

February 26<sup>th</sup>, 2016

## **TBT NOTIFICATIONS CHN/1094-1095-1096**

**On 22 July 2015 the Chinese government notified three standards to the WTO:**

- **CHN 1094: Limits on the level of volatile organic compounds and the migration of heavy metals in wooden furniture**
- **CHN 1095: Upholstered furniture – Limits for volatile organic compounds, decomposable aromatic amine and flame retardants in mattresses**
- **CHN 1096: Upholstered furniture – Limits on the levels of volatile organic compounds and decomposable aromatic amines in sofas**

**Both, EFIC and the IKEA Group addressed the European Commission with explanatory comments on these notifications in order to raise awareness of the potential technical barriers to trade.**

**The EU Commission reacted with comments on the three notified standards on 06 October 2015. China answered on 10 November 2015.**

**With the following contribution, we would like to bring further evidence that the three notified Chinese standards for furniture products are not legally complying with the TBT agreement, not technically correct, nor clarified and duly justified by the Chinese authorities in their reply to the European Union.**

**To this extent, EFIC and IKEA Group wish to provide the EU Commission with a detailed legal, technical and economic analysis to support the EU Furniture Industry in the relevant fora.**

**Q&A**

## Table of Contents

(1) Legal analysis.....	3
a) Legal base .....	3
(2) Technical analysis.....	5
a) What are our main concerns regarding the content of the three notified standards?.....	<b>Error! Bookmark not defined.</b>
b) Are TVOCs relevant as a risk indicator for health and comfort effects in non-industrial buildings? What scientific basis do we use to distinguish between harmful and harmless emissions?.....	<b>Error! Bookmark not defined.</b>
c) Which ISO standards for thresholds and testing methods would be relevant? 10	
(3) Economic analysis .....	5
a) Which is the outlook of the World Furniture Market? .....	12
1. World furniture production.....	12
2. World furniture export.....	12
3. World furniture imports.....	13
4. World furniture consumption.....	13
5. Market shares of the major exporting countries.....	14
b) Which is the current export value from EU to China on furniture products?...14	
c) Which EU Member States are affected by the CHN TBT?.....	16
1. Overall Assessment.....	16
2. Germany.....	16
3. Italy.....	18
c) Why the notified standards may highly impact the EU furniture industry?...19	
1. Technical barrier to trade.....	19
2. High costs and double testing.....	19
3. Undermining the growth of EU furniture industries and reciprocity in trade.....	20
e) Why the EU furniture industry is important?.....	21
(4) CHN Reply .....	23
a) Why do we consider that the answers are vague and out of focus? .....	23
(5) Facts & Figures .....	26

## (1) Legal analysis

### a. Legal base

#### **Art.2.2 TBT agreement**

*Members shall ensure that technical regulations are not prepared, adopted or applied with a view to or with the effect of creating unnecessary obstacles to international trade. For this purpose, technical regulations shall not be more trade-restrictive than necessary to fulfil a legitimate objective, taking account of the risks non-fulfilment would create. Such legitimate objectives are, inter alia: national security requirements; the prevention of deceptive practices; protection of human health or safety, animal or plant life or health, or the environment. In assessing such risks, relevant elements of consideration are, inter alia: available scientific and technical information, related processing technology or intended end-uses of products.*

#### **Articles 5.1 and 5.1.2 TBT agreement - Conformity assessment procedures**

*... Conformity assessment procedures are not prepared, adopted or applied with a view to or with the effect of creating unnecessary obstacles to international trade. This means, inter alia, that conformity assessment procedures shall not be more strict or be applied more strictly than is necessary to give the importing Member adequate confidence that products conform with the applicable technical regulations or standards, taking account of the risks non-conformity would create.*

#### **Annex 3 paragraph E, under "substantive provisions"**

*The standardizing body shall ensure that standards are not prepared, adopted or applied with a view to, or with the effect of, creating unnecessary obstacles to international trade.*

In this regard:

- 1) *"Members shall ensure that technical regulations are not prepared, adopted or applied with a view to or with the effect of creating **unnecessary obstacles** to international trade".*
- The three notified standards (G/TBT/N/CHN/1094: standard for wooden furniture that replace GB 18584-2001: "Indoor decoration and refurbishing materials – Limit of harmful substances of wood based furniture", G/TBT/N/CHN/1095 for Upholstered Furniture Mattress and G/TBT/N/CHN/1096 for Upholstered Furniture Sofa), propose while regulating the "testing method" for the Formaldehyde determination, the use of method called "3-methyl-2-benzothiazolonehydrazone method" (MBTH-method). But actually the analysis via the MBTH-method is not specific to formaldehyde because it is a colorimetric test for low range measurement of aldehydes triggering multiple reactions. Accordingly it is not the right method when focus is on determination of formaldehyde, additionally due to complex interferences with other volatile substances, especially other aldehydes or amines. Because of its twenty steps the MBTH-method is unnecessary complex to use if aiming for correct formaldehyde measurements, when

considering the fact that cheaper, more specific and widely recognized methods are available.

If the analysis is focused on the determination of formaldehyde, the Hantzsch-method, the well-known and validated method regulated in the EN and ISO standards (e.g. EN 717-1), with fluorescent detection, and even with UV-spectrophotometry, test method also proposed in the ISO and the European Standards, is most appropriate, cost-effective and specific method. Concerning the determination of more volatile aldehydes in addition to formaldehyde, then the DNPH-method (e.g. ISO 16000-3) should be used.

- **New specific and non-validated approaches have been invented without providing evidences that prove their efficiency:**

- for wood based furniture a totally new approach: "volume factor loading" defined as: "the ratio of the volume of wooden furniture to the volume of the environmental test chamber" has been introduced. This approach is different from the surface area approach used in existing internationally recognized, well-tested and efficient product emission standards, as ISO 16000-9.
- for mattresses: a special chamber that exist only few places and that are not defined in such a way that results from equipment made according to the standard can be expected to give comparable results.

2) *"Such legitimate objectives are, inter alia: national security requirements; the prevention of deceptive practices; protection of **human health or safety**, animal or plant life or health, or the environment."*

- The protection of human health cannot be used as an argument since, as explained in details in the technical analysis, the 3 standards are not health based (although intended by China) as there is not focus on hazardous substances. TVOC (sum of harmful and harmless substances) is restricted at a very strict level, while only few hazardous substances are restricted as individual substances, and surprisingly not at very restrictive levels.

TVOC consists of different mixtures of chemical substances, with varying biological effects. The importance of a toxicologically potent substance can be underestimated, while that of a low-toxicity substance can be overestimated.

As a consequence of that in theory, a product with a high concentration of a potentially very harmful for the human health substance, not comprised as one of the 4 individually regulated substances, could actually pass the TVOC requirement according to the Chinese standards.

- But on the other hand, the chemicals applied in the MBTH-method are hazardous and should be avoided under work safety considerations.

3) *"In assessing such risks, relevant elements of consideration are, inter alia: available scientific and technical information, related processing technology or intended end-uses of products."*

- To support this assessments and in line with stipulated in article 2.2 *in fine* abovementioned, please find attached the document "Comparison of Methods for the Determination of Formaldehyde in air", Analytical Letters, 22 January 2016.

### **Annex 3 – paragraph F under "substantive provisions"**

**Where international standards exist or their completion is imminent, the standardizing body shall use them, or the relevant parts of them, as a basis for the standards it develops, except where such international standards or relevant parts would be ineffective or inappropriate, for instance, because of an insufficient level of protection or fundamental climatic or geographical factors or fundamental technological problems.**

In this regard:

- None of those exceptions apply in this case, as already explained, so now the burden of the proof is in CHN as explained before. The answers provided by the CHN Authorities are ambiguous not consistent nor logical. The notified standards do not lead to any improvements over the recognized well-working international ISO-standards. The CHN Authorities have not delivered any documentation that shows validation of the methods either. Further technical details can be found below in parts 2 and 4 of this document.

## **(2) Technical analysis**

### **a. What are our main concerns regarding the content of the three notified standards?**

The concerns are related to the emission test methods and the emission requirements in the three notified standards. (G/TBT/N/CHN/1094: The notified standard for wooden furniture is to replace GB 18584-2001: "Indoor decoration and refurbishing materials – Limit of harmful substances of wood based furniture". The 2001 version did not include any VOC product emission requirements. The other notified standards: G/TBT/N/CHN/1095 for Upholstered Furniture Mattress and G/TBT/N/CHN/1096 for Upholstered Furniture Sofa are totally new standards.)

During the development of the GB 18584 draft, it was raised and discussed technical and scientific issues, as methods to determine formaldehyde emission and TVOC respectively, benefit and drawback of different methods and procedures, considerations around untreated solid wood furniture and need for clear definitions, etc. Following these discussions it was understood in 2014 that China will go for GB 18584 as voluntary standard. It is not understandable why the notified standard now is proposed as mandatory.

The CHN standards 1094-1095-1096 in major aspects are not always comparable with the International ones, especially:

- the **pre-conditioning** and special chamber for this for the notified GB 18584 and the sofa standard,
  - the **new method approaches** (volume approach for the notified GB 18584 and a special set-up the notified method for testing mattresses),
  - the **test conditions** (e.g. relativity humidity -45% RH- deviating from ISO standard -50% RH- conditions for all the notified standards),
  - the **time of air sampling**,
  - the **MBTH-method for determination of formaldehyde** that is not specific for determination of formaldehyde.
1. Moreover, as well as the International standards have been tested and proved efficient, the methods described in notified standard test methods are **immature**, **not on technically correct basis** and to our knowledge **not validated**.

As a matter of example:

- **Pre-conditioning and a special chamber for preconditioning** means introduction of unnecessary uncertainty into the determination.

In Europe the practice is to keep a test item in one chamber during the entire testing (incl. conditioning time) to get more knowledge about the emission and avoid problems by not being able to keep the exactly the same conditions in the pre-conditioning chamber and test chamber respectively. If the conditions in the pre-conditioning chamber and the main chamber are not exactly the same, then the different conditions influences the result. To achieve same conditions, chambers of same standard are needed, accordingly no reason to place the item in two different chambers as it just increases uncertainty, risk for contamination and it results in less information. It would be much better to have stable conditions in one chamber and be able to make more chamber measurements, to gain information about the emission development over time. One point emission result, does not give any information about increasing or decreasing emissions. As there is no minimum requirement set for the air exchange rate, to be able to make sure that the concentration levels set for formaldehyde and TVOC between products are not exceeded, one needs to measure almost frequently between all samples next to each other. It is questionable, if the approach with two chambers results in any benefits, as it implies more costs, more chamber capacity and more work.

Only being able to pre-condition more articles in the same chamber at the same time might appear to be a benefit, but this benefit is doubtful in practice as costly analyses are needed to show that there is no contamination risk during pre-conditioning and the required concentrations of formaldehyde and TVOC are fulfilled.

Conclusion – since the proposed pre-conditioning has not been scientifically validated the results cannot be considered reliable, nor provide any added value compared to the safe and common way of chamber testing (keeping each sample in each chamber during the entire test time).

- **Time of sampling air from test chamber** is in the Chinese notified standards different from ISO/EN standards and common labelling schemes and standards. Often sampling to determine hazardous substances as e.g. carcinogens are done after 24 hours, while sampling and analyse of air from the test chamber for VOCs are done after 3 and 28 days. In the Chinese notified standards the time before sampling is

limited to 20 hours (after the 5 days of pre-conditioning) regardless if determining formaldehyde, carcinogens, neurotoxins or other less problematic substances. The prerequisite for a reliable 20 hour measurement is that the conditions in the pre-conditioning chamber and the test chamber are exactly the same. (See details mentioned under pre-conditioning.)

Conclusion – since the pre-conditioning time and the time in chamber have not been scientifically validated the results cannot be considered reliable.

- The proposed method is based on **volume (m<sup>3</sup>)** instead of **surface area (m<sup>2</sup>)**. The surface area approach is used in existing internationally recognized, well-tested and efficient product emission standards, such as ISO 16000-9. With the common and internationally recognized surface area emission approach the exposure to be experienced by the humans in the room is comparable with what is measured in the test.

On the contrary, volume loading, is a new Chinese approach that has weaknesses and is not a good approach related to actual exposure and health. The approach can lead to both under- and over-estimation. Different furniture leading to the same volume loading (and thus tested with same air exchange rate) are likely to have very different surface areas, and accordingly measured the results will differ. For example, a piece of furniture made of the same board-materials with the same frame outline will result in different results dependent on how many shelves, drawers, etc. the tested furniture is containing.

It is important in the context of the proposed volume approach to be aware of the consequence of different and higher loading than commonly specified, when testing based on the area specific loading. For example, a box furniture (dimensions: 400 x 500 x 750) and a volume loading ratio of 0.15 (as requested in the notified standard) results in a surface area specific load of 1.55 m<sup>2</sup>/m<sup>3</sup>. Furthermore, in the context of CEN TS 16516 this would already mean a deviation because of overloading of the test chamber. Many furniture labelling standards specify 1 m<sup>2</sup>/m<sup>3</sup>. Additionally, the notified standard also request testing with open drawers, doors, etc.

An important consequence of the volume loading is an unnecessary need of chambers in many different sizes dependent of the outline of the furniture to be tested. If the laboratory needs to test both small and large furniture (as kitchen furniture) then laboratory facilities should cover chamber sizes from 500l to around 60m<sup>3</sup>. The need of many different sizes excludes many laboratories from being able to make the tests. Need for many different chamber sizes is also a challenging and expensive approach. For wood-based furniture, scaling down is an internationally recognized method, which allows the use of relatively small chambers provided that the test item has the same relative surface areas as in the final furniture (and cut surfaces are sealed).

A volume consideration can of course be used to consider how many pieces of furniture of a certain outline can fit into an actual room, but the volume approach should not be used linked to loading in test chamber.

Conclusion - the volume approach of the notified GB 18584 is not scientifically correct when aiming on relevance for human health impact. Additionally the volume approach is a setback compared to current science and experience and creating **unnecessary**

obstacles, without creating any added value compared to existing efficient ISO-standards. The different loading and different test conditions, compared to internationally recognized methods and procedures, have the effect to create a **real technical barrier to trade, implying costs and double testing.** If the intention is to request test for different versions of the same furniture this will result in an additional testing and additional cost to the increased costs due to China specific criteria. The additional consequence of China specific criteria as **hampering comparability of results and harmonization** should not be underestimated either.

- **New China specific approaches** are invented for wood based furniture: "volume factor loading in emission chamber" (see details above), and for mattresses: a special chamber that exists only in very few places and is not defined in such a way that results from equipment made according to the standard can be expected to give comparable results. These 2 approaches are entirely new ways introduced by China for determining product emission.

Conclusion – inventing new testing methods seems arbitrary and can therefore only be considered as not validated.

- The **MBTH-analysis method for determination of formaldehyde** is non-specific and will overestimate formaldehyde, if other aldehydes are present. It is difficult to understand why the MBTH-method is included in a method issued in 2014 (GB/T 31106-2014) and referred to in the notified standards. Especially when the products to be analyzed are wooden products or products that contain parts of wood, where it is known that other aldehydes are present.

The MBTH-method was disregarded during the ISO standardization, and it has been known since 1960s that the MBTH-method is inappropriate for specific determinations of formaldehyde. Recently the MBTH-analysis method has been compared with two commonly used methods for determination of formaldehyde in air: Hantzsch method using derivatization with acetylacetone (as used in e.g. ISO 12460-1) and DNPH according to ISO 16000-3. The results have shown that the MBTH-method is inappropriate for specific determination of formaldehyde, the method overestimates the formaldehyde concentration determined by using the other methods, by 9% up to 140%. The results prove that other volatile organic compounds interfere in a complex way with the formaldehyde quantification by the MBTH-method, which leads to elevate concentrations. The acetylacetone method is an example of a formaldehyde specific cost-effective method. For details see attached article from Analytical Letters, 22 January 2016. By using the acetylacetone method additionally handling of hazardous reaction chemicals needed for the MBTH-method (and the chromotropic acid that is given as a possible alternative to the MBTH-method for formaldehyde determination according to the notified GB 18584 and sofa standard) can be avoided.

Conclusion - the technical basis of the notified standard testing methods is not correct.

2. **Lack of consistency within China:** only the sofa standard is in line with the international approach for emission testing - surface area loading in emission chamber. An approach that is actually more difficult to apply on sofas than on e.g. wood-based furniture that is in the scope of the GB 18584.
3. **Unjustified grounds of the notified standards:** the 3 methods are not health based as they are not focused on hazardous substances. TVOC (sum of harmful and harmless substances) is restricted at a very strict level, while only few hazardous substances are restricted as individual substances, and surprisingly not at very restrictive levels.



4. **Lack of clear definitions** is critical as product emission testing is very challenging and sensitive to a large number of factors. By experience, it is necessary to work according to very thorough definitions and descriptions. Examples where definitions are of high importance and lacking linked to all notified standards: TVOC, minimum substances that shall be included in the VOC calibration, etc.

Concerning TVOC it is not precise enough to state: "Determine the nature and amount of volatile organic compound composition as much as possible according to the standard curve, the nature and amount determination shall be performed for at least 10 highest peaks" (GB/T 31106: "Determination of Volatile Organic Compounds in Furniture" 5.9.3.2). If the laboratories determine TVOC by considering all substances (C6-C16 according to definition in international standards) or in practice work with a list of target compounds, it will result in very different results. Many details need to be addressed, including e.g. how corrections for non-straight baselines are made. A consequence of this is that the testing with ambition to determine all substances, including e.g. acetic acid (main origin from solid wood and normally considered non-problematic) can be responsible for a major emission of furniture, is much stricter than procedures not considering all substances. In such cases it is essential to have clear definitions if as substance as acetic acid shall be included in TVOC or not.

The minimum substances that shall be included in the VOC calibration are stated as: "Volatile organic compound used for calibration is at least composed of benzene, toluene, p-xylene, m-xylene, o-xylene, styrene, ethylbenzene, acetic acid n-butyl ester and undecane" (GB/T 31106: "Determination of Volatile Organic Compounds in Furniture" 5.2.1.4). Depending on which materials are used to make the furniture, these substances will be more or less relevant. In case the main effort behind the notified standard is to avoid well known toxic substances as e.g. aromatic hydro carbons, a target compound list reflecting this should be clearly given (as done for benzene, toluene and xylene). It needs to be clarified which substances (if present) are to be identified, which substances are to be quantified with the substance response factor (determined for the specific individual substance), and which substances can be determined by toluene equivalents.

Linked to GB 18584 – if going ahead with this volume approach - there are additional need for clarification, e.g. need for description of the exact meaning of "adjustable" and "unfold" during pre-conditioning and in measurement chamber, and a need for correction and clarification, if section 5.3.1.1 stating "minimum volume" or Annex A stating "measure the maximum projected area and maximum height" applies.

In GB 18584 and the sofa standard (but for some reason not in the mattress standard) there are references to the analysis standard GB/T 31106-2014. This standard is in general less detailed than the corresponding ISO and EN standards. This needs to be addressed not only in the case of TVOC and formaldehyde methods, but for all important issues that can lead to non-comparable results. It is recommended to refer to the ISO 16000-6 in the case of VOC determination instead.

Conclusion - Without consistency and definitions the notified standards are **immature** and not ready for publishing as risk of delivering unreliable results are to be expected.

5. **Other considerations:** Difficult to conclude on test results from testing made according to unprecise standards. For example, TVOC is not clearly defined in the

standard, accordingly TVOC depends on the analytical set up and knowledge at the laboratory. The strict limit of TVOC 600ug/m<sup>3</sup> turns out to be "very strict" at a laboratory that determine all emissions in the defined range of VOCs, "less strict" at a laboratory that does not determine all emissions in the VOC-range.

Seems also important to raise obviously emissions in a chamber cannot be assumed to be representative for the indoor air quality in real-life surroundings in buildings as VOC interact with each other. So other products in rooms as well as cleaning agents together might have harmful or harmless effects to health. But this interaction is not being reproduced in a chamber because there is a wide-spread list of products that can't be covered by chamber testing, where the purpose is to compare emissions from different materials or product under standard conditions.

There are many technical issues that need to be solved. If the standards come into effect it is to be expected to cause major problems.

### b. Are TVOCs relevant as a risk indicator for health and comfort effects in non-industrial buildings? What scientific basis do we use to distinguish between harmful and harmless emissions?

Indoor air pollutants including VOC are most likely a cause of health effects and discomfort in indoor environments in non-industrial buildings. However, **there is an inadequate scientific basis on which to establish limit values/guidelines for TVOC**, both for air concentrations and for emissions from building materials (K. Andersson et al: "TVOC and Health in Non-industrial Indoor Environments", Indoor Air 1997;7;78-91).

TVOC consists of different mixtures of chemical substances, with varying biological effects. The importance of a low concentration of a toxicologically potent substance can be underestimated, while that of a low-toxicity substance can be overestimated.

In addition, the measured concentration depends on the method of sampling and analysis employed.

Recently, it was reconfirmed by the European standardization body CEN that TVOC is not a reliable indicator of product emission on human health (prEN16516). Accordingly, when focus in the notified standards is on health, then the focus needs to be on individual harmful substances instead of TVOC, as also given in the text from the EU Commission.

### c. Which ISO standards for thresholds and testing methods would be relevant?

Methods: ISO 16000-9 (chamber), ISO 16000-6 (VOC analysis), ISO 16000-3 (DNPH-method - formaldehyde and other carbonyl compounds), ISO 12460-1 (formaldehyde emission in chamber by acetylacetone-method).

Thresholds: linked to the notified GB standards it seems most important to focus on the fact that TVOC is not a toxicological based value. (As TVOC being a sum of harmful and harmless/non-problematic substances cannot be used as a measure of the impact of product emission on human health)

Important references:

- "TVOC and health in non-industrial indoor environments. Reports from a Nordic scientific consensus meeting at Långholmen in Stockholm"  
*Indoor Air 1997; 7: 78-91. K. Andersson et al.: TVOC and Health in Non-industrial Indoor Environments. Report from a Nordic Scientific Consensus Meeting at Långholmen in Stockholm, 1996 – attached.*

Extract:

"Indoor air pollutants including VOC are most likely a cause of health effects and discomfort in indoor environments in non-industrial buildings. However, the group concluded that the scientific literature is inconclusive with respect to the relevance of TVOC as a risk index for health and discomfort effects in buildings. Consequently, there is an inadequate scientific basis on which to establish limit values/guidelines for TVOC, both for air concentrations and for emissions from building materials."

- Lately it is re-confirmed in the European standardisation and stated (in draft for CE labelling of construction products in Europe, prEN16516) that "TVOC is not a reliable indicator of the impact of product emission on human health". – attached.

Related to individual substances, see: ECA Report 29: "Harmonisation framework for health based evaluation of indoor emissions from construction products in the European Union using EU-LCI concept."

Link: [http://www.eu-](http://www.eu-lci.org/EULCI_Website/Links_files/ECA%20Report%2029_EUR%2026168%20EN_2013_JRC83683.pdf)

[lci.org/EULCI\\_Website/Links\\_files/ECA%20Report%2029\\_EUR%2026168%20EN\\_2013\\_JRC83683.pdf](http://www.eu-lci.org/EULCI_Website/Links_files/ECA%20Report%2029_EUR%2026168%20EN_2013_JRC83683.pdf)

Most focus and values are related to construction products and a few legal requirements that include volatile organic compounds exist (as AgBB for some flooring products in German, the Royal decree in Belgium also so far related to flooring materials). Else it is mainly formaldehyde emission that is regulated.

Most criteria documents are national or product area/trade organisation specific and set up as private voluntary labelling or certification schemes. Linked to furniture there are e.g. criteria with limits from BIFMA (office furniture in USA) and RAL (for many different product areas incl. upholstery and wood-based furniture in Germany).

Also some indoor air values (not directly relevant for emission from products) exists for some substances.

### (3) Economic analysis

#### b) Which is the outlook of the World Furniture Market?

##### 1. World Furniture Production

World production of furniture is worth about **US\$ 472 billion**<sup>1</sup>.

The furniture production of the seven major industrial economies - which are, in order of furniture production: the United States, **Germany, Italy**, Japan, the **UK**, Canada and **France** - is about **127\$ billion**.

The increase of furniture production in the **Asia and Pacific region** (from US\$ **87 billion** in 2005 to US\$ **272 billion** in 2014) is a major structural phenomenon which took place in the last 10 years and has **substantially changed** the world furniture sector. In this framework, **China** only has rapidly shifted from a share of **14,6%** to **45% of world furniture production**. See *figure 1 and 2*



**China** currently holds **45%** of world furniture production.



The **EU** accounts for around **25%** of world furniture production. Among **EU countries**, in the world furniture production:

- **Germany** holds **5%**;
- **Italy** **4%**;
- **Poland** **3%**;
- **France** and **UK** **2%**.

*See figure 1*

##### 2. World Furniture Exports

The main furniture exporting country is **China**, followed at a distance by **Germany, Italy, Poland** and Vietnam. See *figure 4*.

The evolution of exports between 2009 and 2014 has been characterized by an **impressive growth of the Chinese exports**, as described in *figure 12*.

In 2014, for the first time in many years, **Chinese exports were stagnant**. The fastest growing furniture exporter (from a low base) is Vietnam. **Vietnam** recently moved from the 6<sup>th</sup> to the 5<sup>th</sup> place, overcoming the USA.

**Opening of furniture markets:** in *Table W7*, the growth of exports, 2005-2014 is reported.

---

<sup>1</sup> Source: **CSIL World furniture outlook 2015/2016**. Estimates are based on CSIL processing of data from official sources, both national and international, that cover the 70 most important countries.



Chinese exports increased from **13,451** US\$ millions in **2005** to **51,751** US\$ millions in **2015**



**EU exports** accounts for **57,846** US\$ millions

Among **EU countries**, exports in the period 2005-2015 performed as follows:

**Germany:** from **7,375** to **11,290** US\$ millions

**Italy:** from **10,338** to **11,252** US\$ millions

**Poland:** from **5,310** to **9,780** US\$ millions

**France:** from **2,445** to **2,221** US\$ millions

*See Table W7*

### 3. World Furniture Imports

The main furniture importing country is the **USA**, followed at distance by **Germany, France** and **the UK**. *See table W8;*

The Chinese market is still recognized for being a **closed market** – in China **imports** account for **less than 5%** of the market<sup>2</sup>;

However, in the last ten years **furniture imports in China has been growing;**

**Opening of furniture markets:** in *Table W8* the growth of imports, 2005-2014 is reported



Chinese imports increased from **479** US\$ millions in **2005** to **2,382** US\$ millions in **2015**. This data does not include **lighting and mattresses**.



Among **EU countries**, imports in the period 2005-2015 increased as follows:

**Germany:** increased from **9,011** to **13,815** US\$ millions

**Italy:** increased from **1,701** to **2,226** US\$ millions

**Poland:** increased from **826** to **1,633** US\$ millions

**France:** increased from **6,079** to **7,150** US\$ millions

*See Table W8*

### 4. World Furniture Consumption

China is today the larger furniture **consumer** (besides being the largest **producer** and **exporter**)<sup>3</sup>

The **apparent consumption** in China is very high, amounting at **162,786 US\$ million** in 2014. This is nearly corresponding to the global apparent consumption for **all** 7 major countries (Canada, USA, France, Germany, Italy, Japan, UK) amounting globally at **163,265 US\$ million**. *See table 5.*

<sup>2</sup>Source: Study on [The EU furniture market situation and a possible furniture products initiative](#), CEPS, Economisti Associati, CSIL and Demetra for DG Enterprise and Industry, November 2014, page 28

<sup>3</sup>Source: Study on [The EU furniture market situation and a possible furniture products initiative](#), page 20

With a permanently **growing increase** in revenue and thus also of private wealth, expenditure on housing, car, computer, **furniture**, securities and trips abroad are at the forefront of investments and of **Chinese consumption**. There is a strong demand for consumer goods, especially in fast growing **middle class** as well as in the **high-spending class**.



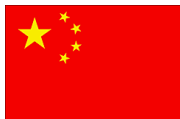
The apparent consumption for furniture products in the Asian and Pacific region is valued 222,781 US\$ millions. China only accounts for **162,786** US\$ million.



The apparent consumption in the EU 28 is valued **101,167** US\$ millions.

## 5. Market Shares of the Major Exporting Countries

- In the period 2005-2015, for **furniture production**:



China: from 14,6 to **45%**



EU 28: from 36,2 to **22,7 %**

Among which:

Italy: from 8,2 to 4,2%

Germany: from 6,5 to 4,8 %

UK: from 3,5 to 2.1%

France: from 3,2 to 1,9%

- In the period 2005-2015, for **furniture exports**:



China: from 16,6 to **36,2%**



EU 28: from 54,5 to **40,5 %**

Among which:

Italy: from 12,7 to 7,9 %

Germany: from 9,1 to 7,9 %

UK: from 1,6 to 0,9 %

France: from 3,0 to 1,6 %

*See table 6*

c) Which is the current export value from EU to China on furniture products?

China is an **export market** of **growing importance** for EU furniture industries.

Exports from EU to China are growing. See *Table W10*

**Furniture imports** in **China** today account for **2,382 million US\$** (from **479 US\$** millions in **2005**).

The **first** origin of imports in China is **Germany**, with a share of **16%**, followed by **Italy**, with a share of **12%**. See *Table W10*

#### Main furniture trading partners of China

Origin of furniture imports		Destination of furniture exports	
Germany	16.2%	United States	28.8%
Italy	11.6%	Japan	5.5%
South Korea	9.2%	United Kingdom	4.6%
Vietnam	8.4%	Malaysia	3.8%
Japan	8.4%	Germany	3.7%
United States	6.7%	Australia	3.6%
Poland	5.8%	Singapore	3.5%
France	3.6%	Canada	2.9%
Taiwan	2.9%	Hong Kong	2.8%
Thailand	2.7%	United Arab Emirates	2.6%

Source: CSIL. Data are for the last available year

The growth of EU furniture exports to China is relevant also in terms of market segments

*E.g.* for what **mattresses** are concerned, EU exports to China **doubled** in 4 years only: from a total of Million **EUR 6.127,488** in 2010 to **EUR 12.346,041** in 2014.

EU Exports to China <sup>4</sup> - EUR					
mattresses	of cellular rubber	of cellular plastics	with spring interiors	other	TOTAL
2010	274.528	2.001.307	2.037.125	1.814.488	6.127.448
2011	876.475	2.400.083	1.875.827	2.492.846	7.645.231
2012	436.420	2.303.386	1.700.542	2.561.207	7.001.555
2013	819.188	2.586.114	2.724.128	2.452.885	8.582.315
2014	2.045.567	3.770.690	3.931.787	2.597.997	12.346.041

<sup>4</sup> Source: EBIA, European Bedding Industries Confederation

100Kg					
mattresses	of cellular rubber	of cellular plastics	with spring interiors	other	TOTAL
2010	340	1.463	3.682	2.415	7.900
2011	1.082	1.645	3.392	2.753	8.872
2012	450	1.557	2.159	2.641	6.807
2013	809	2.234	2.853	2.643	8.539
2014	2.125	2.036	2.654	3.232	10.047

## d) Which EU Member States are affected by the CHN TBT?

### 1. Overall assessment

In the short term, **Germany** and **Italy** would probably be the countries most affected by the Chinese TBT;

**Germany** and **Italy** are also the major EU furniture producers, holding together **40% of the EU furniture production**<sup>5</sup>.

However, this is likely to undermine **other EU countries** as well, as the Chinese market is already seen as a growing opportunity for EU furniture companies e.g. **Poland** and **France** are already increasing their export to China (ranking 7<sup>th</sup> and 8<sup>th</sup> among Chinese origin of imports);

In fact, **Chinese consumption** is high and increasing. At the same time, more and more the **request for EU products** is growing;

This is particularly relevant for the **high-end segment**, but not only.

### 2. Germany



Germany is the major furniture producing country in Europe.

In 2014 it contributed **18.2 billion EUR** to the country's GDP, and employs **101,000 people** within **1011 companies** with 20 and more employees.

Industry's total **export** reached **9.5 billion EUR** in 2014

<sup>5</sup>Source: Study on [The EU furniture market situation and a possible furniture products initiative](#), CEPS, Economisti Associati, CSIL and Demetra for DG Enterprise and Industry, November 2014, Table 25





**China** represented in 2014 the **11th** most important destination for German furniture's export, up to the 14th position in 2010.



In 2014, **German export** amounted to **324 million EUR**, an increase of **90%** compared to 2010. In January-October 2015 the German furniture industry registered a **+4%** in its export to China, which is expected to reach the **10<sup>th</sup>** position at the end of 2015.

Therefore China represents a very important destination for the German furniture industry and it will be even more important in coming years with export expected to reach **500 million EUR** mark by **2020**.

**CURRENT VALUE OF TRADE AFFECTED AND/OR FORECAST BECAUSE OF THE CHN TBT**

Considering export data for 2014, the **current value of trade affected by the CHN TBT** is estimated being **240 million EUR** (75% of the total German export of furniture for that year)

**ESTIMATED VALUE OF TRADE FOREGONE BECAUSE OF THE MEASURE**

At the same time, the **estimated value of trade foregone because of the measure** concerns potentially all **240 million EUR** (375 million EUR by 2020).

Considering the strategic role that China plays for the German furniture export there will be two **German national pavilions** on Chinese furniture fairs in 2016, *Interzum Guangzhou* (for the 12<sup>th</sup> time) and for the second time *CIKB Shanghai*, supported by the National Confederation Of German Woodworking and Furniture Industries HDH/VDM.

Moreover, for German furniture industries the access to the market is very successful by **brand flagship stores** and **showrooms**.

The "**Made in Germany**" has a particularly good reputation and the increasing demand for German furniture is remarkably observed in the fields of **kitchen, bedding seating, living, dining** and **office**.

Another important access to the furniture market in China for German companies results from the **two most important furniture fairs** in **Europe**, the **IMM Cologne** and the **Salone del Mobile**, Milano<sup>6</sup>.

**German kitchen sector:** especially the kitchen sector can be seen as the most developed until now. AMK has also founded a subsidiary in China for assisting its members and any new members and western companies that wish to enter into Chinese market, while local Chinese companies benefit from media, marketing and public relation coverage<sup>7</sup>.

This a general approach for a long-term healthy relationship all involved can profit in.

For the benefits of both, German industry as well as Chinese partners, it is important to maintain frequent interaction with Chinese associations and to facilitate a **deepen relationship** and mutual collaboration. Also on technical side a collaboration and partnership with local associations is required and already started to be able to take the country-specific aspects adequately into consideration.

---

<sup>6</sup> In 2015 AMK, the German Association for modern kitchen, organized different special events in the IMM Cologne with the topic of China and a China Congress. This resulted in an unbroken interest of Chinese people in German furniture. Moreover, for German producers, the Salone del Mobile furniture fair in Milan is highly relevant, where trade visitors from China are highly represented.

The German furniture industry has optimistic estimate for the future, with China as a growing important market, not only in the absolute **high price range** but also in the **middle** of the market mainly driven by a permanently growing increase in revenue and thus also of private wealth that results in expenditure of Chinese consumption and a strong demand and awareness for German brands, especially in fast growing middle class as well as in the high-spending class.

However, the way the three Chinese standards **CHN/1094/1095/1096** have been introduced are **undermining the efforts and success made so far**. Besides the technically very questionable approach against internationally recognized existing standards, as currently proposed the three Chinese standards will be a major obstruction of access to the Chinese market with additional costs and will have impacts on the furniture industry that shall not be underestimated.

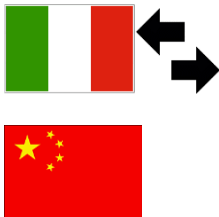
### 3. Italy



The Italian furniture, bed and furnishings manufacturing is a substantial industry.

In 2014 it contributed **15,3 billion EUR** to the country's GDP, and employs **192.000 people** within **28.600 companies**.

Industry's total **export** reached **9.550 million EUR** in 2014.



China represented in 2014 the **9<sup>th</sup>** most important destination for the Italian furniture's export, up to the **14<sup>th</sup>** position in 2010.

In 2014 the Italian export amounted to **235 million EUR**, an increase of **106%** compared to 2010. In January-October 2015 the Italian furniture industry registered a **+22%** in its export to China, which is expected to reach the **8<sup>th</sup>** position at the end of 2015.

Therefore, China represents a very important destination for the Italian furniture industry and it will be even more important in coming years with export expected to reach **385 million EUR** by **2020**.

**CURRENT VALUE OF TRADE AFFECTED AND/OR FORECAST BECAUSE OF THE CHN TBT**

Considering export data for 2014, the value of trade affected is estimated being **175 million EUR** (75% of the total Italian export of furniture for that year)

**ESTIMATED VALUE OF TRADE FOREGONE BECAUSE OF THE MEASURE**

Potentially all **175 million EUR** (288 million EUR by 2020)

Considering the strategic role that China plays for the Italian furniture export late this year there will be the first **Italian Furniture Fair in Shanghai** organized by the Italian Furniture and Furnishing Association FederlegnoArredo Eventi SpA (19-21 November 2016).

This event, first of its kind, will bring to the Chinese market the top producers of the Italian furniture sector, who will show their products on a **4.000 mq exhibition area** to selected architects, trade operators and investors.

It is meant to replicate the success of the **Salone Internazionale del Mobile** di Milano – the **biggest furniture fair worldwide**, established in 1961, that counts nowadays on the annual attendance of around **310,000 visitors** and **1,300 exhibitors**.

The fair will be complemented by the “**Salone Satellite China**” the annual event that bring together young designers under 35 and companies, first launched in 1998 in Milan.

## e) Why the notified standards may highly impact the EU furniture industry

The CHN standards have the effect to create a **real technical barrier to trade**, implying **costs, double testing**, and **unnecessary obstacles**, without creating any added value and furthermore delivering **unreliable results**.

### 1. Technical barrier to trade

The CHN standards would pose the **potential risk** for EU companies of **not being able to sell their products in China**. This is due to the fact that, given the **unpredictability** of the test method proposed, it might be that – for the same kind of furniture – the test might result “passed” or “failed”, without any concrete possibility for EU companies to assess its result beforehand.

The **impact** in **economic terms** is potentially **huge**, as it is able to affect all current – and future potential – value of trade for the concerned products. *See Economic analysis and Member States` assessment for all economic details*

The threat is even more critical as the proposed test method is **not scientific-based** and **unable** to deliver **reliable** nor **comparable results**.

Moreover, for some products, it will not be possible to test according to CHN dispositions. *See Technical analysis for all technical details.*

### 2. High costs and double testing

Concerning **costs for the double testing** required, if the GB standards become a reality and both GB tests and another test are needed, we estimate that this will result in **more than double costs**.

In case of the notified GB 18584 additional test is needed due to volume approach and preconditioning, other air sampling times, other climate conditions in chambers; in case of the notified sofa standard additional test is needed due to preconditioning, other air sampling times, other climate conditions in chambers; in case of the notified mattress standard additional test is needed due to special test set-up and conditions.

At an European laboratory experienced in product emission testing and since decades one of the leading emission laboratories in the world the **(extra) costs for tests according to the notified GB 18584 is around Euro 1000-1100,- per product** dependent on chamber size needed.

The notified standard requires use of a chamber size corresponding to the furniture dimension (the most suitable according to GB 18584 is a test chamber with a volume ratio closest to a volume loading ration of 0.15, and the volume loading ratio must be within 0.075 – 0.3). This also means that quite a number of chambers in different sizes are needed. This is in particular challenging due to limited number of larger environmental test chambers around the world and the costs for chambers of 20m<sup>3</sup> and larger are EUR 300.000-500.000 and up.

Basis for calculation:

- Pre-conditioning: 5 days of pre-conditioning in a larger climate chamber with sufficient air exchange, for example 5 test items in a 20m<sup>3</sup> chamber to avoid violating the TVOC and formaldehyde requirements and the 30cm distance requirement set in the GB notified standard, daily monitoring of concentrations of TVOC and formaldehyde to prove that the conditions are fulfilled. Cost of pre-conditioning chamber use and analyses EUR 2775,- to be divided by the items would be EUR 555,- If fewer samples can be fitted into the pre-conditioning chamber (as it is the case for sofas) that again will increase the cost. (As mentioned in the Technical analysis it can be questioned, if it is worth the risk of contamination and in case of contamination problems to have to start from the beginning of requesting new items for test, or actually preferable to pre-condition each item separately, and then just as well as one item for test in one chamber for the entire time (pre-conditioning and test chamber time).)
- Actual test chamber test and analyses: One day in a sufficiently large chamber for the test per sample and sampling and analyses for formaldehyde and VOC EUR 480,- If chamber > 1m<sup>3</sup> is needed additional costs of EUR 80,- apply.

In all cases the analyses for formaldehyde need to be made according to a formaldehyde specific method and the method requested according to the notified GB standards. Acetyl acetone analysis and MBTH-analyses are at the same cost level, if the methods are set up as routine tests. Estimated cost EUR50,- for each method.

An alternative furniture emission test to the GB 18584 that is carried out as standard on a voluntary basis in Europe is a short term 2-3 days test primarily to determine, if any hazardous substances in the emission, and as furniture often is introduced into in indoor environment when people are living in the rooms (in contrast to most building materials that are introduced at an earlier time before moving in). Cost for a full emission test according to ISO 16000-9 including the item in test chamber for 28 days and analyses after 1, 3 and 28 days and DNPH- for determination of lower aldehydes (not only formaldehyde) and identification and quantification of all individual VOCs is around EUR 2000,-, which accordingly cannot be directly compared with a test according to GB 18584. However, worth mentioning that the costs of the short product emission test of 2-3 days, and the GB 18584 corresponds to the costs of a full ISO 16000-9.

### 3. Undermining the growth of EU furniture industries and reciprocity in trade

While EU companies has been struggling for a long time – and still they are – against a huge **import pressure** from Chinese products in the EU market, in the latest years China

has become an **export market of growing importance** for EU furniture industries, with even higher potentials in the near future.

Ensuring a balanced **reciprocity in trade** and a **level playing field** in international trade is fundamental to support EU furniture industries and EU position in the international scenario.

Data on Chinese furniture industry<sup>8</sup>:

- With its focus on **export-driven** industrial production and thanks to **foreign investments**, China has witnessed an unprecedented period of growth in the last two decades and is now the **largest producer** (and also **exporter** and **consumer**) of furniture worldwide and a manufacturing centre with increasing outsourcing and production migration from overseas;
- In this line, the Chinese government has also adopted a series of **provisions** aimed at **supporting furniture exports**, such as declining tariffs on raw material imports and VAT rebates for exports;
- In the last ten years only, China passed from a global **10%** to **45%** of the **world furniture production**;
- The Chinese furniture industry has now become a huge integrated industry with more than 5 million employees, exporting nearly **30%** of its production and satisfying **99%** of the domestic demand;
- Correspondently, **Chinese imports in Europe** have a great impact: it is now estimated that **64%** of **total EU imports** in the furniture sector comes from China;
- A host of favourable factors contributed to this growth. Firstly, the combination of **abundant skilled workforce** and **low costs** enabled China to provide furniture to the international market at highly competitive prices. Secondly, China enjoyed a **growing inflow of investments** especially from Hong Kong, following the liberalisation process begun in the early 1980s. In parallel, the Taiwanese furniture industry began to **shift its production** core to China, especially to the Guangdong province. Many Singaporean companies also started investing in China;
- **Huge public investments** in shipping and containerisation also helped the local industry to take off, especially as regards **exports**;
- Even if China is now facing a **more challenging global macroeconomic environment**, a permanently growing increase in revenue and thus also of private wealth, together with expenditure on products as housing, car, computer, furniture, are at the forefront of investments and of **Chinese consumption**;
- In China there is a **strong demand for consumer goods**, especially in **fast growing middle class** as well as in the **high-spending class**, registered as well in the particular field of furniture industry and especially for high-value products.

#### f) Why the EU furniture industry is important?

**Employment** - the sector employs around **1 million workers** in **130 thousand companies** generating an annual turnover of around **EUR 96 billion**;

**Significant contribution to European and National economies** - Furniture companies makes a significant contribution to the EU and National economy. **One quarter** of the world`s furniture is produced in the EU and in most of the European countries the furniture

---

<sup>8</sup>Source: Study on [The EU furniture market situation and a possible furniture products initiative](#), CEPS, Economisti Associati, CSIL and Demetra for DG Enterprise and Industry, November 2014, page 19

sector represents between **2** and **4%** of the production value of the overall manufacturing sector;

**Strong impact on EU external market** - The EU accounts for about **40-50%** of world furniture imports, **30-35%** of exports and **45%** of total world trade. EU furniture products remain at the top-level in terms of exports to other countries thanks to the quality of our products and EU countries are still gaining a relevant share of global production and trade of furniture;

**Trend setting** - EU furniture manufacturers set **global trends**. EU furniture manufacturers are widely known and esteemed worldwide and the EU furniture sector still remains one of the most integrated and best differentiated in terms of **product variety** in the world;

**High-end segment** - the EU is a **world leader** in the **high-end segment** of the furniture market. Nearly **two** out of every **three** high-end furniture products sold in the world are produced in the EU;

**Labour intensive sector** – furniture industries produce goods that require a **large workforce** with a **wide range of professional backgrounds**: from industrial workers to manufacturers, designers, suppliers and entrepreneurs. Moreover, EU furniture industries are still often situated in **smaller cities** and **rural areas**, promoting employment in areas where a job may typically not be easy to find;

**Promotion of SMEs** – the EU furniture sector is mainly composed of **SMEs**, or even **micro** companies, so EU furniture industry is constantly engaged in developing strategies and promoting policies aimed at supporting EU small and medium sized manufacturers and facilitating their growth, innovation and internationalization;

**Fostering Creativity, Innovation and Technology** - EU furniture production technology is advanced and companies operating in the woodworking machinery industry are **global leaders**. Furthermore, all **leading design and research centers** are located in the EU and EU furniture manufacturers are global trendsetters. In this regard, it is noteworthy that about **12%** of **designs** registered in the Office for Harmonization in the Internal Market relate to this sector;

**Respect for high health and environmental standards** - The EU furniture industry has always embraced high ecological standards and furniture products manufactured in the EU are **top performers** in terms of **environmental** and **social sustainability**;

**Traditional Europe's artistic and cultural patrimony** – last but not least, the EU furniture industry represents an EU manufacturing sector that incorporates major values other than price. European furniture products are appreciated and recognized worldwide because of their **cultural heritage, quality** and the **excellence of the artisanal skills** used to create them.

Because of its importance, the performance of the sector can be considered a **driving force for EU economic growth**. This is a remarkable position to be defended.

## (4) CHN Reply

### a. Why do we consider that the answers are vague and out of focus?

Questions asked by the EU Commission and comments on the CHN reply:

1. Why the notified drafts are based on three different test approaches -surface area loading in emission chamber (sofa), volume factor loading in emission chamber (wood based furniture) and special mattress chamber.

Very confusion answer, where China actually themselves point out that they choose surface area loading method like relevant ISO standards. Indeed not consistent nor logical why they then in only one standard (sofas) use this surface area loading approach. The approach as for wooden furniture and for mattresses and other Chinese modifications in the standards (see Technical analysis for details) do not lead to any improvements over the recognized well-working international ISO-standards. The CHN Authorities have not delivered any documentation that shows validation of the methods either.

But, according to the Annex 3 – paragraph F under “substantive provisions”, where international standards exist or their completion is imminent, the standardizing body shall use them, or the relevant parts of them, as a basis for the standards it develops, except where such international standards or relevant parts would be ineffective or inappropriate, for instance, because of an insufficient level of protection or fundamental climatic or geographical factors or fundamental technological problems. None of those exceptions apply in this case, as explained above.

A statement from the Chinese earlier in the answer 1: “...our researchers think that whatever the furniture is, how much space does the furniture account for only relates to the volume of the furniture”, this is not necessarily true. As explained under Technical analysis point on volume compared with surface area. E.g. a chair and a small cupboard with several shelf-boards (both with more or less the same volume) will have very different surface areas, and even if coated with the very same lacquer, very different emissions.

The mattress test construction is very unique that does not relate to any other standards and with a testing shelf made of “pure wood or stainless steel” and a shelf that is not fitting exactly to the hood. How is it verified that this will give similar results for formaldehyde and TVOC for all the allowed variations (dimension and material)?

2. The EU would appreciate further information on the reasons why the relevant ISO-standards, namely ISO 16000-9 (chamber), ISO 16000-6 (VOC analysis), ISO 16000-3 (DNPH-method - formaldehyde and other carbonyl compounds) and ISO 12460-1 (formaldehyde emission in chamber by acetylacetone-method), are not followed. The EU would like to ask whether these ISO standards would be accepted by the Chinese authorities as well.

- a. CHN Statement: “During the process we developed these 3 standards, we researched relevant ISO standards and did verification tests according to their specified methods. In accordance with the test data and the real situation about Chinese labs and furniture products, the final analysis method of formaldehyde and VOC was confirmed.”

If a technical regulation is in accordance with a relevant international standard, it is presumed (although this presumption is challenged) not to create an unnecessary obstacle to international trade. (Art. 2.5 TBT Agreement).

This is not the case as already explained and expressly admitted by the CHN Authorities when thereupon conclude that a different method has been chosen. And on top of this, it is stated in the Chinese comments that VOC / TVOC analysis as set out in "GB/T 31106-2014 refer to the main technical content from ISO 16000-6". However, the GB/T 31106 is less detailed than the corresponding ISO and EN standards, which can lead to non-comparable results. It is recommended to refer to the ISO 16000-6 in case of VOC determination instead. These arguments show clearly that the CHN Authorities are not following the content and principles of the International Standards.

Furthermore, if the final analysis method of formaldehyde and VOC was confirmed based on the research of the ISO standards and the "*real situation of the Chinese labs and furniture products*" and we know that the content of the ISO standards is not followed, then, in fact it has to be just based on the local features of the Chinese market, which is against the principle of non-discrimination, the core of the TBT Agreement. Under the TBT Agreement governments have to ensure that TBT measures do not discriminate against foreign products in favor of domestic producers.

- b. Concerning the Chinese preference for the MBTH method, it is not acceptable from a technical point of view to request a method known since many years back, not to be specific to formaldehyde (meaning overestimation of formaldehyde - one of the substances with limits in the Chinese standard).

The Chinese statement: "*ISO 12460-1 ... may causes relative larger deviation, so we did not adopt...*"

This is in contradiction with our and the common knowledge, as both for the MBTH and the acetylacetone-method based on Hantzsch (even when using UV-spectrophotometry for detection) the Limit of Detection is in the same order of magnitude.

- c. CHN Statement: "*ISO 16000-3 uses HPLC to determine the formaldehyde content but we think that it improves the test expenses and admittance for the labs only to determine the formaldehyde content.*"

The analysis via the MBTH-method is not specific to formaldehyde and accordingly not the right method when focus is on determination of formaldehyde, additionally due to complex interferences with other volatile substances the MBTH-method is unnecessary complex to use for correct formaldehyde measurements, when considering the fact that cheaper and more specific methods are available. If the analysis is focused on the determination of formaldehyde, the Hantzsch-method with fluorescent detection and even with UV-spectrophotometry is most appropriate and cost-effective and specific method and if necessary to determine more volatile aldehydes in addition to formaldehyde, then the DNPH-method should be used.

3. The EU would kindly invite the Chinese authorities to consider distinguishing between harmful and non-problematic substances and only focus on harmful substances by means of a toxicological-based value.



The comment from the EU Commission is not answered. Even if VOCs are considered generally harmful, however, there is an inadequate scientific basis on which to establish limit values/guidelines for TVOC, both for air concentrations and for emissions from materials and products.

TVOC consists of different mixtures of chemical substances, with varying biological effects. The importance of a low concentration of a toxicologically potent substance can be underestimated, while that of a low-toxicity substance can be overestimated.

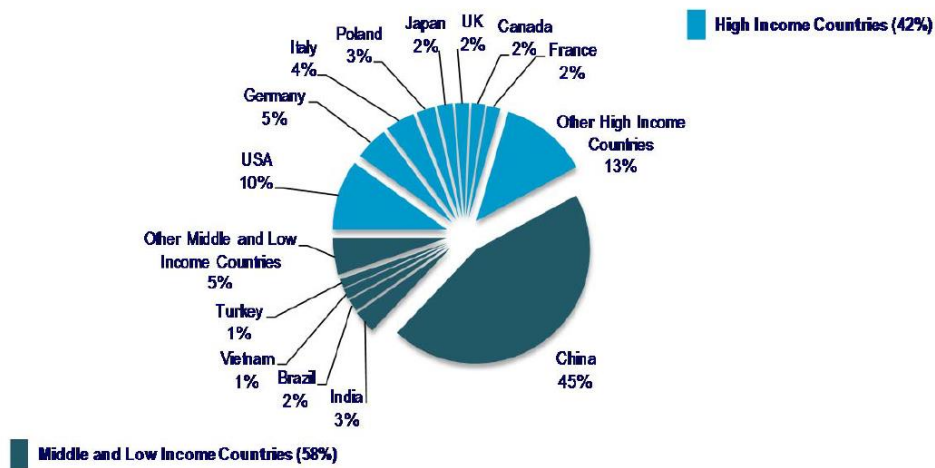
In addition, the measured concentration depends on the method of sampling and analysis employed.

Recently the European standardisation body CEN reconfirmed that TVOCs are not a reliable indicator of product emission on human health. (prEN16516). Accordingly, when focus in the notified standards is on health, then the focus needs to be on individual harmful substances instead of TVOC, as also given in the text from the EU Commission.

## (5) Facts & Figures

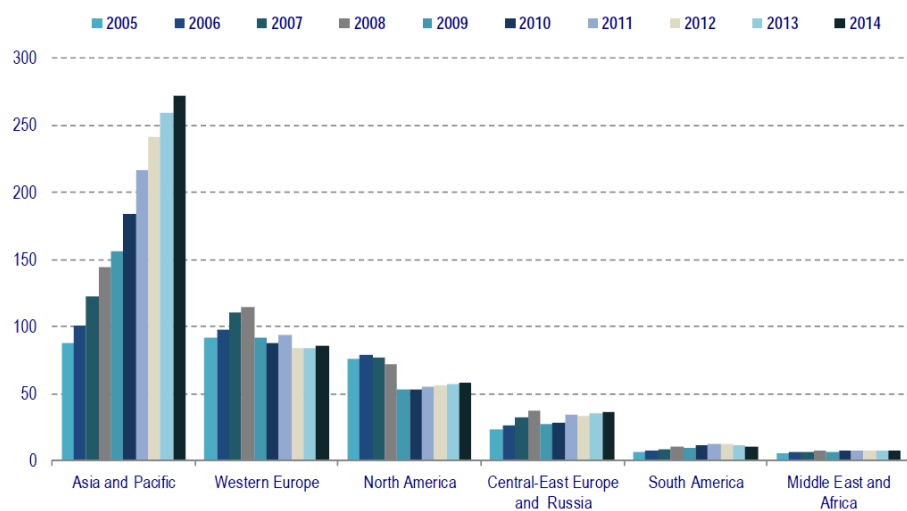
### World furniture production

Figure 1  
Percentage breakdown of world furniture production, 2014



Source: CSIL

Figure 2  
Furniture production by geographical region 2005-2014. Current US\$ billion.



Source: CSIL

Western Europe: Europe 15 + Norway, Switzerland and Iceland

## World furniture exports

### WORLD FURNITURE INDICATORS

**Table W7**  
**THE OPENING OF FURNITURE MARKETS. Growth of exports, 2005-2014,**  
**40 major exporting countries**

Country	Furniture exports									
	US\$ Million									
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
China	13,451	17,059	22,030	26,807	25,221	32,896	37,803	48,591	51,583	51,751
Germany	7,375	8,436	10,493	11,671	9,509	9,827	11,554	10,825	10,980	11,290
Italy	10,338	11,030	12,884	13,459	9,922	10,058	10,996	10,283	10,886	11,252
Poland	5,310	5,929	7,174	7,991	6,406	7,025	8,310	7,810	8,647	9,780
Vietnam	1,794	2,221	2,949	3,405	3,104	3,731	3,918	4,519	4,988	5,837
United States	2,908	3,204	3,598	4,124	3,225	3,766	4,151	4,812	4,955	5,134
Canada	4,419	4,457	4,178	3,693	2,387	2,701	2,830	2,865	2,855	3,032
Malaysia	1,973	2,198	2,474	2,602	2,155	2,459	2,496	2,580	2,317	2,432
Romania	1,099	1,205	1,510	1,593	1,335	1,381	1,765	1,742	2,084	2,370
France	2,445	2,634	3,113	3,362	2,593	2,217	2,335	2,122	2,225	2,221
Mexico	1,383	1,438	1,355	1,249	1,070	1,340	1,420	1,762	1,943	2,130
Turkey	558	642	872	1,125	1,016	1,178	1,383	1,638	1,929	2,092
Sweden	1,655	1,886	2,206	2,384	1,904	2,017	2,331	2,190	2,134	2,063
Denmark	2,443	2,493	2,754	2,507	1,928	1,810	1,907	1,855	1,911	2,019
Spain	1,724	1,703	2,054	2,146	1,670	1,624	1,777	1,665	1,886	1,997
Indonesia	1,835	1,843	1,908	1,893	1,627	1,919	1,705	1,732	1,699	1,744
Portugal	851	971	1,185	1,267	1,113	1,182	1,322	1,270	1,435	1,678
Lithuania	520	631	829	900	793	903	1,138	1,268	1,424	1,622
Netherlands	1,177	1,286	1,581	1,695	1,400	1,512	1,559	1,548	1,561	1,580
Taiwan	1,194	1,191	1,246	1,231	971	1,198	1,309	1,375	1,373	1,489
Austria	1,778	1,781	2,164	2,314	1,833	1,728	1,921	1,559	1,495	1,480
United Kingdom	1,336	1,456	1,658	1,476	1,015	1,091	1,297	1,244	1,243	1,329
Belgium	1,710	1,703	2,013	2,147	1,694	1,594	1,588	1,373	1,354	1,321
Hungary	865	944	1,061	1,139	882	937	1,135	1,162	1,272	1,315
South Korea	410	577	616	571	513	671	876	1,011	1,091	1,178
Thailand	1,203	1,151	1,297	1,072	937	1,098	1,063	1,049	1,130	1,086
Slovenia	1,214	1,298	1,429	1,494	1,076	1,113	1,190	1,074	1,115	1,046
Czech Republic	664	714	875	1,009	684	726	830	794	876	990
Slovakia	512	581	773	879	736	679	725	686	785	866
India	396	439	532	534	408	532	617	697	760	820
Japan	506	574	703	898	739	1,023	1,037	993	785	658
Switzerland	617	642	769	853	636	618	712	660	634	658
Brazil	988	942	971	950	679	737	712	691	669	657
Bosnia Herzegovina	124	231	272	332	335	408	480	471	539	567
Croatia	231	291	358	357	264	290	319	293	342	401
Ukraine	133	165	235	301	218	278	355	399	418	398
Estonia	233	252	304	325	261	307	375	349	365	368
United Arab Emirates	240	293	345	392	321	268	274	335	395	356
South Africa	529	475	516	484	383	531	440	438	383	342
Norway	387	451	510	540	394	416	407	376	347	334

Source: CSIL processing of official data

Figure 4  
Major furniture exporting countries. Exports, 2009-2014.  
Current US\$ billion and annual percentage changes

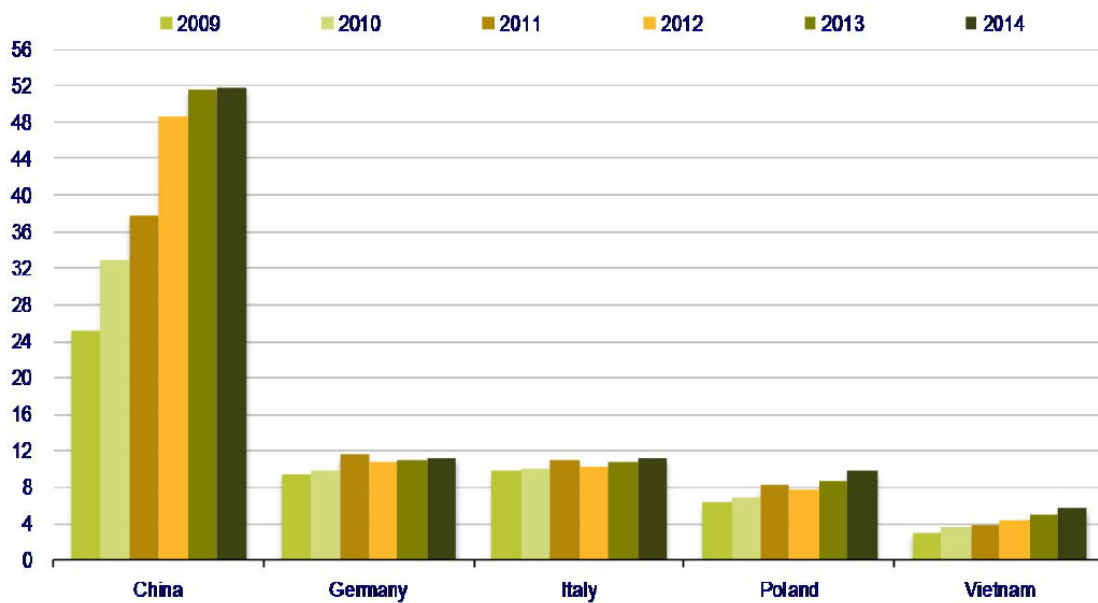
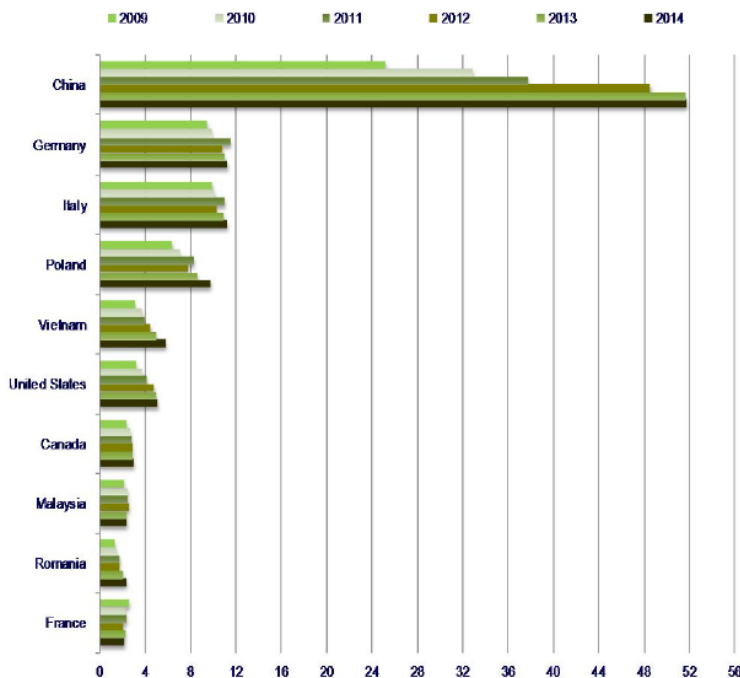


Figure 12  
The main furniture exporting countries, 2009-2014.  
Current US\$ billion



Sources: UN, Eurostat, CSIL

## World furniture imports

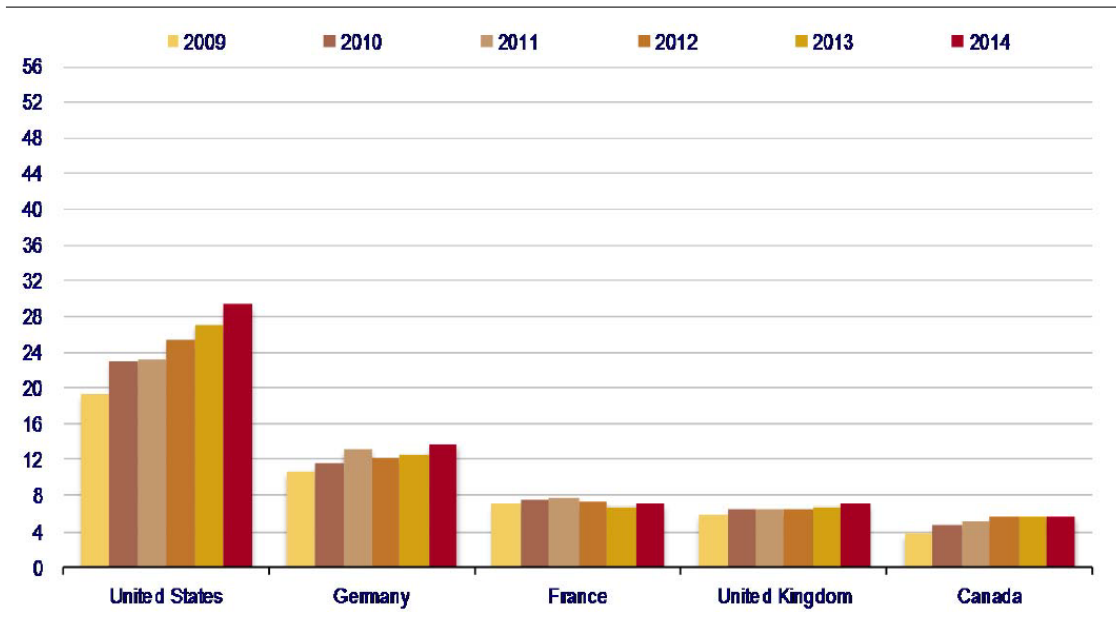
### WORLD FURNITURE INDICATORS

**Table W8**  
**THE OPENING OF FURNITURE MARKETS. Growth of imports, 2005-2014,**  
**40 major importing countries**

Country	Furniture imports US\$ Million									
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
United States	23,763	25,440	25,986	24,383	19,282	23,119	23,318	25,305	27,032	29,361
Germany	9,011	9,553	11,038	11,922	10,655	11,542	13,151	12,183	12,664	13,815
France	6,079	6,380	7,723	8,457	7,061	7,492	7,765	7,260	6,815	7,150
United Kingdom	6,730	7,233	8,571	8,132	5,976	6,566	6,515	6,648	6,703	7,118
Canada	3,484	4,067	4,586	4,845	3,889	4,803	5,147	5,792	5,728	5,829
Japan	3,899	4,062	4,278	4,475	3,854	4,356	4,798	5,358	5,301	5,438
Russia	1,478	1,894	2,573	3,368	2,058	2,382	3,106	3,650	4,005	3,937
Switzerland	2,115	2,251	2,707	2,951	2,568	2,700	3,191	3,052	3,225	3,234
Belgium	2,883	2,961	3,499	3,722	3,029	2,873	3,160	2,887	2,947	3,058
Australia	1,342	1,520	1,811	2,120	1,855	2,105	2,536	2,624	2,687	2,862
Spain	2,315	2,501	3,621	3,726	2,548	2,898	2,732	2,203	2,287	2,609
Netherlands	2,443	2,570	3,196	3,540	2,847	2,949	3,002	2,698	2,543	2,593
Austria	1,888	1,862	2,370	2,640	2,299	2,239	2,664	2,495	2,509	2,510
China	479	596	882	1,006	1,093	1,507	1,885	1,936	2,136	2,382
United Arab Emirates	586	715	1,012	1,571	1,232	1,165	1,507	2,041	2,470	2,272
Italy	1,701	1,987	2,545	2,600	2,059	2,276	2,389	1,970	2,004	2,226
Sweden	1,529	1,744	2,079	2,200	1,513	1,745	1,946	1,784	1,869	1,974
Norway	1,200	1,345	1,696	1,835	1,478	1,574	1,796	1,906	1,872	1,963
Poland	826	932	1,255	1,595	1,170	1,144	1,311	1,199	1,322	1,633
South Korea	798	1,113	1,358	1,294	968	1,219	1,347	1,324	1,458	1,560
Denmark	1,136	1,330	1,613	1,649	1,259	1,371	1,412	1,282	1,391	1,481
Saudi Arabia	446	503	618	679	747	831	1,079	1,274	1,426	1,425
Mexico	677	843	925	953	609	747	903	1,035	1,129	1,196
India	162	239	384	499	411	834	869	1,005	1,078	1,067
Turkey	335	471	629	673	500	632	793	680	805	798
Hong Kong, China	783	698	692	681	587	648	705	699	780	788
Czech Republic	484	581	731	903	652	639	699	688	705	741
Singapore	376	440	564	625	528	644	716	681	721	736
Portugal	552	694	839	939	769	763	823	626	595	699
Brazil	109	135	202	301	248	377	457	554	628	624
Hungary	502	547	610	635	400	350	413	408	503	623
Finland	403	468	574	674	491	528	585	576	586	605
Slovenia	432	533	665	727	615	696	724	645	636	600
Israel	244	267	335	382	338	408	468	454	492	549
Taiwan	317	315	350	358	317	386	456	469	484	540
South Africa	345	431	479	472	349	481	527	549	534	500
Malaysia	303	330	363	397	288	388	416	437	467	494
Romania	277	364	562	694	400	369	431	390	455	493
Qatar	149	238	223	318	320	367	407	452	477	485
Thailand	142	172	182	225	184	299	361	483	511	475

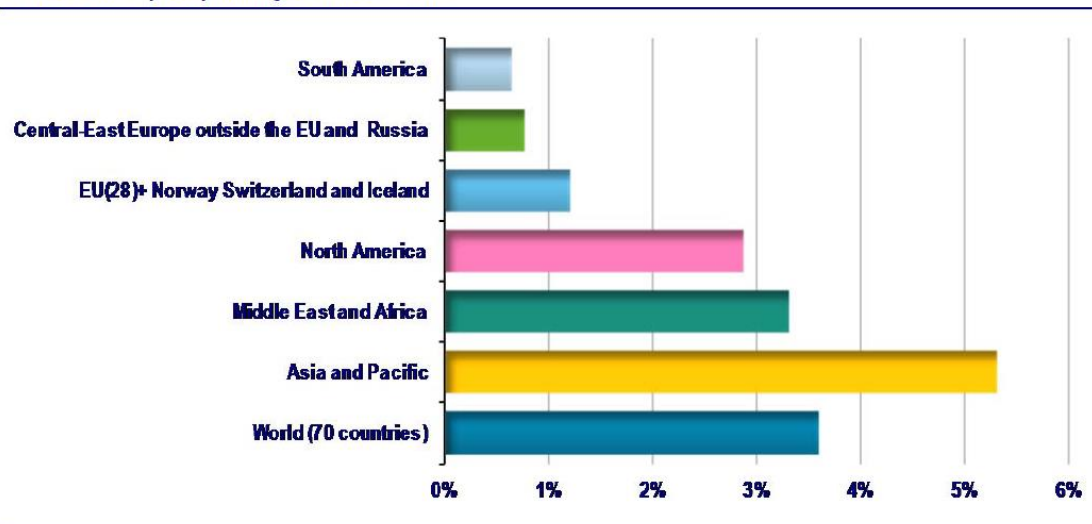
Source: CSIL processing of official data

Figure 3  
Major furniture importing countries. Imports, 2009-2014.  
Current US\$ billion and annual percentage changes



## World furniture consumption

Figure 6  
Furniture consumption by geographical region, 2016.  
Forecasts of yearly changes in real terms



Source: CSIL

## World trade regions and trade areas

### World geographic regions and trade areas

**Table 5**  
Overview of the furniture industry (by geographical regions)

	Production (US\$ Million)	Exports (US\$ Million)	Imports (US\$ Million)	Apparent Consumption (US\$ Million)	Population (Million)	Apparent Consumption per Capita (US\$)
<b>EU (28), Norway Switzerland and Iceland</b>	<b>109,288</b>	<b>58,838</b>	<b>57,349</b>	<b>107,800</b>	<b>520</b>	<b>207</b>
of which Old EU members (15)	83,245	38,542	46,560	91,263	401	228
New EU Members (13)	23,671	19,304	5,537	9,904	106	94
European Union (28)	106,916	57,846	52,097	101,167	507	200
Norway, Switzerland and Iceland	2,372	992	5,252	6,632	13	492
<b>Central-East Europe outside the EU and Russia</b>	<b>12,437</b>	<b>3,595</b>	<b>5,292</b>	<b>14,134</b>	<b>275</b>	<b>51</b>
<b>Asia and Pacific</b>	<b>272,480</b>	<b>67,899</b>	<b>18,199</b>	<b>222,781</b>	<b>3,402</b>	<b>65</b>
of which China	212,156	51,751	2,382	162,786	1,357	120
Japan	10,186	658	5,438	14,966	127	118
Other Asia and Pacific	50,138	15,489	10,379	45,028	1,917	23
<b>Middle East and Africa</b>	<b>8,149</b>	<b>1,433</b>	<b>6,772</b>	<b>13,487</b>	<b>269</b>	<b>50</b>
<b>North America</b>	<b>58,473</b>	<b>10,295</b>	<b>36,386</b>	<b>84,564</b>	<b>474</b>	<b>179</b>
of which United States	47,015	5,134	29,361	71,241	316	225
Canada	9,019	3,032	5,829	11,816	35	336
Mexico	2,439	2,130	1,196	1,506	122	12
<b>South America</b>	<b>11,118</b>	<b>785</b>	<b>1,522</b>	<b>11,854</b>	<b>338</b>	<b>35</b>
<b>WORLD TOTAL (70 COUNTRIES)</b>	<b>471,944</b>	<b>142,845</b>	<b>125,520</b>	<b>454,619</b>	<b>5,277</b>	<b>86</b>

Sources: United Nations, World Bank, Eurostat, CSIL

Furniture data are for the last available year (normally 2014)

Population data are for 2013 (from the World Development Indicators 2014)

Apparent consumption is valued at production prices (excluding markup)

**Table 6**  
**Market shares of the major exporting countries.**  
**Percentages**

	PRODUCTION		EXPORTS	
	2005	2014	2005	2014
<b>BY HIGH INCOME COUNTRIES / MIDDLE AND LOW INCOME COUNTRIES</b>				
<b>HIGH INCOME COUNTRIES</b>				
<i>Major Industrial Countries</i>				
Canada	3.5	1.9	5.4	2.1
France	3.2	1.9	3.0	1.6
Germany	6.5	4.8	9.1	7.9
Italy	8.2	4.2	12.7	7.9
Japan	4.5	2.2	0.6	0.5
United Kingdom	3.5	2.1	1.6	0.9
United States	21.7	10.0	3.6	3.6
Subtotal G7	50.9	27.0	36.1	24.4
Other High Income Countries	21.3	15.2	30.4	23.0
<b>Total High Income Countries</b>	<b>72.2</b>	<b>42.1</b>	<b>66.5</b>	<b>47.5</b>
<b>MIDDLE AND LOW INCOME COUNTRIES</b>				
<i>Major Furniture Exporting Middle and Low Income Countries</i>				
China	14.6	45.0	16.6	36.2
Vietnam	0.7	1.5	2.2	4.1
Malaysia	0.9	0.8	2.4	1.7
Turkey	1.3	1.3	0.7	1.5
Other Middle and Low Income Countries	10.2	9.3	11.5	9.1
<b>Total Middle and Low Income Countries</b>	<b>27.8</b>	<b>57.9</b>	<b>33.5</b>	<b>52.5</b>
<b>WORLD (70 COUNTRIES)</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>BY GEOGRAPHICAL REGION</b>				
EU (28), Norway, Switzerland and Iceland	37.0	23.2	55.8	41.2
of which				
Old EU members (15)	30.9	17.6	41.0	27.0
New EU Members (13)	5.3	5.0	13.6	13.5
European Union (28)	36.2	22.7	54.5	40.5
Norway, Switzerland and Iceland	0.8	0.5	1.2	0.7
Central-East Europe outside the EU and Russia	2.6	2.6	1.4	2.5
Asia and Pacific	30.1	57.7	29.4	47.5
of which				
China	14.6	45.0	16.6	36.2
Japan	4.5	2.2	0.6	0.5
Other Asia and Pacific	11.0	10.6	12.2	10.8
Middle East and Africa	2.0	1.7	1.3	1.0
North America	26.2	12.4	10.7	7.2
of which				
United States	21.7	10.0	3.6	3.6
Canada	3.5	1.9	5.4	2.1
Mexico	1.1	0.5	1.7	1.5
South America	2.2	2.4	1.5	0.5
<b>WORLD TOTAL (70 COUNTRIES)</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: CSIL



## High Income Countries and Middle and Low Income Countries

Table 4

Overview of the furniture industry (by High Income Countries/Middle and Low Income Countries)

	Production (US\$ Million)	Exports (US\$ Million)	Imports (US\$ Million)	Apparent Consumption (US\$ Million)	Population (Million)	Apparent Consumption per Capita (US\$)
<b>HIGH INCOME COUNTRIES</b>						
<i>Major Industrial Countries</i>						
Canada	9,019	3,032	5,829	11,816	35	336
France	8,999	2,221	7,150	13,928	66	211
Germany	22,446	11,290	13,815	24,972	81	310
Italy	19,852	11,252	2,226	10,827	60	180
Japan	10,186	658	5,438	14,966	127	118
United Kingdom	9,727	1,329	7,118	15,516	64	242
United States	47,015	5,134	29,361	71,241	316	225
<b>Subtotal G7</b>	<b>127,244</b>	<b>34,916</b>	<b>70,937</b>	<b>163,265</b>	<b>750</b>	<b>218</b>
Other High Income Countries	71,553	32,878	42,490	81,165	543	149
<b>Total High Income Countries</b>	<b>198,798</b>	<b>67,794</b>	<b>113,427</b>	<b>244,431</b>	<b>1,293</b>	<b>189</b>
<b>MIDDLE AND LOW INCOME COUNTRIES</b>						
<i>Major Furniture Exporting Middle and Low Income Countries</i>						
China	212,156	51,751	2,382	162,786	1,357	120
Vietnam	6,933	5,837	361	1,457	90	16
Turkey	6,137	2,092	798	4,843	75	65
Malaysia	3,911	2,432	494	1,973	30	66
Other Middle and Low Income Countries	44,009	12,939	8,059	39,128	2,433	16
<b>Total Middle and Low Income Countries</b>	<b>273,147</b>	<b>75,051</b>	<b>12,093</b>	<b>210,188</b>	<b>3,985</b>	<b>53</b>
<b>WORLD (70 COUNTRIES)</b>	<b>471,944</b>	<b>142,845</b>	<b>125,520</b>	<b>454,619</b>	<b>5,277</b>	<b>86</b>

Sources: United Nations, World Bank, Eurostat, CSIL

Furniture data are for the last available year (normally 2014)

Population data are for 2013 (from the World Development Indicators 2014)

Apparent consumption is valued at production prices (excluding markup)

Classification of countries by income is according to the World Bank definition.

## Trade relations between UE and China

### WORLD FURNITURE INDICATORS

TableW10

#### WORLD FURNITURE TRADE. Origin of imports

Country	Furniture imports US\$ million	Origin 1		Origin 2		Origin 3		Origin 4		Origin 5	
United States	29,361	China	54%	Vietnam	11%	Canada	9%	Mexico	6%	Italy	3%
Germany	13,815	Poland	24%	China	14%	Czech Rep	11%	Italy	7%	Hungary	4%
France	7,150	China	17%	Italy	17%	Germany	15%	Poland	8%	Belgium	6%
United Kingdom	7,118	China	35%	Italy	11%	Poland	10%	Germany	8%	Vietnam	5%
Canada	5,829	China	32%	USA	31%	Mexico	15%	Vietnam	4%	Italy	3%
Japan	5,438	China	54%	Vietnam	11%	Taiwan	5%	Thailand	4%	Malaysia	4%
Russia	3,937	Italy	23%	China	19%	Poland	11%	Germany	8%	Belarus	6%
Switzerland	3,234	Germany	42%	Italy	19%	China	7%	Poland	6%	France	5%
Belgium	3,058	Germany	24%	China	15%	Netherlands	14%	Italy	8%	Poland	7%
Australia	2,862	China	62%	Vietnam	7%	Malaysia	6%	Italy	4%	Thailand	3%
Spain	2,609	China	21%	Germany	14%	Portugal	13%	Italy	10%	France	8%
Netherlands	2,593	China	31%	Germany	18%	Poland	10%	Belgium	10%	Indonesia	3%
Austria	2,510	Germany	51%	Italy	13%	China	7%	Poland	7%	Romania	4%
China	2,382	Germany	16%	Italy	12%	South Korea	9%	Vietnam	8%	Japan	8%
Un Arab Emir	2,272	China	66%	Italy	8%	Malaysia	3%	USA	3%	Germany	3%
Italy	2,226	China	24%	Germany	15%	Romania	13%	Poland	9%	France	5%
Sweden	1,974	China	20%	Poland	15%	Lithuania	13%	Germany	12%	Denmark	9%
Norway	1,963	Sweden	25%	Denmark	18%	China	14%	Poland	10%	Lithuania	9%
Poland	1,633	Germany	25%	China	19%	Czech Rep	8%	Italy	7%	Austria	5%
South Korea	1,560	China	67%	Vietnam	11%	Italy	4%	Indonesia	3%	USA	2%
Denmark	1,481	China	23%	Sweden	18%	Poland	12%	Germany	9%	Lithuania	6%
Saudi Arabia	1,425	China	42%	Italy	10%	Egypt	7%	USA	6%	Germany	4%
Mexico	1,196	China	38%	USA	37%	Italy	6%	Spain	4%	Canada	2%
India	1,067	China	67%	Italy	7%	Malaysia	6%	Germany	5%	South Korea	2%
Turkey	798	China	36%	Italy	12%	Germany	10%	Poland	6%	Romania	4%
Hong Kong	788	China	77%	Italy	7%	Germany	3%	USA	3%	Malaysia	1%
Czech Republic	741	Poland	37%	Germany	19%	China	10%	Slovakia	7%	Italy	6%
Singapore	736	China	35%	Malaysia	30%	Italy	7%	USA	5%	Germany	3%
Portugal	699	Spain	38%	Poland	15%	Germany	10%	France	10%	Italy	9%
Brazil	624	China	33%	USA	9%	South Korea	6%	Mexico	6%	Italy	5%
Hungary	623	Germany	29%	Poland	21%	Czech Rep	8%	Romania	7%	Austria	6%
Finland	605	Sweden	34%	Estonia	20%	Germany	14%	China	10%	Denmark	4%
Slovenia	600	Bosnia Herz	47%	Germany	12%	Serbia	7%	Italy	5%	China	5%
Israel	549	China	29%	Italy	20%	Cyprus	15%	Hong Kong	5%	Germany	4%
Taiwan	540	China	45%	Italy	10%	Indonesia	9%	Vietnam	6%	Germany	6%

>>>

**Table 3 World furniture production, top 10 producing countries (€million and percentage share), 2003 and 2012**

	2003		2012	
	€million	% share	€million	% share
<b>China</b>	22,555	10%	145,318	40%
<b>USA</b>	60,677	27%	51,642	14%
<b>Germany</b>	15,492	7%	17,738	5%
<b>Italy</b>	19,338	9%	15,950	4%
<b>India</b>	5,386	2%	11,624	3%
<b>Japan</b>	11,925	5%	10,743	3%
<b>Poland</b>	4,393	2%	8,323	2%
<b>Canada</b>	8,385	4%	8,262	2%
<b>Brazil</b>	3,168	1%	7,970	2%
<b>France</b>	7,817	4%	7,929	2%
<b>Top 10</b>	159,137	71%	285,499	79%
<b>Others</b>	63,877	29%	75,363	21%
<b>World*</b>	<b>223,014</b>	<b>100%</b>	<b>360,862</b>	<b>100%</b>

Note: \*Estimates covering 70 countries, see note 8.

Source: CSIL processing of data from official sources: Eurostat, UN, National Statistical Offices, National Furniture manufacturers associations, (e.g. Statistics Canada, US Census Bureau, China National Furniture Association, Amedoro, Japan Ministry of Finance, Japan Ministry of Economy, Trade and Industry)

**Table 9 World furniture trade, top 10 importing countries (€million)**

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
United States	16,598	17,280	19,205	20,406	19,084	16,687	13,965	17,631	16,948	19,983
Germany	7,130	7,251	7,425	7,798	8,257	8,321	7,901	8,968	9,736	9,539
France	4,147	4,587	5,017	5,220	5,790	5,908	5,233	5,850	5,791	5,854
United Kingdom	4,796	5,502	5,490	5,849	6,361	5,630	4,378	5,047	4,770	5,109
Canada	2,272	2,478	2,835	3,298	3,404	3,356	2,854	3,701	3,794	4,614
Japan	2,857	3,140	3,232	3,324	3,213	3,136	2,880	3,410	3,583	4,371
Russia	842	1,032	1,197	1,520	1,893	2,311	1,492	1,813	2,249	2,770
Switzerland	1,582	1,622	1,742	1,840	2,025	2,061	1,903	2,110	2,369	2,465
Belgium	2,023	2,163	2,374	2,416	2,617	2,595	2,242	2,244	2,357	2,326
Australia	785	980	1,111	1,253	1,374	1,496	1,382	1,638	1,879	2,115

Source: CSIL processing of United Nations, Eurostat and national data. Specifically other national sources include: US Census Bureau, Industry Canada, Ministry of Finance (Japan).

**Table 10 EU28 furniture production and share of world furniture production (€million and percentage share)**

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
EU28, €million	84,911	88,136	89,985	95,232	99,828	97,594	82,478	83,470	85,419	84,147
World*, €million	223,014	229,598	248,386	268,020	278,709	278,495	263,596	299,342	321,026	360,862
EU28 share	38%	38%	36%	36%	36%	35%	31%	28%	27%	23%

Note: \*Estimates covering 70 countries, see note 8.

Source: CSIL processing of data from Eurostat, National Statistical Offices, National Furniture manufacturers associations.

**Table 8 World furniture trade, top 10 exporting countries (€million)**

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
China	6,503	8,270	10,967	13,800	16,357	18,481	18,337	25,165	27,524	38,387
Germany	5,279	5,776	6,109	6,897	7,855	8,131	7,015	7,605	8,505	8,483
Italy	8,553	8,698	8,442	8,944	9,591	9,320	7,285	7,761	8,064	8,131
Poland	3,313	3,867	4,394	4,898	5,485	5,767	4,921	5,701	6,404	6,513
United States	2,131	2,198	2,400	2,620	2,689	2,869	2,380	2,919	3,064	3,816
Vietnam	761	1,070	1,447	1,776	2,158	2,320	2,239	2,820	2,791	3,494
Canada	3,639	3,469	3,591	3,586	3,073	2,530	1,734	2,064	2,057	2,255
Malaysia	1,416	1,512	1,613	1,783	1,839	1,809	1,586	1,904	1,840	2,060
Sweden	1,239	1,324	1,411	1,589	1,704	1,705	1,433	1,590	1,751	1,783
France	2,014	2,041	2,030	2,176	2,369	2,384	1,948	1,746	1,733	1,704

Source: CSIL processing of United Nations, Eurostat and national data. Specifically other national sources include: US Census Bureau, Ministry of International Trade and Industry (Malaysia).

More figures and info available in the **CSIL World furniture outlook 2015/2016** and in the [Study](#) on "The EU furniture market situation and a possible furniture products initiative", CEPS, Economisti Associati, CSIL and Demetra for **DG Enterprise and Industry**

