Environmentally harmful dumping of inefficient comfort fans in the European Union

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Abstract

Comfort fans - together with air conditioners - are included in the European Ecodesign Commission Regulation (EU) No 206/2012. However, unlike most Ecodesign regulations it only contains information requirements for the products and no requirements on their energy efficiency. As the revision of the Ecodesign and Energy Label regulation for fans is taking place on the European level, it is being considered to introduce minimum energy performance standards as well as an energy label for these products. In other regions of the world, such requirements already exist, including countries that produce comfort fans that are destined for the European market. The paper will illustrate the environmental dumping that is taking place in Europe where the products that are being exported from the manufacturing countries often have a lower energy efficiency performance than the domestic minimum energy performance standard in place in the country of origin. It will subsequently compare the energy efficiency of the products available in Europe with the mandatory energy efficiency requirements in China. In 2015, 25 million units were sold in the European Union. In 2020, this number increased to 52 million units. With rising temperatures, this number will continue to grow. An efficient comfort fan can also be an alternative solution to installing an air conditioner, thus achieving additional energy savings.

Keywords: air flow, product import, MEPS; energy efficiency requirements, dumping, best available technologies.

Introduction

This paper will investigate the case of environmental dumping in terms of energy efficiency of comfort fans that is taking place within the European Union. This refers to products that do not respect the domestic minimum energy performance standards (MEPS) in their country of origin but are exported to the European market. The paper will show that existing MEPS in the country of origin are not sufficient to guarantee that a minimum energy efficiency standard is applied to exports.

The paper will also show that many countries already have requirements in place, which would make barriers and efforts for the European Union to adapt or harmonize their own requirements very low. The existing information requirements that are required in the Commission Regulation (EU) No 206/2012 for air conditioners and comfort fans are insufficient and are not being respected. Based on a market assessment performed by Topten in 2018, a significant share of models does not comply with the Chinese MEPS, which is where a greater part of comfort fans are imported from.

Definitions

Comfort fans

According to the European Ecodesign Commission Regulation (EU) No 206/2012 for air conditioners and comfort fans, a comfort fan is an “appliance primarily designed for creating air movement around or on part of a human body for personal cooling comfort, including comfort fans that can perform additional functionalities such as lighting” (EC, 2012a). Fans can be further classified as table fans, floor standing fans, pedestal fans, wall-mounted fans, tower fans and ceiling fans.

Table 1: Construction types of comfort fans according to the definitions in the Ecodesign preparatory study for comfort fans (EC, 2008)

 Source: Rotel	Table fan Table fans are suitable for individuals but cannot ventilate larger rooms. Table fans are usually not height-adjustable, so the user needs to improvise to set the right height.
 Source: Sonnenkoenig	Floor standing fan Floor standing fans - sometimes also called air circulators - provide an intensive circulation of air in a room. They should not be directed against a person because of their strong airflow.
 Source: Solis	Pedestal fan Pedestal fans are ideal for larger rooms, as they are often height-adjustable and rotatable and can therefore reach the whole space.
 Source: Satrap	Tower fan Tower fans produce a lower airflow and are less energy-efficient than floor fans, but the airflow produced is evenly distributed and can feel more pleasant to the user. The rotor blades are not visible from the outside, which can give a feeling of higher safety to certain people.
 Source: CasaFan	Ceiling fan Due to the large rotor blades, they are very efficient and quiet. Some models have integrated lamps. Ceiling fans must be installed fixedly.

Environmental dumping

Environmentally harmful product dumping (hereinafter referred to as "environmental dumping") is a practice historically associated with the export of hazardous product waste and associated unwanted chemicals from a developed country for irresponsible and often illegal disposal in a developing country (Anderson et al., 2018). Anderson et al. (2018) expanded the definition which now also refers to the practice of exporting products or technologies that cannot be legally sold in the country of origin because of environmental, safety, energy efficiency or any other product standards to another country or territory with less stringent or non-existent regulations. This practice undermines the ability of the importing country to fulfil their environmental objectives and is contrary to the interest of consumers.

Main metric and test standard

The performance and energy consumption of comfort fans is measured with the standard International Electrotechnical Commission (IEC) 60879:2019 "Performance and construction of electric circulating fans and regulators". The standard "specifies the performance-measuring methods of comfort fans and regulators for household and similar purposes, including conventional fans, tower fans and bladeless fans, their rated voltage being not more than 250 V for single-phase fans and 480 V for other fans, and their rated power input being less than 125 W" (IEC, 2019). The standard also includes functional requirements as well as recommended design values in terms of preferred sizes that lead to the common declared characteristics of products that are observed on the market. The fan "Service Value" is a metric used across many countries or regions such as China or Malaysia. Most countries using the Service Value as the main metric also have measurement standards that are based on IEC 60879:2019 (CLASP, 2020). It is the main metric to calculate the energy efficiency of comfort fans and is expressed in m^3/min/W. It is a ratio of the flow generated to the electrical power absorbed and is measured at maximum speed. The flow is measured without any oscillation function of the fan. When this metric is used as a criterion for the minimum requirements, manufacturers are incentivized to optimize the motor efficiency and the overall design of the device including the blades to displace a maximum amount of air per Watt.

$$Service\ Value = \frac{\frac{m^3}{min}}{W}$$

Well-designed blades will displace more air per minute (high m^3/min) and an efficient motor will require a low power input to rotate at full capacity (low power input, W). A comfort fan can reach a high Service Value by increasing the airflow, decreasing the power input or by doing both.

Ceiling fans are in general subject to higher requirements than other types of fans because of their larger blade sweep and their ability to displace more air.

Market for comfort fans in Europe

The EU Ecodesign preparatory study for air conditioners and comfort fans (EC, 2008) estimated that the annual sales of comfort fans in the EU increased from 10 to 25 million units from 2000 to 2005. Sales peaked in 2004 at 35 million units, because of a strong heat wave in that year. Sales are strongly correlated with the weather, which means that they are expected to grow as summers get warmer as consequence of climate change. This can also be confirmed for example by the supply shortages faced by retailers in recent years in France, Germany, and the United Kingdom (Francebleu, 2019; Chip.de, 2018; itv, 2018) in the first half of the year. Since then, heat waves have been regularly occurring in the summer throughout Europe.

In the EU Ecodesign review study (EC, 2018), the sales and trades of comfort fans in the EU countries were estimated to be in between 20 and 30 million units per year for the period between 2009 and 2015. The study further assumes that sales of comfort fans will progressively decline due to the competition with air conditioners (17 million units sold in 2025). This assumption has proven to be incorrect so far, as shown by recent UN Comtrade data showing that imports of fans in the EU-28 actually have doubled, reporting the import of 52 million units in 2020.

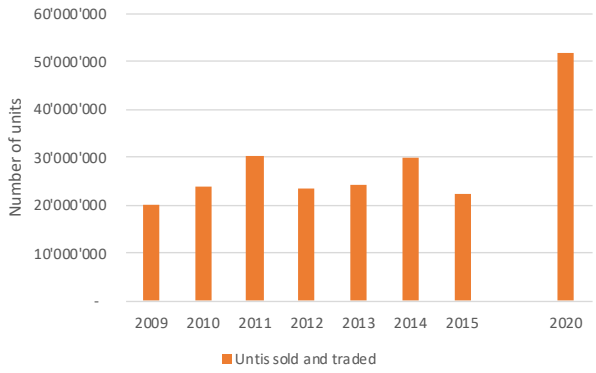

Figure 1: Total units of comfort fans below 125 W sold and traded in the EU from 2009 to 2015 and 2020. (EC, 2018; UN Comtrade, 2020).

The sales data shows that the estimates from the preparatory study underestimated the market for comfort fans, given that they are for consumers a quick and cheap solution in cases of extreme heat waves.

European regulation for comfort fans

In the EU, the Ecodesign Commission Regulation (EU) No 206/2012 defines product information requirements for air conditioner and comfort fans. However, the regulation does not set any further requirements such as noise limits or MEPS for comfort fans. The review study for the air conditioners and comfort fans regulation (EC, 2018) mentions that due to a lack of data on comfort fans (i.e., data on product efficiency, energy consumption) in the EU at the time of policy design for Commission Regulation (EU) No 206/2012, the European Commission introduced just product information requirements to begin a systematic product data gathering process. The data from these information requirements was supposed to be monitored and collected by market surveillance authorities and to be used for setting future minimum energy efficiency requirements when a review of the regulation takes place.

Table 2: Information requirements for comfort fans in Commission Regulation (EU) No 206/2012

Information to identify the model(s) to which the information relates to			
Description	**Symbol**	**Value**	**Unit**
Maximum fan flow rate	F	[x,x]	m^3/min
Fan power input	P	[x,x]	W
Service Value	SV	[x,x]	(m^3/min)/W
Standby power consumption	PSB	[x,x]	W

Fan sound power level	LWA	[x,x]	dB(A)
Maximum air velocity	C	[x,x]	meters/sec
Measurement standard for service value	[State here the reference to measurement standard used]		
Contact details for obtaining more information	Name and address of the manufacturer or of its authorized representative		

The Ecodesign regulation for air conditioners and comfort fans is currently being reviewed, but the review study (EC, 2018) brings only very little new knowledge on this product category. It discusses comfort fans only very briefly, refers mostly to the 2008 Preparatory Study and explains that due to a persistent lack of data concerning the comfort fan products on the market, it cannot draw any further conclusions. In comparison to air conditioners (the other product category covered by Commission Regulation (EU) No 206/2012) comfort fans appear to be less complex and might represent a comparatively smaller energy savings potential. However, this should not be interpreted as argument to neglect or overlook this product category during policy revision. The most recent draft regulation (EC, 2019) contains at least a proposal for MEPS for comfort fans (Table 3), which follows the same approach as the Chinese MEPS. Accordingly, MEPS are based on the Service Value and differ according to the size of blade sweep (Table 4).

Table 3: Proposed MEPS for comfort fans in the EU draft regulation for ACs and comfort fans (EC, 2019)

Comfort Fan categories	SV (m³/min)/W
All comfort fans, except ceiling fans, with a fan diameter ≥ 20 and < 25 cm	0.5
All comfort fans, except ceiling fans, with a fan diameter ≥ 25 and < 30 cm	0.65
All comfort fans, except ceiling fans, with a fan diameter ≥ 30 and < 40 cm	0.75
All comfort fans, except ceiling fans, with a fan diameter ≥ 40 and < 50 cm	1.08
All comfort fans, except ceiling fans, with a fan diameter ≥ 50 and < 60 cm	1
All comfort fans, except ceiling fans, with a fan diameter ≥ 60 cm	1.1
Ceiling fans, with a fan diameter > 0 and < 60 cm (23”)	1.4
Ceiling fans, with a fan diameter > 60 and < 90 cm (35”)	2.6
Ceiling fans, with a fan diameter ≥ 90 and < 120 cm	3.1
Ceiling fans, with a fan diameter ≥ 120 and < 140 cm	4.0
Ceiling fans, with a fan diameter ≥ 140 and < 150 cm	4.1
Ceiling fans, with a fan diameter ≥ 150 cm	4.3

Minimum requirements for tower fans were not included in the draft regulation because the review study came to the conclusion that the IEC 60879:1986 standard still valid at that time did not include a measurement method for tower fans. This is however not correct anymore, as the new 2019 version of the standard (published after the end of the review study) added a measurement method also for tower fans and bladeless fans. Indeed, the whole review study, impact assessment and recommendations for policy design used for the still on-going revision process are essentially based on a previous and out-dated version of the IEC standard and not the newly published version, which was already under preparation at that time.

Existing requirements in other countries

Overall, several countries in Asia already have regulations in place that set minimum energy efficiency requirements for comfort fans. Indonesia is in the process of setting MEPS for these products as well (CLASP, 2020).

China

In China, the regulation GB 12021.9 (2008) for comfort fans sets MEPS and includes an energy labelling scheme for these products. The metric used is the Service Value and the national measurement standard is based on the IEC 60879 (year unknown). The MEPS level is set at the energy efficiency grade three.

Table 4: China’s energy efficiency grades for electric fans expressed in m^3/min/W (GB, 2008).

Type		Specifications (mm)	Energy efficiency value		
			Energy efficiency grade		
			1	2	3 (= MEPS Level)
Table fans, rotary fans, wall fans, box fans, stand fans	Capacitive	200	0.71	0.60	0.54
	Shaded pole		0.63	0.51	0.45
	Capacitive	230	0.84	0.70	0.64
	Shaded pole		0.65	0.57	0.50
	Capacitive	250	0.91	0.79	0.74
	Shaded pole		0.72	0.61	0.54

	Capacitive	300	0.98	0.86	0.80
		350	1.08	0.95	0.90
		400	1.25	1.06	1.00
		450	1.42	1.19	1.10
		500	1.45	1.25	1.13
		600	1.65	1.43	1.30
Ceiling Fans	Capacitive	900	2.95	2.87	2.75
		1050	3.10	2.93	2.79
		1200	3.22	3.08	2.93
		1400	3.45	3.32	3.15
		1500	3.68	3.52	3.33

The MEPS for all tower fans are 0.4 m^3/min/W. The regulation also sets noise limit requirements according to the type of fans and the size of the blades.

India BEE voluntary labelling scheme for ceiling fans

The India Bureau of Energy Efficiency (BEE) initially set up a voluntary labelling scheme for ceiling fans. The scheme was supposed to become mandatory in July 2020 (CLASP, 2019), however, it has been postponed due to the Coronavirus pandemic. It is now expected to come into force in January 2022 (New Indian Express, 2020).

The star rating plan for ceiling fans is as follows:

Table 5: Star Rating Index Calculation for Ceiling Fans (BEE, 2019)

Star Rating	Service Value for Ceiling Fans for sweep size < 1200 mm (i.e., 900 mm and 1050 mm)	Service Value for Ceiling Fans for sweep size ≥ 1200 mm (i.e., 1200 mm, 1400 mm, and 1500 mm)
1 Star	≥ 3.2 to < 3.4	≥ 4.0 to < 4.5
2 Star	≥ 3.4 to < 3.6	≥ 4.5 to < 5.0
3 Star	≥ 3.6 to < 3.8	≥ 5.0 to < 5.5
4 Star	≥ 3.8 to < 4.0	≥ 5.5 to < 6.0
5 Star	≥ 4.0	≥ 6.0

Malaysia

The requirements for comfort fans are also based on the Service Value although the regulation uses the term "Coefficient of performance (COP)". The regulation uses a star rating for the different classes of energy efficiency (Attorney General's Chambers of Malaysia, 2013). The MEPS are currently set at the 2-star level (Table 6).

Table 6: Malaysia's star rating for electric fans (Attorney General's Chambers of Malaysia, 2013)

Star rating	Ceiling fan Minimum COP	Pedestal, wall, and desk fan
5	≥ 3.00	≥ 1.20
4	2.74 – 2.99	1.12 – 1.19
3	2.66 – 2.73	1.08 – 1.11
2 (MEPS)	2.58 – 2.65	1.01 – 1.07
1	2.50 – 2.57	0.93 – 1.00

Vietnam

In Vietnam the MEPS are also based on the Service Value and are set according to the blade sweep (D) (TCVN, 2015). The Service Value is measured according to a standard that is equivalent to IEC 60879 (CLASP, 2020). In the labelling scheme there are five energy efficiency levels (R), which are determined by the ratio of the measured energy efficiency to the minimum energy performance standard (Table 7 and Table 8).

Table 7: Minimum energy efficiency for table vertical and wall fans in Vietnam (TCVN, 2015)

Blade sweep (mm)	MEPS (m^3/min/W)
D < 230	0.54
230 ≤ D < 250	0.64
250 ≤ D < 300	0.74
300 ≤ D < 350	0.80
350 ≤ D < 400	0.90
400 ≤ D < 450	1.00
450 ≤ D < 500	1.10
500 ≤ D < 600	1.13
D ≥ 600	1.30

Table 8: Minimum energy efficiency for ceiling fans in Vietnam (TCVN, 2015)

Blade sweep (mm)	MEPS (m^3/min/W)
D < 900	2.75
900 ≤ D < 1050	2.79
1050 ≤ D < 1200	2.93
1200 ≤ D < 1350	3.04
D ≥ 1350	3.15

Data analysis based on market information

In 2018, Topten performed an assessment of the comfort fans sold in Switzerland with the intention of creating a product list with the most efficient products. All requirements of Commission Regulation (EU) No 206/2012 were adopted in Switzerland. The information requirements for comfort fans are identical and also mandatory in Switzerland. Topten product lists in general select the most efficient products on the market. The steps taken to initially create a product list are the same for all product categories. Topten first creates an overview of the products available on the market, and based on that data, determines selection criteria to select the best performing units.

Topten collected the product information for comfort fans on the websites of approximatively 39 manufacturers and 6 retailers. Most of the assessed manufacturers are also present in the European Union. When a product did not display the information required by the information requirements of Commission Regulation (EU) No 206/2012 or the information needed to calculate the Service Value, Topten first downloaded the product information sheets and user manuals to verify if the information was present in these documents. When the information was still missing, Topten directly contacted the manufacturers and importers asking them for the data (for data information requirements see Table 2). In many cases, Topten had to explain what was the information that was being requested as the manufacturers or importers were unaware that such requirements existed or what the data was.

Results

In the market overview, Topten evaluated 158 models of comfort fans that were on sale in Switzerland in 2018. Out of these 158 models, only eight declared all the information that is required by Commission Regulation (EU) No 206/2012. From the manufacturers, Topten received enough data to assess or calculate the Service Value of 67 models. In total - together with own research - it could assess the performance of 75 models (Table 9).

Table 9: Assessment of comfort fans for a Topten product list (data gathered by Topten, 2018)

Number of models evaluated	158
Number of models that fulfill the product information requirements of Commission Regulation (EU) No 206/2012	8
Number of models for which data was received after contacting the manufacturer	67
Total number of models with complete product information, complemented by own research	75

The product survey showed that in many cases (89% of all products), products do not comply with the regulation already in force (i.e., the product information requirements). The information requirements were set in 2011 to gather data for the review of Commission Regulation (EU) No 206/2012. However, the situation with a persistent lack of data is jeopardizing the introduction of MEPS for comfort fans also in the current revision process of Commission Regulation (EU) No 206/2012, because not much more official data on product performance is available today.

The data shows that there is no clear correlation between the “fan input power” and the “maximum airflow”. As expected, the average maximum airflow of some fan types is higher than others. The design of the blades and

their size play a substantial role in the effectiveness of the fans. The “Service Value” takes both aspects into account.

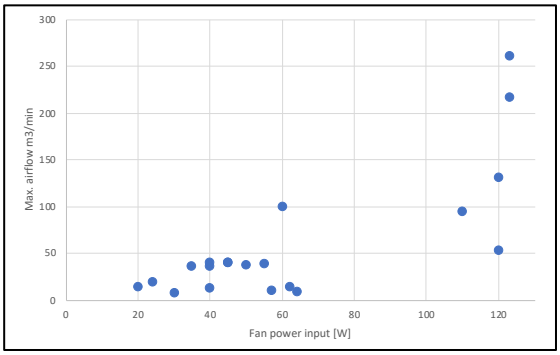

Figure 2: Distribution of floor standing comfort fans according to maximum airflow [m^3/min] and fan power input [W] (data gathered by Topten, 2018)

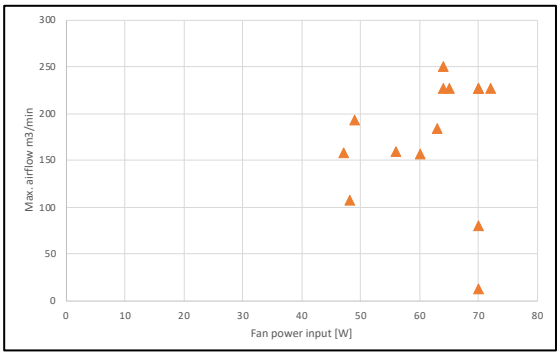

Figure 3: Distribution of ceiling comfort fans according to maximum airflow [m^3/min] and fan power input [W] (data gathered by Topten, 2018)

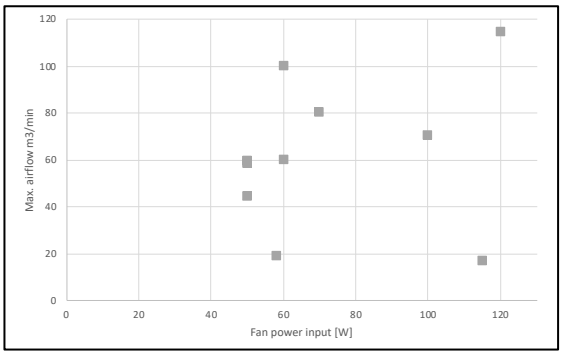

Figure 4: Distribution of pedestal comfort fans according to maximum airflow [m^3/min] and fan power input [W] (data gathered by Topten, 2018)

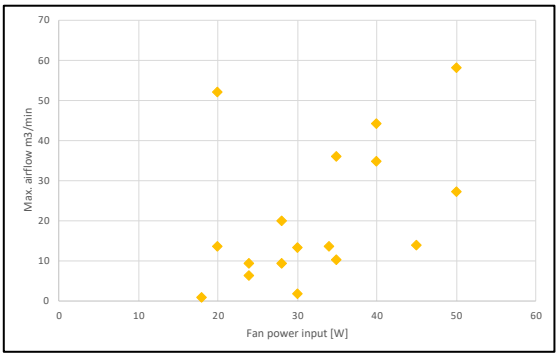

Figure 5: Distribution of table comfort fans according to maximum airflow [m^3/min] and fan power input [W] (data gathered by Topten, 2018)

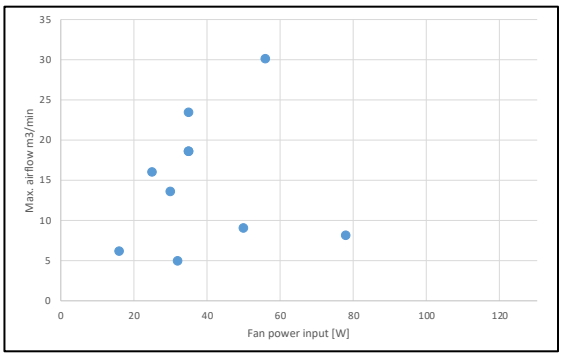

Figure 6: Distribution of tower comfort fans according to maximum airflow [m^3/min] and fan power input [W] (data gathered by Topten, 2018)

Definition of the Topten Criteria

Based on the available data from the 75 models, Topten empirically determined the selection criteria for each fan construction type. Using the Service Value as the parameter for the selection criteria (Figure 7), it defined a threshold that would select the top 50% of available models for the product list (Table 10)[1]. The criteria could not be too stringent for this specific product group, because the product list would otherwise only contain a few models and would not be useful for the consumer. Also, as a rule for Topten, the selection criteria must be straightforward and easy for consumers to understand. Therefore, for these two reasons, Topten also did not use the Chinese MEPS as references (where the Service Value threshold depends on the size of the blade sweep), because there would be 1) too few products on the list and 2) the criteria would be too complicated to understand for consumer. It therefore opted for one Service Value threshold for each construction type.

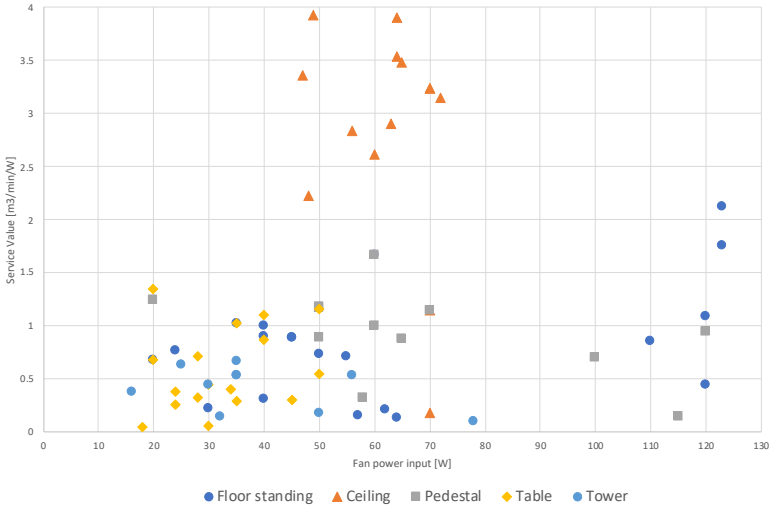

Figure 7: Distribution of fans (according to construction types) according to the Service Value. The Topten selection criteria were based on the service value and selected the 50% best performing products (data gathered by Topten, 2018).

As the Topten product list went online for the first time in May 2018, it contained 41 models of comfort fans. In the subsequent years, manufacturers announced new products and the list could grow. As of May 2021, 123 models are listed on Topten. The Topten selection criteria were also strengthened in 2021 for table and floor standing fans as the number of efficient models grew (Table 10).

[1] Topten product lists usually select the top 20% -30% performing products available on the market. In some cases, when the product is an alternative for another product (group) that consumes more energy, the selection criteria are more lenient. In this case comfort fans are an alternative to air conditioners (especially portable units), which consume much more electricity. Therefore, the selection criteria are more lenient and encompass 50% of the existing market.

Table 10: Topten selection criteria for comfort fans (Topten.eu, 2021)

Construction type	Topten selection criteria (2018) Service value (m^3/min/W)	Revised selection criteria (2021) Service value (m^3/min/W)
Pedestal	≥ 1.00	≥ 1.00
Ceiling	≥ 2.75	≥ 2.75
Table	≥ 0.50	**≥ 0.80**
Floor standing	≥ 0.75	**≥ 0.80**
Tower	≥ 0.45	≥ 0.45

Comparison of comfort fans on the European market with the Chinese MEPS

Most comfort fans being imported into the European Union are produced in China. According to UN Comtrade (2020), this amounts to 95% of units by volume or 90% by value. For this reason, the energy efficiency of the models that were part of the market assessment in 2018 (data on all products on the market) and the energy efficiency of the products of the Topten list in 2021 (best performing products of the market) were compared to the MEPS that were into force in China in 2018 and that are still in force in 2021.

Comparison with the 2018 sample

Out of the 75 models with complete product data, 32 models did not comply with the Chinese MEPS (Figure 8 to Figure 10). It can be expected that the performance of the remaining models with no product declaration is also low as there is often a reporting bias as good performers tend to report more frequently than bad performers. The share of models from the market assessment that did not fulfil the Chinese MEPS in 2018 (42%) shows the extent of the potential environmental dumping in the European market.

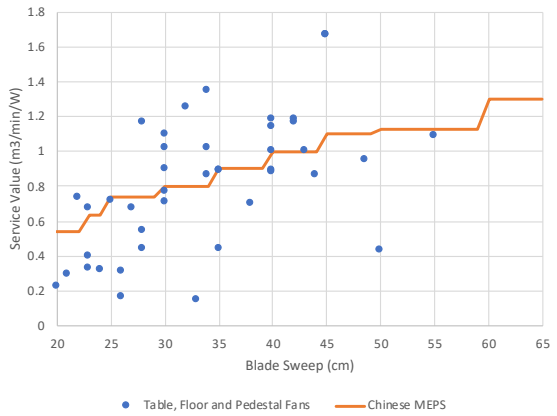

Figure 8: Comparison of table, floor, and pedestal comfort fans with the Chinese MEPS (data gathered by Topten, 2018).

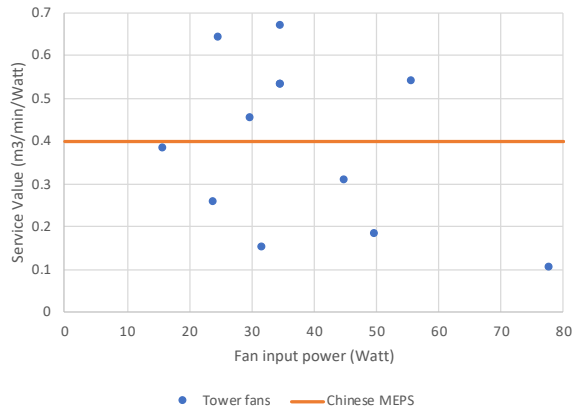

Figure 9: Comparison tower comfort fans with the Chinese MEPS (data gathered by Topten, 2018).

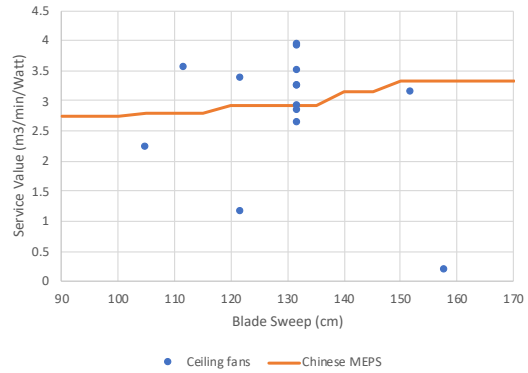

Figure 10: Comparison of ceiling comfort fans with the Chinese MEPS (data gathered by Topten, 2018).

Comparison with Topten product list (2021)

A similar comparison was made with the models that are listed on the Topten product list for comfort fans in Switzerland (2021). As a reminder, a Topten product list shows the most efficient products that are currently available on the domestic market. The selection criteria are determined empirically by selecting the top performing products on the market. The 2021 sample does not look at the overall market as it was the case in 2018. The aim was to assess whether there were improvements made among the top performing products on the market.

The 123 models listed on Topten in March 2021 were the models that fulfilled Topten's selection criteria and can be considered as the top performing models available on the market at that time. Since setting the initial selection criteria in 2018, the 2021 Topten list focuses on the current best performing products and does not consider all the products on the market that do not fulfil these criteria. It is therefore likely that the 2021 Topten product list does not exactly correspond anymore to the top 50% performing products on the market, but a much more comprehensive new market analysis would be needed to assess this aspect more in detail.

Nevertheless, the findings for 2021 are very clear. Out of the 123 products listed in 2021, 12 Topten products did not comply with the MEPS that are currently still into force in China. Among these are three floor standing fans, six ceiling fans, two pedestal fans and one table fan. Furthermore, three additional models did not comply with the Chinese noise limits. The proportion of Topten listed models that are not compliant with the Chinese MEPS has declined since the first assessment in 2018 (Table 11).

Table 11: Number of products on Topten that did not fulfill the requirements of the Chinese MEPS (Topten data, 2021)

	2018	2021
Topten products that do not comply with the Chinese MEPS	10 models (24%)	12 models (9%)

A smaller proportion of models do not fulfil the requirements of the Chinese MEPS because Topten could strengthen the selection criteria for two fan construction types (Table 10). The increase in the size of the Topten product list is a positive sign that manufacturers also started paying more attention to the information requirements and started reporting the data requested by Commission Regulation (EU) No 206/2012.

If even some Topten eligible models do not comply with the Chinese MEPS, this means that many of the comfort fans that do not fulfil the Topten selection criteria, most likely don't fulfil the Chinese MEPS as well.

Conclusion

The analysis of the data gathered by Topten showed that many comfort fans that are being imported to Europe are inefficient. Products that are not allowed to be sold domestically in the country of origin (i.e., China) are being obviously still manufactured with the intention of exporting them to countries or regions with lower or no requirements in terms of energy efficiency. This practice is a case of environmental dumping and although it is legal, it is clearly against the interests of the customers in the importing countries, which are often not aware that they are receiving low quality products that even the exporting country does not want to use for it's own market. Although the current Ecodesign review study uses a statement from the 2012 Impact assessment stating that *"setting efficiency requirements at similar level as in China/Taiwan with risk of removing virtually all comfort fans from the EU market"* (EC, 2012b. p. 29), this argument is definitively not valid anymore, as the 2021 Topten list of many available efficient products clearly shows. To mitigate this situation, it is important for the

importing countries or importing regions (i.e., the European Union) to set their own requirements that are more stringent than the requirements of the exporting country or at least to harmonize them with the ones of the country of manufacturing. The requirements in China have been into force since 2008, obviously without hampering the market of efficient and affordable comfort fans there, so implementing at least the same minimum performance requirements in Europe should be quite simple as the groundwork has already been laid for policy and technology. Without doubt, this will in return also provide the European consumers (and potentially also other world-regions) with better and more efficient products that improve their quality of life. Indeed, a consumer might need to buy several inefficient fans to achieve the same results that an efficient fan would yield for less money and energy.

However, on the side of European policymaking, the current process of joint regulation for air conditioners and comforts fans clearly acts in disfavour of comfort fans, as all the attention in the review process is being focused on air conditioners. In fact, comfort fans are barely mentioned throughout the whole process. The recommendations on policy design for fans are placed in an annex and are - even worse - based on a previous and out-dated version of the applicable IEC standard (stemming from decades ago). One of the main justifications given by the EU review study for the lack of new information throughout the document is the supposedly missing product data on the energy efficiency of the comfort fans on the market, despite the (obviously not enforced) EU product information requirements being into force for many years. On the other hand, comfort fans alone with approximately 50 million units sold in 2020 already exceed by far the threshold defined in the Ecodesign Directive (EC, 2009) of more than 200,000 units sold per year to be covered by an implementing measure. Additionally, for the second requirement of the Ecodesign Directive on the significant saving potential, the EU impact assessment expected in 2012, the energy savings to be 1 TWh by 2020 if at least the same MEPS as the ones in place in China and Taiwan were introduced (EC, 2012b). The current review study still uses the same assumptions on energy savings, which are most likely much too low considering that actual sales have increased dramatically and clearly do not reflect the assumptions of the review study. Accordingly, the actual energy saving potential is expected to be even higher and therefore also fulfil the second criteria of the Ecodesign Directive on significant saving potential in the European Union in any case.

Therefore, the EU should definitely implement at least the same minimum performance requirements as in the main exporting countries of comfort fans (i.e. China) or, even better, own EU requirements that are more stringent to use the full saving potential of the many efficient products already available on the market (as shown by the Topten product list). Based on this Topten study, it is also urgently recommended to the European Commission to include MEPS also for tower fans and bladeless fans or to include at least a special early revision clause for these product groups, as a new IEC standard also covering these types of fans is available since 2019. Furthermore, to achieve the targets of Ecodesign more effectively, it is also recommended to the European Commission to separate the two product groups of ACs and comfort fans from one another in future preparatory and review studies.

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