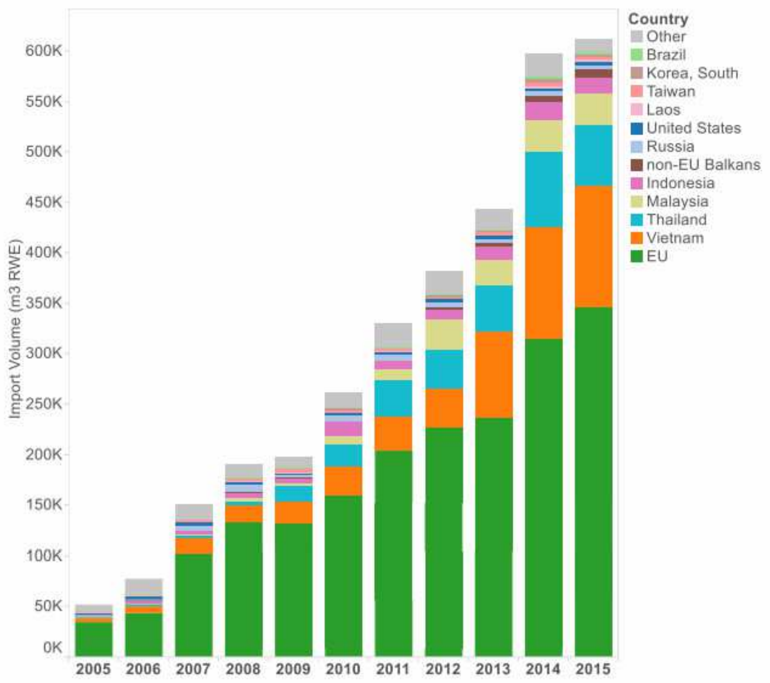


Figure 1-44: Wood Chip Imports: Top 10 source countries (2005-2015)

1.7.8 Furniture imports



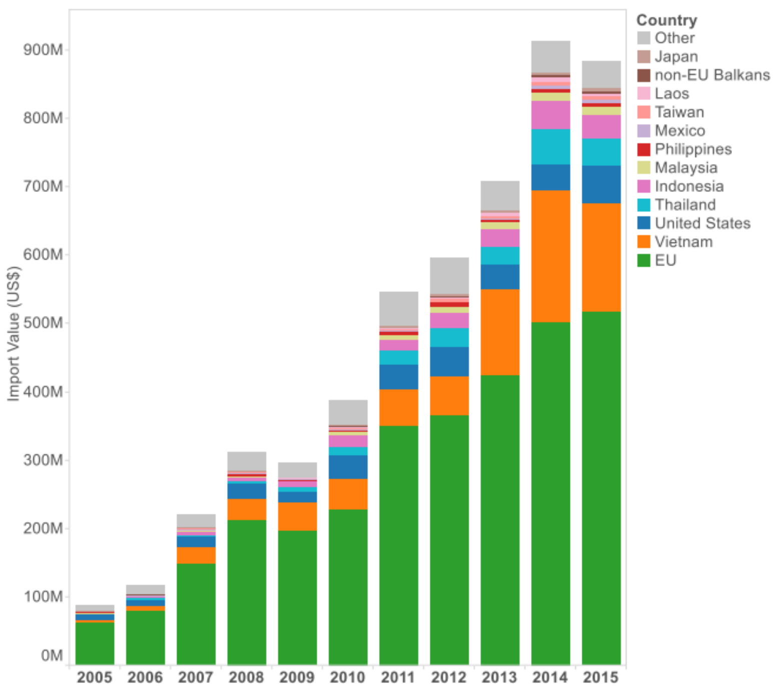
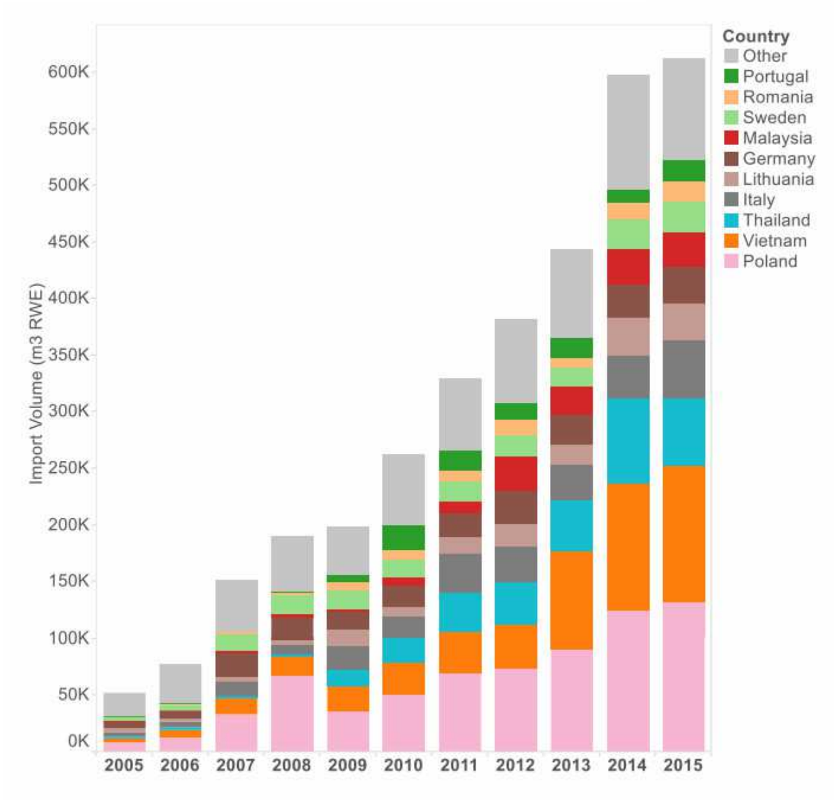


Figure 1-45: Furniture Imports by Country (and EU and Balkans) (2005-2015)



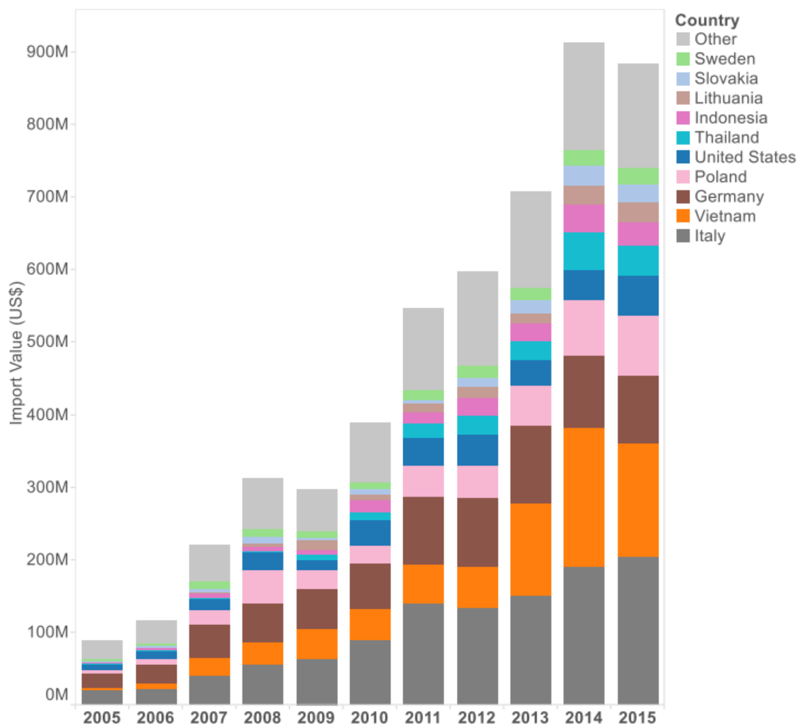
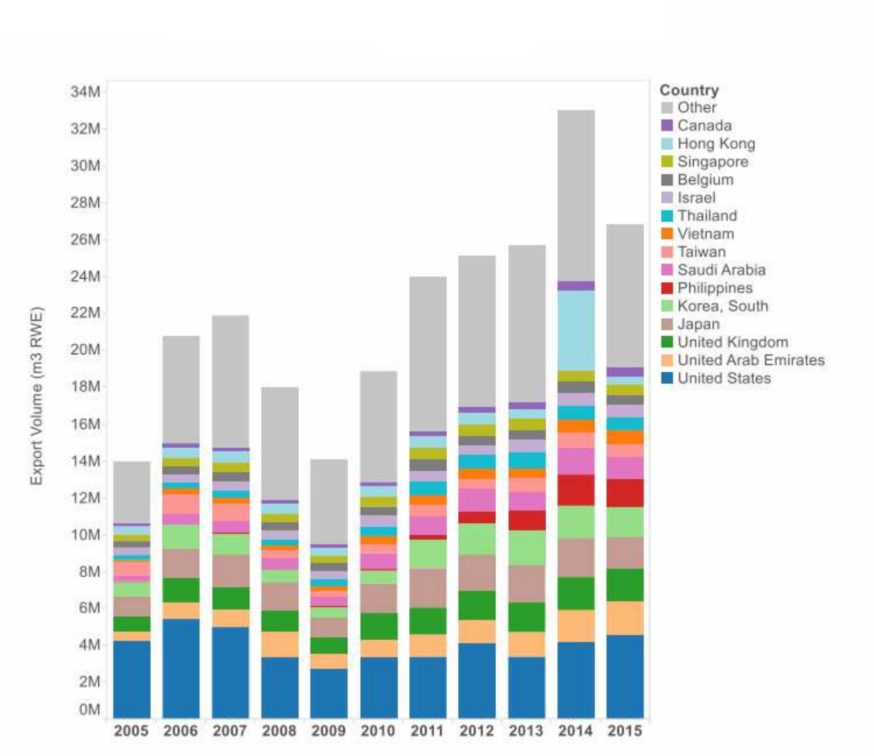


Figure 1-46: Furniture Imports: Top 10 source countries (2005-2015)

1.7.9 Plywood exports



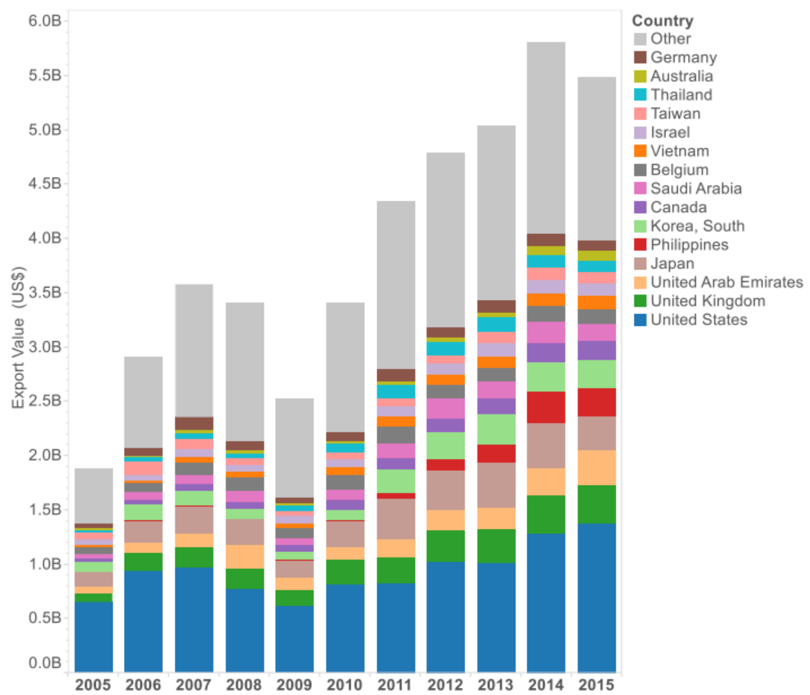
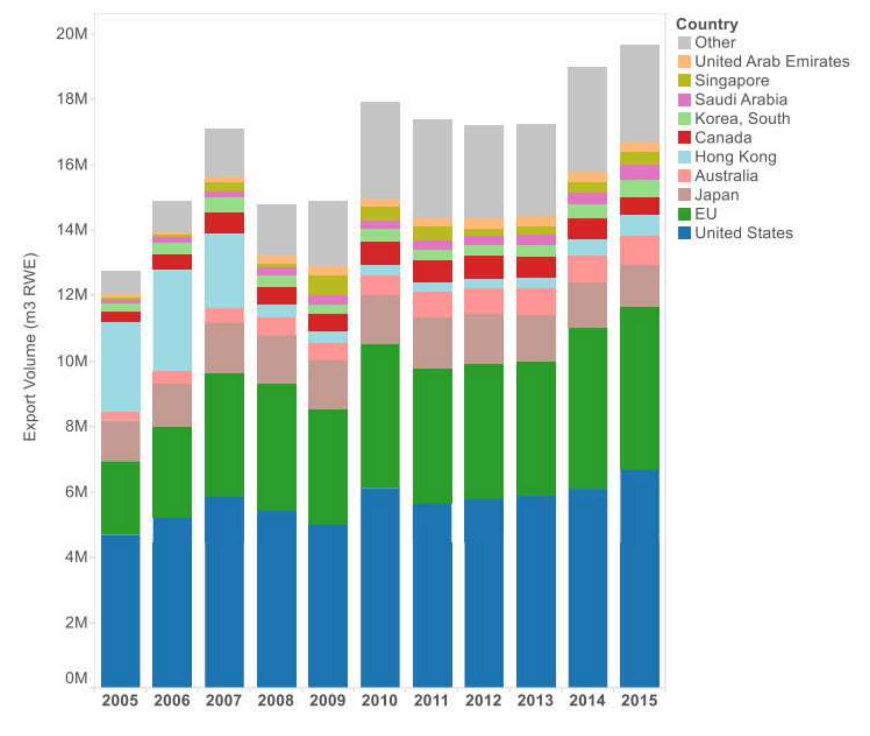


Figure 1-47: Plywood Exports: Top 15 destination countries (2005-2015)

1.7.10 Furniture exports



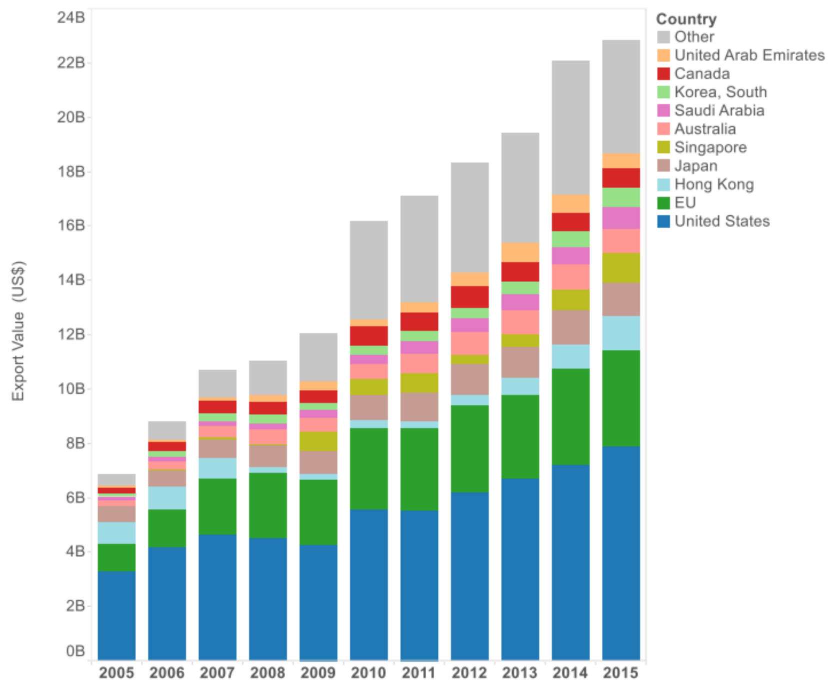
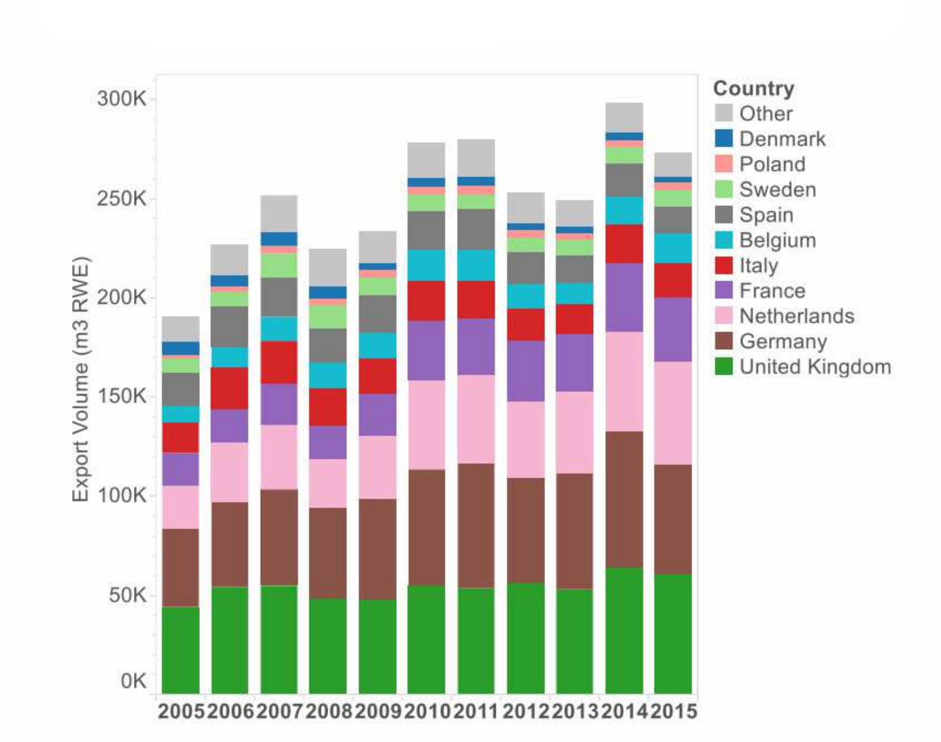


Figure 1-48: Furniture Exports by Country (and EU) (2005-2015)

1.7.11 Other timber products exported to EU



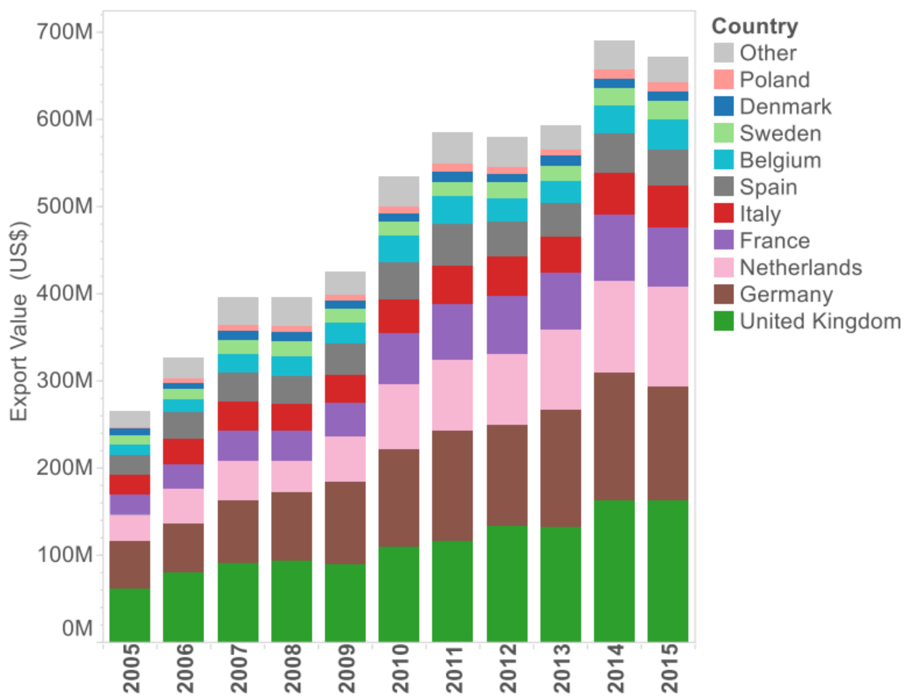
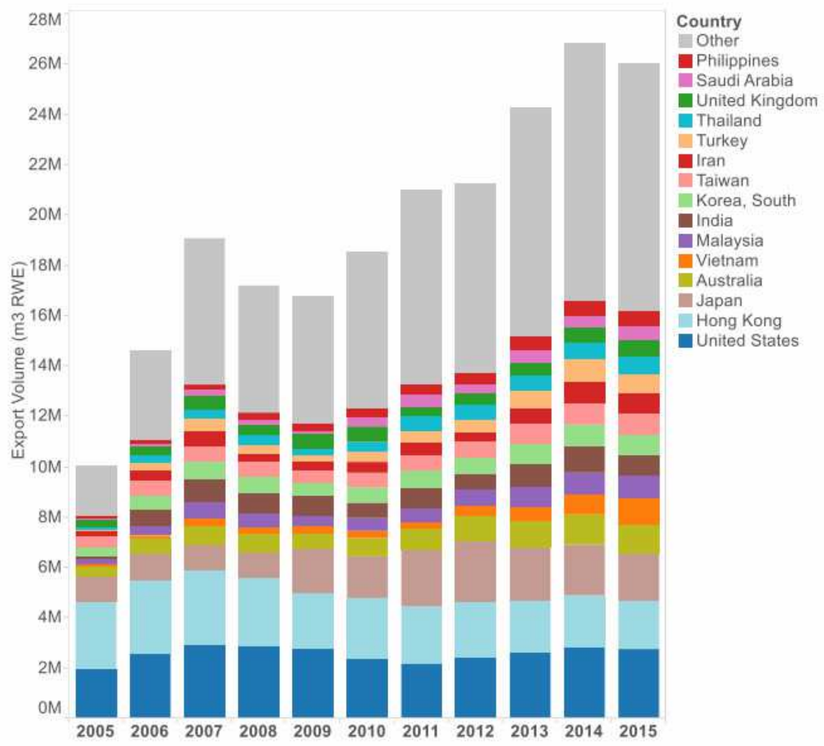


Figure 1-49: Other Timber products exported to EU: Top 10 destination countries

1.7.12 Pulp and paper exports



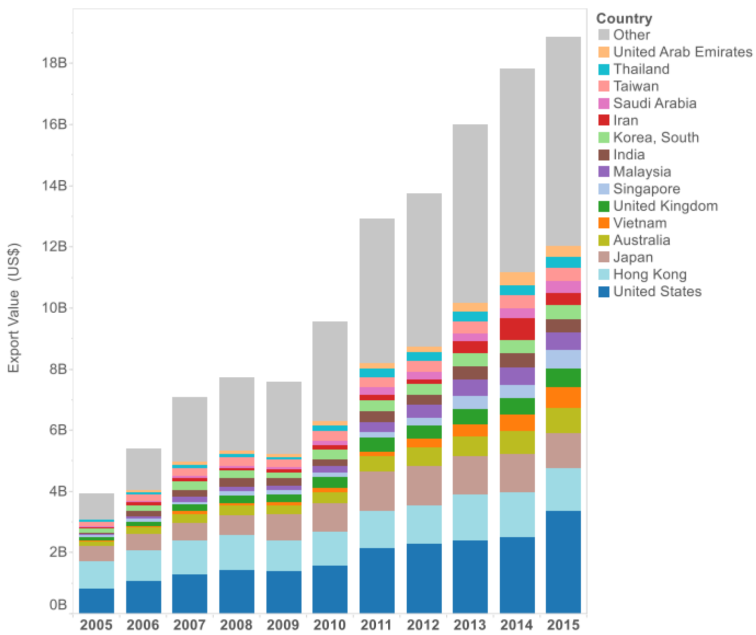


Figure 1-50: Paper and Paperboard Exports: Top 15 destination countries (2005-2015)

2. Status of Timber Industries in China

2. Status of Timber Industries in China

As the global largest timber industry country, China has the highest timber industry output, raw material import as well as processed product export among all countries of the world. The main timber industrial products of China include log, sawn timber, wood based panel, wood flooring, wooden doors, furniture and so on. Timber industry plays an important role in Chinese national economy thanks to its superiorities of low consumption of energy, lesser pollution, resources renewability and its distinguished product properties.

2.1 Current Status of Timber Industries in China by Geographic Region

2.1.1 Overview of timber industry in China

2.1.1.1 General situation

The output value of timber industry of China in 2015 is about 2.14 trillion yuan including 690 billion yuan of wood furniture, 600 billion yuan of wood based panel, 290 billion yuan of logs (including the domestic and imported), 250 billion yuan of sawn timber (including domestic and imported), 120 billion yuan of wooden doors, 90 billion yuan of wood floor and 100 billion yuan for other timber industrial products (decorative paper, wood staircase, wood structures, wood windows, wood toys, wood picture frames, preservative treated timber etc)

The timber industry enterprises are widely distributed in the provinces (autonomous regions) of Guangdong, Zhejiang, Jiangsu, Shandong, Hebei, Guangxi, Sichuan, Anhui, Fujian, Henan and other. The main listed companies include Daya Technology Co., Ltd, Guangdong Yihua Timber Co., Ltd, Dehua Tubaobao New Decorative Materials Co., Ltd, Natural Flooring (China) Co., Ltd., Dalian Kemian Wood Co., Ltd. , China Jilin Forest Industry Group Co., Ltd., Hebei Aimeisen Woodworking Co., Carpenter Tan Handicraft Co., Ltd., Guangdong Weihua Co., Ltd, Guangxi Fenglin Forest Group Co., Ltd., Sichuan Shengda Forest Industrial Co., Ltd., Suofeiya Home Furnishing Co. Ltd, Meike International Furniture Co., Ltd., Der International Home Furnishing Co. Ltd., Zhejiang Dilong New Material Co., Ltd., Shandong Qifeng Special Paper Co., Ltd., Fujian Yongan Forestry (Group) Co., Ltd and so on.

The main timber producers of China include Guangxi, Guangdong, Fujian, Shandong, Anhui, Hunan and Yunnan; the main producers of wood-based panels are Shandong, Jiangsu, Guangxi, Anhui, Guangdong, Henan, Hebei, Sichuan and so on. The major furniture producers are Zhejiang, Guangdong, Fujian, Henan, Shandong, Liaoning, Shanghai, Sichuan, Jiangsu, Jiangxi etc. The main producers of wood flooring are Jiangsu, Zhejiang, Guangdong, Sichuan, Liaoning, Jilin, Shandong, Shanghai etc. The major producers of wooden doors are Zhejiang, Jiangsu, Guangdong, Sichuan, Liaoning, Jilin, Shandong, Beijing and so on.

According to both output and output value, the main production areas of the timber industry of China can be divided into four scales namely the very large, the large, the medium-sized and the small. The very large production area covers Guangdong, Zhejiang, Shandong and Jiangsu; The large scale covers Guangxi, Anhui, Fujian Henan, Hebei, Sichuan, Hubei, Liaoning; The medium-sized scale covers Jilin, Heilongjiang, Shanghai, Jiangxi, Hunan, Chongqing, Yunnan, Shaanxi; The small scale covers Beijing, Tianjin, Shanxi, Inner Mongolia, Hainan, Guizhou, Tibet, Gansu , Qinghai, Ningxia and Xinjiang. Refer to Figure 2-1.

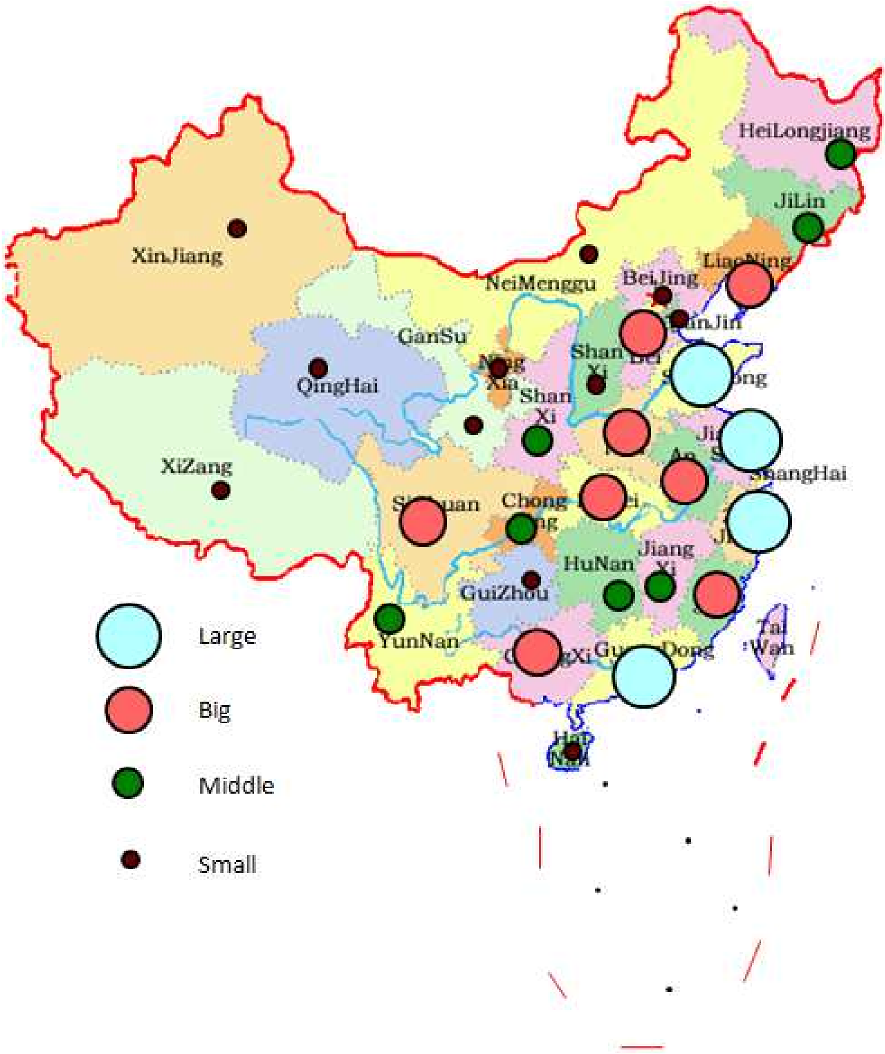


Figure 2-1: Timber industry by scale in China

2.1.1.2 Introduction of the key timber industrial regions

The timber industry enterprises of China are widely distributed in the provinces (autonomous regions) of Guangdong, Zhejiang, Jiangsu, Shandong, Guangxi, Hebei, Sichuan, Anhui, Fujian, Henan etc, as detailed below.

(1) Guangdong Province

Guangdong is the major timber industry province of China in the production and consumption of furniture, customized closets, wood flooring and wooden doors. It is also one of the major timber producers of China.

Refer to the Part 2.2 of this report for specialized introduction of the timber industry development in Guangdong Province.

(2) Zhejiang Province

Zhejiang Province is one important producer and major consumer market of China in wood based panel, wood flooring, bamboo flooring, wooden doors, and wood furniture (including the redwood). Zhejiang has the advantageous industries of plywood, decorative veneered plywood, impregnated paper, veneer wood based panel, block board, solid wood finger joint board, solid wood compound flooring, laminated wood flooring, bamboo flooring, bamboo plywood formwork, bamboo mat, wooden doors, wood products, wood furniture etc. So far there have formed a number of timber industrial agglomerations including the Huzhou Nanxun "China wood flooring capital" with the solid wood flooring production and sales accounting for about 60% of the country; The Huzhou Anji "bamboo flooring Chinese capital " with the bamboo flooring production accounting for about 60% of the country; The Qingyuan "daily bamboo products cluster". The Jiaxing (Jiashan) once the main production area of the Chinese plywood has now become the main producing areas of compound flooring during “12th Five-year Plan” period (2011-2015) following the rapid industrial restructuring development. Jiangshan city of Quzhou is now the main producing area of wooden doors, blockboards, Chinese fir finger-joint board (assembled board) of the country and Hangzhou, Yuhuan, Dongyang, etc. are centres of office furniture, household furniture and redwood furniture production. The forestry output value of the province in 2015 reached 295 billion yuan, 40% of which are from the timber and bamboo processing industry. Industrial enterprises with output value of more than ten billion yuan include the Nanxun wood floor, Jiashan wood processing, Dongyang redwood furniture, Hangzhou office furniture, Jiangshan wooden doors and joinery woodworking, Deqing woodworking timber industrial clusters.

(3) Shandong Province

Shandong is a major province of wood processing of China with the output value over 200 billion yuan. In 2015, the provincial wood-based panel production was 70.68 million cubic meters accounting for 24.6% of national total output ranking in the first place in the country. Of the above total output, 48,397,700 cubic meters is for plywood accounting for 29.25 percent of the national total. There has formed industry clusters at the cities of Linyi, Heze, Liaocheng mainly of wood-based panel while cities of Qingdao, Zibo, Weifang mainly of furniture. Qingdao as one of Chinese major production base of woodworking machinery has more than 250 enterprises engaging in woodworking machinery production, marketing, research and related businesses, so was awarded the "China Woodworking Machinery City" by China Forestry Machinery Association.

(4) Jiangsu Province

According to incomplete statistics, there is now 323,000 hectares of forest in the northern part of Jiangsu of with the poplar stocking volume reaches 17 million cubic meters. There have been growing poplar forestation and the large poplar acreage promoted the development of the timber processing industry forming many wood processing clusters. For example, the plywood industry cluster with the cites of Pizhou, Xuzhou has more than 2100 plate board deep processing production lines and the annual plywood export reached 5 million cubic meters; The plate board industrial belt with the cites of Suqian, Siyang and Shuyang included more than 3,000 board processing mills; The floor industrial cluster of Changzhou, Danyang, Suzhou has more than 200 processing enterprises and over 200 supporting enterprises to produce annually floor more than 200 million square meters for export to over 100 countries around the world and regions, and such exports accounted for more than 60% of the national total export of wood flooring. In Jiangsu province, there has been Daya, Power Dekor Group, Kendiya and other nationally well-known wood processing enterprises. There have also formed in Suzhou, Nantong etc. redwood furniture industry clusters. In 2015, the total production of wood-based panels of Jiangsu Province reached 46.856 million cubic meters accounting for 16.23 percent of the national total output ranking in the second place of the country.

(5) Guangxi Zhuang Autonomous Region

Located in tropical and subtropical regions, Guangxi has very favorable climatic condition for cultivating forest resources especially timber forest. Guangxi as one of the most important forestry resources province of China has been one of the first pilot national strategic reserve timber production base of China having an important role in the national forestry. In 2015, Guangxi forestry industry output value reached 430 billion yuan ranking the fifth place in the country; the timber production reached 21.05 million cubic meters, accounting for about 29.2% of national total ranking the first in the country; wood-based panel production reached 35,607,300 cubic meters ranking the third in the country. There have formed plywood manufacturing base centering around the cities of Nanning, Guigang; Fibreboard production base centering around Nanning, Wuzhou, Hezhou; Particleboard production base centering around Chongzuo, Hezhou; Finger-joint board production base with the centres of Liuzhou, Baise, Hechi; and moulding plywood production base around Yulin.

(6) Hebei Province

By end 2015, the wood-based panel production of Hebei Province reached 16,704,200 cubic meters with the output value of 29.67 billion yuan one of the highest provinces in China. Of the above production, the particleboard output was 2.9622 million cubic meters accounting for 14.59 percent of the country. There have established three major wood-based panel production bases in cities of Wen'an, Xingtai, Zhengding, and some new industrial areas are gaining development strength in Nanhe, Xinle, Tangxian, Bazhou and so on.

2.1.2 Timber products

2.1.2.1 Logs and sawn timber

In 2015 the total commercial timber output amounted to 72,182,100 cubic meters in China a slight decrease of 12.3% over the previous year. Due to the continuous downsize of timber production of the key state owned forest regions in northeast China and Inner Mongolia, the provinces (region) with higher commercial timber production turned to concentrate in the collective forest areas of Guangxi, Guangdong, Fujian, Anhui, Shandong, Yunnan. The commercial timber production of the provinces totalled more than three million cubic meters. Refer to Table 2-1 for the major timber production and products from 2002 to 2015.

Table 2-1: Output of major timber and products of China (2002-2015)

Year	Log (ten thousand cubic meters)	Sawn timber (ten thousand cubic meters)	Wood-Based panels (ten thousand cubic meters)	Furniture (hundred million piece)
2002	4,436.1	851.6	2,930.2	0.5
2003	4,758.9	1,126.9	4,553.4	3.5
2004	5,197.3	1,532.5	5,446.5	4.3
2005	5,560.3	1,790.3	6,392.9	1.1
2006	6,611.8	2,486.5	7,428.6	2.1
2007	6,976.7	2,829.1	8,838.6	1.7
2008	8,108.3	2,841.0	9,410.0	1.9
2009	7,068.3	3,229.8	11,546.7	2.1
2010	8,089.6	3,722.6	15,360.8	2.6
2011	7,449.6	4,460.3	20,919.3	2.5
2012	8,174.9	5,573.8	28,604.0	2.4
2013	8,438.5	6,297.6	25,559.9	2.4
2014	7,553.46	6,836.98	27,371.79	2.6
2015	7,218.21	7,430.38	28,679.52	2.5

The sawn timber production in 2015 was 74,303,800 cubic meters, an increase of 8.68% over 2014. Shandong, Guangxi, Inner Mongolia, Heilongjiang, Hunan, Anhui, Liaoning, Zhejiang have output more than three million cubic meters.

2.1.2.2 Glued laminated timber

Glued Laminated Timber (“glulam” for short) refers to the material integrated with fibre-parallel plate timbers, small square-edged timbers by gluing in the directions of length, width or thickness. There are a variety of glulam products. It can be divided according to use the structural glulam timber and non-structural glulam timber; By shape it can be classified into plate glulam and cubic glulam. The typical glulam thickness ranges from 12 mm to 18 mm, with specifications 2440 mm × 1220 mm or specified to customer requirements. The main raw material species include larch, oak, catalpa, *Pinus sylvestris var. mongolica*, white pine, birch, ash, elm, poplar and so on. Chinese fir, pine etc that contains natural insecticides are widely used in home decoration.

Due to the exclusion of wood knots, decayed wood and other defects without changing the structure and characteristics of the wood itself, glulam has the natural wood texture, looks beautiful, uniform and overcomes the natural wood shortcomings of easy warp, deformation, cracking etc thus superior to natural wood. High quality glulam has generally smooth surface, beautiful colour, small size error, firm bonding and not easily deformed. Glulam achieves perfection by using small marginal raw materials for making of excellent timber for high-end purpose, makes full use of timber resources, alleviates effectively the shortage of large-diameter timber, improves the comprehensive utilization and value of timber thus one of the most effective ways of wood utilization.

Glulam industry was initiated in the three north-eastern provinces from early 1980s. Now there has formed in China a complete glulam industry chain from afforestation, lumber processing to production, sales and service. Zhejiang, Hunan, Fujian, Jilin, Heilongjiang, Guizhou etc have had a number of relatively concentrated industry production bases. There are about 500 glulam manufacturers in China, with the actual production capacity about three million cubic meters thus the production, technology and market have matured.

2.1.3 Wood based panels

Wood-based panels includes four major categories namely the plywood, particleboard, fibreboard and blockboard. However with extended uses and deep processing, there may be hundreds of wood-based panels. The report focuses on the above four categories.

Wood-based panel production of China ranked first in the world for many years. In the upcoming decade or even longer period of time, Chinese plywood and their products will continue to broaden the market. More and more products will be replaced by wood based panels that became applied in more fields. The quality will be continuously improved and the records of output and sales will be continuously broken. In 2015, the Chinese wood based panel output is about 286.8 million cubic meters an increase of 4.8% of that at the same period of time last year. Of the 286.8 million cubic meters, about 165,460,000 cubic meters is for plywood, an increase of 10.5% and accounting for 57.7% of the total production of wood-based panel; The fibreboard production is about 66.16 million cubic meters, an increase of 2.4% and accounting for 23.0% of total wood-based panel production; The particleboard production is about 20.3 million cubic meters, a decrease of 2.7% accounting for 7.1% of total wood-based panel production of the country. Shandong, Jiangsu, Guangxi, Anhui, Guangdong, Henan are the six top producers of wood-based panel in 2015 which have an accumulated production about 209,280,000 m accounting for 72.91 percent of the total output of wood-based panels of the country. China has become a major country of wood-based panel production and export in the world. Nevertheless, China is not a strong country of wood based panel because in the whole there is still a gap with the international advanced level in terms of production equipment, personnel quality etc.

2.1.3.1 Output

After years of continual development, the wood-based panel production of China has for years ranked the first in the world. Over the past decade, Chinese plywood industry developed rapidly. The product quality has gradually increased so that the quality of most products has reached or approached the quality standards of the advanced countries. This makes China the lead country of world in wood-based panel production, consumption and import and export trade.

Table 2-2: Wood based panel output of China (2001-2015)
(ten thousand cubic meters)

Year	Total output	Plywood	Fibreboard	Particleboard	Other boards (blockboard)
2001	2,111	904	970	342	——
2002	2,430	1,135	789	369	——

2003	4,553	2,102	1,128	547	775（617）
2004	5,446	2,099	1,560	643	1,144.49（881）
2005	6,393	2,515	2,061	576	1,241
2006	7,429	2,729	2,467	843	1,390（1,155）
2007	8,839	3,561	2,729	829	1,718（1,322）
2008	9,410	3,541	2,907	1,142	1,820（1,304）
2009	11,547	4,451	3,489	1,431	2,176（1,480）
2010	15,361	7,140	4,355	1,264	2,602（1,652）
2011	20,919	9,870	5,562	2,559	2,928（2,034）
2012	22,336	10,982	5,800	2,350	3,204（1,868）
2013	25,560	13,725	6,402	1,885	3,547（2,117）
2014	27,372	14,970	6,463	2,088	3,852（2,388）
2015	28,680	16,546	6,616	2,030	3,488（2,161）

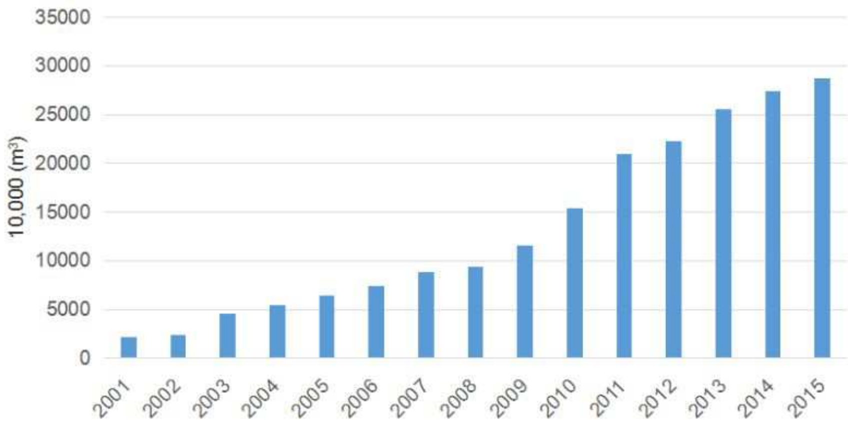


Figure 2-2: Wood-based panel production of China (2001-2015)

2.1.3.2 Main production bases

Chinese wood-based panel production has for many years ranked first in the world. At present, Chinese artificial board manufacturing enterprises are mainly distributed in three key areas: Firstly, the eastern China wood-based panel industrial cluster with the roles of Zhejiang, Jiangsu and Shandong. Secondly, the southern China wood-based panel industrial cluster with the roles of Guangdong, Guangxi. Thirdly, the northern and central China wood-based panel industrial cluster with the roles of Hebei, Henan and Hunan. The regional concentration of MDF manufacturing is low. Apart from Tibet, Qinghai and Ningxia all mainland provinces and autonomous regions have MDF production.

There are 6 major wood-based panel production bases in China, namely the Pizhou wood-based panel production base in Jiangsu, Suqian wood-based panel production base in Jiangsu, Jiashan wood-based panel production base in Zhejiang, Linyi wood-based panel production base in Shandong, the Wen’an wood-based panel production base in Hebei and the panel production base in Guangxi.

(1) Pizhou wood-based panel production base in Jiangsu

Located at the border area of northern Jiangsu and southern Shandong, the Pizhou wood-based panel production base has an area of 2,088 square kilometres and population of 1.58 million. The area has developed traffic system, about 100 km to the Lianyungang port for export, and with the Lianyungang-Lanzhou Railway, Lianyungang-Huoerguosi Express, the Beijing-Hangzhou Grand Canal passing through from east to west. The production base contains of more than 3,000 plywood enterprises mostly small and medium sized and over 2,200 deep-processing production lines have annual output of high-quality wood-based panel of 8 million cubic meters and forestry output value over 16 billion yuan. The contribution rate forestry industry to the city fiscal revenue and the income of farmers are over 20% and 25% respectively. There are more than 100 types of product including plywood, fire-retardant board, waterproof formwork, container floor plywood etc, for export to 26 countries and regions of North America and Europe so an important base for production and export of plywood of China.

(2) Suqian wood-based panel production base in Jiangsu

Suqian well known as the "hometown of Italian poplar" in China has poplar cultivation history of more than 30 years. Now the city has poplar area of 123,000 ha with standing volume of 10 million cubic meters. Since the late 1980s, there has been rapid development of the local timber processing industry with poplar as raw material, making the timber industry the local pillar industry. Currently, the city has more than 2,000 wood processing enterprises with annual design production capacity of medium and high density fibreboard amounting to 800,000 cubic meters, ranking first in the Jiangsu Province.

(3) Jiashan wood-based panel production base in Zhejiang

Jiashan County has more than 300 timber processing enterprises, with fixed assets of 20 billion, 35,000 employees, and plywood annual output of nearly 3 million cubic meters. The products are exported to Europe, the Middle East, Southeast Asia, India, Japan and South Korea, with trade value more than 100 million US dollars so an economic bright spot in the Yangtze River Delta region.

(4) Linyi wood-based panel production base in Shandong

The production enterprises are mainly concentrated in Lanshan district, with the main product of plywood. Linyi city has now more than 3,000 board processing enterprises including 1,000 ones for the plywood. In addition, more than 2,000 enterprises engage in veneering of import logs, with more than 1,000 production lines, the annual consumption of imported logs over 200 million cubic meters producing veneer 1.8 million cubic meters so the veneer board supply base of the country. For the first half of 2008, 104 export enterprises had the total export value of 195 million US dollars, accounting for one third of Chinese export of wood-based panels so an important wood-based panels export base of China. 45 enterprises have self-managerial import & export authority of which 23 ones has export value over one million USD.

(5) Wen’an wood-based panel production base in Hebei

The processing enterprises are concentrated in the Zuogezhuang Town located at the north-eastern part of Wen’an County. With convenient transport condition and advantageous location, Wen’an is now the largest plywood production base in northern China. Zuogezhuang Town has more than 1,200 plywood and associated industrial manufacturers mainly producing plywood, particle board, block board, decorative plates, building templates, MDF, flooring, compound floor etc. sold throughout China and exported to South Korea, Japan, the United States and Southeast Asian countries.

(6) Panel production base in Guangxi

There has been much advancement of wood-based panel industry in Guangxi in recent years. According to incomplete statistics, Guangxi has now 22 wood-based enterprises with industrial output value over one billion yuan, 3 enterprises with industrial output value 5-10 hundred million yuan, and 18 enterprises with industrial output value over 1-5 million yuan. There have initially formed in Guangxi the Nanning, Guigang centred plywood and fibreboard industry clusters; The Rongxian centred special-shaped plywood industry cluster; The Liuzhou centred blockboard and finger-joint board industrial cluster. These featured industrial clusters not only improved the timber and bamboo industrial concentration promoting the development of the timber and bamboo industry of Guangxi, but also improved the popularity domestic and abroad of timber and bamboo industry of Guangxi.

2.1.3.3 Basic situation of the main wood-based panel products

(1) Plywood

The plywood production in China is carried out mostly by small-scale enterprises. Since adopting reform and open policies form early 1980s, there was substantial growth in plywood production along with the surging market demand. Consequently, the plywood production companies expanded speedily from the original state-owned enterprises to collective enterprises, Sino-foreign joint ventures. From 1993 on, Chinese plywood production enterprises mushroomed with the output in continuous escalation. International market demand for plywood was also rising. Following the introduction of the fast-growth Italian poplar to northern China and eastern China , the plywood industry in Hebei, Shandong, Jiangsu and Zhejiang developed very rapidly. The large-scale cultivation of eucalyptus in southern China also led to the rapid development of plywood production of Guangdong and Guangxi. Refer Figure 2-3 for annual output of plywood of China,

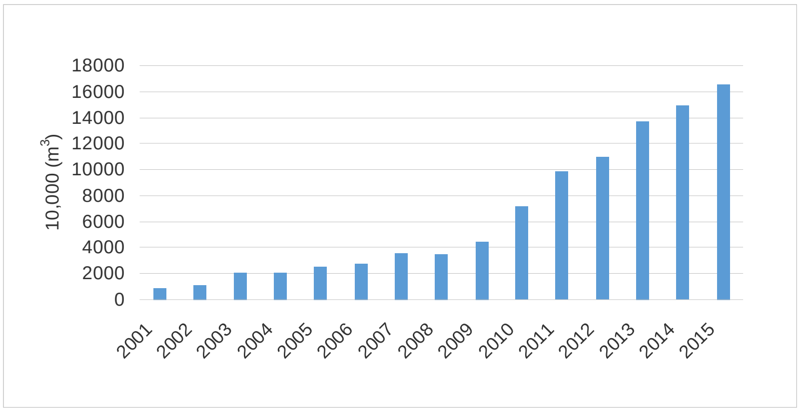


Figure 2-3: Annual output of plywood of China (2001-2015)

(2) Fibreboard

Fibreboard is one of traditional wood-based panel products in China. Following decades of development, Chinese fibreboard industry has evolved into a multi-product, multi-purpose scale-oriented industrial system. Since 2001, Chinese government adopted the preferential VAT waiving policy to the production and processing of raw materials of "three forest residues and small/inferior fuelwood" for comprehensive utilization. This provided the impetus for further progress of fibreboard industry, increasing the fibreboard annual output from 5.14 million cubic meters in 2000 to 66.16 million cubic meters in 2015, an average annual growth over 20%.

Chinese fibreboard is mainly of MDF accounting for about 90% of the annual output of fibreboard. MDF industry in China relies on mainly small enterprises which account for 70% of the entire industry with annual sales less than 100 million yuan. The medium-sized enterprises account for about 20% of the entire industry with annual sales of between 100 million-300 million yuan; The large enterprises account for about 10% of the entire industry, with annual sales of more than 300 million yuan in general. Chinese fibreboard production enterprises are mainly distributed in Shandong, Jiangsu, Guangdong, Zhejiang, Anhui, Fujian, Jiangxi and Sichuan thus more in the eastern and less in the western part of the country.

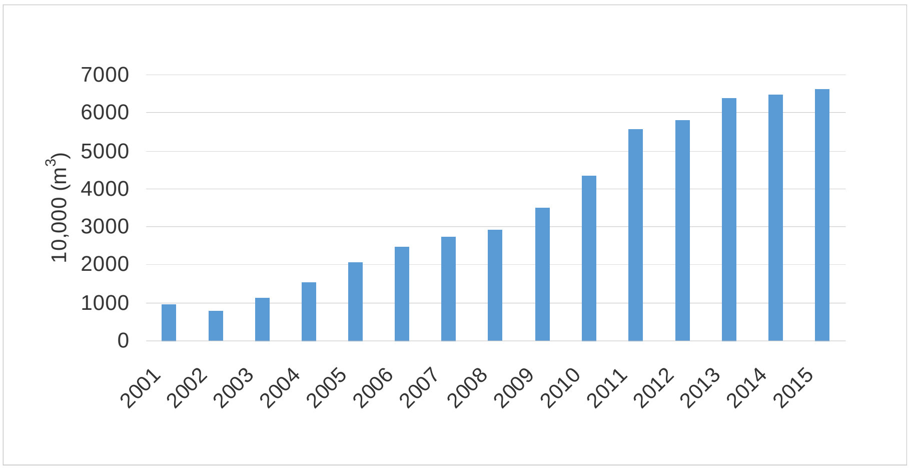


Figure 2-4: Fibreboard output of China (2001-2015)

Fibreboard is currently the fastest growing wood based panel product in China, with the output ranking the first in the world. Its development trends are as the follows: rapid growth of production capacity; production scale shift from small- medium sizes to medium-large sizes; persistent price competition for eventual winner that has high quality product; transfer of single product situation to that of multi-products and multi-functions.

(3) Particleboard

Since 2000, the particleboard production has increased annually, particularly in 2006 and 2008 with significant average annual increase over the previous years. In 2008 Chinse particleboard output exceeded 10 million cubic meters and in 2015 to 20.3 million cubic meters (Figure 2-5).

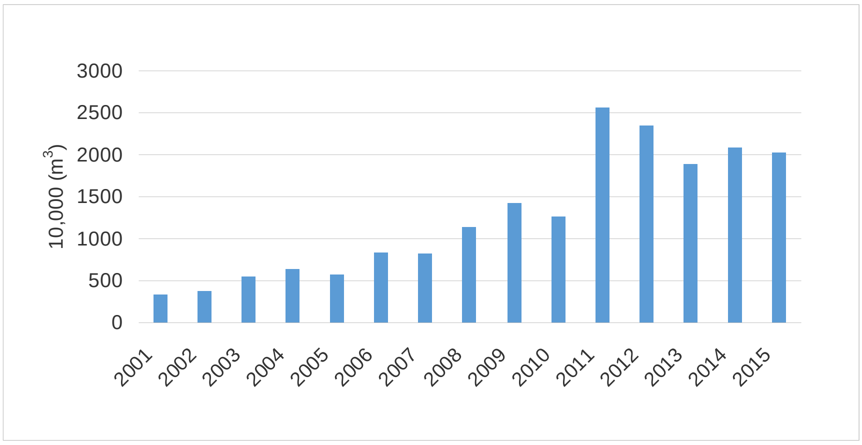


Figure 2-5: Annual particleboard output of China (2001-2015)

The particleboard industry is concentrated in eastern China, followed by the northern and northeast parts of the country. The north-western and southwestern regions have little particleboard production.

(4) Blockboard

According to the number of production enterprises, the top ten blockboard enterprises were Hebei, Zhejiang, Hunan, Fujian, Guangxi, Jiangxi, Shandong, Sichuan, Liaoning and Jilin; According to production, the top ten are Hunan, Zhejiang, Guangdong, Hebei, Fujian, Liaoning, Guangxi, Jiangxi, Hubei and Shandong. High output enterprises are for Liaoning Dalian Penghong Wood Co., Ltd., Hubei Eastern Wood Co., Ltd., Hunan Fuxiang Wood Co., Ltd., Zhejiang Dehua Baby Rabbit New Decorative Materials Co., Ltd., Hangzhou Huahai Wood Industry Co., Anhui Suzhou Dongjian Wood Co., Ltd., Shandong Longsen Wood Co., Ltd, Zhejiang Shenghua Yunfeng New Material Co., Ltd., Shandong Caoxian Huiyuan Wood Co. Ltd., Anhui Suzhou Dongda Wood Co. Limited etc.

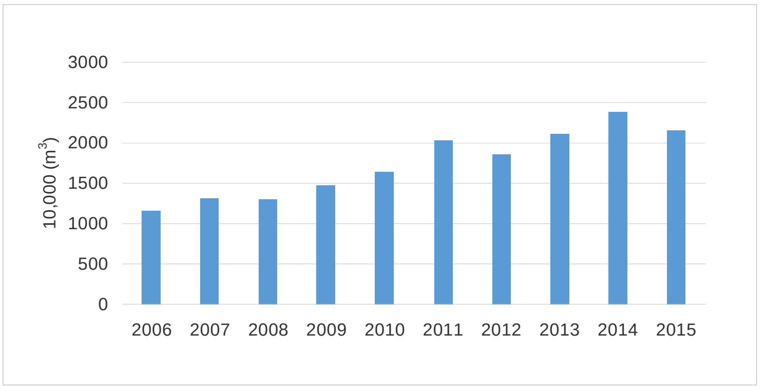


Figure 2-6: Annual blockboard output of China (2006-2015)

2.1.3.4 Problems in course of the development

(1) Numerous enterprises with limited average production capacity

The vast majority of wood-based panel production enterprises of China have small scale, low equipment level and few have large scale with advanced technology and equipment for production. According to the survey analysis, Chinese fibreboard production relies on too many enterprises most of which are small and medium sized. The average annual capacity of single production line is about 50,000 cubic meters. With small-scale production capacity the risk-resisting capability is low. 93% of the plywood enterprises has annual sales less than 50 million yuan. Only about ten particleboard enterprises has production capacity over 200,000 cubic meters so the industrial concentration is low. Large enterprises account for about 1% of the total number of the blockboard enterprises, medium-sized enterprises accounted for 2% while 97% of small businesses. The vast majority of small-scale enterprises lack advanced production equipment so the product quality is unstable.

(2) Shortage and price escalation of raw materials started restricting the industry development in some areas

Although the wood based panel production effectively motivated the construction of the national fast-growing and high-yielding timber planation production base as well as the plain forestry, the raw materials supply capacity has failed to keep up with wood based panel development which was in rapid scale expansion and quick growth of production capacity. In some areas, restricted by raw material supply, the output growth has stopped or even declined. In China, with the relatively scarce raw materials for the production of fibreboard and particleboard, especially with the further increase of the production lines, the supply and demand contradiction of raw material will eventually push high the prices and bringing about more intense competition in the industry.

(3) Insufficient market demand and fierce competition lead to enterprise revenue decline

Survey study shows that the management situation of the enterprise remains severe. Along with the deepening regulation of real estate, the downstream industries of fibreboard and plywood, ie the furniture, flooring, doors, decoration etc continue to operate weakly with declined purchases, lack of demand, slack market so that some enterprises have ceased production, turned to other production or simply closed especially the small and medium enterprises (the demand for particleboard in 2015 is however an increase so the price rose). At the same time, due to the impacts from prices rise of raw and auxiliary materials and energy, higher costs in transportation and logistics, rapidly rising labour costs etc, the production operation costs of fibreboard, plywood increased in general. The revenues declined and the enterprises are experiencing difficulty in recruiting workers, financing and organizing production. The comparative advantage of labour-intensive industries and downstream industries decreased and more manufacturers are leaving the industry.

2.1.3.5 Development trends

(1) Plywood

In the future 5 to 10 years, Chinese plywood will continue to focus on the products of furniture board, decoration plate, composite flooring substrate, packaging board, concrete formwork. Production ratio of laminated veneer lumber with poplar and eucalyptus as raw material shall increase. Larch based structural laminated veneer lumber will enter the market. Bio-based formaldehyde-free adhesive plywood market share will gradually expand. There is space for the southern China, north-eastern China to add plywood production capacity. The fast-growing eucalyptus will be the main raw material to support growth the plywood production capacity.

(2) Fibreboard

Fibreboard will continue to focus on products of furniture board, laminate flooring substrate, door plates and decoration plate. The market for low formaldehyde fibreboard, inflammable fibreboard etc will expand. Central China, southern China and southwestern China has production capacity growth potential of fibreboard. The fibreboard production capacity share of eastern China and northern China will drop.

(3) Particleboard

Particleboard will continue to have furniture board as the main product. The market share of hollow particleboard for producing composite door will increase slightly. OSB use for construction of wooden houses and product packaging etc will further expand. The proportion of low formaldehyde emission plate will increase significantly. Southern China particleboard production capacity will increase dramatically while particleboard production capacity share for eastern China region will drop.

(4) Blockboard

Blockboard will continue to focus on products of interior decoration, furniture plate etc. The ratio of impregnated paper veneer blockboard will increase significantly and the proportion of low formaldehyde emission board will expand. There is growth potential of Blockboard production capacity for areas of central China and southwest China. The blockboard production capacity share of eastern China, northern China and southern China will drop.

2.1.4 Wooden floor

2.1.4.1 Basic situation

Wood flooring product is the only product made from renewable raw material and can be recycled. It has features of being graceful, simple and natural, warm-looking and comfortable thus on the whole good choice for decoration of homes and shops. After 20 years of continual development, China has formed a complete industrial system of wood floor production, sale, laying and after-sale service. China has now more than 2,300 wood floor enterprises of which about 800 ones are for solid wood flooring, 900 ones for laminate flooring, 500 ones for solid wood compound floor, and 150 ones for bamboo flooring. There is only a small proportion of large and medium-sized enterprises in the industry. The small enterprises accounted for about 90% of the total number of enterprises of the industry. The market concentration is low and the product quality of different enterprises varies significantly. Currently only a few companies of the wood floor industry are entitled with "China Famous Brand", including Dekor, Der, Nature, Fillinger, Shengda, Jinqiao, Yihua and so on. These high-quality companies distinguished in terms of brand, technology, talents have gradually formed their integrated production and marketing chain that extends to the upper end of the industrial chain. Some companies have built up their own base for base material processing and even raw material forest base to optimize the allocation of resources, to match the international advanced level in regards of production scale, technology, equipment, product quality, service, marketing concepts and management methods. With fiercer competition strength, these enterprises tend to guide the entire wood floor industry to further enhance inherent quality and market competitiveness. There has been the trend for Chinese wood flooring industry to concentrate on advantageous brand enterprises. In consumption structure, the consolidated composite floor laminate flooring dominates the market with its advantageous properties of easy cleaning, abrasion resistance, scratch resistance, stain resistance, impact resistance, moisture resistance etc. which will help create a safe, sanitary, and comfortable living environment to meet demands of the vast number of household consumers. Consolidated composite floor has the largest share of total sales of wood flooring, has been in more than 50%; followed by solid wood flooring which accounted for more than 20%. Solid wood flooring due to the shortage of timber resources and national forest resources conservation policies has been on a decline in the annual sales for the past two years. Bamboo flooring sales share has been at a low level. According to the incomplete statistics of the Flooring Committee of China Forestry Industry Association, the total sales of wood floor of scale-production enterprises in 2015 of China is about 380.15 million square meters, a decrease about 2.2% over that of the same period of the previous year. Of the 380.15 million square meters, the consolidated composite floor is for 206 million square meters, an decrease of 3.2%; solid wood compound floor of about 95.5 million square meters, a decrease about 1.04%; solid wood floor of about 3990 square meters, decrease of 0.99%; bamboo flooring about 35.1 million m, decrease of 0.71%; other floor products about 3.65 million square meters, a decrease about 2.67%.

2.1.4.2 Total output and sales over the past five years

Refer to Table 2-3 for the total output of consolidated composite floor, solid wood floor, multi-layer solid wood compound floor, three-layer solid wood compound floor, bamboo floor of China from 2010 to 2015.

Table 2-3: Wood flooring output of China (2010-2015)
(ten thousand square meters)

Year	Consolidate wood floor	Solid wood floor	Wood compound floor		Bamboo floor	Total output
			Multi-layer	Three-layer		
2010	23,800	4,300	6,270	2,630	2,530	39,900
2011	23,500	4,260	6,420	2,650	2,510	39,700
2012	21,100	4,170	6,070	2,530	3,500	37,700
2013	22,400	4,250	6,800	2,660	3,500	40,000
2014	21,280	4,030	6,960	2,690	3,535	38,870
2015	20,600	3,990	6,850	2,700	3,510	38,015

2.1.4.3 Number of scale-production floor enterprises

(1) Consolidated wood floor

The enterprise with annual output above 5 million square meters include Dekor Group Co., Nature Flooring (China) Co., Ltd., Sichuan Shengda Industrial Co., Ltd., Der International Home Furnishing Co., Baluoke Wood (Zhongshan) Co., Ltd., Jiangsu Kendiya Wood Co., Ltd., Jiangsu Bei'er Decoration Materials Co., Ltd. (export-oriented), Shanghai Feilingeer Wood Industry Co., Ltd., Jiangsu Luoji Wood Co, Ltd, Anhui Yangtze Floor Co., Ltd., Jiangsu Kailai Wood Co. Ltd., Shanghai Aosheng Wood Co. Limited.

(2) Multi-layer compound floor

The enterprise with annual output above 1.5 million square meters include mainly Dekor Group Co., Nature Flooring (China) Co., Ltd., Jinqiao Floor of the Jilin Forest Industry Group Co., Ltd., Baluoke Wood (Zhongshan) Co., Ltd. Jiafeng Wood (Suzhou) Co.Ltd., Huzhou Shiyou Shijia Wood Co.Ltd, Xinwei Weiguang (Shanghai) Wood Co., Ltd., Zhejiang Liangyou Wood Co., Ltd., Zhejiang Yuhua Wood Co., Ltd., Jiangsu Senmao Bamboo Wood Co. Ltd, Shuxiang Mendi (Shanghai) New Material Technology Co., Ltd., Jiu-Sheng Floor Co., Ltd., Shanghai Filingeer Co., Wood Ltd. Co Ltd, Dehua Tubaobao Decorative New Material Co. Ltd. etc.

(3) Three-layer compound floor

The enterprise with annual output above 800,000 square meters include Jinqiao Floor of the Jilin Forest Industry Group Co., Ltd., Power Dekor Group Co., Ltd., Jinlong Wood Group Co., Ltd., Hunchun Xingjia Floor Co Ltd, Dalian Kemian Wood Industry Co., Ltd., Jilin Xinyuan Wood Co., Ltd., Hunchun Senlinshan Wood Co., Ltd. of Jilin Yanbian Forestry Group, Dalian Huafeng Wood Industry Co., Ltd., Shenzhen Huanwei Wood Co. Ltd.

2.1.5 Wooden door

2.1.5.1 Overview

Wooden door as one of the earliest adopted building product, has been of the necessities for decoration of modern homes and public venues. The past decade has witnessed quickened urbanization and rapid development of real estate industry in China providing huge space for development of the wooden door industry. Modern wooden door industry has completely changed in production manner, from the traditional mode of "handmade service by hired carpenter at home" to the modern mode of "large-scale customized industrial production". And the product evolved meanwhile from the practical design to integrated design of being decorative and environmental friendly. China has been now the world largest production base and consumer market of wooden doors.

With the development of the timber processing industry, construction industry and interior decoration industry of China, the wooden door industry tends to match with international standards in aspects of product conception, style design, technical procedures etc, High-quality logs, laminated timber, plywood, fibreboard, hollow particleboard, blockwood, decorative plywood etc became widely used in the production of wooden doors, which enriched the material choices of wooden doors. With the technological innovation of processing, improvement of overall structural design, enrichment of surface decoration workmanship, there have been much diversified products of wooden doors, such as the newly developed solid wooden door, solid wood compound doors etc. The humanistic, green and low-carbon culture concepts offer new meanings of wooden doors, realizing the shift from single practical use to utility -enjoyment integrate functional mode. The fashionable style, simple style, European style, classical style, modern style, energy-efficient style, environmental protection style wooden doors and more, with enriched cultural connotation have become an integral part of home decoration meeting consumers' diverse needs.

Chinese wooden door industry has developed very rapidly. According to statistics, the first decade of the 21st century has witnessed an annual average output growth rate over 25% for the domestic wooden door industry. The output value rose from 12.0 billion yuan in 2003 to 320 billion yuan in 2006, to 40 billion yuan in 2007, to 78 billion yuan in 2010 and over 120 billion yuan in 2015.

2.1.5.2 The main production regions

The maturity of wooden door industry of China has been growing, along with significant improvements in enterprise management, production technology, product quality, market awareness, brand awareness and service awareness. Nevertheless, affected by the size irregularities of Chinese building doors and openings, the wooden door production process has to go through the 5 steps of measuring, production, installation, commissioning and after-sale service. As the result, wooden doors are in general locally produced and on few occasions standardized production can be conducted. Currently over 10,000 enterprises carry out preliminary industrial production of which 3,000 ones carry out scaled, mechanized production with annual output value of 5 million yuan, less than 2000 ones with annual output value more than 10 million yuan, 200 ones with output value more than 50 million yuan, and 70 ones with annual output value of 100 million yuan. Wooden door production enterprises are mainly distributed in the five major production bases namely the Pearl River Delta, Yangtze River Delta, the Bohai Rim region and north-eastern China, southwestern China. The past small-workshop scale processing has evolved into large-scale product-oriented, integrated, brand-oriented industrial production forming a number of industrial clusters, as per the following proportions:

- Pearl River Delta: 33%;
- Yangtze River Delta: 25%;
- Bohai Rim region: 19%;
- Northeast China: 10%;
- Southwest China: 9%
- Northwest China: 4%.

(1) Pearl River Delta region

This region has centred around the two provinces of Guangdong and Fujian. A number of manufacturers of wooden door are located at the south-eastern coastal areas of China, many of which are strong, capital-rich large scale ones. A few of these enterprises follows export-only strategy so not yet opening up any domestic market.

The wooden door industry of this region started early whose growth is due to both the escalated consumption and the use of import timber for production.

(2) Yangtze River Delta

This region has centred around Shanghai, Zhejiang and Jiangsu. Located to the eastern coast the most developed area of China, it is also the most developed area Chinese wood processing. Thanks to the geographical advantages of intersection inland rivers and sea, the Yangtze River Delta region has become the forefront of opening up, helping boom the wooden door industry in the number and sizes of the firms and the growth rate as a whole.

(3) Bohai Sea Rim

This region has centred around Beijing, Hebei, Shandong. For most parts of the region there are large wooden door product sales. For the location of the capital and neighbouring Beijing-Tianjin area which have higher end consumers, the wooden doors are of higher prices. With plenty of home furnishing and decoration markets, the developed traffic condition, there has formed the Great Beijing-Tianjin wooden door advantageous sales market network in which the manufacturers are stimulated to improve product quality and expand the scope of sales, increase sales.

(4) Northeast China

This region has included Heilongjiang, Jilin and Liaoning provinces and specifically in focal cities of Qiqihar, Shenyang, Dalian, Harbin and Changchun. The area has rich forest resources and imports timber with the facilities of neighbouring Russia. A large part of import enters the domestic distribution market through the customs of this north-eastern China. The location advantage, good industrial base and timber resources promote the development of the wood processing.

(5) Southwest China

This region that has centred around Sichuan, Chongqing and Yunnan, has been the frontier area of both the National Western Development program and further opening up. With these advantages for development and opening up, the local wooden door enterprises have had rapid development. However, located in the underdeveloped western areas, the consumption is comparable to that the north-western parts of China, many wooden enterprises use low-priced products to seize market share.

In brief, the regional differences of the number of manufacturer of wooden doors enterprises, their product coverage vary significantly. With the Yangtze River as the dividing line, there are more southern produced wooden doors entering the market to the north of Yangtze while there are less northern produced wooden doors entering the market to the south of Yangtze. There are obvious difference between the north and the south, and very obvious difference between the east and the west.

2.1.6 Furniture

Furniture industry is a traditional labour intensive industry, a key light industry in stimulating economic development, and an evergreen industry. Since the reform and opening up from 1980s on, the rapid economic development and the continuous improvement of people's living standards, provide a broad growth space for the furniture industry. Following a decade-long transition period, 2-dacede-long rapid development, the situation has gradually formed for the furniture industry characterized large-scale enterprises as leaders, and small and medium enterprises as the mainstay. With relatively complete industrial chain, complete range of products, developed furniture circulation, Chinese furniture industry has become an important part of the world furniture industry. The stable international role of Chinese furniture industry play roles in meeting the domestic needs, demands of international market and in stimulating domestic general demand.

2.1.6.1 Basic situation of the furniture industry of China

There are more than 3,000 scale-production wooden furniture enterprises in China with the output of 253.1533 million pieces of furniture in 2015 (see Figure 2-7), a decrease of 3.91% over 2014. Of all the enterprises, 19.36% are large and medium-sized enterprises while 80.64 percent are small enterprise. Furniture enterprises are widely distributed in Guangdong, Zhejiang, Shandong, Fujian, Henan etc.

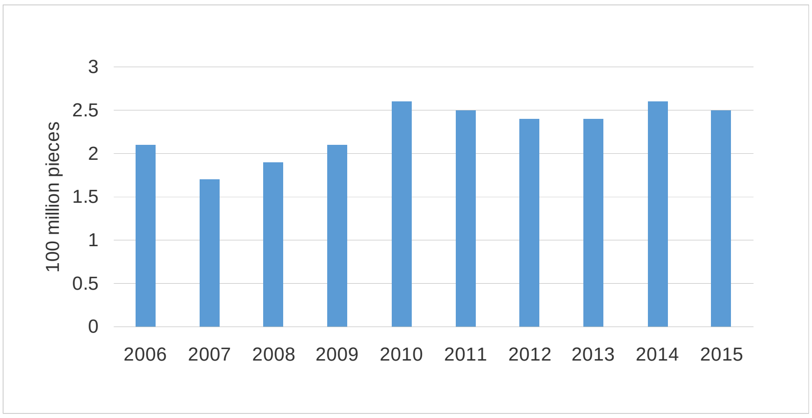


Figure 2-7: Wood furniture production of China 2006-2015

There have formed five industrial regions in southern, eastern, northern, north-eastern and western parts of the country.

(1) Southern China furniture industry

Guangdong Pearl River Delta is the centre of the furniture industry in southern China with advantages in industrial clusters, supply chains and brands. Guangdong has more than 6,000 large and small furniture companies, employing over one million people. In particular, the customized furniture enterprises including Suofeiya, Shangpin Zhaipei, Oupai, Haokelai has developed very rapidly.

(2) Eastern China furniture industry

The eastern China furniture industry with Yangtze River Delta as the centre has product quality and management advantages. There are more than 2600 furniture enterprises in Zhejiang Province, with more than 300,000 employees with gradually rising reputation in China in recent years.

(3) Northern China furniture industry

This region with the Bohai Sea rim areas as the centre has advantages in enterprise scale and market demand.

(4) Northeast China furniture industry

With the local old industrial bases as the furniture industry centre, this region has advantages in solid wood furniture production and timber resources.

(5) Western China furniture industry

Chengdu and Chongqing are the centres of the furniture industry in western China. The region has advantages in Tier II market products facing mainly the domestic customers.

2.1.6.2 General characteristics of the furniture industry

(1) Industrial growth transition from high speed to moderate speed

Over three decades beginning from the reform and opening up, the furniture industry of China has developed very rapidly to create a world wonder. Currently, China is at the transition of economic growth with pains of structural adjustment and burdens to actualize the earlier development policies. Consistent with the pace of national economy, the furniture industry will shift from the high speed development to low-speed development. Industrial restructuring of the furniture industry will continue. To this end, the supply-side reforms the will offer new driving force for development, has become an important target for the furniture companies to adjust their development strategies. While some enterprises have had initial success in upgrading themselves, some other companies got eliminated. Last year is period for the furniture industry to experience conflicts. The whole industry underwent a major test of the decline in exports, slow growth of domestic sales, speeded industrial restructuring, enhanced environmental protection requirements, furthered taxation reform, economic downward pressure, slack real estate market etc. The furniture industry is facing both opportunities and challenges.

(2) Overall progress but imbalanced in development

The technological level of Chinese furniture industry has improved rapidly in general. Some well-known companies have mastered the world advanced production technology and techniques to meet the needs of the market and build up international corporate image. However, the furniture industry development of China has been imbalanced. Small and micro enterprises as the majority that are short of core technology do not carry out brand management. With low concentration, they are less capable in resisting risks and with low in labour productivity and profitability. Some small and mid-sized enterprises that had difficulties in production management find price competition no longer an effective strategy. For reasons of environmental non-compliance, counterfeiting, plagiarism etc, they encountered both domestic and overseas markets challenges. For the past two years, some small and micro furniture enterprises have closed down for production operational downturn reasons.

In contrast to small furniture enterprises, the large furniture business has tended to develop and there has been a rise in the number of scale-production furniture enterprises. In 2015, scale-production enterprises realized main business income of 787.25 billion yuan, an increase of 9.29% over that of the same period of the previous year. Of the 787.25 billion yuan, 109 large companies had the average annual income of 1.257 billion yuan, an average increase of 25.7%; 825 medium-sized enterprises had an average annual income of 285 million yuan, an increase of 7.28%; 4,356 small enterprises had average annual income of 95 million yuan, an increase of 12.81%. In general net profit of the scale-production furniture enterprises rose by 14.03% over the previous year with the cumulative output growth of only 0.38%, indicating that the scale-production enterprises has improved both efficiency and profitability. There has been a reduction of employment in scale-production furniture enterprises, so the labor productivity rose by more than 5%, indicating qualitative change of economic growth of the industry and the entrance as a whole into a period to rely on labor productivity to achieve economic growth.

(3) Fast advancement of customized furniture

Some large customized furniture manufacturing enterprises have developed rapidly in recent years. In order to meet the needs of individual consumers, the customized furniture enterprises grew rapidly produce. To produce customized multi-category furniture, enterprises have introduced large-scale customized manufacturing equipment using in particular the digital information technology to shorten production cycle. The integration of modern technology and traditional manufacturing has been has become a model for the furniture industrial upgrading transformation The annual output value of these enterprises are usually over one billion yuan and sometimes tens of billion yuan indicating the strength of the integration of information technology and industrialization.

(4) Emerging prosperity of e-commerce

E-commerce of Chinese furniture industry is gradually on rise. Some large enterprises, large stores started using e-commerce marketing mode to seek prior market advantage by catching up with the gradual changes occurring in furniture consumer attitudes and market. Part of the stores and enterprises began to explore online-offline integrated marketing network model. Sales of certain furniture companies specialized in e-commerce have grown rapidly. More enterprises are cooperating with Tmall, Jingdong Mall to carry out online and offline sales at the same time which are accepted by the consumers. The e-commerce furniture sales have been growing quickly so that assigned sales growth targets are being realized by full integrating online experience and offline experience of the consumers.

2.1.6.3 Recommendations of furniture industry development of China

(1) Build up brands by innovation

China has now come up with a number of furniture enterprises with good social image and brand influence, including some listed enterprises. The future Chinese furniture industry will witness a growing number brand enterprise based furniture groups. Through scientific and technological innovation, product innovation, marketing innovation, the brand-oriented core competition strength will be enhanced to improve the brand value, expand the brand influence to promote the stable sustainable development of enterprises.

(2) Improve the management level

The general competence of the furniture enterprise managers of China is on a rise. Highly educated personnel are joining the furniture enterprises to adapt to new changes of the furniture industry. Under the current development environment of China, there is high need for the managers to improve their management level especially by further strengthening integration of industrialization and digital information technology. By implementing the "Made in China 2025" and Industrial 4.0 strategies, there will be more developments and actions in specialized production, using modern technology to transform traditional industries, actualizing the the concept of energy conservation, and in reducing resource consumption for improved resource utilization efficiency.

(3) Enhance industrial concentration

In course of the furniture industry industrial restructuring process, it is imperative to solve the problems of product homogeneity and overcapacity. It is proposed that industry concentration be enhanced through mergers and acquisitions among enterprises, to gradually phase out the poor-quality products, low-efficiency backward production capacity to achieve a qualitative leap of the furniture industry of the country.

(4) Strengthen the construction of industrial clusters

Furniture industry clustering has an important role in promoting the furniture industry of China. It is proposed to strengthen the construction of furniture industry clusters by fortifying the industry layout planning to promote the formation of furniture industry chain. There is also high need for the enterprises to strengthen cooperation with universities, consultancy firms and other professional entities. In addition, endeavours should be made to strengthen specialized division of labour, good public service platform operation and provide professional services of design and development, quality inspection, e-commerce, training and education, trade docking etc, to expand marketing channels of the industrial cluster enterprises and to improve the overall level of the industrial cluster enterprises.

(5) Transform from manufacturing to production service

In a mature market economy, it is the consumers' interests that to a large extent determines how the commodities will be produced and how the services be provided. The simple-production enterprises that cannot fully integrate consumer trends into their operational strategy will gradually lose market share. Enterprises' shift from production to service means is the sure performance of a mature business, but also an inevitable result of industrial upgrading.

2.2 Case Analysis of Timber Industry in Guangdong Province of China

Guangdong as the frontier province of reform and opening up of China, has produced for recent years about one-seventh of the national economic output ranking the first among all the provinces of the country.

By adopting the reform and open polices and with the rapid development of the national economy and surging domestic and international demand for timber products, the timber processing industry developed fast in Guangdong. Currently, the production of paper and timber furniture in Guangdong is at the national leading position, with its furniture export comprising about half of the total of the country.

The boom of timber processing industry not only provided plenty of wood products for meeting the consumers' demands, but also triggered huge social investments for forestation which contributed to local forestry development by significantly improving the forest area, forest standing volume and forest coverage of the province.

2.2.1 General situation

With the fast growth of national economy and uprising national and international market demand for timber products, Guangdong timber processing industry remained thriving in 2015 with output value of 482.82 billion yuan, ranking the first in China.

(1) Timber industry products

There was increase for most scale-production wood processing products in the province. The wood-based panel production totaled 12.21 million cubic meters inclusive of plywood for about 3.27 million cubic meters, fiberboard 6.09 million cubic meters, particleboard 1.76 million cubic meters, and blockboard 0.39 million cubic meters. Refer to the following table.

Table 2-4: Timber industry output of Guangdong

Products	Unit	2014	2015	Increase by (%)
Wood based panel	Cubic meter	11,174,228.0	12,211,789.9	9.3
Plywood	Cubic meter	3,272,619.4	3,622,934.3	1.7
Fibreboard	Cubic meter	5,678,858.8	6,085,725.0	7.2
Particle board	Cubic meter	1,562,303.6	175,512.3	12.3
Decorative board	Sqm	14,683,243.5	12,924,788.8	-12.0
Blockboard	Cubic meter	373,129.0	387,288.0	3.8
Solid wood flooring	Sqm	17,383,402.3	15,189,612.6	-12.6
Composite wood flooring	Sqm	16,114,616.7	14,073,967.0	-12.7
Bamboo floor	Sqm	280,895.0	359,197.0	27.9
Furniture	Piece	168,636,512.4	156,761,702.2	-7.0
Wood furniture	Piece	56,684,466.4	51,285,443.6	-9.5
Papermaking	0000 tons	1,992.83	2,078.29	4.3

(2) Timber industry product output value

Along with the increase of wood product output in 2015, the timber processing enterprises in Guangdong have faced the stern situation of rising labor cost, rising raw materials cost and rising RMB exchange rate. To secure higher economic return, the enterprises have to transform and upgrade the manufacturing and continuously improve product quality. Consequently, most wood enterprises in Guangdong adopted competitive prices for both export and domestic sales leading to increased wood processing industrial output value in 2015 although at reduced levels. Refer to the following table.

Table 2-5: Timber industry output value of Guangdong (1,000 yuan)

Timber processing industries	2014	2015	Increase by (%)
Wood processing	10,290,233.0	12,476,417.0	21.25
Wood-based panel	40,801,229.0	46,008,602.0	12.76
Wood product	17,448,645.0	20,269,857.0	16.17
Bamboo, rattan, palm fiber, grass	10,585,386.0	12,210,758.0	15.35
Wood furniture	101,937,202.0	106,946,022.0	4.91
Bamboo or rattan furniture	3,081,226.0	3,517,279.0	14.15
Paper industry	204,533,650.0		5.51
Pulp manufacturing	695,123.0	2,019,598.0	190.54
Papermaking	79,510,662.0	83,565,396.0	5.1
Paper products manufacturing	124,327,865.0	130,215,159.0	4.74
Total of the province	388,677,571.0	417,229,088.0	7.35

2.2.2 Statistics of the Timber processing enterprises

Annual information for timber processing enterprises have been collected and consolidated. By December 17, 2016, information have been collected from (1) 47 MDF enterprises that have totally 51 production lines and designed annual production capacity of 3.822 million cubic meters; (2) 71 particleboard enterprise that have totally 79 production lines, the designed annual production capacity of 3,076,400 cubic meters; (3) 87 plywood enterprise that have totally the designed annual production capacity of 4,068,600 cubic meters; (4) 168 wood flooring enterprises that have totally the designed annual production capacity of 167.42 million square meters, of which 57.56 million square meters of solid wood flooring, composite solid wood flooring 44.89 million square meters, 63 million square meters of laminate flooring and 1.97 million square meters of bamboo flooring; (5) 449 mid-size and large enterprises of wood furniture, including Taisheng, Meishi, Yihua, Guangrun, Huangchao, Liangbang etc; (6) 836 paper or paper product enterprises with scale production, including 239 enterprises for paper-making, 230 enterprises for paper products, 30 pulp mills, 12 large or very large paper companies.

2.2.3 Rapid development of the furniture industry

With the rapid development of national economy and continuous improvement of people's living standards since 1980s, the wooden furniture industry in Guangdong flourished. Within about thirty years, the furniture industry in the province has fledged from the past cottage-scaled production into a large-scale dynamic furniture industry centering on the production bases of Dongguan, Shunde, Shenzhen, Zhongshan and Guangzhou and extending to Pearl River Delta and the whole Guangdong province. A complete industry chain of furniture production, supply and marketing has come into being. The furniture industry in Dongguan, Shunde etc has become local pillar industry. Still, the managerial strength of the furniture industry in Guangdong is to be improved, especially in furniture design. Guangdong furniture industry has now few genuine local brands. Many of the furniture enterprises are small-scaled with limited research and development capability, so most living on imitating others' products. The competition among the furniture enterprises tended disorderly which has begun to restrict the development scale.

(1) Briefing of the local furniture industry development

The furniture industry in Guangdong has developed very quickly. In early 1980s, the timber consumption for wood furniture industry of the province was only 18,900 cubic meters. With the high-speed development of national economy and continuous improvement of the people's living standards, the furniture industry in Guangdong has developed progressively from the previous state or collective owned small factories to modern enterprises with multiple ownerships of the state, collective, private, Taiwan and Hong Kong. And in the production equipment, the mechanization and semi-mechanization operations have replaced the hand tools.

Within the first two years of 1980s, the furniture timber consumption of the province climbed up to 70,000 cubic meters including a lot of wood-based panels as raw materials. In the 1990s, the furniture timber consumption of the province reached 100,000 cubic meters and the consumption volume of wood-based panels for the furniture industry surpassed that of log so bringing wood-based panel production to higher levels. According to statistics, the output of wood-based panel of Guangdong had risen from 41,000 cubic meters in 1978 to 1.762 million cubic meters in 2002 including locally produced MDF of 560,000 cubic meters and imported MDF of 730,200 cubic meters. And this means that the MDF consumption has sourced from the production of Guangdong, other parts of China and overseas. After 1993, a leap forward took place to the furniture industry in Guangdong with a variety of types of ownerships for the furniture enterprises. There were more than 6,000 furniture manufacturers in 1999 with the output value of 32 billion yuan. In recent years, to meet with the demands of global development of the furniture industry and to improve the yield and quality, the furniture manufacturers in Guangdong introduced world advanced equipment and technology which have significantly improved the output, quality and style of the Guangdong furniture.

According to preliminary statistics, there are now 9,600 furniture enterprises in Guangdong employing over one million people. The output value of Guangdong furniture in 2002 reached 48 billion yuan accounting for 30% of the national total of 160 billion yuan. Of the 48 billion yuan, the export value was 2.733 billion USD accounting for 50.61 percent of the national total of 5.417 billion. In 2015, the wooden furniture export of Guangdong reached 10.97 billion USD accounting for 51.76 % of the national total. With no exaggeration, the furniture export of Guangdong has basically represented that of the country.

The furniture industry boom in Guangdong helped flourish the downstream industries of furniture industry. The furniture raw material markets of Guangdong especially those of wood-based panels, logs and sawn timber products play a major role in the country. The province has more than 1,000 large and small enterprises of wood based panels and the reported wood based panel production rose from 1.762 million cubic meters in 2002 to 14.54 million cubic meters in 2015, an increase of 91.27%. And the timber consumption for furniture for the whole province rose from 18,900 cubic meters in early 1980s to 5.07 million cubic meters in 2015, an increase of 268.25 times. In fact, it is assessed that the wood based panel production in Guangdong should be around 13 million cubic meters with the reasonable employment of about 100,000 people. In addition to wood based panel, there have been other related industries such as woodworking machinery enterprises, furniture hardware companies, paint companies, packaging enterprises. Although there have been no statistics for the numbers of enterprises and employment etc., several paint factories in Guangdong such as the Dabao Paint Factory in Shenzhen, Huarun Paints Factory in Shunde are well-known paint brands in and outside the province. The Huarun Paints Factory for example, has had annual output value over several hundred million Yuan. The Guangdong Shunde Lunjiao over the past decade started from scratch to develop into woodworking machinery production and selling base in China. And the furniture hardware accessories in Guangdong Leliu Town are in rapid development so highly reputable.

The rapid rise of the furniture industry also prospered the circulation market. Along the Guangzhou-Zhanjiang highway and at the section from Shunde to Longjiang, there have stretched the “furniture promenade” over 10 kilometers where the Shunde Lecong International Furniture City has been a spectacularly busy area. With hundreds of shops at a shopping area of 200 million square meters the City is now the largest furniture wholesale market in Asia where more than 2000 furniture shops around the country gathered and the annual sales are over 20 billion yuan. In addition, there are Dongguan Houjie International Furniture City, Heng Fung Furniture City, Shunde Longjiang International Furniture City, Guangzhou Jinhaima Furniture City etc. Furthermore, many large, fashionably decorated wholesale-retail markets focused on the brand-name furniture of the province and across the country are becoming furniture sales centers of the countries. There are also large raw material markets such as Longjiang Wood Wholesale Market, Dalingshan Jilong Timber Market, Houjie Industrial Wood Decorative City, Guangdong Yuzhu International Timber Market and Guangzhou Tianjian Square.

There are 11 large furniture fairs held annually in Guangdong, attracting from around the world numerous furniture factories, businessmen, enterprises to come to buy, negotiate and visit making Guangdong furniture a world attentive venue. Although there is still some distance for Guangdong to catch up with world level furniture, it has been indisputable that the Chinese furniture industry is firstly the Guangdong furniture industry. Like what some insiders said, "Italians makes worldwide furniture, Cantonese makes Chinese furniture". In fact, the furniture export volume of Guangdong has already exceeded that of many other countries.

In terms of product types, Guangdong furniture are mainly solid wood furniture and wood-based panel furniture, followed those made of metal, glass and other materials. Although Bamboo and rattan furniture is of lesser output proportion, a few bamboo and rattan furniture plants such as Guangdong Feicui Rattan Factory, Dongguan Yitengyuan Rattan etc are internationally reputable with products best-sold in Southeast Asia and European markets.

The furniture enterprises in Guangdong are mainly privately or collectively owned, or kept by Hong Kong and Taiwanese entrepreneurs. Apart from these furniture enterprises of Hong Kong, Taiwan and small part of private enterprises, most furniture enterprises are small or medium sized.

(2) Regional distribution of furniture enterprises

The furniture industry in Guangdong is usually classified in accordance with their locations which concentrated in the Pearl River Delta especially the cities of Dongguan, Foshan, Zhongshan, Shenzhen and Guangzhou. Among these, Dongguan has more than 3,000 furniture enterprises employing 360,000 people with an annual output value over 60 billion yuan. Dongguan furniture industry produces high-end and mid-end solid wood furniture, office furniture, including (such as these used in kitchen, bedroom) and software furniture etc.

The Dongguan furniture is featured with brand production so mostly for export. The private, collective and overseas furniture enterprises glorified in parallel in which 15% of the enterprises are collectively owned, 40% privately owned and foreign-funded enterprises accounted for 45% of the total. Currently, the towns of Houjie, Dalingshan, Changan etc have become major production bases of furniture and the Dalingshan Town alone has more than 200 Hong Kong or Taiwan-funded furniture enterprises with the export value nearly 1.5 billion USD accounting for over half of the total of the Guangdong province. Most of theDongguan furniture enterprises are considerably large manufacturers, many of which have annual output value over 1 billion yuan, such as Dongguan Taisheng Furniture Factory, Meishi Furniture Manufacturing Co.Ltd. However, most of the large and very large enterprises are kept by entrepreneurs of Hong Kong and Taiwan. Furniture industry has become a local pillar industry ranking in the fourth place in terms of output value, next to home appliances, clothing and electronics. The local government has attached great importance to the furniture industry by creating brand effect, opening an additional or alternative marketing channel which has helped form the Houjie International Famous Furniture Fair (Dongguan) Club, "Elite Furniture Fair bringing disseminating huge reputation of Dongguan furniture across the country. Due to the innovative design, advanced production equipment, the Dongguan furniture are mostly fashionable and of good quality so widely welcome by domestic and international customers. They Dongguan furniture not only entered the Zhongnanhai in Beijing, but also won all the four awards of Chinese exhibitors at the World Elite Furniture Fair held in Milan of Italy in September 1999 so expanding Chinese furniture to the world. In 2002, the production value of export furniture of Dongguan Taisheng Furniture Factory alone reached more than 200 million USD.

It is estimated that of the thousands of large and small furniture enterprises in Shunde of the Foshan city, about 2,000 ones are scale production enterprises. For example, Lai Xing Furniture Factory, the Jinbaoma Furniture Company, ZhongTai, Weibang etc are larger manufacturers. Most of Shunde furniture enterprises are privately run, small and medium scale, producing furniture for moderate domestic consumers except a few high-end solid wood and upholstered furniture manufacturers. Relatively large amount of furniture in Shunde is also sold to the United States, Japan etc. For example, the Hua Wei Outdoor Furniture, Sanyou Ming-styled Furniture etc. enjoys good reputation overseas. Shunde furniture is characterized with good marketability of the products. And the furniture industry is of the three major industries with governmental preferential policy support (namely the home appliances, furniture and flora) .The Lecong Furniture City started from the “roadside shop plus backyard factory” to develop into the Asia's largest furniture wholesale and retail base with an business area of 2 million square meters where two furniture exhibitions are annually held for Longjiang and Lecong respectively, attracting buyers from all over the country. All these indicate that the development of Shunde furniture industry with its marketable products has great development potential.

Zhongshan furniture industry of Guangdong includes some large and small wood-based panel and solid wood furniture factories such as the Zhongshan Guotai Furniture Company, Zhongshan Sihai Furniture Factory whose output value are at hundred million yuan. However, redwood furniture is the main feature of Zhongshan furniture which has Dayong Town as the main production base and wholesale distribution center. Dayong Town has more than 300 redwood furniture enterprises employing lots of technicians from Zhejiang province. High quality redwood such as that of Dalbergia odorifera etc has high hardness and stability properties and not easily deformed. With exquisite workmanship, unique shape, the locality employed over 30,000 people. There have been local redwood furniture research and development centers, exhibition venues making redwood furniture the focal industry of Dayong Town. Almost all local households are engaged in redwood furniture industry.

In recent years, the furniture industry in Guangdong has developed into an important industry from the core developed cities of Dongguan, Guangzhou, Shenzhen, Shunde, Zhongshan to the whole Pearl River Delta region so an engine of the provincial economy. The furniture industry added fixed assets of over 10 billion yuan to Guangdong, making tremendous tax revenues and created employment opportunities for over one million people in surrounding areas, enormous social and economic benefits.

(3) Development history of the furniture industry

Development of Guangdong furniture industry started from late 1970s to early 1980s the beginning time of national opening up, when a few Hong Kong and Taiwan entrepreneurs established furniture factories in Guangdong. Some local farmers realized the market potential of furniture manufacturing, so to start their household furniture workshops. This is called the startup stage of Guangdong furniture industry.

At this stage, self-employed individuals with their initial capital accumulation began to purchase a piece of land in front of their houses or from furniture manufacturing centralized sites to build workshops or mills. It typically contained a shop at roadside with backyard as the factory. Examples include the furniture enterprise at Longjiang town of Shunde city, and the redwood furniture in Dayong town of Zhongshan city. Still, the furniture enterprises kept in mainland China by entrepreneurs of Hong Kong, Macao and Taiwan, had started with a formal design for production. For example, Huasheng Furniture Factory of Shenzhen city has been China's first plate furniture factory with all its production equipment imported. Its operation laid a technical model for Chinese plate furniture production, which then attracted huge amount visitors from all over the country.

During this period Chinese furniture is basically plate furniture. The related historical background is as the follows. From late 1970s to the mid-1980s, wood-based panel developed quickly to provide a large number of wood-based panel raw materials for furniture industry. Since 1980s the reform and opening up time of China, Chinese people began to pursue a stable life but with limited purchase strength, they can only afford economical furniture such as the large-size, low price board furniture. Meanwhile, a large number of foreign companies that opened factories in Guangdong needed a lot of plate office furniture. While some quality assured plate furniture production lines were imported, local farmers also used simple wood processing equipment to produce low-quality plate furniture. Often furniture factories with a few sets of the disc saws could make in small shed some good-looking wood-based furniture that apparently comparable to bestsellers and suitable for temporary use by migratory field work managers in Guangdong. The furniture quality in Guangdong at this period vary significantly, and the price differed from several hundred yuan to tens of thousands yuan. Still, due to the huge furniture market in Guangdong, no matter what quality or price levels the furniture belonged to, someone would buy it once it was produced.

From mid 1980s to early 1990s, Guangdong furniture industry entered a period of rapid development. At this time most furniture enterprises have accumulated capital, increased management efficiency, expanded investment scales, and many factories were importing directly large woodworking equipment from Germany or Italy such as the CNC machining centers, electronic cutting saws etc. Guangdong Federal Furniture Factory, Qianjin Furniture Factory, Zhongshan Guotai Furniture Factory, Sihai Furniture Factory, etc. were giants grown up during this period of time. Income of the common people at this period was considerably improved so their aesthetic attitude to furniture has changed by abandoning the large-block, single color furniture to pursue natural-beauty, genuine real material furniture. Consequently the solid wood furniture typically those furniture made by the Federal Furniture Factory turned most popular in northern and southern parts of the country for a time. In fact, since 1949 the birth time of the new China, there had been no furniture becoming as widely popular throughout the country as the Federal chair! Of course, board furniture remained a large market share thanks to the fast growth national economy and increased demand for office furniture. During this period, the concept of office furniture was distinguished and office efficiency, screens for open-style offices became acceptably popular, for which such furniture enterprise as Guangdong Nantian Furniture Company produces well-known office furniture brands. On the one hand, there was rapid growth of production. On the other hand, the genuine management and design talents were scarce, resulting in the then furniture factories mass reproduce the same products. Still, some stronger factories began to go to Cologne, Paris and the United States where world high-end furniture fairs were held. To the furniture enterprises, it is more like going to the exhibitions to copy style than going to the exhibitions to learn. By copying and following suits "new products" appeared for those companies that could not afford to go to world exhibitions to further in domestic exhibitions. The furniture style looks monotonous and it is very difficult for ordinary people to differentiate the quality, so the competition in the furniture market simply evolved into competition of prices: consumers only buy low price products.

Up till the end of last century and the beginning of the 21st century, the Guangdong furniture industry entered the maturity period. At the beginning of the century, the enterprise decision-makers found that their existent industrial operations could hardly sustain. The calmly analyzed the realities and recognized that only the production with own characteristics can have better positions at the market. To this end, they began to focus on such aspects of the product quality, recruitment of higher level personnel, which led to improved furniture quality, diversify products and styles, integrated use of production raw materials, which offered ordinary customers more options and the furniture exports also increased. Nevertheless, lack of talents and lack of furniture production research and development capabilities remained major constraints for the furniture industry. For these reasons, such problems of the dimension stability of wood furniture materials, wood property modification, use of fast-growing timber, reduction of formaldehyde emission of furniture materials etc failed to have good solutions. Guangdong is now processing a large quantity of import timber, but many countries have begun restricting export of logs, which bring about major impact on timber processing enterprises in Guangdong that remained only to rely on imported eucalyptus chips for pulp production. The lower prices from abroad form also significant pressures. Most furniture enterprises in Guangdong are small private enterprises. Although these business owners are aware of the importance of research and development of furniture, few are unwilling to invest on such public good activities. Some large companies do engage in immature researches, but with their confidential control, there are hardly real technical exchanges or academic activities. Such condition leads to stagnancy of the research and development furniture.

(4) The furniture industry development trends

Looking to the future, Guangdong furniture industry and furniture industry of China as a whole will faced a situation of continuous steady and rapid development. In the upcoming decade, with the deepening of China's accession to WTO and along with influx of foreign goods and investment, the domestic market and products will become further internationalized. The Chinese furniture industry shall with its brand new look, reinvent the furniture industry to meet domestic and international market competitive challenges, and to, soon as possible, realize the shift from a large furniture manufacturer to a strong exporter. Vietnam and other Southeast Asian countries have issued special preferential policies to attract Taiwanese furniture enterprises to their homelands and to use the price advantage to seize the international furniture market share. Their annual furniture export to the United States has reached two to three billion USD. This has formed a major impact to the Guangdong furniture industry that has long adopted competitive prices at international furniture market. For the first 11 months of 2016, the wooden furniture export of Guangdong fell by 8.65 percent over the same period of the previous year.

Table 2-6: Production value and structure of scale production furniture enterprises (unit: 1,000 yuan)

	2011	**2012**	**2013**	**2015**
Furniture Manufacturing	19,492,604	123,211,419	146,050,028	184,732,000
Wooden furniture	6,122,781.7	701,780.0	8,553,816.9	106,946,022

Bamboo& rattan furniture	2,200,527	2,578,269	2,943,226	2,517,279

In 2015, the furniture output value of the province is about 382 billion yuan, an increase of 5.2% over the previous year. Of the 382 billion yuan, 329.2 billion yuan or 60% is for wood and bamboo furniture. The export value is 10.9702 billion USD, an increase of 5.51% of the same period of the previous year and accounting for 51.76 percent of Chinese enterprise export of wood furniture.

(5) Impacts from Vietnam

About one-third of the wood furniture of Guangdong is for exports. However, this has been difficult under the impact of Vietnam since 2016.

Due to the slow recovery of international economy, the economic development slowed down in many countries. The global trade remained in doldrums and the international furniture market tended to shrink. With the continuous depreciation of euro and the currencies of many countries, the rush of certain Southeast Asian countries (such as Vietnam) to seize the market furniture with low-cost advantage, the furniture market became highly competitive resulting in unsynchronized export volume and export value. For example, the volume of furniture export to Japan increase by 48.59% but export value grew by only 0.19%. The exports to the US went up by 24.52%, but export value grew by less than 14 percent. These imbalances seriously affected the export returns of Guangdong wood furniture.

By making arduous efforts to identify market, there have achieved good results in export of seats and wooden furniture of Guangdong despite of the general export downturn and the unfavorable environment of global furniture market. For the first 11 months of 2016, the export of wood seat and wooden furniture totaled 82.3967 million pieces, a decrease of only 9.55% over the previous year. Specifically, the export of wooden furniture totaled 57,780,200 pieces, a decrease of 10.1% over the previous year. In export value, the wooden furniture and wood seats totaled 965 million USD, a decrease of 6.48% over the previous year, inclusive of export of wooden furniture of 6.261 billion US dollars, down 8.65 percent over the previous year.

2.2.4 Papermaking is the lead part of the timber industry in Guangdong

Paper industry as the pillar industry of Guangdong is lead part of the timber processing industry in Guangdong. In 2015, the scale-production industrial production output of the paper making industry of Guangdong is 20,782,900 tons, an increase of 4.3% over the previous year, an increase of 5.51 percent over the same period last year ranking the first in China. The paper industry output value is 215.8 billion yuan, an increase of 5.51% over the previous year inclusive of 83.565 billion yuan of paper, 130.215 billion yuan of paper products and 9.068 billion yuan of pulp.

In 2015, Guangdong imported 13,052,800 tons of waste paper, 1.5604 million tons of pulp, an increase of 55.8% over the previous year.

Table 2-7: Paper industry output value of Guangdong in 2014 and 2015
(unit: 1,000 yuan)

	2015	**2014**	**Increase by (%)**

Paper industry	215,800,153.0	204,533,650.0	5.51
Pulp	2,019,598.0	695,123.0	190.54
Paper	83,565,396.0	7,951,662.0	5.1
Paper products	130,215,159.0	124,327,865.0	4.74

Guangdong as one of the first provinces to adopt the reform and opening up policies represents about one-seventh of the national economy. The rapid development of Chinese economy and the continuous improvement of the people's living standards combined to increase the market demand for paper products, leading to the growth of Guangdong paper industry in three major sections centering around the cites of Dongguan, Jiangmen and Zhanjiang,

2.2.5 The timber processing enterprises of Guangdong managed to address the economic barriers to normalize its import and export

Guangdong has been the province with most developed timber industry. The annual timber consumption is equivalent to log volume about 35 million cubic meters, of which 8 million cubic meters are imports. On the other hand, Guangdong exports every year a large number of wooden furniture, wooden flooring and a variety of wood-based panels.

Due to the sluggish international economy, the slowdown of economic recovery in many countries, and depression of the global trade, such "anti-globalization" thoughts typically of protectionism and isolationism rose with the geopolitical risks. Certain western countries came up with emerging economic barriers, such as the EU Timber Regulation, US Lacey Act Amendment and so on.

Guangdong as a comparatively mature market economy conducts import, production and export in accordance with the requirements of the customer country. After the issuance of the US Lacey Act amendments, the Guangdong furniture industries turned to directly import raw materials from the United States by observing the various requirements of the Act to then organize the production in line with the US product standards. For example, in accordance with the requirement that the formaldehyde emission of all wood furniture, wood flooring exports to US should meet California's mandatory standards, the Guangdong furniture and flooring companies turned to import various wood-based panels that conform to the compulsory formaldehyde emission standards of the US. In addition, relevant enterprises have actively participated in a variety of timber legality verification activities, including due diligence system by the third parties to enable enterprises to export products meeting the requirements of the customer country. Therefore, following the barriers of the "EU Timber Regulation", "US Lacey Act amendment" etc, the timber processing enterprises in Guangdong have managed to readjust themselves. For example, of the total wood furniture consumption of 5.07 million cubic meters, the import of rubber wood from Thailand that was equivalent to log volume of 4.0058 million cubic meters accounted for 79.01 percent, and the import from the United States of 1.1391 million cubic meters made up 22.47%, and other countries to import timber included Sweden, Finland and Australia. Therefore, the various economic barriers, trade barriers, did not cast significant impact on Guangdong timber imports. The more obvious impact has been on the redwood furniture processing which is however of limited quantity and proportion.

In general, so far, it has not much impact on import and export of Guangdong.

Table 2-8: Timber and timber products import volume and value of Guangdong

		2010	2011	2012	2013	2014	2015
Log	Volume (10,000 m^3)	159.26	189.43	193.49	220.95	304.62	277.54
	Value (10,000 USD)	50,509.73	87,040.41	85,671.97	95,636.82	169,814.55	104,539.22
Sawn timber	Volume (10,000 m^3)	281.71	338.37	356.3	468.43	528.98	622.37
	Value (10,000 USD)	90,786.81	116,079.5	127,660.81	178,545.89	225,673.94	221,775.69
Plywood	Volume (m^3)	116,430	102,213	92,484	73,543	74,415	75,907
	Value (10,000 USD)	53,646.94	5,343.09	4,922.03	3,325.9	3,742.88	41.49
Fiberboard	Volume (m^3)	62,647	41,987	30,643	22,764	142,794	99,934
	Value 10,000 USD)	1,609.58	1,237.88	1,392	1,076.19	3,315.94	3,429.88
Particleboard	Volume (m^3)	251,928	220,164	246,222	252,800	197,338	20.38
	Value (10,000 USD)	4,711.08	4,466.45	4,949.85	4,843.05	4,041.19	4,147.37
Wooden furniture	Volume (10,000 pieces)	34.84	28.53	28.66	47.57	46.3	49.74
	Value (10,000 USD)	3,682.02	3,973.16	4,070.35	7,016.03	7,289	8,206.73

Table 2-9: Timber and timber products export volume and value of Guangdong

		2010	2011	2012	2013	2014	2015
Log	Volume (10,000 cubic meters)	0	0	0	0	0	0
	Value (10,000 USD)	0	0	0	0	0	0
Sawn timber	Volume (10,000 cubic meters)	0	1	0	0.69	0.65	0.65
	Value (10,000 USD)	0	34.99	0	227.88	528.98	234.43
Plywood	Volume (10,000 cubic meters)	390,002	562,320	591,144	591,273	664,845	619,589
	Value (10,000 USD)	99,392	23,020.16	24,458.57	27,925.98	32,705.95	44.76
Fibre board	Volume (10,000 cubic meters)	121,544	110,975	143,619	74,069	93,847	197,521
	Value (10,000 USD)	2,158.41	45,367.8	4,346.62	381,4.57	9,629.03	13,426.42
Particle board	Volume (10,000 cubic meters)	8,093	5,826	3,190	9,359	48,094	2.07
	Value (10,000 USD)	2,158.41	4,536.45	453.55	588.38	2,394.78	1,458.18
Wooden furniture	Volume (10,000 cubic meters)	7,019.99	6,922.39	6,518.33	6,297.47	6,894.29	7,037.05
	Value (10,000 USD)	473,459.45	517,375.79	567,427	627,780.78	718,614.22	758,205

2.2.6 Conclusion

After thirty years of continual development, the timber industry of Guangdong has evolved from a backward province of timber industry to an initial international timber processing plant province of paper-making, wood furniture, wood-based panels and wood products with advanced timber processing system and products sales to different parts of the world. The comparatively mature market economy especially the honesty and product quality performances of the production enterprises led to admirable reputation in high output and reliable quality for the timber industry in Guangdong, for both domestic sale and export. The “high quality for high price” competition mechanism prevailed so the enterprises generally have good returns.

Take 2015 as an example, the wooden furniture export volume of Guangdong accounted for 30.68% of the total export of China, but the export value represented 51.76% of the country. For the first 11 months of 2016, the wooden furniture export volume made up 27.42% of the country while the export value comprised 50.19%.

2.3 Cases of External Investment and Business Integration by the Chinese Private Enterprises

In the wake of the uninterruptedly accelerated pace of “going global” by Chinese forestry enterprises in recent years, the business scale is cumulatively expanded and domains are gradually broadened. However, an increasingly complex external environment is also faced by overseas investment and cooperation in forestry. By the end of 2014, China’s stock of overseas investment in forestry reached US$ 2.34 billion, with 6.1 million ha forested land purchased or rented and about 200 overseas investment and cooperation projects carried out in more than 20 countries. The Chinese enterprises involved in overseas investment and cooperation in forestry are mainly engaged in logging, primary processing and production of timber products and furniture.

Many of the foreign countries hosting Chinese enterprises’ forestry investment are enduring unfavorable environment for domestic economic development, large population of relative poverty, incompetent governments and low transparency in decision-making. Some of them are even faced with severe corruption. Such factors impose many more risks on the overseas investment by Chinese enterprises. Meanwhile, there exist some undeniable facts, including uneven investment abilities among different Chinese enterprises, low competence and chaotic cutthroat competitions between them, inexperience in international cooperation and poor anti-risk capability, and the lack of legal consciousness and environmental awareness of a few enterprises (which will diminish the international image of China). Some enterprises are also faced with various challenges, such as inaccessibility of necessary information, unpreparedness, difficulties in getting loans, incomplete and unsystematic precautionary measures against risks, incomprehension of taxation laws and regulations of host countries, underutilization of external resources, ineffective communication with governments of host countries, insufficient attention paid to the subsequent business integration and the dispute settlement, and so on. The above challenges constrain the business development to a severe extent.

As a result, successively, the State Forestry Administration (SFA) and the Ministry of Commerce (MOFCOM) of China have issued *A Guide on Sustainable Overseas Silviculture by Chinese Enterprises* and *A Guide on Sustainable Overseas Forest Management and Utilization by Chinese Enterprises* (hereinafter referred to as "the Guides" together) in collaboration. It is hopeful that, under the guidance and regulation provided by the Guides, when going global, Chinese enterprises will increase their attention to the sustainable forest management and community development. They will adopt sustainable forest management practices in alignment with the principle and tenet of benefitting the localities, and with greater importance attached to maximizing the integrated economic, social and environmental benefits, combine the enterprises' overseas development and the sustainable economic, social and environmental development of local communities in a coordinated manner. Under promotion and help of overseas and domestic organizations, the Chinese government encourages stakeholder enterprises to implement the Guides, provides trainings and pilots for their application and will include them into the performance appraisal and supervision on overseas forest management and utilization by enterprises stepwise.

Generally, the overseas investment by Chinese enterprises is growing year by year, but the investment is still in its "babyhood" and consequently there are rarely overseas mergers conducted by Chinese enterprises.

2.3.1 An overview of oversea Investment by Chinese enterprises

China's forest industry accelerates its pace in going global in recent years and innovations of modes in conducting overseas forestry investment are made constantly.

Currently, the overseas investment practices by Chinese enterprises mainly include logging, primary processing and production of wooden products and furniture in Russia, Africa, Southeast Asia, America, and so on. Significant changes took place in regard to investment modes, i.e. from simply logging and primary processing to the integration of logging, deep processing, logistics and trade, and from directly purchasing or renting forest resources by enterprises to multiple cooperation patterns including acquisition, joint venture, capital operation, strategic alliance, equity replacement, etc.

SFA provides a platform for cooperation among governments, banks and enterprises and introduces new cooperation mechanisms and modes to assist eligible forestry enterprises in applying for loans.

2.3.1.1 Investment distribution in different host countries

According to a questionnaire survey conducted by a Chinese organization in 2013, Chinese enterprises had invested in 65 countries by the end of 2013, and most of their overseas investments were located in Russia. A total of 589 forestry investment companies were established abroad by 557 Chinese enterprises, with a total foreign direct investment (FDI) of US$ 3.918 billion, while purchasing and renting 56.368 million ha forested land, and providing a total employment of 29,000 in the host countries, including 18,000 foreign employees.

Most of the 589 Chinese companies engaged in overseas forestry investment are located in Russia, up to 291 companies and 49.4% of the total. Laos ranks the second, with 70 companies and 11.8% of the total. USA comes next with 23 companies and 3.9%. Cambodia, Gabon, Canada, New Zealand and Indonesia also host more than 10 Chinese companies respectively. The 589 overseas companies are distributed in six continents on the earth, including 141 in Asia, 68 in Africa, 17 in South America, 40 in Oceania, 19 in North America and 14 in Europe, and separately 23.9%, 11.5%, 2.9%, 6.8% 3.2% and 2.4% as in proportion of the total number.

(1) Distribution of purchased and rented area of forested land

Chinese forestry enterprises purchased and/or rent a larger area of forested land abroad. The total area is more than 43 million ha, amongst which around 40 million ha or 92.7% of them are situated in the following five countries in a reducing order by area: Canada, Russia, Guyana, Congo and Gabon. In particular, respectively, 42.4% and 41.3% of the total are located in Canada and Russia, while 3.2% in Guyana, 3% in the Republic of Congo, 2.9% in Gabon and the remainder 7.3% are distributed in other host countries.

(2) Distribution of actual annual timber harvest

The actual annual timber harvest obtained abroad by Chinese forestry enterprises is about 15.20 million m^3 and around 14 million m^3 or 92.3% of the total are harvested in the following five countries in a reducing order by quantity: Russia, Canada, New Zealand, Papua New Guinea and Gabon. Amidst them, 59.9% of the total harvest are obtained in Russia, 19.2% in Canada, 7.4% in New Zealand, 4.2% in Papua New Guinea, 1.6% in Gabon and the remainder of 7.7% are obtained from other countries altogether.

(3) Distribution of offshore assets

The total offshore assets actually owned by Chinese forestry enterprises amount approximately US$ 3.7 billion, amongst which US$ 2.971 billion or 80.5% of the total is located in the five countries in a reducing order by amount: Russia, Guayana, Cambodia, Congo and Canada. Specifically, US$ 1.823 billion or 49.4% of the total is located in Russia, and US$ 500 million or 13.6% is in Guyana.

(4) Distribution of Actual Investments

According to the incomplete statistics by the end of 2012, a total of 589 forestry companies were invested and established abroad by 557 Chinese enterprises of various types and the total actual amount of investment was around UD$ 3.918 billion. Amidst the total investment, US$ 3.868 billion or 98.7% was distributed in the countries in a reducing order: Russia, Gabon, Laos, Guyana, New Zealand, Georgia, Canada, Cambodia, Equatorial Guinea and France. Russia hosted most of the investment, amounting US$ 2.985 billion and accounting for 60.9% of the total overseas investment by forestry enterprises. Gabon ranked the second, with an amount of US$ 289 million and 11.9% of the total. Laos hosted an investment of US$ 169 million and 7.6% of the total. See the figure below.

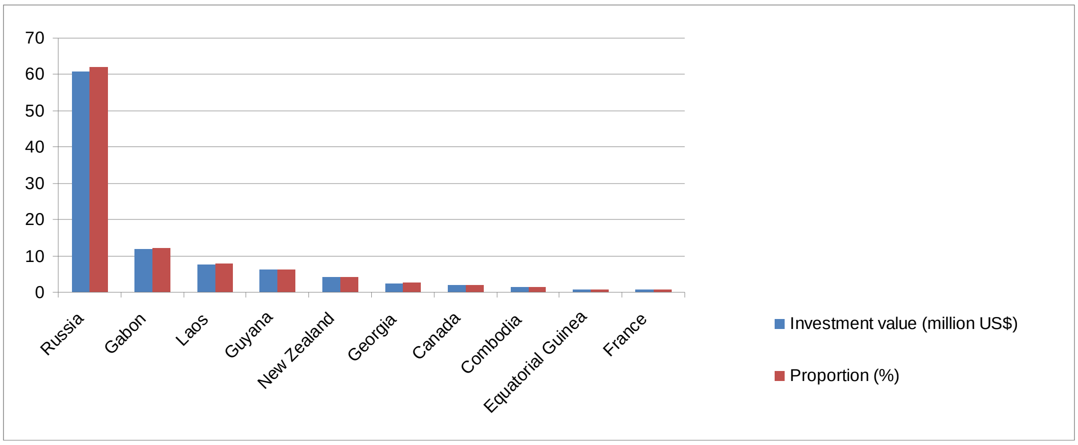


Figure 2-8: Amount of overseas investment in forestry by Chinese enterprises (in different countries)

In regard to host regions, except for the remarkable dominance of Russia, Africa ranked the second, hosting an investment of US$ 332 million and 8.5% of the total. Additionally, US$ 208 million or 5.3% of the total was invested in Asia, US$ 164 million in South America, US$ 103 million in Oceania, US$ 77 million in Europe and US$ 48 million, the least, was invested in North America. See the figure below.

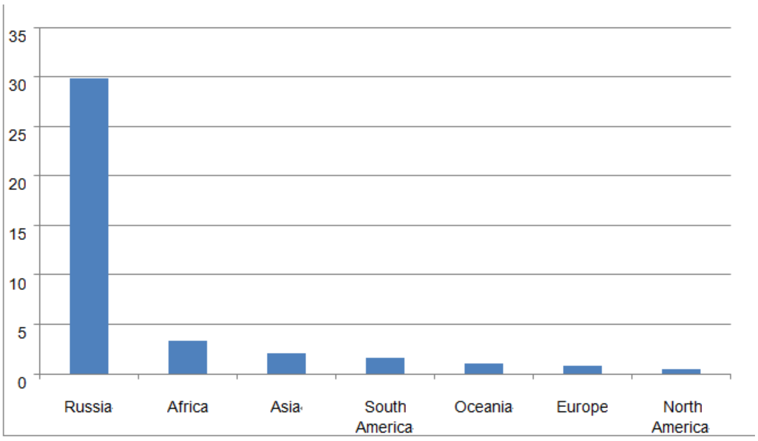


Figure 2-9: Amount of overseas investment in forestry by Chinese enterprises (in different continents)

2.3.1.2 Invested industries

Among the 589 overseas forestry companies, 391 are engaged in forest logging and primary processing of logs and sawn timber, accounting for 66.4%; 70 are forest tree planters, accounting for 11.9%; 61 are furniture manufacturers, accounting for 10.4%, and only 3 are engaged in technology research and development and transfer, representing 0.5%, the least.

2.3.1.3 Investment by provinces

The top ten investors running forestry companies abroad are Heilongjiang, Shandong, Yunnan, Jiangsu, Jilin, Zhejiang, centrally-administered enterprises and the four forest industry group corporations, Inner Mongolia, Guangdong and Liaoning, whose overseas forestry companies add up to represent over 80% of the total number.

Heilongjiang is the province in China that owns the maximum forestry companies abroad - 177 companies and 30.1% of the total. It is followed by Shandong Province, which has 60 overseas forestry companies, representing 10.2%. Yunnan Province has 42, accounting for 7.1%.

In regard to the amount of their investments, the top ten investors are Heilongjiang, the centrally-administered enterprises and forest industry group corporations, Shandong, Jilin, Guangdong, Jiangsu, Xinjiang, Hebei, Liaoning and Zhejiang, who have invested a total amount of nearly US$ 4 billion, accounting for 99.0% of the total overseas investment in forestry industry. Amongst them, Heilongjiang Province has invested the most, i.e. US$ 2.531 billion, representing 64.6% of the total. It is followed by Shandong Province, who has invested US$ 385 million, accounting for 9.8%. The amount of investment contributed by the centrally-administered enterprises and forest industry group corporations amounts US$ 354 million, representing 9.0% of the total.

2.3.1.4 Ownerships of invested companies

The majority of the 589 overseas forestry companies invested by China are private companies, amounting 519 and accounting for 88.1% of the total; 38 are state-owned companies, accounting for 6.5% and 32 are under other ownership (i.e. a combination of state ownership and private ownership), representing 5.4%.

Among the 38 state-owned companies, 18 are centrally-administered enterprises, representing the most, 8 are state-owned forest industrial enterprises and 12 are state-owned enterprises of other types.

In regard to the amount of investment, private companies receive most of the investment, up to US$ 3.504 billion and accounting for 89.4% of the total investment. US$ 414 million, or 11.6% of the total, was invested in state-owned companies.

The centrally-administered enterprises receive US$ 381 million, representing a majority, namely 92.0%, of the US$ 414 million invested in state-owned companies. The state-owned enterprises of other types and the forest industrial enterprises receive US$ 29 million and US$ 4 million respectively.

2.3.2 An Overview of Forestry Investment by Chinese Enterprises in Russia

Russia stands for a top choice when Chinese enterprises look for a country to invest in forestry.

According to a questionnaire survey conducted by a Chinese organization, by the end of 2013, a total area of 17.93 million ha of forested land had been rented by 109 Chinese enterprises (there were 291 Chinese enterprises in Russia), accounting for 41.3% of the total area of forested land purchased or rented by Chinese enterprises abroad. The total forest stock volume on these forested lands amounted 1.12 billion m^3. The agreed annual harvest was 17.51 m^3 while the actual annual harvest was 8.93 m^3, and the agreed annual processing volume of logs was 4.72 million m^3 while the actual annual processing volume was 4.23 million m^3. Preliminarily processed products such as boards represented the majority of the products. The total agreed investment or contract amount was US$ 2.58 billion while the actual amount of investment was US$ 920 million. Assets owned by the overseas enterprises were valued US$ 1.82 billion, and their annual revenue was US$ 1.13 billion. In total, 4,700 Chinese employees were sent abroad and a foreign staff of 9,500 were employed. Most of the products were placed on the Chinese market, a certain amount of them were sold in Russia and a small number of them were sold to Japan, Korea, etc.

(1) Investment by provinces

In terms of the number of companies invested and run by Chinese enterprises in Russia as well as the amount of their investment, the top three provinces investing in Russian forestry in terms of investment value are Heilongjiang, Jilin and Shandong, who have respectively established 184, 28 and 20 forestry companies in Russia through investing US$ 2.4 billion, US$ 270 million and US$ 170 million. Although Inner Mongolia also set up 22 forestry companies in Russia, there is no investment at the moment. Four Chinese enterprises have invested over US$ 100 million separately, amongst whom, Jiayin Yitong Timber Industry Co. Ltd., Heilongjiang Province, has invested the most in Russia, i.e. US$ 1.5 billion in total. See the figure below.

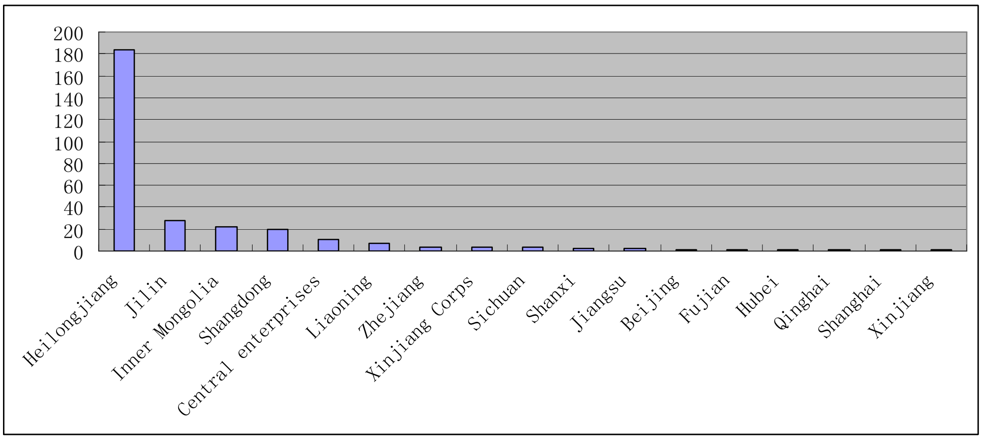


Figure 2-10: Number of companies in Russia investmed by Chinese enterprises

(2) Product Classification

Among the 291 forestry companies established by China in Russia, the majority of 261 are engaged in sawn timber processing, accounting for 89.7%, 13 are furniture manufacturers, representing 4.5%, and 6 manufacturing wooden products, 4 producing wood flooring, 3 producing plywood, 2 producing medium density fiberboards (MDF), 1 producing veneers and 1 producing wood pellets.

2.3.3 An overview of forestry investment by Chinese enterprises in Africa

Africa is the second largest host, next to Russia, for investments in forestry by Chinese enterprises.

Currently, there are 65 Chinese enterprises involved in forestry investment in Africa, most of which are investing in Gabon (14), Nigeria (7), Zambia (7) and the Republic of Congo (7). In addition, 4 enterprises are investing in Benin, three in Angola, 2 in Algeria, Ethiopia, Equatorial Guinea, Democratic Republic of Congo, Ghana, Zimbabwe, Cameroon, Kenya, South Africa and Uganda respectively, and 1 in Egypt, Guinea, Liberia and Mozambique respectively.

In Africa, Gabon hosts the largest amount of investment, namely US$ 289 million, accounting for 7.4% of the total overseas investment by forestry enterprises.

The primary timber processing usually includes forest logging and production of logs, sawn timber and boards. There are 39 primary processing companies in Africa, mainly distributed in Gabon (14), the Republic of Congo (6) and Zambia (4). Others are run in Benin (3), Angola (2), Equatorial Guinea (2), Democratic Republic of Congo (2), Guinea (1), Cameroon (1), Liberia (1), Mozambique (1), South Africa (1) and Nigeria (1).

In addition, currently there are 6 wood-based panel companies investing in plywood production in Africa, including 3 in Nigeria, 1 in Uganda, 1 in Kenya and 1 in Ethiopia. There are also 3 wood flooring manufacturers investing in Africa, i.e. 1 in Ethiopia, Benin and Ghana respectively.

2.3.4 Overseas forestry investment policies of Government of China

The amount and scale of overseas investment in forestry by Chinese enterprises are still relatively smaller than in other industries, especially such as in energy, minerals, etc., and most of the investors are private enterprises, whose investments are characterized by small scale and scattered distribution. Therefore, the forest sector has not yet provided a key field for China's overseas investment. For this, the government has neither attached strategic importance to the overseas forestry investment nor provided any particular preferential overseas investment policies for the forest sector. Forestry is only involved in a few specific policy details, including the adjustments of import and export tariffs, export tax rebates, and so on.

In the case of imports, the reduction of import tariffs constitutes a main direction for the policy implementation, in order to increase the imports of forestry resources and products.

In the case of exports, a turning point was marked in the year of 2009. Before 2009, the reduction of export tax rebates provided the main means to restrict the exports of domestic timber resources. However, after 2009, the exports of domestic forest products were hindered as a consequence of the global financial crisis, resulting in excessive production. To cope with this, the government increased the export tax rebates for forest products and issued preferential policies for processing trade to provide export incentives for consuming the surplus products.

Policies directly in relation to overseas forestry investment principally are:

(1) *A Guide on Sustainable Overseas Silviculture by Chinese Enterprises*, issued collaboratively by SFA and MOFCOM in August, 2007;

(2) *A Guide on Sustainable Overseas Forest Management and Utilization by Chinese Enterprises*, issued collaboratively by SFA and MOFCOM in March, 2009; and
(3) *Cooperation Agreement on Development Finance in Support of Forestry Development* signed between SFA and China Development Bank in September, 2012, which aimed at enhancing robust credit support for enterprises to go global and develop overseas forest resources.

2.3.5 Cases of overseas forestry investment by Chinese enterprises

2.3.5.1 Cases of forestry investment and cooperation under the intergovernmental cooperation framework between China and Russia

The Memorandum of Understanding on Cooperative Exploitation and Sustainable Utilization of Forest Resources in Far East Russia was signed between China and Russia during the fifth regular meeting between Chinese and Russian prime ministers in November, 2000. So far, China and Russia have cooperatively implemented three phases of the general planning program under the MOU. A total investment of RMB 6.12 billion yuan in establishing 5 timber processing zones was planned in Phase One; RMB 1.37 billion yuan in establishing 3 timber processing zones in Phase Two; and RMB 4.87 billion yuan in establishing 3 timber processing zones in Phase Three.

(1) The Phase One Project Implemented by Shandong Province

Shandong Province involved 13 enterprises in an introductory meeting of the Phase One Project in 2007. Subsequently, the province organized relevant enterprises to carry out field trips in Russia and meet with related Russian governmental departments. It also organized a banker delegation to provide financing service for the development and construction projects of the Phase One Planning.

In December 2008, the Sales Center of Yantai Economic & Technological Development Area, Shandong Province and Hengda-Siberia Co. Ltd. registered a joint venture in Russia named China-Russia Tomsk Industry and Trade Cooperation Zone Development and Investment Co. Ltd. (changes took place in the shareholding structure in 2011, from when Hengda-Siberia Co. Ltd. held 58.71%, AVIC Forestry Co. Ltd. 40% and AVIC International Holding Corporation 1.29%, and the registered capital was 149 million yuan. The joint venture was in charge of the construction and development of the planned zone. By the end of 2012, a total of 14 enterprises were established inside the zone, with an actual cumulative investment of US$ 227 million, accounting for about 33% of the total investment in the construction project.

Yantai Northwest Forestry Co. Ltd. (hereinafter referred to as “Northwest Forestry”) was established in YEDA in October 2003, with a registered capital of RMB 160 million yuan. One month later, Northwest Forestry acquired 100% of the shares held by “Siberia Company”. AVIC Forestry Co. Ltd. (hereinafter referred to as “AVIC

Forestry") was reorganized from the former Northwest Forestry in July, 2011. The registered capital was RMB 550 million yuan, which was controlled by AVIC International Holding Corporation (52%, hereinafter referred to as "AVIC International"), and other shares jointly held by Northwest Forestry (38%) and YEDA Sales Center (10%). The forest assets owned by Northwest Forestry (which is a private company) in Russia became accessible by AVIC International (which is a state-owned enterprise) through their cooperation. AVIC International started exploiting and utilizing forest resources under the Phase One Planning of "China-Russia Cooperative Forest Resource Development" after it assumed control of AVIC Forestry. In September 2013, AVIC Forestry received a credit support of US$ 170 million from a Chinese bank for the construction and development project. AVIC International provided the joint and several liability assurance and guarantee for full amount and whole period during granting the credit for the project loan, which significantly uplifted AVIC Forestry's credit level and played an important role in accelerating the fund-raising for the project.

(2) The Phase Two Project Implemented by Heilongjiang Province

China and Russia collaboratively organized an introductory meeting of the China-Russia Intensive Timber Processing Cooperation Project on the 20th Harbin International Economic and Trade Fair held in June 2009, introducing the elements of the Phase Two Planning and the project to involved enterprises. Again, MOFCOM organized the introductory meeting of the China-Russia Intensive Timber Processing Cooperation Project during the China-Northeast Asia Expo held in September 2009 in Changchun, Jilin, emphasizing the projects of both Phase One and Phase Two. Based on the preparatory survey and arrangements by Heilongjiang Province, Russia Xinchun Timber Industry Co. Ltd., Amur Timber Industry Co. Ltd. and Russia Naili Timber Co. Ltd. were identified to execute the construction projects of three planned zones separately. By the end of 2012, a total of 7 companies were settled in three zones, including Haihua Timber Co. Ltd., Shanghai Senda Timber Industry Co. Ltd., Nature Flooring etc.

(3) The Phase Three Project to be Implemented by Shandong Province

The planned zone will be built on the foundation laid by Shandong Shunhe Timber Industrial Co. Ltd., Yangxin Eurasia Group and other companies who are currently engaged in logging and timber processing in Irkutsk Oblast.

In conclusion, the overseas investment zones planned by the government have laid a solid foundation and can provide robust service support for the overseas investment for other Chinese enterprises. The cooperative forest resource development planning between China and Russia plays an exemplary role for the overseas investment in forestry by Chinese private enterprises.

2.3.5.2 Cases of strategic partnerships initiated by enterprises

Various multi-stakeholder participatory strategic partnerships, bound by different forms of contracts, have been established by enterprises. They help improving the involved enterprises' competence and lowering their risk during internationalization.

(1) A case of cooperation between a private company and a State-owned enterprise

In regard to the current national circumstances, such mode serves as the most vitalized pattern of overseas investment by Chinese private companies by helping them solve the fund-raising issues.

Heilongjiang Baishanlin Timber Industry Co. Ltd. (hereinafter referred to Baishanlin Company) works with Daxing'anling Forestry Group Corporation to implement a forest resource development project in Guyana, which provides an exemplary case of such cooperation mode. Guyana is endowed with rich forest resources and has a growing stock of 2 billion m^3 and more than 30 high-quality tree species. Guyana allows log exports and views forestry as one of the backbone industries. It also actively encourages foreign investors to be involved in the development of its forest resources. Baishanlin Company intends to implement a logging and processing project with a planned capacity of 300,000 m^3 timber of high-quality trees, and most of its timber products will be supplied for the Chinese market. Established in 2009 as a private company of natural person holding at the very beginning, Baishanlin Company is mainly engaged in timber processing and import & export trades and it owns 440,000 ha of forest resources in Guyana. Its natural person shareholders have more than 10 years' business experience in Guyana and are well acquainted with the forest industry across the country. However, they are in sore need of large-amount and long-term financial support due to the capital shortage and high risks in carrying on with the business, suggesting that the difficulty in raising funds has led to the bottleneck hindering the company's further development. Established in 1963, Daxing'anling Forestry Group Corporation is one of the four state-owned forest industry enterprises. In the context of implementing the national logging ban, the group corporation longed for exertion of its advantages in capital, technology, talents and credits to carry out "overseas investment" and utilize overseas forest resources, but it is impeded by a serious lack of both experience in such investment and a platform to perform it. Therefore, Daxing'anling Forestry Group Corporation and Baishanlin Company can be highly complementary to each other in terms of their operation philosophy, management models, interests and needs, etc.

Based on a comprehensive analysis of potentials, willingness and intentions in the project cooperation between the two enterprises, coordinated and facilitated by financial institutions, Xing An International, the overseas investment company of Daxing'anling Forestry Group Corporation signed the Agreement on Cooperative

Forest Resource Development in Guyana with Baishanlin Company. According to the agreement, the natural person shareholders promise an annual project profit of no less than RMB 30 million yuan to the controlling shareholders of the debtor, which mobilizes the participation of Daxing'anling Forestry Group Corporation into the project. A withdrawal strategy has also been identified for Xing An International, namely the natural person shareholders can acquire the shares held by Xing An International based on the appraisal value of the assets earned by the project when the cooperation ends. This ensures the due rights of the natural person shareholders and arouses their enthusiasm in involving Xing An International in the project.

In early 2012, through Xing An International, its overseas investment company, Daxing'anling Forestry Group Corporation acquired 51% of Baishanlin Company's shares and became the controlling shareholder. Baishanlin Company, as a private company, has been benefitted by the cooperation with the state-owned enterprise in regularizing its business administration, professionalizing the logging crew, widening the marketing channels for products, and effectively improving its overall strengths. On the other hand, Daxing'anling Forestry Group Corporation found a resultful approach to the "overseas investment" through becoming a shareholder of the private company. Before its admission to Baishanlin, the debtor's collateral security mainly included its forested land resources in Guyana and the personal property of its natural person shareholders, which were insufficient to cover the project loan risks. After its admission, the China Development Bank facilitated Daxing'anling Forestry Group Corporation to provide the joint and several liability assurance and guarantee for full amount, which efficiently increased the project's guaranty capability, avoided the previously existing country risks as well as the credit risks of the debtor and perfected the crediting structure.

The above project provides a successful case of the cooperative development of overseas forest resources by a private company and a state-owned enterprise. The highlight of the cooperation between the state-owned and private companies shows that they can be complementary to each other, with the advantages of the large state-owned forest enterprise in administration, technology, human resources and credits, and those of the private company in deep comprehension of the host country's policies, laws and investment culture and its flexible operation which makes the resources more easily accessible. Such complementation helps lowering the project loan risks and guarantees the smooth project implementation. The main characteristics include involving a state-owned company as a controlling shareholder as well as a fundraiser for the project, who provides solid guaranty and thus helps improve the integrated strengths of the debtor; prescribing the rights and obligations of each of the two parties in an agreement, which mobilizes their maximum enthusiasms in developing the cooperation; and making use of the valid guaranty provided by the state-owned enterprise to tackle the project's crediting structure issues.

It should be noted that the Provisional Measures for Supervision and Administration of Overseas Investment by Centrally Administered Enterprises (State-owned Assets Supervision and Administration Commission of the State Council Order No.28), which entered into force on May 1, 2012, prescribed that “in principle, a centrally-administered enterprise may not make any overseas investment which does not belong to its principal business. Where a non-principal business investment is indeed necessary for any particular reason, it shall be subject to the approval of the SASAC.” The issuance of the Provisional Measures has restricted the bank loans granted to private companies who involve centrally-administered enterprises unrelated to forestry to get the loans. A current case is that China Chengtong Holdings Group Ltd. intends to cooperate with a private enterprise in implementing an overseas forestry investment project in Southeast Asia, however which is proceeding tardily due to the limitations of its principal business.

(2) A case of cooperation between private enterprises

Private enterprises can proceed with their overseas forestry investment in collaboration formed by the connections between the upstream and downstream sectors along the industry chain or the complementarity in terms of technology or capital.

The Baskovo Timber Industrial Zone planned in Jewish Autonomous Oblast during the Phase Two of the General Planning for China-Russia Forestry Cooperation emerged as an example of the cooperation between private enterprises. Heilongjiang Xinchun Timber, as the project investor, entered the close collaboration with Haihua Group. Xinchun Timber was in charge of renting forested lands surrounding the zone, logging, transporting etc, while Haihua Group, as a participatory enterprise, was uninvolved in controlling the upstream resources, and instead, directly purchased timber resources from Xinchun Timber, processed them into flooring slabs and other primary products and then transported them back to China for further processing. At the same time, Haihua has registered the trademark for Basskovo Flooring Company in Russia and directly exports the products to Europe.

2.3.6 A case of successful overseas forestry investment by Chinese enterprises - Nature Home (China) Co. Ltd.

As a well-famed home furnishing company valued as the Merit Conservation Supporter, Nature Home (China) Co. Ltd. strictly abides by the requirements towards the legal source of forest resources and has created a new business model for the sustainable development of timber industry in collaboration with a number of international organizations. Meanwhile, with its industry chain stretching abroad, the Nature Home Company has been established in Peru. Since the beginning of its establishment, in the spirit of green development, the company has been insisting on responsible business and actively implementing the localized operation strategy , which has helped with the local social, economic and technological development and consequently gained the recognition and support of the Peruvian government and its people. In this way, to some extent, it helps turn around the embarrassment where Chinese forest enterprises are often criticized internationally and creates a good image for the Chinese forest sector and even the Peruvian forest sector who are practicing lawful business operation.

As one of the initiators for the Initiative on Sustainable Overseas Forest Management and Utilization by Chinese Enterprises, the Nature Home Company in Peru has been realizing the concept of sustainable development and it has created a path for green development integrating the interests of the company and the local community in combination with the reality in Peru. Its success has set up a good example for others.

2.3.6.1 The attachment of importance to sustainable forest management laid the cornerstone for the company's overseas development

The Nature Home in Peru acquired the tenure of 295,000 ha forested land in Peru for 40 years according to the legal procedure. After acquiring the forested land, the company carried out field surveys to understand the distribution of its current forest resources, stock volume, site conditions of the concessionaire, environment for logging operation, haul roads and bridges and culverts. A long-term forest management plan has been developed in light of local laws and regulations in Peru, which sub-divides the concessionaire into 20-25 smaller stands, only one of which can be logged each year, in order to accelerate the natural regeneration. An annual operational plan are developed for the logging operations, which strictly implement the cutting quota and do not cut the trees with diameter-at-breast-height (DBH) smaller than 60 cm (the DBH requirement varies among different species) as provided in the forest law of Peru. Attention is paid to both utilization and restoration of forests. A number of seedlings of nursery plants of rare species are replanted on a periodical basis after the cutting and artificial regeneration is applied to restore the forest resources in time. The forests possessed by the company in Peru either have passed or are passing the FSC-FM certification and its downstream processing plants and exporters own complete COC certification, so it is one of the few forest enterprises in Peru who can directly export FSC certified products. The company applies the FSC criteria to screen the qualifications of its suppliers and eliminate the unqualified ones. Processing consignments are accepted for log production and effective supervision is provided in accordance with the management system of material sources, quality and logistics established by the company.

2.3.6.2 Intensive processing industry is proved to be an integral part for the company's overseas development

The Nature Home in Peru attaches great importance to the whole industry chain. With a total of 6 processing bases have been established or under construction and its partner processors, the company owns a full and complete industry chain covering from forest management, log sawing, board drying, ultra-violet paint, export of finished products to international marketing, and it produces solid timber flooring, multi-layer solid timber composite flooring, commodity lumber, etc. The company has an annual processing capacity of sawn timber of 25,000 m^3, an annual drying capacity of 20,000 m^3 and an annual production capacity of flooring (painted flooring) of around 400,000 m^2. In 2007, Peru's then president, Alan Gabriel Ludwig García Pérez visited the company, which was the only one enterprise capable of producing "Made in Peru" finished flooring products and selling them on USA market at that time. The president highly complimented the company's efforts which opened up a new phase for Peru's forest product processing industry and contributed to the friendship between China and Peru. Currently, using the overseas sales network of the Nature Home (China) Co. Ltd., the company are selling its finished flooring products and panels for outdoor uses in USA, Europe and South America and has preliminarily formed a commercial pattern of being "originated in China, made in Peru and sold worldwide". Most of its sawnwood are exported to China, supplying the domestic production bases of Nature Home (China) Co. Ltd. with good-quality semi-finished products. The company's export volumes have been remaining among the top ten within Peru's forest industry in recent years.

2.3.6.3 Enhanced ecological environment protection provides importance guarantee for the company's overseas development

The Nature Home in Peru has been practicing scientific management, rational utilization and lawful operation and actively participating in FSC certification. It strictly abides by the forest law and regulations of Peru by adopting a series of measures involving cutting quota, prohibition of cutting young trees, replanting after cutting, protection of water sources, and conservation of biological hotspots. It conserves tropical rainforests and accelerates the natural forest regeneration wherever possible, and within the concessionaire, it remains sufficient seed trees under good protection and continuously reduces the cutting intensity in per unit area. The annual timber yield per hectare is rigidly restricted within the permitted range by Peru's forest law. Meanwhile, non-cutting conservation areas are specifically delineated in the concessionaire, where a great deal of nursery plants of rare species are relented on a periodical basis, ensuring the direct proportion between planting and cutting. The rare wildlife protection is emphasized by establishing punishment clauses and supervising on the implementation by its staff. Water protection is highlighted and buffer zones in proximity to water sources are defined. A complete forest fire prevention system has been provided and needed equipment has been prepared to protect the forest resources in accordance with the local regulations on forest fire.

2.3.6.4 The involvement in the development of local communities provides support for the company's overseas development

The Nature Home in Peru has been actively participating in aiding the local communities, developing zero-carbon products and organizing various public benefit activities for promoting environment protection. It has created a large number of employment opportunities for the local communities and 95% of its staff are local people. It also provides many jobs as well as skill training for local indigenous people to help increase employments. The company invests in local infrastructure construction to improve the traffic conditions, which not only helps solve its own problems in transporting timber but also increases the convenience in local people's daily traffic. It also assist the local communities and people in solving some real difficulties, e.g. by donating cars, electric generators, computers and stationery to local people, to improve the school facilities and change the semi-primitive life style of local indigenous people. It gives robust support for the local forestry development, e.g. through providing internships for local forestry universities, colleges and schools in Peru, regularly holding football games to enrich the staff's entertainment, supporting local indigenous communities to participate in FSC forest certification by providing funding, equipment and technology and helping ensure the stable channels for sales of FSC certified products to boost the local economic development.

The Nature Home in Peru has set up a successful example of sustainable overseas development by Chinese enterprises, which helps other Chinese companies to recognize that the win-win relationship between sustainable economic growth and ecological environment protection serves as a robust support for the company's long lifespan in surviving abroad and the experience in achieving such success shall be widely shared. This is exactly the reason that SFA and MOFCOM jointly issued the Guide on Sustainable Overseas Forest Management and Utilization by Chinese Enterprises, in order to reaffirm the principle and position in sustainable forest management and win-win cooperation upheld by the Chinese government, as a responsible large country, and also provide practical guidance for forest enterprises investing abroad.

3. Illegal Logging Countermeasures Taken by the Government of China

3. Illegal Logging Countermeasures Taken by the Government of China (Introduction of Forest Certification, Legality Assurance Measures etc)

China, as a responsible large developing country and with firm determination, has been committed to fighting against and combating illegal logging and associated trade, supporting the conservation of global forest resources, promoting sustainable forest management and accelerating the facilitation of trade in forest products, either at home or in its international forestry cooperation.

The Chinese government has been implementing related international conventions and associated obligations all the time and also expects involved countries to enhance their administration of logging to eradicate illegal logging and trade of illegal timber from the source.

3.1 Illegal Logging Countermeasures Taken by the Government of China

A two-tier system is adopted by the Chinese government to combat illegal logging according the countries of origin, namely domestic timber and imported timber. Under this system, accordingly, there are two sets of countermeasures separately specific to domestic and international aspects.

The domestic aspects can be further divided into two sub-aspects, namely the administration of domestic forest resources, i.e., timber production, and the administration of export and import trade (especially imports). Sections 3.1.1 and 3.1.2 will discuss the two sub-aspects.

The international aspects are emphasized in this part and will be elaborated below from section 3.1.3.

3.1.1 Enhanced administration of domestic forest resources to eradiate illegal logging from the sources

Mature laws and regulations, strict regulatory regime and well-equipped law enforcement teams are provided for forest resource administration in China. In particular, a rigid ban on all types of commercial logging in natural forests is executed, which effectively conserves the forest resources and almost completely avoids illegal logging.

A sturdy framework for forest resource administration has been established and executed through legislation and regulation development, to ensure the legality of logging, transportation, processing and utilization of timber and timber products within China.

3.1.1.1 Law and regulation development

The Chinese government has formulated a series of laws and regulations, which specifically prescribe the definition and scope of illegal logging and relevant measurements of penalty, to strengthen forest resource administration and prohibit illegal logging practices.

The Forest Law stipulates that forest and tree logging shall apply for and be operated subject to the "cutting permits" issued by forestry authorities, timber transporters shall hold "timber transportation permits" issued by forestry authorities, timber processors shall hold "timber processing permits" issued by forestry authorities and traders of timber and timber products shall hold export approvals and documentations permitting imports and exports. It also provided that the exports of rare species and their products and derivatives shall be prohibited and restricted. Any violations, such as illegal logging and destruction of rare species, will be investigated for criminal responsibilities according to the law.

The Regulations for the Implementation of Forest Law prescribes the economic penalties, while *the Criminal Law* provides detailed criminal punishments, and the Interpretation of the Supreme People's Court on the Relevant Issues concerning the Application of Law in the Trial of Criminal Cases of Destructing Forestland Resources defines the justifications for criminal punishments against illegal logging, such as tress species, amount, etc., and corresponding accusations and punishments.

As a result, in China, all steps from logging, transportation, processing and imports and exports of timber and timber products are strictly regulated by a full set of well-developed laws and regulations. Any serious violation of these regulations will be investigated for criminal punishments.

The three-permit system (namely cutting permit, transportation permit and processing permit) provides the most effective administrative approach to manage the forest resources and address illegal logging issues in China. In combination with the administration systems of cutting quota, after-logging regeneration and annual timber production planning, and well equipped with the full-fledged law enforcement institutions and enhanced law enforcement, altogether they efficiently guarantee the reasonable and sustainable utilization of forest resources and almost eradicate the occurrence of illegal logging from the source.

The table below describes the specific practices in relation to timber cutting permits, timber transportation permits and timber processing permits.

Table 3-1: Three permits mechanism of logging

Permit	Condition	Procedure	Timeline
Timber Cutting Permits	(1) The applicant shall be the owner or operator of the forest; (2) The forest in application for logging shall meet the provisions in Article 31 of *the Forest Law*; and (3) None of the situations prescribed in Article 31 of *the Regulations for the Implementation of Forest Law* happens.	(1) Logging company or individual applies to the local forestry authorities; (2) The local forestry authorities investigates the application and submits to the county-level forestry authorities after approval; and (3) The county-level forestry authorities or its authorized organization issues the timber cutting permit to the applicant when the application is deemed to be qualified, otherwise, notifies the applicant with an explanation about why the application is unqualified and informs the applicant about the right to apply for an administrative review or file a lawsuit.	Decision on whether accepting the application or not will be made in 7 working days since the receipt of the application.
Timber Transportation Permits	(1) Holding a timber cutting permit; (2) Holding a customs declaration form and an in-county timber transportation permit; (3) Holding a timber processing permit; (4) Having invoices of related taxes and fees; and (5) Holding the proof document issued by a township-level forestry station about the validity extension and/or transfer.	Submitted by an individual applicant, the qualified application will be transacted, while the unqualified will be returned with an explanation of the reasons.	3 days
Timber Processing Permits	The applicant shall: (1) be independently accounting, self-financing and capable of bearing civil liability; (2) owns a well-developed	The applicant applies to the county-level forestry authorities and submits required documents. The county-level forestry authorities examines	Decision on whether accepting the application or not will be made in 20 working days since

	financial department and a sound financial management system; (3) possesses a fixed place and facilities matching its processing business scope; (4) owns a registered capital matching its processing business scale; and (5) meets other conditions provided in related laws and regulations.	and verifies the applicant's qualifications and the submitted documents and decides whether the application will be transacted, based on the authorities' determination on how many timber processors are needed within its jurisdiction when taking into account the current status of its forest resources, commercial timber cutting quota and market demands.	the receipt of the application.

The cutting quota system: Article 29 of *the Forest Law* provides that the State strictly controls the annual rate of forest felling in accordance with the principle that the rate of consumption is lower than the rate of growth. Annual quotas for felling shall be worked out by state-owned forestry enterprises and institutions, farms, factories and mines as units with respect to the state-owned forests and timber and by counties as units with respect to collective-owned forests and timber and individually-owned timber which shall be collected and consolidated by the competent departments of forestry of the provinces, autonomous regions and municipalities directly under the Central Government and submitted to the State Council for approval upon examination and verification by people's governments at the corresponding level.

3.1.1.2 Establishment of law enforcement agencies

Aiming at the thorough practical implementation of the Forest Law and related laws and regulations and the suppression of illegal logging, the State Forestry Administration (SFA) set up the Forestry Public Security Bureau to supervise the forestry administrative law enforcement by forest public security offices at different levels across China, coordinate and organize the unified operations and special campaigns for law enforcement against violations and crimes in destructing forests and wild animal resources, inspect and investigate the serious cases where forest resources and wild animals under national priority protection are destructed, and oversee the integrated security control in forest areas. Forestry authorities and public security organs at different levels also establish forestry public security offices or forest police stations to take care of specific affairs in their jurisdictions to combat any illegal activity in relation to forests. Meanwhile, as the grass-root law enforcement units, the timber checkpoints, which are subordinated to the local forestry authorities at various levels and supervised by forestry authorities at county-level or above, check required documents for transported timber, seize the illegally logged timber and assist the forestry public security offices in uncovering serious cases.

3.1.2 Strengthened administration of timber import and export trade to avoid trade in illegal timber

3.1.2.1 Law and regulation development

As part of the merchandise trade, timber trade is also applicable in all related laws and regulations. Requirements towards timber trade are provided in many laws and regulations such as the Foreign Trade Law, the Customs Law, the Law on Import and Export Commodity Inspection, the Forest Law, the Regulation on Administration of Import and Export of Goods, etc. Generally speaking, these requirements are particularly prescribed specific to timber characteristics, e.g. only including the inspection and quarantine of plants and animals, the species enlisted in the CITES Appendix I in a prohibition of commercial trade and those in prohibition of trade as provided by domestic laws and regulations, but do not raise the threshold against business operation in any respect.

To cope with the international trends in trade liberalization and facilitation, conditions to get the permission for timber trade business have been greatly relaxed, i.e. all enterprises holding a foreign trade business license can operate timber trade.

3.1.2.2 Strengthened law enforcement

The General Administration of Customs (GACC) is a border agency supervising inbound and overseas activities including the import and export trade, which applies a 3-level organizational structure. The General Administration of Customs lies on the top level; has Guangdong Sub-Administration of Customs, 2 supervising offices that are located in Tianjin and Shanghai respectively and 41 Customs Districts at the middle level; and 562 local Customs houses and offices at the bottom level. It has a staff force of around 50,000 (including Customs anti-smuggling police).

The performance and capability of China Customs’ law enforcement and its administration have been internationally acknowledged. It sets up anti-smuggling bureaus at all the three levels, whose staff are working as anti-smuggling police, part of police force, with strong deterrent power and good enforcement efficiency.

Regarding timber import and export trade, SFA, as the central forestry authorities, has been working closely with the Customs and the counterpart departments in charge of inspection and quarantine for imports and exports to supervise the imports of timber and timber products.

China is both the second largest economy and the second largest trading country in the world. In general, thanks to the existing well-developed laws and regulations and their strict enforcement, the import and export trade of all goods including timber conducted by China are well regulated and related statistics of such trade are of high accuracy. The illegal trade including in timber have been dramatically reduced especially through adopting stern measures in fighting against smuggling.

The Chinese government has been holding a consistent and explicit attitude towards illegal logging. On one hand, it firmly combats and eradicates illegal logging at home; on the other hand, it actively supports the international community and continuously strengthens international cooperation in cracking down on illegal logging in other countries, and meanwhile, adopts concrete measures to guide the Chinese timber industry enterprises to get adaptive to the requirements of international community towards the legality of timber and timber products.

The Chinese forestry authorities put forward the following 7 principles to manifest the attitude and achievements of the Chinese government on combating illegal logging, which is shown in the following box.

Box 3-1: Seven principles of combating illegal logging of China

(1) Nation sovereignty;
(2) Leadership of the government;
(3) Pursuit of sustainable forest management;
(4) Protecting the normal international trade;
(5) Global collaboration;
(6) Science-based definition, evaluation and reporting; and
(7) Community participation.

3.1.3 Timely amendments of laws, regulations and policies

The Chinese government pays high attention to illegal logging and has been considering the stipulation of relevant requirements in laws and regulation to regulate related practices.

Undoubtedly, the amendment of laws and regulations requires a time-consuming and complex process and cannot be finished immediately. It is fortunate that the Chinese governmental departments and related research and education organizations have been studying and discussing on the necessity and feasibility in revising the relevant laws and regulations, and a preliminary timeframe has been worked out roughly.

3.1.3.1 Law amendment

For a long run, the *Forest Law* and other related laws may be revised when necessary to include the prohibition of illegal logging into the legislation.

In fact *the Forest Law* is in a process of amendment. However, according to the current exposure draft, the explicit description of "prohibiting illegal logging" has not yet been included, and thus efforts are needed to have its inclusion in the law's next amendment. It requires a long process to include the illegal logging into *the Forest Law*.

3.1.3.2 Regulation modification

Voices asking for timely modification to related regulations and inclusion of combating illegal logging have been heard.

It is easier to revise a regulation than amending a law, and thus a medium-term goal of regulation modification may be attained.

3.1.3.3 Policy revision

Many voices asking for timely revision to related policies or department rules and inclusion of combating illegal logging have been heard.

Revision of policies and department rules is even much easier than the amendment of laws and regulations, so it can be viewed as a short-term goal.

3.1.4 Strict implementation of CITES

With high attention paid to and serious implementation of CITES, the government enhances the import administration of timber of endangered species.

The Endangered Species Import and Export Management Office of China is working with GACC to strengthen the import administration of timber of endangered species, in order to fulfill the international obligations and assist producing countries in sustainable utilization of timber resources. When approving the administrative permit for timber imports, the office examines and verifies the applications strictly in line with the Commodity Appendix of Import & Export on Wild Fauna and Flora and avoids issuance of any administrative license using HS code for species excluded in the China National Hongmu (rose wood) Standard. The office also enhances its cooperation with the Customs in classifying, identifying and inspecting imported timber commodities. With an emphasis on Hongmu (rose wood) imports in the on-spot supervision and inspection, the supervision on administrative licensing for timber imports has been strengthened and the surveillance and inspection on endangered species in key ports have been reinforced to assist in the law enforcement by enforcement and administration departments. Services are provided for enterprise, by timely informing them about the changes of timber species and the adjustments of policies about imports through internet, meetings, trainings and so on.

The serial Operation COBRA has been adopted in collaboration with dozens of countries and international organizations including USA, which effectively suppressed the high incidence of wildlife and forest crimes.

3.1.5 Establishment of cooperation mechanisms

Combating illegal logging calls for concerted efforts by all stakeholder departments.

SFA is devoted to establish various cooperation mechanisms to crack down on illegal logging and associated trade, and under efforts made, an inter-departmental mechanism has been built to plan, decide on, coordinate and arrange related actions. A multi-departmental administration system for imports and exports of timber and timber products, involving the Ministry of Commerce (MOFCOM), the Customs, SFA, etc., has been formed to achieve the collaborative synergy in combating illegal logging. A five-in-one interactive cooperation mechanism, involving the governmental authorities, research organizations, industry associations, enterprises and legal assistance, has been established, under which international exchanges are encouraged, policy consultancy is provided and the green procurement is initiated.

3.1.6 Enhanced guidance and services to increase enterprises' consciousness of self-discipline and responsibility during practicing overseas investment

The number of Chinese enterprises involved in overseas forestry investment has been on the rise continuously in recent years. A few of these enterprises do not abide by the laws and regulations of the host countries and thus caused a negative image about China.

In such context, the Chinese government has been alerted and consequently adopted a series of measures to instruct and guide Chinese companies to respect the laws and regulations of the host countries.

SFA and MOFCOM jointly issued *a Guide on Sustainable Overseas Silviculture by Chinese Enterprises* in August, 2007.

In March 2009, SFA and MOFCOM jointly issued another document named *a Guide on Sustainable Overseas Forest Management and Utilization by Chinese Enterprises*. As the former guider, again, it provides management and technical codes for practicing forestry operations abroad by Chinese enterprises and further demonstrates China's determination and efforts in contributing to the global sustainable forest management. Actively encouraging stakeholder companies to implement the guides, the government has organized trainings on how to implement the guides for Chinese-funded companies based in Russia, Indonesia, Gabon, Papua New Guinea, Guyana and other countries, where pilots have also been developed. In a step-by-step approach, the implementation will be included into the performance appraisal and supervision provided by the government towards companies on their forest management and utilization abroad. With the guides, Chinese enterprises are directed to abide by laws and regulations of host countries and respect international conventions during their silviculture, logging and processing activities in foreign countries, which will help to regulate the companies' overseas investment behaviours and work out a win-win cooperation mode taking into account the local sustainable social, economic and environmental development.

In addition, *a Guide on Sustainable Overseas Trade and Investment in Forest Products by Chinese Enterprises* has also been drafted and it is probable that it will be jointly issued by SFA and MOFCOM soon.

The three guides will play an increasingly important role in further regulating the overseas forestry investment conducts by Chinese enterprises, and from an alternative angle, will help gradually reduce illegal logging in developing countries.

3.1.7 Enhanced organizing and guidance to improve Chinese enterprises' capacity in meeting international requirements of timber legality

The successive implementation of the EU Timber Regulation (EUTR) and the Lacey Act of USA has brought about challenges to the overseas timber processing enterprises of China. Meanwhile to encouraging the enterprises to improve their management, the governmental departments are also enhancing the provision of necessary services, i.e. through organizing and initiating a series of trainings to increase the domestic companies' capacity in meeting the international requirements of timber legality. They include:

2. Trainings directly organized by the government, some of which are funded by the state revenue and some are funded by multiple stakeholders;
3. Trainings organized by forest research and education organization as entrusted by the government, some of which are funded by the state revenue and some are funded by multiple stakeholders;
4. Trainings organized by forest industry associations as entrusted by the government, most of which are funded by multiple stakeholders; and
5. Trainings provided by Chinese and international NGOs, most of whose funds are raised by the NGOs.

Competent staffers from governmental departments are often invited to give lectures on these trainings, introducing laws, regulations and policies on China's forest resource administration, timber processing and utilization, trade and investment in forestry, etc. It helps Chinese companies to improve their own management and adapt to the international requirements of timber legality.

The governmental departments (including industry associations) are also resorting to research and education organizations for their technical support to cope with illegal logging, e.g. through helping companies to strengthen their supply chain management and R&D on tracing technology, providing simple and practicable technical guides (including technical systems of various approaches and measures), developing nation-specific guides on legal timber procurement based on analysis of different countries' laws and regulations on timber production, transportation and processing with emphases on EU Timber Regulation and the Lacey Act, and providing technical consultancy and service for companies to help them satisfy the international market's demands of legal timber.

3.1.8 On-going establishment of China's Timber Legality Verification System

For years, a number of Chinese organizations, including research and education organizations and forest industry associations, have been studying on the establishment of a timber legality verification system. Some of them put forward many constructive suggestions for the system establishment, including an assurance system and criteria built by an industry association as the second party, and those built by the enterprise as the first party on its own. Extensive communications and exchanges on these systems and criteria, which are deemed to be possible technical codes, have been carried out with major timber producing countries and consuming countries.

3.1.8.1 The pilot phase

Based on the research findings of the project "Timber Legality Verification Schemes" funded by the Department for International Development (DFID) of UK and executed by the Chinese Academy of Forestry (CAF), the China National Forest Products Industry Association (CNFPIA) launched a pilot Timber Legality Verification Standard in November 2012. It also unveiled its timber legality verification pilots by releasing relevant notices and the matching pilot Rules for Implementation of the Timber Legality Verification Standard, the pilot Self-discipline Agreement of China Timber Processing Industry on Applying Legal Timber and the pilot Regulations on Procedures, Labelling and Licensing for Timber Legality Verification in China. Up to date, a total of 13 companies have obtained the timber legality certificates issued by CNFPIA and some other companies are still undergoing the verification process.

It is still in the pilot phase which is started by CNFPIA as an industry association only, but it has provided a technical code for verifying timber legality in Chin and thus has valuable significance.

3.1.8.2 The promotion phase

A reform of standardization is in process in China. Currently, the Chinese standards can be classified into two categories and six sub-categories, among which, the six sub-categories dominated by the government are now streamlined to four sub-categories, namely the compulsory national standards, recommended national standards, recommended industrial standards and recommended local standards, while the standards independently developed by the market consist of group standards and company standards.

In such a context, SFA is coordinating and integrating the efforts made by industry associations and research and education organizations to establish a mutually-recognition approach of timber legality, which can satisfy various stakeholders' interests and meet related requirements, and provide an official group standard for the Timber Legality Verification Standard, in order to ensure the legality of timber sources. A recommended group standard is hopeful to be provided through the on-going action.

3.1.8.3 Processes of due diligence and timber legality verification

EU Timber Regulation requires the countries, who have not signed the Voluntary Partnership Agreements (VPAs), to fulfill the due diligence when they are exporting forest products to EU states.

8. First-party assurance

Many Chinese enterprises are now carrying out the due diligence on their own, and some of them have established their own due diligence system to meet the EU requirements.

9. Second-party assurance

As above, the Timber Legality Verification Standard launched by CNFPIA is still in its pilot phase and only 13 companies have obtained the certificates. It can be said that the second-party assurance system has not yet been built. However, the government is integrating efforts made by industry associations and research and education organizations to develop a group standard for the timber legality verification in China, and thus the second-party system will be provided by then with its completion.

10. Third-party certification

Numerous third-party certifiers or verifiers have been working on the timber legality verification in China, including SGS, BV and NEPCon who have been accredited by EU Timber Regulation mechanism and SCS who is coping with the Amendments to the Lacey Act of USA. They either adapt the timber legality verification standards already built by the certifiers or verifiers to the national circumstances of China, or help Chinese companies establish their own due diligence systems.

Usually, these certifiers or verifiers do not issue any certificate even after completing the timber legality verification process, nor label on the products. Instead, they provide relevant statements, which can satisfy the requirements provided by EU Timber Regulation or the Lacey Act towards the timber legality or low risks.

3.1.9 Establishing and improving China Forest Certification Scheme

Currently, China has already established China Forest Certification Scheme which is progressing well. In February 2014, China Forest Certification Scheme was endorsed by PEFC.

Currently, China Forest Certification Scheme has a total of 25 standards, among which, “Forest certification in China --- Forest management” and “Forest certification in China --- Chain of custody” are national standards, while the other 23 are forestry sector standards.

The national certification standard of “Forest certification in China - Chain of custody (GB/T 28952-2012)” released in 2012 was developed based on PEFC International Standard of “Chain of Custody of Forest Based Products - Requirements (PEFC ST 2002:2010)”, which already included requirements for due diligence in response to illegal logging, but not fully perfect.

In order to tackle illegal logging, especially in response to EU Timber Regulation, PEFC adopted a new “Chain of Custody of Forest Based Products - Requirements” in 2013.

In order to keep China Forest Certification Scheme in a sustainable line with international practices, CFCC is now revising the national certification standard of “Forest certification in China - Chain of custody”, so as to ensure to be in consistency with PEFC new “Chain of Custody of Forest Based Products - Requirements” adopted in 2013, which already meets relevant requirement by EU Timber Regulation. Currently, the process of the revision of this national standard is around the end, and the expert assessment meeting over the draft of the revised standard was held in Beijing on December 19, 2016, and the new standard is expected to be issued in the first half of 2017 after final revision and improvement.

The currently being revised national standard of “Forest certification in China - Chain of custody” especially enhances the due diligence system (DDS), and requires that all raw materials entered into chain of custody process in the certified company must implement DDS, and at the same time increases the benchmark of risk assessment so as to keep full consistency with DDS requirements set by EU Timber Regulation. It can be concluded that all timber products certified by the new chain of custody standard will naturally meet requirements of low risk category of risk assessment for timber legality set by EU Timber Regulation, thus naturally can smoothly be entered into EU market.

Currently, there is a voice in China, and also in some other countries, which needs to be paid with attention: Forest certification is an effective market based instrument to promote sustainable forest management, and is conducted by an independent third party to verify both the legality of the sources of timber and the sustainability of the management of forests which produce such timber. However, due to various reasons, not all companies can meet requirements in a very high standard of sustainability, so just to ensure the legality of sources of timber as a basic requirement is the first choice by most companies. And the DDS in the upcoming new national standard of chain of custody certification can be taken as an independent standard or basis to verify the timber legality, also with technical feasibility and practical operationality. Especially, this new national standard of chain of custody certification will be issued by the government through the Standardization Administration of China (SAC), to some extent of significance, it is also one of concrete measures for the Government of China in response to illegal logging.

In addition, the Chinese government departments are also contiuously improving China's government green procurement policy system, and emphasize in prioritizing to and forcing to purchase the verified and lebaled legal timber products and certified timber products, and encourage companies to use legally sourced timber.

3.1.10 Implementation of government green procurement policy

According to the Government Procurement Law, the Chinese government formulated the Government Green Procurement Policy, and stated that the policy implementation would start in central and provincial budgetary units (including municipalities with independent planning status) from January 1, 2007 and then be extended nationwide from January 1, 2008. Timber products included in the directory listing for the policy are furniture, timber-based panels, construction materials, paper products, etc. The technical standards of some timber products amongst them actually have demanded that the raw timber materials used in these products shall be certified to be from sustainably managed forests. Another voice, asking for adding the legality verification for timber sources in addition to modifying these technical standards about SFM certified timber, has been heard (but has not yet been adopted).

Moreover, the Guiding Principle on Accelerating Forest Certification of SFA was issued on September 16, 2010, which stated that "certified forest products shall be included into the directory of government procurement and their proportion in the procurement shall be increased step by step" (it will be further detailed in section 3.2).

Regarding the large amount in China's government procurement, the implementation of green procurement will play as a robust leverage, which will promote the development of green industry and help form a market of green consumption. It also serves an effective approach to establish a good image of the government in protecting the ecological environment and initiating an environment-friendly society. As a large consumer of timber, the government procurement of timber and timber products has great effects on suppliers and also affects the consumption preference of other timber consumers, which composes a powerful measure to boycott the illegal logging and associated trade.

Besides, the competent Chinese governmental departments are exploring on the "green credit policy", which may include the legality or sustainability of the applicant's timber sourcing as part of the conditions to get loans.

3.1.11 Active participation into international cooperation

The Chinese government pays high attention to illegal logging and China, as an important base for producing, processing and trading forest products in the world, has maintained a consistent and affirmative attitude towards combating illegal logging and associated trade. China is willing to cooperate with the international community to make more contributions to pursuing the global sustainable forest management, enhancing the protection of global forest resources and safeguarding the normal order of trade in legal forest products.

An all-around and multi-dimension international cooperation pattern at multilateral, regional and bilateral levels has been formed.

3.1.11.1 Multilateral cooperation

(1) Involvement in FLEG process

The Chinese government has participated in the process of Forest Law Enforcement and Governance (FLEG) since the early 21st Century, specifically taking part in two of the three conferences regarding regional process, namely the East Asia Ministerial Conference on FLEG held in Bali, Indonesia in September 2001, and the Europe and North Asia Ministerial Conference on FLEG held in St. Petersburg, Russia in 2005.

(2) Involvement in APEC process

The First APEC Meeting of Ministers Responsible for Forestry was held in Beijing, China in September 2011. The Beijing Forestry Declaration passed on the meeting initiates "to combat illegal logging, promote trade in legally logged forest products and enhance the capacity building in this regard through the APEC's Expert Group".

As a member of APEC, China has been playing an active role in the APEC's Expert Group on Illegal Logging and Associated Trade (APEC-EGILAT), i.e. it attended all the ten APEC-EGILAT meetings held during the five years from 2012-2016, hosted two of these meeting in 2014, and provided many valuable inputs and suggestions for various thematic considerations such as the initiative in establishing an in-region mutual-recognition scheme of timber legality.

The consensus on adopting the Timber Legality Guidance Template by APEC economies was reached on the 8th EGILAT Meeting held in the Philippines in August 2015, which laid a foundation for the actions to be taken to combat illegal logging and associated trade and promote trade in legal forest products.

(3) Project cooperation with ITTO

China is the largest and most important member state of the International Tropical Timber Organization (ITTO), and the latter has developed a specific plan to help its member states to cope with illegal logging issues.

CAF has implemented two projects in this regard, which are "Equipping Small and Medium Sized Forestry Enterprises in China for Procurement of Tropical Timber from Legal and Sustainably Managed Forests" executed in 2011-2014 and "Supporting SMEs and Importers of Tropical Timber for Better Understanding of CITES and the Need to Comply with CITES Rules in China" executed on 2015-2017. The project implementation reflected the close international cooperation in combating illegal logging by China.

11. Cooperation with APFNet

The Asia-Pacific Network for Sustainable Forest Management and Rehabilitation, APFNet for short, initiated and founded by China, aims at accelerating the forest restoration in Asia-Pacific and improving the sustainable forest management in the region through pilot and demonstration projects, capacity building, information sharing and policy dialogues. It has 31 member economies and international organizations and is an active international organization in its virtue in the region.

APFNet also pays high attention to illegal logging and thus has carried out a number of related activities. For example, it organized a training workshop entitled "Enhancing Forest Governance for Asia and the Pacific in the Context of Timber Legality Verification" in collaboration with CAF in 2015, in which 16 participants from 10 APEC economies took part.

3.1.11.2 Bilateral cooperation

(1) Cooperation with EU

EU, as a union of states, is playing the most active role in combating illegal logging and associated trade, with the masterpiece of FLEGT (Forest Law Enforcement, Governance and Trade) process presented.

China and EU agreed on the China-EU Summit Joint Statement on the 8th Summit Meeting held in Beijing in September 2005. In the Statement, both sides agreed to "cooperate in combating the illegal logging in Asia". On September 9, 2007, Wen Jiabao, Premier of the State Council of China, attended the 9th China-EU Leaders' Meeting held in Helsinki, Finland, which adopted a Joint Statement that stated the leaders of both sides agreed to strengthen cooperation in curbing illegal logging and to make significant contribution to the conservation of natural resources.

To practically implement the elements on curbing illegal logging in the Joint Statement, SFA, in collaboration with EU, held the International Conference on Forest Law Enforcement and Governance in Beijing on 19-20 September 2007, with participation by more than 200 participants from 27 countries and over 30 international organizations.

In 2009, during Premier Wen Jiabao's visit to EU, SFA established the Bilateral Coordination Mechanism (BCM) on Forest Law Enforcement and Governance with the Directorate-General for Environment of EU, agreed that a regular meeting would be held every year to discuss on the cooperation in combating illegal logging. Up to date, both sides have held seven consultative meetings and carried out policy dialogues, information sharing, capacity building, and company exchanges under the BCM, which are jointly designed and organized by the Research Institute of Forestry Policy and Information of CAF and the European Forest Institute (EFI). These activities help deepen the Chinese side's understanding about the EU Timber Regulation and the FLEGT initiative and also timely inform the European side about the points focused by the Chinese side. The annual regular meeting of BCM also invites representatives from industry associations such as the CNFPIA.

In spite of many cooperation activities in combating illegal logging conducted by China and EU, no agreement has been reached by both sides on the signatory of VPA.

(2) Cooperation with the United States

China and the United States, the world's two top countries in terms of their forest resources, timber production, consumption and imports and exports, have attracted the international community's focus in regard to combating illegal logging and associated trade. The illegal logging has been included into the bilateral strategic economic dialogue since the second dialogue in 2007, in order to demonstrate to the international community their determination and efforts in combating illegal logging and associated trade.

In May 2008, China and USA signed the China-US MOU on Combating Illegal Logging and Associated Trade and established a bilateral forum in this regard. Both sides have been cooperating in a practical way in four aspects. Firstly, they have been working together in reaching a common understanding about “illegal logging” to serve for the fight against illegal logging and associated trade and identifying the priorities for the cooperation, e.g. including the improvement of forest law enforcement and governance, information sharing, etc. Secondly, they are working together in increasing the transparency of timber market to encourage the trade and utilization of legal sourced timber and timber products while suppressing those of illegal timber and timber products. Thirdly, they are working in establishing an information sharing mechanism, covering the efforts made to promote trade in legally sourced timber and timber products and information about relevant countries’ laws. Fourthly, they are discussing on the roles, responsibilities and obligations of public sector, industry association and enterprises in combating illegal logging and associated trade.

Both sides have held seven meetings since the establishment of the bilateral forum on combating illegal logging and associated trade, among which the 7^{th} forum was held on November 1 in Washington. On the meeting, both sides reported the progresses achieved on illegal logging and associated trade since the 6^{th} forum as well as the collaboration with other countries and organizations, exchanged viewpoints on sharing customs data, developing and implementing legislative and regulatory frameworks, participation of private sector and civil groups and other relevant topics, and discussed on the fields of priorities for cooperation. Dialogues with private sector and civil groups were also held jointly by both sides. Representatives from International Timber Products Association, The Nature Conservancy (TNC), Forest Trends and other international NGOs also attended the dialogue.

In addition, both sides carried out bilateral exchanges on a non-regular basis, including jointly organizing international workshops. In particular, after the issuance of the Lacey Act, both sides have held a number of various symposia and workshops on illegal logging and how to adapt to the Act.

(3) Cooperation with the United Kingdom

The United Kingdom (UK) is one of the most active EU countries in combating illegal logging. Governments of China and UK have been extending their collaboration and exchange in this regard. Every year, Chinese experts will attend the annual Illegal Logging and Stakeholder Update Meeting hosted by the Chatham House.

The China-UK cooperative projects "Timber Legality Verification Schemes" and "International Forestry Investment and Trade" are funded by the Department for International Development (DFID) of UK and executed by China. The former project has been completed, through implementation of which numerous constructive inputs and suggestions have been proposed. The latter one is still on-going.

In addition, China and UK have organized many international workshops on illegal logging in collaboration between them or even with other organizations.

(4) Cooperation with Indonesia

SFA signed a Memorandum of Understanding (MOU) on Forestry Cooperation with the Ministry of Forestry of Indonesia in 2002. The difference of this MOU from the agreement signed between the two parties in 1992 lies in that it adds new elements including the cooperation in combating trade in illegal forest products.

(5) Cooperation with Australia

Australia is the third country in the world, next to USA and EU, which determines to combat illegal logging in the form of legislation through issuing the Illegal Logging Prohibition Act.

In 2009, China and Australia signed the Memorandum of Understanding on Combating Illegal Logging and Associated Trade and Supporting Sustainable Forest Management. The two parties have also established a meeting mechanism of the bilateral forestry working group on a regular basis and illegal logging has been included into its discussion in recent years. The most recent 11th Meeting of China-Australia Forestry Working Group and the 3rd Meeting on Combating Illegal Logging and Associated Trade was held in Canberra, Australia on March 22, 2016. China and Australia agreed to finalize and promulgate their respective national guides on timber legality as soon as possible to provide service for enterprises, aiming at guiding both Chinese and Australian enterprises to implement investment and trade in a legal and well-regulated way in the opposite country and thus promoting the sustainable development of both sides' trade in forest products.

(6) Cooperation with Japan

Recently, Japan has been intensely advocated the "Act on Promotion of Distribution and Use of Legally Logged Timber Products to Prevent Global Warming", which is hopefully to be passed by the National Diet of Japan soon.

China and Japan signed the Memorandum of Understanding on Combating Illegal Logging and Associated Trade and Supporting Sustainable Forest Management in 2010. A regular meeting mechanism of the bilateral forestry working group has also been established between China and Japan and illegal logging has also been included in discussions of this working group.

Chinese experts have also participated in numerous international workshops on combating illegal logging held in Tokyo by relevant Japanese organizations.

(7) Cooperation with Russia

Russia is the main importer of China's coniferous timber and the two countries have extended their forestry cooperation in a highly wide range. At present, Russia is the largest host country for China's investment in forestry. A large number of Chinese enterprises are investing in forest resource development or in processing of timber products in Russia.

In November 2000, the Memorandum of Understanding on Cooperative Exploitation and Sustainable Utilization of Forest Resources in Far East Russia was signed by Chinese and Russian prime ministers.

In November 2005, the tenth regular meeting between Chinese and Russian prime ministers agreed on "strengthening the development and utilization of forest resources and intensifying the actions in combating illegal logging and trade".

Under the witness of Chinese President Xi Jinping and Russian President Vladimir Putin, a Memorandum of Understanding on Forestry Cooperation was signed by Mr. Zhang Jianlong, Administrator of State Forestry Administration of China and Mr. Valentik, Head of Federal Forest Agency of Russian Federation on 25 June 2016 in Beijing. According to the MOU, both sides will continue with the scientific and technological exchanges and economic cooperation through the China-Russia Forestry Working Group on an equal, friendly and mutual-beneficiary basis, covering fields of forestry legislation and law enforcement, sustainable forest management, forest monitoring and inventory, forest conservation and utilization, combating illegal logging and associated trade, desertification, forestry investment etc.

The forestry authorities of China and Russia have frequently held discussions on illegal logging issues.

(8) Cooperation with Canada

China and Canada have maintained a regular meeting mechanism for the bilateral forestry working group, which have included illegal logging into their discussions in recent years. The forestry authorities of both countries organized a China-Canada Workshop on Combating Illegal Logging and Associated Trade in Beijing on December 5, 2016.

3.1.11.3 Cooperation with various stakeholders especially international NGOs

China has established a four-in-one cooperative mechanism to combat illegal logging and associated trade, involving the governmental departments, industry associations, research organizations and enterprises.

In addition to the bilateral and multilateral inter-governmental cooperation, China has also extended fruitful collaboration with many NGOs on illegal logging and associated trade.

WWF, IUCN, Forest Trend, the domestic Global Environment Institute (GEI) and some transnational enterprises cooperate with relevant Chinese organizations through projects or jointly organizing international workshops.

3.1.11.4 Cooperation with other developing countries

MOFCOM provides a large number of forestry technical training workshops for developing countries in China every year, including the FLEG Training Workshop addressing illegal logging, technical training workshops for sustainable forest management, training on wildlife protection and CITES implementation and so on. All costs incurred for the foreign participants are funded by the Chinese government.

Besides, China also frequently organizes special technical trainings in developing countries through various approaches, including on forest resource management, sustainable forest management, forest law enforcement and governance, etc., in order to make the most efforts to help other developing countries improve their capacity in forest governance and forest management and thus eradicate the occurrence of illegal logging from the source wherever possible.

All the above cooperation activities mentioned fully demonstrate the consistent fulfillment of responsibilities by the government of China, as a large country, in firmly combating illegal logging and associated trade and safeguarding the order of international timber trade.

3.2 Progress in forest certification

As an effective market based instrument to promote sustainable forest management, forest certification has developed rapidly around the world since it establishment in 1993. Besides 2 major international forest certification schemes co-existed, there are over 50 countries which have also developed their own national forest certification schemes, and both the United States and Indonesia have developed 2 national forest certification schemes respectively. The forest area certified and number of chain of custody issued by all kinds of forest certification schemes increased year by year.

As the major country in the world in terms of forest resources, timber production, timber processing and manufacturing, timber import, and forest products export, the forest certification in China also developed rapidly.

The development process of forest certification in China started in 1995 when the experts of the Chinese Academy of Forestry (CAF) started the research on forest certification. The first certificate of chain of custody by FSC was issued in 1998, and the first certificate of forest management by FSC was issued in 2002.

The development of China Forest Certification Scheme started in 2001. After 15 years of stable development, it is now fully on the normal track and has realized to be fully in line with international practices.

3.2.1 Development history of China Forest Certification Scheme

3.2.1.1 Scheme development stage

- In 2001: An informal and multi-participatory Working Group on Forest Certification in China was established in May, which had extensive discussions for all issues on forest certification, and this kicked off the development of China Forest Certification Scheme. In September, the State Forestry Administration (SFA) set up a Leading Group on Forest Certification Work in China, and clearly decided to "set up a national forest certification scheme which complies with the condition of the country and the condition of forestry", and to set up a governing body of forest certification which is the Division of Forest Certification (now the Division of Certification Management) under its Science and Technology Development Centre to monitor all forest certification work in China. This marked the commencement of the development of China Forest Certification Scheme. At the end of that year, SFA formally commissioned CAF to develop forest management certification standard, and also started the work of capacity building on forest certification. Also at the end of that year, the Certification and Accreditation Administration (CNCA) was also formally set up, which marked the establishment of centralized and unified certification and accreditation mechanism in China.
- In 2002: SFA joined the National Joint Ministerial Conference on Certification and Accreditation initiated by CNCA, and this marked that the development of China Forest Certification Scheme was formally incorporated into the national unified certification and accreditation mechanism.
- In 2003: In June, *the Decision to Accelerate Forestry Development* by the Central Committee of the Communist Part of China and the State Council clearly defined to "actively carry out the forest certification work, and try to be in line with international practices as soon as possible". This reflected that the Government of China attached great importance to forest certification work. At the same year, SFA commissioned CAF to development chain of custody certification standard.
- In 2004: Forest certification work was incorporated into central government

financial budget, which marked the acceptance and support by the Government of China to forest certification work. At the same time, international exchange and cooperation of forest certification started to be carried out.

- In 2005 and 2006: Pilot work on forest certification was carried out in typical forest management unites and forest products processing and marketing companies in over 20 provinces with different forest ownerships, different forest management models, and different forest climates, which aimed at testing 2 forest certification standards, fostering forest certification talents, and accumulating forest certification experiences.
- In 2007: SFA issued 2 forestry sector standards of “Forest certification in China --- Forest management (LY/T 1714-2007)” and “Forest certification in China --- Chain of custody (LY/ 1715-2007)”, which marked that the development of China Forest Certification Scheme and sustainable forest management work entered into a new stage of scientific and standardized development. Also in that year, PEFC set up a PEFC China Office, and then has kept good cooperation relation all the way with government departments of China. The main functions and tasks of PEFC China Office are: to support and promote sustainable forest management in China; to enhance the recognition of PEFC certification in the China market; to promote PEFC chain of custody certification as an effective tool of market promotion and access; to strengthen cooperation with forestry and forest products industry of China; and to provide market with information services and technical support of PEFC certification.
- In 2008: CNCA and SFA jointly issued a policy document of “the View of Carrying Out Forest Certification Work”, which clarified that the forest certification work in China will be under the guidance and supervision of CNCA and SFA. This marked the start-up and formal operation of China Forest Certification Scheme. At the same year, SFA set up a National Technical Committee of Standardization of Sustainable Forest Management and Forest Certification, which is mainly responsible for the unified management of standardization related to forest certification, including the following of track of forest certification standardization tendency of main standardization organizations in the world and the entrusting of development of various standards of forest certification.
- In 2009: CNCA and SFA jointly issued a policy document of “Implementation Rules for Forest Certification in China (Trial Implementation)”, which further regularized forest certification activities in China. In the same year, the first forest certification body “Zhonglin Tianhe (Beijing) Forest Certification Centre” was established, and China Forest Certification Scheme formally started to be operational. Also in the same year, China Forest Certification Scheme formally started to the work of endorsement by PEFC.

3.2.1.2 Scheme operational stage

- In 2010: In order to further strengthen the supervision to forest certification work in China, SFA re-established the Leading Group on Forest Certification Work in

China, and at the same time established China Forest Certification Council (CFCC) which is responsible for the operation and management, promotion and publicity, standard development and approval, and participation of international exchange and cooperation on behalf of CFCC. The forest sector standard of “Forest certification in China --- Audit directive on forest management certification” was issued, which provided technical guidance to the auditing of forest management certification in China. The first training course of forest certification auditors was held in Hainan Province, which fostered talents for auditing of forest certification in China and is of great significance to forest certification practices in China. SFA issued a policy document of “Guidance to Rapidly Promote Forest Certification Work”, which clearly defined the guiding ideology, fundamental principle, main tasks and development objectives of forest certification work. The pilot work on auditing of forest management certification was carried out, which aimed at putting forward to revision suggestions and comments by testing the adaptability and feasibility of forest management certification standard in China.

- In 2011: A thematic exhibition on “Actively carry out forest certification and promote modern forestry development” was held at the office building of SFA, with forest certification in China extensively publicized and promoted. CFCC became the member of PEFC, which is of milestone significance for the international endorsement of CFCC. CFCC formally launched its official website which is also as the window for its external relation.

3.2.1.3 Scheme improvement stage

- In 2012: The Standardization Administration of China (SAC) issued 2 national standards of “Forest certification in China --- Forest management (GB/T 28951-2012)” and “Forest certification in China --- Chain of custody (GB/T 28952-2012)”. A usage guideline of China forest certification logo was developed, which regularized the usage of China forest certification logo. CFCC formally submitted endorsement documents to PEFC. The second training course for forest certification auditors was held, which provided forest certification auditors team with more talents.
- In 2013: 2 meetings of Stakeholders Forum of CFCC were held in Beijing and Shanghai in January and July, respectively. In May and August, the third and forth training courses for forest certification auditors were held in Shangdong and Heilongjiang Provinces, respectively. In July, the Forest Certification Research Centre of SFA was established in the Chinese Academy of Forestry, which is responsible for the forest certification research and information consultation services. In October, 2 forestry sector standards of “Forest certification in China --- Forest eco-environment services --- Nature reserve (LY/T 2239-2013)” and “Forest certification in China --- Forest eco-environment services --- Audit directive for nature reserve (LY/T 2240-2013)” were issued.
- In 2014: On February 5, China Forest Certification Scheme was formally

endorsed by PEFC, which is the time of most milestone significance for both CFCC and China Forest Certification Scheme. In August, 12 forestry sector standards of forest certification were issued, such as “Forest certification in China --- Non-timber forest products management (LY/T 2273-2014)” and “Forest certification in China --- Guidance on bamboo management certification (LY/T 2515-2015)”. The standard system of China Forest Certification Scheme was basically established.

- In 2015: In June, CNCA and SFA jointly issued a new policy document of “Forest Certification Rules”, which clearly defines that the basis for carrying out forest certification in China are national standards and forest sector standards of forest certification in China. It also emphasizes to improve the supervision of forest certification bodies and regulate the forest certification market. Based on this policy document, China National Accreditation Service for Conformity Assessment (CNAS) issued a revised “Accreditation Scheme for Forest Certification Bodies (CNAS-SC23:2015)”, and China Certification and Accreditation Association (CCAA) issued a revised “Registration Criteria for Management System Auditors” (including forest certification auditors)”. The issuance of these 2 documents plays a positive role in scientifically guiding forest certification work and regulating forest certification activities. In the same year, CFCC was granted with a certificate which verifies that China is the country among PEFC family with the largest increase of certified forest areas in 2015.
- 2016: CFCC was granted with a certificate which verifies that China is the third largest country among PEFC family with the increase of chain of custody in 2016.

Box 3-2: “Forest Certification Rules” by CNCA and SFA

2.1 Scope of application: All forest certification bodies and other organizations which would like to carry out forest certification activities in the territory of the People’s Republic of China shall abide by this rule.

3. Basis for certification: Forest certification shall be based on relevant national standards or forest sector standards.

3.2.2 Latest progress of forest certification in China

At present, there are 3 different forest certification schemes which co-exist in the China market, and they are CFCC, PEFC and FSC.

As for December 2016, the latest progress of these 3 forest certification schemes is as follows:

(1) **For CFCC:** 8.75 million ha (8,750,287.32 ha) of forest areas are certified, with 29 chain of custody certificates issued.
(2) **For PEFC:** In the world level, there are 303 million ha (303,134,908 ha) of forest areas certified, with 10,968 chain of custody certificates issued. In China, there are 5.53 million ha (5,526,298 ha) of forest areas certified, and 283 chain of custody certificates issued. The certified forest areas by CFCC in China should be the same of PEFC certified forest areas due to the endorsement.
(3) **For FSC:** In the world level, there are 194 million ha (194,093,509 ha) of forest areas certified, with 32,622 chain of custody certificate issued. In China, 4,811 chain of custody certificates are issued, which is the largest one in the world.

3.2.3 Supervision and management of forest certification in China

The Supervision and management authorities of forest certification in China are the Certification and Accreditation Administration (CNCA) and the State Forestry Administration (SFA). All of forest certification work in China shall be under the joint supervision and management of CNCA and SFA.

CNCA is responsible for the unified management, supervision and integrated coordination of all certification and accreditation work across the country, and also responsible for the approval of accreditation bodies and certification bodies. Under CNCA, there are China National Accreditation Service for Conformity Assessment (CNAS) and China Certification and Accreditation Association (CCAA).

CNAS is set up under CNCA according to the stipulation by “Certification and Accreditation Regulation”, and is the only authorized accreditation body in China, which is responsible for unified accreditation of certification bodies, laboratories, and inspection bodies etc.

CCAA is a national non-profit association in the certification and accreditation sector, consisting of group members and individual members from accreditation bodies, certification bodies, certification training bodies, certification consulting bodies, laboratories, inspection bodies and parts of certification related organizations. CCAA is responsible for the management, education and training for qualification of certification auditors and inspectors.

SFA is a national governmental department for the forestry sector. SFA Science and Technology Development Centre sets up a Division of Certification Management, which is responsible for the unified management of all forest certification work in China. CFCC is responsible for the management and operation of China Forest Certification Scheme, and represents China Forest Certification Scheme to conduct international exchange and cooperation.

3.2.4 Overview of China Forest Certification Scheme

3.2.4.1 Organizational structure

The organizational structure of China Forest Certification Scheme is as Figure 3-1.

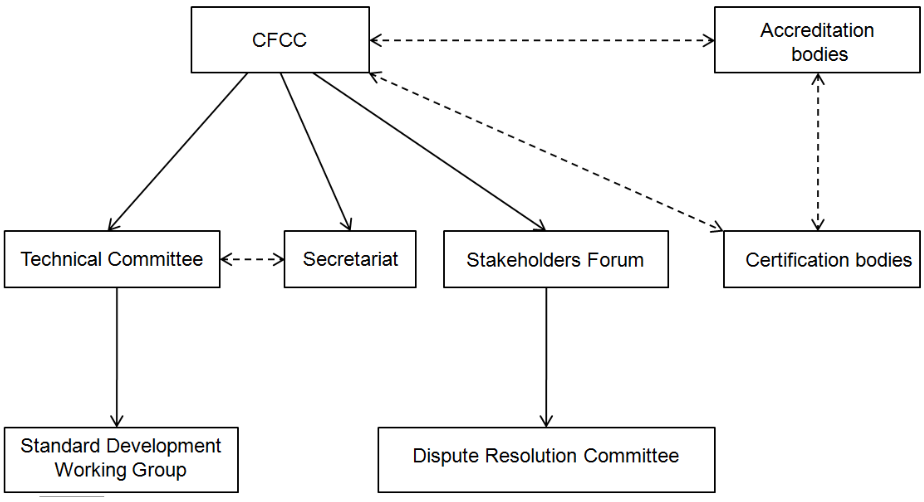


Figure 3-1: Organizational structure of China Forest Certification Scheme

CFCC is the highest governing body of China Forest Certification Scheme, and its daily work is managed by its Secretariat.

According to the principle of multi-participation, CFCC consists of 21 members from government departments, research institutions, universities, companies, and social groups, which represent interests from social, economic and environment sectors.

The main responsibilities of CFCC are as follows:

(1) Organizing the formulation, approval and announcement of documents of China Forest Certification Scheme;
(2) Operating and governing China Forest Certification Scheme;
(3) Arbitrating the disputes, complaints and appeals of China Forest Certification Scheme;
(4) Promoting and publicizing China Forest Certification Scheme; and
(5) Representing China Forest Certification Scheme to participate international exchange and cooperation.

The Secretariat of CFCC is set in the Science and Technology Development Centre of SFA, and is responsible for the daily work of CFCC. The Secretariat consists of one Secretary General and one Deputy Secretary General. The Secretary General is responsible for the overall issues of the Secretariat, while the Deputy Secretary

General assists the Secretary General for its work, and also is responsible for the technical support and international cooperation.

The Stakeholders Forum aims to provide all parties, which pay attention to and support the China's forest certification process, with a platform for information exchange and cooperative participation, and also to enhance the transparency of the scheme development, which helps the China Forest Certification Scheme to be more suitable to the condition of the country and the condition of the forestry, as well as to be more advanced. Every year, the Stakeholders Forum irregularly holds plenary meetings and also thematic meetings for parts of its members, so as to communicate and change with its all members about the major issues related to the development strategy of China Forest Certification Scheme, and also to solicit comments and suggestions from all parties.

The National Technical Committee of Standardization of Sustainable Forest Management and Forest Certification is governed jointly under the Standardization Administration of China (SAC) and SFA, which is the technical organization for standardization of sustainable forest management and forest certification of the whole country.

The Dispute Resolution Committee is a part of CFCC organizational framework, which, however, is not affected by CFCC and other organizations. It conducts work independently, and aims to ensure the objectiveness, fairness and effectiveness of forest certification work, and to maintain and report the legal rights and interests as well as reasonable appeals by forest certification applicants, certification bodies, accreditation bodies and related stakeholders.

3.2.4.2 Scheme documents

In order to ensure its standardized operation, China Forest Certification Scheme has developed a series of scheme management documents, which mainly include the guidance documents and procedural documents. These documents mainly include "Standard Development Rule", "Guidelines on Group Forest Management Certification", "Procedures for Certification, Accreditation and CFCC Notification of Certification Bodies", "Dispute Resolution Procedures", "Procedures for Verifying Logo Usage by CFCC", "Application Procedures for Using CFCC Forest Certification Logo and Explanations of Application Procedures for Certification Auditing by Certification Bodies", "Usage Rules for China Forest Certification Logo" and "Management Rules for China Forest Certification Logo" etc.

3.2.4.3 Scopes of certification

China Forest Certification Scheme not only adopts international practices, but also has creative measures. It mainly extends scopes of certification.

Apart from international practices of forest management certification and chain of custody certification, China Forest Certification Scheme also includes the followings:

(1) Certification for bamboo forest management;
(2) Certification for non-timber forest products management;
(3) Certification for commercially managed precious and endangered species;
(4) Certification for forest eco-environmental services;
(5) Certification for carbon sequestration forests;
(6) Certification for forest fire; and
(7) Certification for forest flowers etc.

3.2.4.4 Certification standards

Each scope of certification of China Forest Certification Scheme has its corresponding certification standard. All certification standards are recommendatory and not compulsory as all certifications are voluntary. In addition, in order to help certification bodies accurately master certification standards with the same auditing yardstick, China Forest Certification Scheme also developed corresponding audit directives for certification bodies. And at the same time, in order to help certification companies accurately master certification standards and improve management level, China Forest Certification Scheme also developed corresponding operational manuals for certification companies.

As of the end of 2016, China Forest Certification Scheme has issued a total of 25 standards, including 9 certification standards (2 national standards and 7 forestry sector standards), 9 audit directives, and 7 operational manuals. It can be concluded that China Forest Certification Scheme has established quite perfect standard system. The concrete standards and corresponding scopes of certification are as following table.

Table 3-2: List of standards of China Forest Certification Scheme

No.	Scope of certification	Certification standard	Audit directive	Operational manuals
1	Forest management	(1) Forest certification in China - Forest management (GB/T 28951-2012), and (2) Forest certification in China - Plantation management (LY/T 2272-2014)	Forest certification in China - Audit directive on forest management certification (LY/T 1878-2014)	Forest certification in China - Operation guideline on forest management (LY/T 2280-2014)
2	Chain of custody	Forest certification in China - Chain of custody (GB/T 28951-2012)	Forest certification in China - Audit directive on chain of forest certification (LY/T	Forest certification in China - Operation guideline on the chain of custody (LY/T

			2281-2014)	2282-2014)
3	Non-timber forest products management	(1) Forest certification in China - Forest management (GB/T 28951-2012), and (2) Forest certification in China - Non-timber forest products management (LY/T 2273-2014)	Forest certification in China - Non-timber forest product certification audit directive (LY/T 2274-2014)	Forest certification in China - Guidance on Non-timber forest products management certification (LY/T 2514-2015)
4	Bamboo forest management	(1) Forest certification in China - Forest management (GB/T 28951-2012), and (2) Forest certification in China - Bamboo forest management (LY/T 2275-2014)	Forest certification in China - Bamboo management certification audit directive (LY/T 2276-2014)	Forest certification in China - Guidance on bamboo management certification (LY/T 2515-2015)
5	Forest eco-environmental services	(1) Forest certification in China - Forest management (GB/T 28951-2012), (2) Forest certification in China - Forest eco-environment services - Nature reserve (LY/T 2239-2013), and (3) Forest certification in China - Forest park eco-environment services (LY/T 2277-2014)	(1) Forest certification in China - Forest eco-environment services - Audit directive for nature reserve (LY/T 2240-2013), and (2) Forest certification in China - Audit directive for park eco-environment services (LY/T 2278-2014)	(1) Forest certification in China - Forest eco-environment services - Operation guideline on nature reserve (LY/T 2604-2016), and (2) Forest certification in China - Operation guideline on forest park eco-environment services(LY/T 2605-2016)
6	Commercially managed precious and endangered species	(1) Forest certification in China - Precious and endangered wildlife for production and management - Feeding and management (LY/T 2279-2014), and (2) Forest Certification in China - Artificial planted endangered species of plants (LY/T 2602—2016)	(1) Forest Certification in China - Precious and endangered wildlife for production and management feeding and management – Auditing (LY/T 2601-2016), and (2) Forest Certification in China - Artificial planted endangered plants certification audit directive (LY/T 2603-2016)	
7	Carbon sequestration forests			

8	Forest fire			
9	Forest flowers			
10	Group certification		Forest certification in China – Audit directive on group certification (LY/T 2512-2015)	Forest certification in China – Guideline on group certification (LY/T 2513-2015)

3.2.4.5 Accreditation body

According to relevant laws and regulation, there is only one accreditation body in China, which is China National Accreditation Service for Conformity Assessment (CNAS). CNAS is also a member of the International Accreditation Forum (IAF). Currently, the director general of CNAS is also the chair of the Board of Directors of IAF.

The accreditation body for China Forest Certification Scheme is also CNAS. Under the support of CFCC, and according to the new “Forest Certification Rules” jointly issued by CNCA and SFA in 2015, CNAS issued a new “Accreditation Scheme for Forest Certification Bodies (CNAS-SC23:2015) in 2015, which is used to guide the accreditation for forest certification bodies in China.

As of the end of 2016, there are a total of 5 forest certification bodies which had been accredited by CNAS. They are Zhonglin Tianhe (Beijing) Forest Certification Centre, BV Certification, Jinlin Songbai Forest Certification Co. Ltd., Jiangsu Zhiyuan Forest Certification Centre Co. Ltd., and SGS China.

3.2.4.6 Certification bodies

According to relevant laws and regulations, all certification bodies (including forest certification bodies) have to be approved by CNCA and register in the government department of industry and commerce, as otherwise they can not do any certification audits. The new “Forest Certification Rules” jointly issued by CNCA and SFA in 2015 also stipulates very clear requirements for the qualifications for forest certification bodies and forest certification auditors, the procedure for forest certification, and certificates etc.

The first forest certification body in China is Zhonglin Tianhe (Beijing) Forest Certification Centre which was set up in 2009. Currently, there are 15 certification bodies which have been approved by CNCA to conduct forest certification audits. Among these 15 forest certification bodies, some are fully owned by foreign capitals, some are joint ventures, and some are fully owned by domestic capitals.

3.2.4.7 Auditors

According to relevant laws and regulations, all certification auditors have to be granted with qualification certificates by CCAA. What is a pity is that many people who conduct forest certification audits (mainly for FSC certification) do not have such qualification certificates granted by CCAA.

All auditors for China Forest Certification Scheme have participated professional examinations organized by CCAA, and have registered in CCAA or they are granted by CCAA with qualification certificates.

Under technical support by CFCC, and according to the new “Forest Certification Rules” jointly issued by CNCA and SFA in 2015, CCAA issued in the beginning of 2016 a new “Registration Criteria for Forest Certification Auditors”, which further regulates the registration requirements for forest certification auditors, including qualification requirements, knowledge and skill requirements, assessment requirements, codes of conducts, monitoring and qualification disposition, as well as special requirements for forest certification auditors.

As of the end of 2016, there are over 200 registered forest certification auditors in certification bodies, among which, Zhonglin Tianhe (Beijing) Forest Certification Centre has 155 auditors (both for full-time and for part-time) including 12 senior auditors, Jinlin Songbai Forest Certification Co. Ltd. has 14 auditors, and Jiangsu Zhiyuan Forest Certification Centre Co. Ltd. has 4 auditors.

3.2.4.8 Certification logo

CFCC Logo includes the logo itself and corresponding descriptions.

CFCC Logo consists of figure and code. The figure includes two ginkgo leaves, one sustainable ring, and CFCC characters. The following figure shows the CFCC Logo.

Standard color value for figure: C: 100; M: 0; Y: 100; K: 0.
Standard color value for code: M: 0; Y: 0; K: 100.

Figure 3-2: CFCC Logo

“Usage Rules for China Forest Certification Logo” stipulates that CFCC Logo (including capital letters) is copyrighted and is owned by CFCC. CFCC Logo is also a registered trademark owned by CFCC. Un-authorized use of this copyrighted logo is prohibited and may lead to legal action. All CFCC certified companies have to use CFCC Logo.

Based on different usage types, CFCC Logo consists of on-product used logo and off-product used logo.

The composition of CFCC Logo will vary with different scopes of certification and different certification means.

Figure 3-3 shows certification logo on general timber products.

Figure 3-3: Certification log for general timber products

Figure 3-4 shows certification logo for non-timber forest products.

Figure 3-4: Certification logo for non-timber forest products

3.2.5 Government support

The Government of China attaches great importance to forest certification work, especially for China Forest Certification Scheme. SFA not only initiated and promoted to establish China Forest Certification Scheme, but also adopts a series of policy support measures and also works with CNCA to jointly supervise and monitor forest certification activities so as to promote a healthy, stable and ordered development for China's forest certification.

3.2.5.1 Setting up management body

As mentioned previously, SFA set up a Leading Group on Forest Certification Work in China, and also set up a Division of Certification Management under its Science and Technology Development Centre to govern all forest certification work in China, and to act as the Secretariat of CFCC to manage the operation of China Forest Certification Scheme.

3.2.5.2 Setting up a special fund

As mentioned previously, forest certification work has been incorporate into the government financial budget, and the Science and Technology Development Centre of SFA allocates an annual budget of about 8 million yuan as a special fund to forest certification work, including standard development, pilot and demonstration, policy research, and international cooperation etc.

3.2.5.3 Adopting preferential policy

SFA issued a policy document on September 16, 2010, which is “Guidance to Rapidly Promote Forest Certification Work”. The Guidance clearly defines the guiding ideology, fundamental principles (which are: (1) guided by government and supervised by society; (2) driven by market and voluntary by company; (3) governed in an integrated way and implemented in a diversified approach; and (4) pilot projects first and steady advancement thereafter), development objectives and main tasks for forest certification work in China. The Guidance also put forward policy measures to accelerate forest certification work in China, with 2 major items as follows:

(1) Formulating policy measures which are conducive to sustainable forest management and forest certification, strengthening the communication and coordination with relevant government departments, and incorporating certified forest products into government procurement lists as soon as possible and gradually increase their procurement proportion; and
(2) Providing certified forest management units and certified forest products processing and marketing companies with supports in technical guidance, information services, projects arrangement, resources utilization, bank loans, and market extension etc.

Box 3-3: Guidance to Rapidly Promote Forest Certification Work by SFA

(22) Enhancing policy support: Formulating policy measures which are conducive to sustainable forest management and forest certification, strengthening the communication and coordination with relevant government departments, and incorporating certified forest products into government procurement lists as soon as possible and gradually increase

their procurement proportion. Providing certified forest management units and certified forest products processing and marketing companies with supports in technical guidance, information services, projects arrangement, resources utilization, bank loans, and market extension etc.

3.2.5.4 Adopting government procurement policy for certified forest products at an appropriate time

According to the policy document of "Guidance to Rapidly Promote Forest Certification Work" issued by SFA on September 16, 2010, the Chinese Academy of Forestry (CAF) conducted a policy feasibility study on government procurement policy for certified forest products, and put forward to a road map of 3 steps about the adoption of the government procurement policy for certified forest products in China:

(1) Step one: Gradually revising the currently applied requirements of timber materials in the standard of "Technical Requirements for Environmentally Labeled Products" which is already incorporated into government procurement lists for environmentally labeled products, by just replacing the name of certification scheme for sustainable forest management with "CFCC or CFCC endorsed national forest certification schemes" as a part of requirements to timber materials;
(2) Prioritizing at an appropriate time the procurement of CFCC (or CFCC endorsed national certification schemes) certified paper products among all government departments, State owned companies, and government funded organizations in the forestry sector; and
(3) Incorporating at an appropriate time all CFCC (or CFCC endorsed national certification schemes) certified forest products into government procurement lists.

Due to the fact that the total amount of government procurement in China accounts for a very high proportion over the total GDP and also government financial expenditure, especially its proportion over the total procurement among government departments, State owned companies, and government funded organizations is much higher, so if the certified forest products can been incorporated into government procurement lists, it will be of a very significant importance in promoting forest certification and sustainable forest management in China.

3.2.5.5 Adopting government subsidy policy for certified forest products at an appropriate time

In 2015, commissioned by the State Forestry Administration (SFA), the Chinese Academy of Forestry (CAF) conducted a policy feasibility study on government subsidy policy for certified forest products, and put forward to 3 policy options, for the adoption of the government subsidy policy for certified forest products in China at an appropriate time.

(1) Directly subsidizing certified companies

Any company (especially the forest management unit, and also forest products processing and marketing company) which is certified under CFCC (or CFCC endorsed national certification schemes) will get subsidy from the government. The subsidy standard is based on certified area of the forest management unit or annual sales values of the forest products processing and marketing company. Such policy is similar to currently implemented government subsidy policy for solar photovoltaic products.

(2) Indirectly subsidizing buyers

Any consumer who buys forest products which are certified under CFCC (or CFCC endorsed national certification schemes) will get some discount, while the discount is subsidized directly by the government to the sellers (or indirectly by the government to the buyers). The subsidy standard is normally a certain percent of the sales price. Such policy is similar to formerly implemented government policy for “the home appliance subsidies for rural areas”.

(3) Subsidizing both sides

This is the combination of above mentioned 2 policy options. The government will subsidize both directly to the forest management units or forest products processing and marketing companies which are certified under CFCC (or CFCC endorsed national certification schemes), and indirectly to the buyers. Such policy is similar to currently implemented government subsidy policy for electric vehicles.

As the profitability of wood industry in China is generally relatively low, for the companies, if they can get government subsidy, even quite small, it will be quite helpful, which naturally promotes the companies to actively conduct forest certification.

For the consumers, such policy will be more effective. As the Chinese people’s quality of life is increasing and their environmental awareness is enhancing, more and more people would like to pay a little more to buy environmentally friendly products which are certified and labeled with special logo. If they can buy such environmentally friendly products by not paying more rather by paying less, it will be surely very conducive to the marketing of such environmentally friendly products, thus promoting the companies to actively conduct forest certification.

3.2.6 Chain of custody certification standard and EU Timber Regulations

The national certification standard of “Forest certification in China - Chain of custody (GB/T 28952-2012)” released in 2012 was developed based on PEFC International Standard of “Chain of Custody of Forest Based Products - Requirements (PEFC ST 2002:2010)”, which already included requirements for due diligence in response to illegal logging, but not fully perfect.

In order to tackle illegal logging, especially in response to EU Timber Regulation, PEFC adopted a new “Chain of Custody of Forest Based Products - Requirements” in 2013.

In order to keep China Forest Certification Scheme in a sustainable line with international practices, CFCC is now revising the national certification standard of “Forest certification in China - Chain of custody”, so as to ensure to be in consistency with PEFC new “Chain of Custody of Forest Based Products - Requirements” adopted in 2013, which already meets relevant requirement by EU Timber Regulation. Currently, the process of the revision of this national standard is around the end, and the expert assessment meeting over the draft of the revised standard was held in Beijing on December 19, 2016, and the new standard is expected to be issued in the first half of 2017 after final revision and improvement.

The currently being revised national standard of “Forest certification in China - Chain of custody” especially enhances the due diligence system (DDS), and requires that all raw materials entered into chain of custody process in the certified company must implement DDS, and at the same time increases the benchmark of risk assessment so as to keep full consistency with DDS requirements set by EU Timber Regulation. It can be concluded that all timber products certified by the new chain of custody standard will naturally meet requirements of low risk category of risk assessment for timber legality set by EU Timber Regulation, thus naturally can smoothly be entered into EU market.

Currently, there is a voice in China, and also in some other countries, which needs to be paid with attention: Forest certification is an effective market based instrument to promote sustainable forest management, and is conducted by an independent third party to verify both the legality of the sources of timber and the sustainability of the management of forests which produce such timber. However, due to various reasons, not all companies can meet requirements in a very high standard of sustainability, so just to ensure the legality of sources of timber as a basic requirement is the first choice by most companies. And the DDS in the upcoming new national standard of chain of custody certification can be taken as an independent standard or basis to verify the timber legality, also with technical feasibility and practical operationality. Especially, this new national standard of chain of custody certification will be issued by the government through the Standardization Administration of China (SAC), to some extent of significance, it is also one of concrete measures for the Government of China in response to illegal logging.

3.2.7 FSC development in China

It should be stated that the forest certification development around the world should firstly give the credit to FSC. As the first international forest certification scheme, FSC does contribute significantly in the process of forest certification in the world including China.

However, due to many reasons such as scheme design etc, FSC also faces various challenges in some countries, especially in China.

3.2.7.1 Before 2003

The concept and practice of FSC entered into China quite early thanks to the active promotion by the World Wide Fund for Nature (WWF)

In July 1999, SFA and WWF jointly held an international workshop on sustainable forest management and forest certification in Beijing, which helped governments, academia and companies have some knowledge and understanding about forest certification.

The first certificate of chain of custody by FSC was issued in 1998, and the first certificate of forest management by FSC was issued in 2002.

In May 2001, under the financial support by WWF, the Chinese Academy of Forestry initiated to establish an informal and multi-participatory Working Group on Forest Certification in China to extensively discuss all issues on forest certification, which made active contribution to the forest certification process in China.

In 2003, under the financial support by the Swedish company of IKEA and WWF, Youhao Forest Industry Bureau of Heilongjiang Province and Baihe Forest Industry Bureau of Jilin Province started to conduct forest management certification, and eventually went through forest management certification in 2005. This is the fist State owned forest management units in China to be certified for forest management, with a total certified forest area of 420,000 ha.

3.2.7.2 After 2004

On November 1, 2003, the Certification and Accreditation Regulation was formally implemented.

This regulation stipulates concrete requirements to all certification bodies and certification auditors. The FSC and its certification activities in China contradict the requirements set by the regulation, which makes FSC and its certification activities in

China always in a grey state: On one hand, FSC certification did provide many Chinese companies with useful guarantee in opening and maintaining foreign export market, while on the other hand, FSC and its certification activities also did contradict current laws and regulations, which makes the government supervision and monitoring departments in an very awkward and embarrassing situation.

Particularly, in June 2015, CNCA and SFA jointly issued a new policy document of “Forest Certification Rules”, which clearly stipulates that all forest certification in China must be based on China’s national standards and forestry sector standards, but FSC international standard is not listed as the certification basis in this policy document. That is to say that there is a legal problem for all forest certification FSC conducted in China with its own international standard.

What is more awkward and embarrassing is that in order to further regulate activities in China by overseas non-governmental organizations (NGOs), the National People’s Congress (China’s parliament) adopted “Law of the People’s Republic of China on Administration of Activities of Overseas Non-governmental Organizations in the Mainland of China”, which is effective on January 1, 2017. As the administrative law enforcement authority of this law, the Chinese Ministry of Public Security issued on December 2016 a policy document “Areas of Activities, Lists of Projects and Lists of Business Competent Departments of Overseas Non-governmental Organizations in the Mainland of China (2017)”, which clearly excludes FSC and its activities. This further challenges the legal status of FSC and all of its activities and certifications in China. On the other hand, PEFC is listed in this policy document to be allowed to conduct activities under the item of “training, promotion and capacity building of forest certification standards”, and moreover any other national forest certification schemes which are mutually endorsed by CFCC and PEFC are also allowed to conduct “exchange and cooperation projects” in China.

As such, people will wait and see how FSC deals with its legal status in China, and even how FSC continues to exist in China.

3.2.7.3 Current situation of FSC certification

As of the end of 2016, FSC certified 840,000 ha of forest areas in76 forest management units in China. Compared with 8.75 million ha of forest areas certified under CFCC (or PEFC), this is just a small fraction. But FSC certified 76 forest management units, which means that most of forest management units certified under FSC is in a small scale, with only about 10,000 ha each.

FSC certified 4,811 companies with chain of custody in China, which is the largest in the world among its family. However, a report of a survey disclosed that: (1) Most of FSC chain of custody certified companies are medium and small ones, and only parts of their production lines are certified; and (2) Especially, nearly half of certified products are produced under requested orders, which means that for some of companies there might be no production of certified products all year around. This may be due to 2 reasons: One is that there might be no request order coming. The other is that there might be no appropriate certified raw materials. All in all, for most of certified companies, the proportion of total sales value of certified products over the total sales value of the certified company may be less than 10% in an average.

3.3 Actions Adopted by the Government and Industrial Organizations to Include Timber Legality into Legislation

The above Section 3.1 has elaborated various measures applied by the Chinese government in coping with illegal logging and also mentioned related actions adopted by industrial enterprises. For this, the current section will mainly provide conclusive or complementary information.

3.3.1 Actions adopted by government departments

Various countermeasures against illegal logging adopted by the Chinese government have been explored in detail above. It also mentioned that full preparations have been done for the legislation on timber legality and revisions of laws, regulations and policies will be made in due time, with a rough timetable provided:

(1) A long-term goal is set for the timely amendment of the Forest Law and other relevant laws to include the prohibition of illegal logging;
(2) a medium-term goal is set for the revision of the Regulations for the Implementation of Forest Law and other related regulations to include the prohibition of illegal logging; and
(3) a short-term goal is set for the modification of related policies and departmental rules to include the prohibition of illegal logging.

3.3.2 Actions adopted by industrial organizations

The active timber industrial organizations (or timber industrial associations) include the Chinese Forestry Industry Association, China National Forest Products Industry Association, China Timber and Timber Products Distribution Association and Shanghai Timber Trade Association.

For years, these timber industry associations have been paying attention to the requirements put forward by EU Timber Regulation and the Lacey Act of USA and working with the governmental departments, Chinese and international NGOs and other industry associations to cope with such international requirements towards timber legality. The actions adopted by them are listed below:

(1) Active participation in various symposia, workshops and trainings on illegal logging held at home and abroad, among which, the trainings introduced the specific requirements of EU Timber Regulation and the Lacey Act, and laws and regulations of the countries of origin;
(2) Active participation in discussions with governmental departments, NGOs and international organizations on how to tackle illegal logging issues and in the processes of standard development and policy-making;
(3) Communication with governmental departments to promote the government green procurement;
(4) Assistance provided to their member companies (especially those engaged in overseas trade), including helping them raise awareness of risks and improve capacity building, providing information service and technical trainings, etc.;
(5) Initiation to establish an alliance or develop and revise the industry's self-discipline agreement, requiring involved companies to "purchase timber of legal sources";
(6) Cooperation with international organizations to recommend timber suppliers with legal timber sourcing; and
(7) Assistance provided to companies to carry out the first-party and third-party timber legality verification and pilot the second-party verification schemes.

In addition to the above actions, some timber industry associations also adopt more relevant activities to meet the requirements of timber legality.

3.3.2.1 Chinese Forestry Industry Association

The Chinese Forestry Industry Association was established in 2007, previously named the China National Forestry Industry Association. At the very beginning of its establishment, the association highly emphasized the forest certification as an approach for the verification of timber legality and sustainability of forest management. It was the investor for Zhonglin Tianhe Forest Certification Center, the first certifier under the China Forest Certification Scheme, when it was established in 2009. The forest certification center was restructured to be a company in 2010, after which the association became a shareholder and held 20% shares of the center. Now the association is still involved in actions coping with timber legality through conducting forest certification as an approach for the verification of timber legality and sustainability of forest management.

3.3.2.2 China National Forest Products Industry Association

(1) Pilots on timber legality verification

As mentioned above, China National Forest Products Industry Association (CNFPIA), among China's timber industry associations, is an active promoter for timber legality verification. In November 2012, CNFPIA officially released the pilot Timber Legality Verification Standard of China and started the pilots for timber legality nationwide. So far, a total of 13 companies have obtained the certificates of timber legality issued by CNFPIA and several companies are still undergoing the verification process.

The association is assisting SFA and working with other industry associations and research and education organizations in developing the official group standard for the Timber Legality Verification Standard of China. It can be forecasted that the group standard will be ultimately promulgated by CNFPIA, regardless of how much technical support will be provided by other participatory organizations.

(2) Company credibility

In response to the requirement of the government to “rectify and regulate the market economic order and improve the social credibility system of modern market-oriented economy”, CNFPIA has passed and established a platform “China Forestry Industry Credibility Alliance” since September 2012 and encourages its member companies to join in. As part of the credibility system, the implementation of due diligence by companies during timber sourcing to assure legality is also included as an evaluation indicator.

3.3.2.3 China Timber and Timber Products Distribution Association

China Timber and Timber Products Distribution Association (CTWPDA) is an industrial association subordinated to the State-owned Assets Supervision and Administration Commission of the State Council and applicable for all timber companies across China.

In addition to the above general actions, China Timber and Timber Products Distribution Association has already been approved to develop the “enterprise credit evaluation system” as early as in late January 2007. Accordingly, it has formulated the pilot Regulations on Credit Evaluation for Timber Enterprises, which provides for the principles of evaluation, conditions of company applicants, establishment of evaluation agencies, elements of evaluation and rating, evaluation methods and procedures, charges and their uses, information disclosure, supervision and administration, etc.

The evaluation is carried out against six aspects, namely the basic credit capacity, the company operation performances, the business solvency, the business management competence, commercial credit records and social responsibility. Each aspect is weighed differently with specific indicators in the evaluation system as a whole, where the full mark is 100 scores. The credit rating for timber companies consists of three level and five sub-levels according to their scores.

The evaluation system and its indicators involve almost all aspects of a company’s credit, and there is a COC (chain of custody) certification in cohesive coherence with timber legality, i.e. the CSR (corporate social responsibility) evaluation, which "emphasizes in investigating the legality of timber sourcing by the company and its integrated timber utilization, and evaluates the degree of its contribution to the sustainability of forest resources".

The evaluation system also includes the companies' environmental and social aspects as part of the credit evaluation indicators, in order to promote the legal timber trade world worldwide by increasing the timber companies' responsible consciousness in protecting environment, and encouraging them to adopt practices in favor of environment protection, including forest management certification, COC certification, procurement of certified timber, tree planting, increased integrated utilization rate of timber, etc. These aspects weigh 8%. The COC certification serves as an indicator in the credit evaluation system, but it is only an encouraged practice but does not compose a compulsory requirement. The evaluation indicators against these aspects include (e.g. for a production company):

(1) If the company procures certified timber and if yes, which forest certification scheme does it apply, the amount and proportion of the certified timber?
(2) If the timber and timber products production company adopts COC certification? Which certification scheme is applied? Companies passing certification will get high scores, and those applying COC certification get the highest scores;
(3) Has the company passed the Social Accountability 8000 Standard certification, ISO14000 certification in Environmental Management, certification of OHSAS18001 Occupational Health and Safety, etc.?
(4) How many timber procurement contracts have been signed by the company since its involvement in the credit rating? How many of the signed contracts committing to "supplying timber with abidance by local laws and regulations in relation to forest logging" and how much is the amount of supply under such commitment? Who are the suppliers? How much is the amount of supply of other timber without such commitment and who are the suppliers?
(5) What is the company's timber utilization rate?
(6) Does the company have any record on illegal logging or forest destruction or imports of endangered species held by the governmental supervision department?
(7) Has the company ever sponsored any programs for public good such as tree-planting and environment protection? Has it contributed to the sustainable development of forest environment?
(8) Is the company involved in the double-commitment (quality and after service) campaign initiated by China Timber and Timber Products Distribution Association ?

Regarding that China is creating a credit system applicable nationwide, the current evaluation system is proved to play a positive role in regulating all aspects of business operation by timber companies including assuring the legal source of timber, so the system is still in use. The notice about its application for 2016 was just released on December 28, 2016.

3.3.2.4 Shanghai Timber Trade Association

Besides the above general actions taken by industrial associations, Shanghai Timber Trade Association (STTA), as a local timber industry association, also proactively adopts other measures to cope with illegal logging, as follows:

(1) Collaborating with competent departments and joining in various combating activities, and carrying out independent or joint investigations on the international trade operated by timber companies, focusing on the region of Yangtze River Delta;
(2) Independently or cooperatively organizing or assisting in organizing numerous domestic and international workshops on timber legality, timber industry exhibitions and other events in Shanghai, and organizing the face-to-face dialogues and exchanges between the participants and the timber companies based in Shanghai and the whole region of Yangtze River Delta;
(3) Collaborating with competent departments in organizing companies based in Shanghai and the whole region of Yangtze River Delta to visit USA in 2008 for the Update Workshop on Legal Trade in Timber Products in USA and EU, where the participants were organized to hold face-to-face dialogues and communication with officials from US Department of Justice, US Forest Service, etc.;
(4) Organizing certification trainings and extension activities to encourage its member companies to purchase certified timber or timber from USA and European countries assured to have low risks;
(5) Encouraging eligible member companies to pass forest certification to minimize the risks in timber legality; and
(6) Strengthening communication and cooperation with international timber industry; for example, in recent years, STTA has established long-term communication and cooperation mechanisms, in succession, with American Hardtimber Export Council (AHEC), American Softtimber, Canada Timber, Japan Timber Products Export Association, French Timber Trade Association, Swedish Forest Industries Federation, Malaysian Timber Council (MTC) and the Association Technique Internationale des Bois Tropicaux (ATIBT) which is authorized by UN.

3.4 Key Factors in the Introduction of Forest Certification and Legality Assurance Measures

Section 3.1 and Section 3.2 has discussed a lot in all aspects of forest certification and timber legality and thus the introduction here can be streamlined as below.

3.4.1 Key factors in introducing forest certification

As discussed above, the China Forest Certification Scheme (CFCS), which was endorsed by PEFC earlier than the Japanese forest certification scheme (of the Sustainable Green Ecosystem Council, SGEC), has been put into use and is now operating normally. It can be said that the society's awareness of CFCS has been significantly raised in recent years as the governmental departments intensify the promotion of forest certification. Any company, when necessary, can apply for such certification to the 15 qualified certifiers for forest certification.

As for the necessity for a company to apply for forest certification, it is dependent on the company itself, when considering:

(1) If the company has practical needs, especially if the downstream buyers propose special requirements towards forest certification (e.g. if the products will be sold to USA and European countries)? This is the question of top priority for the company;
(2) Analysis on cost-effectiveness? This is also an issue of priority for the company. Usually, the cost-effectiveness analysis will turn out to be feasible when the company has practical needs in this regard. A simple reason is that, although the certification will lead to added costs, the certified products can be sold at higher price (i.e. premium price), or it is possible to increase sales volume or maintain sales volume while maintaining the original price;
(3) Are the certified raw materials easily accessible on market? This may not be regarded as a question in USA and European countries, but it is a challenge in China in many cases. As above, many companies applying FSC certification have passed the COC certification, however, they are confronted with such situations where they receive no order for a certain period or there is suddenly an order but it is difficult to buy the particular certified raw materials; and
(4) Other considerations such as the company's image, management capacity, etc., which are secondary in the discussion.

3.4.2 Key factors in introducing timber legality verification

As discussed above, the situation of timber legality verification is in contrast to forest certification.

Although some companies apply the first-party due diligence (with external help in some cases), various overseas certifiers provide the third-party verification on timber legality, and CNFPIA also carries out piloting work on timber legality verification, generally, China has not yet established any third-party timber legality verification system at national level and dominated by the government nor the second-party system dominated by the private sector (certainly the government is now making efforts to facilitate the multi-stakeholder cooperation).

The principal factors holding up the establishment of China timber legality verification system lie in two aspects, one is the necessary technology, and the other is the willingness of companies and the business costs.

In general, Chinese enterprises are a bit reluctant to the timber legality verification and they will not accept it until it becomes a must. All activities for verifying timber legality, even the due diligence, involve increases of the companies' business costs.

First of all, the core factor in adopting legality verification or not relies on the companies' needs (e.g. if the products are exported). Specifically, if a company's products are to be placed on European and US markets, because of EU Timber Regulation and the Lacey Act which have been in force, the company can only have three choices: one is to apply the third-party (or second-party in few cases) timber legality verification, the second is to establish a due diligence system as soon as possible, and the third is to demonstrate the legality of its products or their low risks through providing all related documentation.

Secondly, the establishment of a full-set management system, which is also in need of full-time management by professional employees, will definitely increase the company's business costs. Costs needed in this regard are even higher when the company does not have competent capacity on its own. Therefore, generally, enterprises are implementing such work in a passive way.

4. External Measures and Actions

4. External Measures and Actions

4.1 Discussions on the Three Acts Focusing on Wood Legality

Three countries (or union of countries) have put forward legal requirements of wood legality through legislation. They are:

(1) US Lacey Act entering into force on June 18, 2008;
(2) EU Timber Regulation (EUTR) ratified in 2010 and entering into force on March 3, 2013; and
(3) Australian Illegal Logging Prohibition Act passed in November 2012 and entering into force on November 30, 2014.

In terms of the intensity of their enforcement, currently EU Timber Regulation has the highest intensity, followed by the US Lacey Act and the Australian Illegal Logging Prohibition Act has the lowest intensity.

4.1.1 EU Timber Regulation

The EU Timber Regulation (EUTR) entered into force later than the US Lacey Act, but it shows the highest intensity in its enforcement, because of the vigorous promotion (including financial support) by EU member countries such as UK who is the most active supporter on one hand, and the technical support provided by research organizations like the European Forest Institute (EFI) on the other.

According to EU Timber Regulation, anyone who place wood products on EU market shall either hold a FLEGT license (and a CITES license as well), which can help in direct customs clearance and entry into EU countries, or fulfill due diligence to prove the low risks.

It should be noted that EU Timber Regulation has certain defects in its design and reasonability.

(1) The design defect is shown in FLEGT licensing. So far, six countries have signed Voluntary Partnership Agreements (VPAs) with EU, among whom only Indonesia has exported the FLEGT licensed wood products to EU countries until recently, while the agreements with other five countries have not yet been executed for various reasons. The agreement with Ghana has expired long ago and there is no wish to renew it.

(2) The defect in reasonability appears in that the wood products which have passed forest certification and hold certification labels are still required to fulfill due

diligence (and they can not enjoy the direct customs clearance just like FLEGT licensed products do). It is well known that forest certification is carried out by an independent third party to certify the wood legality and the sustainability of forest management, and both PEFC (and more than 30 national forest certification schemes endorsed by PEFC) and FSC have been widely acknowledged in the international community.

However, undoubtedly, all countries especially the wood producing countries and processing countries have to abide by and adapt themselves to the regulation which has been passed.

4.1.2 The US Lacey Act

The US Lacey Act is the first one, among the three acts, that got passed and thus made a splash in the earliest time. In particular, the exports of forest products to USA accounted for a very high percentage, and they involved a lot of trade frictions (e.g. anti-dumping and anti-subsidy), so the Act aroused serious concerns of many Chinese enterprises at first. For this, the governmental departments have made enormous efforts through various activities (workshops, symposia, exhibitions), in different occasions and in different forms to help companies to cope with it. For example, they invited the US Department of Justice, US Forest Service and stakeholder NGOs to introduce and interpret the Act and had the industry associations to provide guidance for involved enterprises.

Although the US Lacey Act provides very serious penalties, among which the most serious violation may lead to a five-year imprisonment, the practical law enforcement for more than 8 years shows that only very few cases have involved investigation and consequent settlement (including conciliation). It can be said that the real function of the US Lacey Act lies more in its cautionary nature.

In terms of its enforcement process, the Lacey Act requires for the place (or country) of origin in the documentation for customs clearance, in addition to the originally needed species, amount and prices. Of course, traders shall provide as many documents as possible to demonstrate the legality or low risks of their wood sourcing.

It seems that currently many Chinese enterprises have been adapted to the Lacey Act and very few effects are seen on China’s exports of forest products to USA.

However, a significant change has taken place specifically in the fast growths in USA’s exports of logs and sawn timber to China, which is an indirect consequence of the Lacey Act. It is simply because Chinese enterprises are encouraged to import logs and sawn timber from USA due to the cautionary Lacey Act, and then the processed forest products are exported to US, whose country of origin is stated as USA during the customs clearance in order to pass the investigation of US Customs easily. But of course relevant documentations are still needed, including those about Due Care.

In an objective viewpoint, Uncle Sam is smarter than the European people in dealing with the wood trade, namely the former introduced the cautionary Lacey Act but does not adopt any severe punishing measures and thus does not offend any one country, but it still has obtained its aim in a few years after the implementation with significant increases of log and sawn timber exports (especially to China) as a consequence. It is also supported by the fact that USA presents a subtle change in its attitude against illegal logging under the APEC framework in the recent one to two years (less radical and not as active as before).

4.1.3 Australian Illegal Logging Prohibition Act

The Australian Illegal Logging Prohibition Act is the latest one entering into force. Especially, in comparison to USA and European countries, China exports fewer forest products to Australia, and thus most Chinese enterprises have not yet experienced the potential influence of the Act. For this, the discussion does not focus much on this Act.

4.2 Measures and Actions Adopted by Governmental Departments

Section 3.1 has elaborated the 11 specific countermeasures and actions taken by the Chinese governmental department against illegal logging. The first two measures are adopted against domestic timber while the following 9 measures are addressing the demand of international community, especially the three acts on wood legality.

In addition the exploration in section 3.1, specific pertinent measures and actions adopted by the government in response to the three acts are summarized and discussed as below.

4.2.1 Cooperation with issuing countries of these laws in combating illegal logging

As discussed in section 3.1, China has developed close cooperation covering a wide range in the field of illegal logging with the issues countries of the three acts on wood legality.

(1) China and EU established a Bilateral Coordination Mechanism (BCM) on Forest Law Enforcement and Governance, under which an annual regular meeting is held every year. In addition, practical and relevant project cooperation is also carried out through the European Forest Institute (EFI), including numerous symposia, training workshops etc.

(2) China and USA signed a cooperative agreement specifically on combating illegal logging. Additionally, they included illegal logging into the high-level China-US strategic economic dialogues and held inter-governmental meetings to discuss illegal logging issues every year.
(3) A regular meeting mechanism for the China-Australia forestry working group has been established. Illegal logging has been included into the working group's discussion in recent years. The two sides have convened a series of working group meetings and related symposia.

4.2.2 Assistance in enterprises' adaptation

As above, the governmental departments have made enormous efforts to introduce and interpret EU Timber Regulation and the Lacey Act to Chinese enterprises and remind them of attention paid to the details in the two acts especially the specific requirements about Due Care, e.g. through organizing various symposia, workshops and exhibitions independently or in collaboration with Chinese and/or international research and education organizations and other institutions, and providing help to companies for their adaption to the two acts through industrial associations.

Besides, the government is coordinating and integrating efforts made by research organizations, industrial associations, enterprises and all other stakeholders to develop the Timber Legality Verification Standard of China as an industrial group standard to be put into implementation.

Relatively, measures and actions in response to the Australian Illegal Logging Prohibition Act are fewer, because the act entered into force in the latest time and in particular, China exports much fewer wood products to Australia than USA and European countries.

4.3 Measures and Actions Adopted by the Private Sector

Section 3.1 describes many concrete measures and actions taken by companies on their own when discussing the government's countermeasures against illegal logging. For the private sector, when they are coping with illegal logging, they are actually adapting themselves to the requirements of the three acts towards legality of forest products exported by them.

EU Timber Regulation and the Lacey Act have similar requirements toward wood legality, so the measures and actions adopted by the private sector against them do not vary much, namely companies dealing with exports of wood products to EU apply alike measures and actions with those to USA. Although the Australian Illegal Logging Prohibition Act does have many effects, the concrete countermeasures and actions are also alike.

4.3.1 Raw materials imported from low risk countries

Many Chinese enterprises, as a first choice, source raw materials like logs and sawn timber from North American, European and Oceania countries with low risks in regard to the legality of wood sources wherever possible, while avoid wood sourcing from Southeast Asia, Russia, Africa and other high-risk regions. The proportion of companies doing so keeps increasing.

In particular, many small-and-medium size enterprises (SMEs) are relatively weak in building and running their own due diligence systems, so the simple way to cope with such situation is to import logs and sawn timber from countries with low risks in term of wood legality wherever possible. This is also the cause for the fast growths in USA's exports of logs and sawn timber in recent years, as China is the major importer of its exported logs and sawn timber.

In addition, growths have also been seen recently in China's imports of coniferous logs from New Zealand, who once became the largest importer of softwood for China by overpassing Russia. More than a decade ago, China imported a majority of the softwood from Russia, accounting for a half of the total imported logs (combining broad-leaved logs) by China.

China imports a lot of wood chips for paper-pulp making from Australia.

4.3.2 Application of third party forest certification

The application of the third-party forest certification, currently mainly FSC certification and a few PEFC (and CFCC) certification, can help place products on UAS and EU markets as deemed to be low-risk. Now it takes up a certain part in the whole.

4.3.3 Application of third party legality verification

The third-party legality verification can directly prove the legality of wood products. The application is still limited, but there is a large demand and thus it will grow fast.

For EU Timber Regulation, the three certifiers, BV, SGS and NEPCon, have been accredited by EU. No certificate will be issued nor labeling will be done on products after the verification, but a statement will be provided, so it can already meet EU Timber Regulation's requirements towards wood legality or low risks.

The US certifier, SCS has been working extensively for the Lacey Act. Its technical requirements do not vary much from other certifiers.

4.3.4 Application of second party legality verification

The participation in the pilot of second-party wood legality verification provided by CNFPIA may directly demonstrate the wood products' legality. But the system is still in its pilot phase and although it has been piloted for several years, only 13 companies joined in, representing a very small percentage.

However, currently, the government is coordinating and integrating efforts made by multiple stakeholders including research organizations, industrial associations and enterprises with an attempt to develop and provide the Timber Legality Verification Standard of China at the soonest time, which will be then implemented as an industrial group standard. By then, it is anticipated that more and more companies will be involved in the second-party legality verification.

4.3.5 Establishment of first party due diligence system

The establishment of an in-company supply chain tracing and management system, or the company's own first party due diligence system, takes up a large part in the picture. It consists of two types of conducts:

(1) For some large enterprises (around 20 in China), almost all of them have established their own sturdy supply chain tracing and management systems (i.e. the Due Diligence systems), thanks to their outstanding strengths in capital, technology and talents; and
(2) For most of the SMEs, some of them build the due diligence systems on their own and some do so with the external help. Generally, this conduct accounts for a larger proportion.

The implementation of due diligence is a learning course for Chinese enterprises, which helps them understand about the international and domestic laws and regulations (especially EU Timber Regulation and the Lacey Act).

At present, many Chinese enterprises are keen on the due diligence, whilst whose driving force is the requirements of wood products' legality, it indirectly brings many benefits for the private sector, mainly by urging the companies to improve their management, including the standardized traceable system and labelling system, covering raw material sourcing, classification during the production, output of wood production, distinction of different products, product sales, documentation management, and management of wood of difference species and/or from different places of origins (especially imported timber).

It should be pointed out that the Chinese enterprises (perhaps also including foreign companies) do not attach as much importance to tree species as they do to the wood quality. They often ignore the names of species and thus have no idea what species is used in their finished wood products. Nonetheless, the Lacey Act has strict provisions that the scientific names (in Latin) of tree species shall be provided, arousing the attention of the private sector. EU Timber Regulation is not less demanding in this regard.

4.3.6 Involvement in NGOs' initiatives

The World Wildlife Fund for Nature (WWF) built up the Global Forest and Trade Network (GFTN) long ago, which established a branch in China in 2005. GFTN requires its members to carry out responsible procurement, namely purchase legal or sustainable raw materials only. GFTN examines and verifies the compliances of its members. Most large enterprises or retailers in the world are GFTN members.

In China, some large companies engaged in flooring, furniture, plywood, wood trade and forest management have joined the organization. Although the number of its Chinese members is still small, the positive demonstration is presented thanks to the influence of GFTN and the influence and large scale of these Chinese members.

In addition, the Forest Trust (TFT) of UK also asks its members to implement responsible procurement and provides trainings and auditing service to this end. Many Chinese enterprises are holding TFT membership.

4.3.7 Participation in relevant trainings

(1) Various symposia and training workshops organized by governmental departments, industrial associations and international organizations are participated to understand the specific requirements of EU Timber Regulation and the Lacey Act and information in relation with the legal wood sourcing and forest certification.
(2) On-the-spot trainings organized by international buyers for Chinese suppliers are participated actively.

4.4 Two Noteworthy Phenomena

(1) Generally, either EU Timber Regulation or the Lacey Act is "much cry and little wool", namely despite their strict provisions, the enforcement intensity is quite low. It is reflected in the fact that they do not impose many impacts on China's (and other countries') exports of wood products to EU countries and very few violating companies really get punished. On one hand, the Chinese government, industrial associations and especially the private sector are making enormous efforts which have helped actively cope with these acts' requirements towards wood products' legality. On the other hand, it shows that the enforcement intensity of the two acts is relatively low. According to some studies, the performances of USA and EU countries in assuring wood legality and implementing the due diligence/due care systems are not very well, so they are not fully emboldened to put high requirements on other countries.

(2) EU, as a union of states, is really big as a whole. But each member state is quite small, especially in comparison to USA, and the individual market is small. Chinese (also other countries') private sector would focus on the large markets such as the US market, resulting in that the demands of EU market towards wood products are much more than the supplies which the Chinese companies are willing to place on EU market. EU consumers pay much higher attention to the quality of wood products than to the wood legality, leading to such a fact that EU buyers ask to have more imports of wood products from China. Based on such a public opinion, it is natural that the enforcement intensity of EU Timber Regulation is low.

Abbreviations

APEC	Asia-Pacific Economic Cooperation
APFNet	Asia-Pacific Network for Sustainable Forest Management and Rehabilitation
ATIBT	Association Technique Internationale des Bois Tropicaux (France)
BCM	Bilateral Coordination Mechanism on Forest Law Enforcement and Governance (between China and EU)
BV	Bureau Veritas
CAF	Chinese Academy of Forestry
CCAA	China Certification and Accreditation Association
CFCC	China Forest Certification Council
CFCS	China Forest Certification Scheme
CITES	Convention On International Trade In Endangered Species
CNAS	China National Accreditation Service for Conformity Assessment
CNCA	Certification and Accreditation Administration
CNFPIA	China National Forest Products Industry Association
COC	Chain of custody
CSR	Corporate social responsibility
CTWPDA	China Timber and Timber Products Distribution Association
DBH	Diameter-at-breast-height
DDS	Due diligence system
DFID	Department for International Development (UK)
EFI	European Forest Institute
EU	European Union
EUTR	EU Timber Regulation
FAO	Food And Agriculture Organization Of The United Nations
FDI	Foreign direct investment
FLEG	Forest Law Enforcement and Governance
FLEGT	Forest Law Enforcement, Governance and Trade
FM	Forest management
FMU	Forest management unit
FSC	Forest Stewardship Council
GEI	Global Environment Institute
GFTN	Global Forest and Trade Network
ILP	Illegal Logging Prohibition
ITTO	International Tropical Timber Organization
IUCN	International Union for Conservation of Nature
LHV	Legally harvested verification
MDF	Medium density fiberboards

MLTV	Mandatory legal timber certification
MOFCOM	Ministry of Commerce
MOU	Memorandum of understanding
MTC	Malaysian Timber Council
NGO	Non-government organization
NWFP	Non wood forest products
OLB	Origin and legality of timber
PEFC	The Programme of the Endorsement of Forest Certification
RPP	Responsible purchasing policy
SAC	Standardization Administration of China
SFA	State Forestry Administration
SGEC	Sustainable Green Ecosystem Council (Japan)
SME	Small-and-medium size enterprise
STTA	Shanghai Timber Trade Association
TFT	Tropical Forest Trust
TLAS	Timber legality assurance system
TLTV	Timber legality and traceability verification
TRAFFIC	Trade Records Analysis of Fauna & Flora in Commerce
TTF	Timber Trade Federation
UK	The United Kingdom
UNFF	United Nations Forum on Forests
US	The United States
USA	The United States of America
VLC	Verification of legal compliance
VLO	Verification of legal origin
VPA	Voluntary partnership agreement
WB	World Bank
WFP	Wood-based forest products (or timber products, or timber)
WTO	Word Trade Organization
WWF	World Wild Fund For Nature

林野庁委託事業

平成 28 年度
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動向調査　報告書（英語版）

2017（平成 29）年 3 月

一般社団法人全国木材組合連合会

〒100-0014　東京都千代田区永田町 2-4-3　永田町ビル 6 階
TEL：03-3580-3215　FAX：03-3580-3226
URL：　http://www.zenmoku.jp