



## Energy and CO<sub>2</sub>-Impact of Ecodesign Regulation for Fans on the European Market

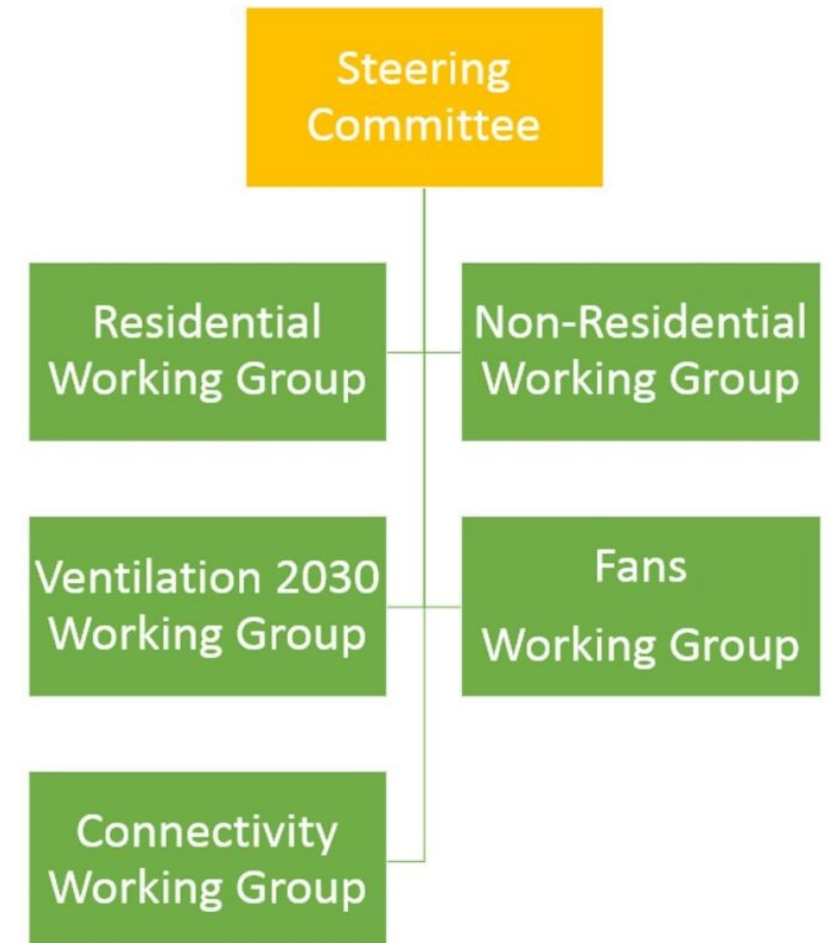
- EVIA and basis for market survey
- ErP Regulation expected revision and market transformation
- Fan types and fan size
- Estimated electrical power, energy and CO<sub>2</sub> savings
- Outlook 2025
- Fans in other ErP products
- Example fan change - Cost for avoided CO<sub>2</sub>-emission



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## EVIA Working Groups

- **Residential Working Group:**  
**Jelmer de Jong (Brink Climate Systems)**
  - IAQ Label Task Force:  
Yves Lambert (Renson)
- **Non-Residential Working Group:**  
**Vice Chair Roger Madorell (Soler&Palau)**
- **Fans Working Group:**  
**Geoff Lockwood (ebm-papst)**
- **Connectivity Working Group:**  
**Jürgen Albig (Ziehl-Abegg)**
- **Ventilation 2030 Working Group:**  
**Marc Jardinier (Aereco)**
- **National Association Liaison Group:**  
**Colin Timmins (BEAMA)**



### Basis for EVIA Fan Market Savings calculations:

- Data are given for EU market when placing on the market
- EVIA collected data of fan manufacturers representing approx. 33% of estimated market size for different fan sizes (fan power).
- The results are extended to the estimated market size.
- Typical power savings, defined for each fan size groups for each year, lead to energy savings by considering 4 000 operating hours per year, which was estimated as a good average of all fan applications.
- CO<sub>2</sub>-Faktor for Electricity 460 g CO<sub>2</sub>/kWh<sub>Electricity</sub>
- Considering exports outside EU for downstream products and spare parts, there is always a stock of non-complying fans.
- Saving estimations made based on BEP (optimistic) but not including variable speed drive (conservative).
- It does not include very big fans >> 22kW and no jet fans.
- A first estimation was published based on a survey 2017 and this is updated for 2020

## Expected Minimum Requirements for Fans EU 327/2011 Revised

In the following called 202x limits

Fan type	Measurement category	Pressure	N
Axial	A, C	static	0,50 (0,48)
	B, D	total	0,64 (0,60)
Forward curved and radial <5kW	A, C	static	0,52
	B, D	total	0,57
Forward curved and radial ≥5kW, Backward curved	A, C	static	0,64
	B, D	total	0,67
Mixed flow	A, C	static	$0,57+0,07 \cdot (\alpha -45)/25$
	B, D	total	0,67
Cross flow	B, D	total	0,21
Jet Fans	E		0,50

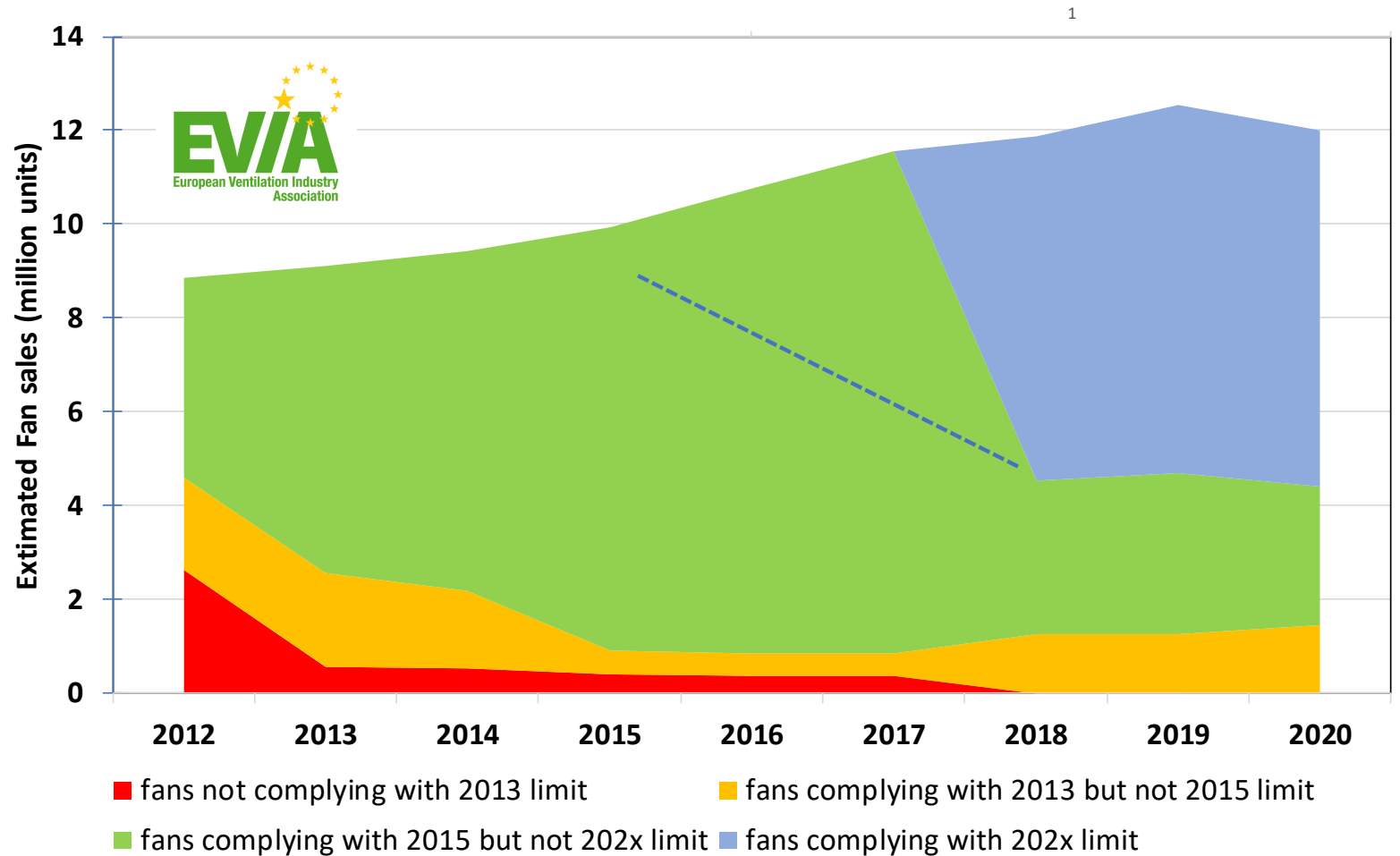
**Revision work on hold since almost 3 years  
Industry urgently awaits clarification and publication!**

# Market Transformation

## Data collection

- < 2018 split
  - 2013 limits
  - 2015 limits
- ≥ 2018 no split between
  - 2013 /2015 limits
- ≥ 2018
  - 202x expected limits added
  - < 2018 also 202x compliant fans on the market

Market Transformation - Estimated Impact of Ecodesign Regulation EU 327/2011



## Market Share Axial – Radial - Size

### ■ Data have been collected for

- Axial Fans
- Radial Fans (including others)

### ■ Size of fans:

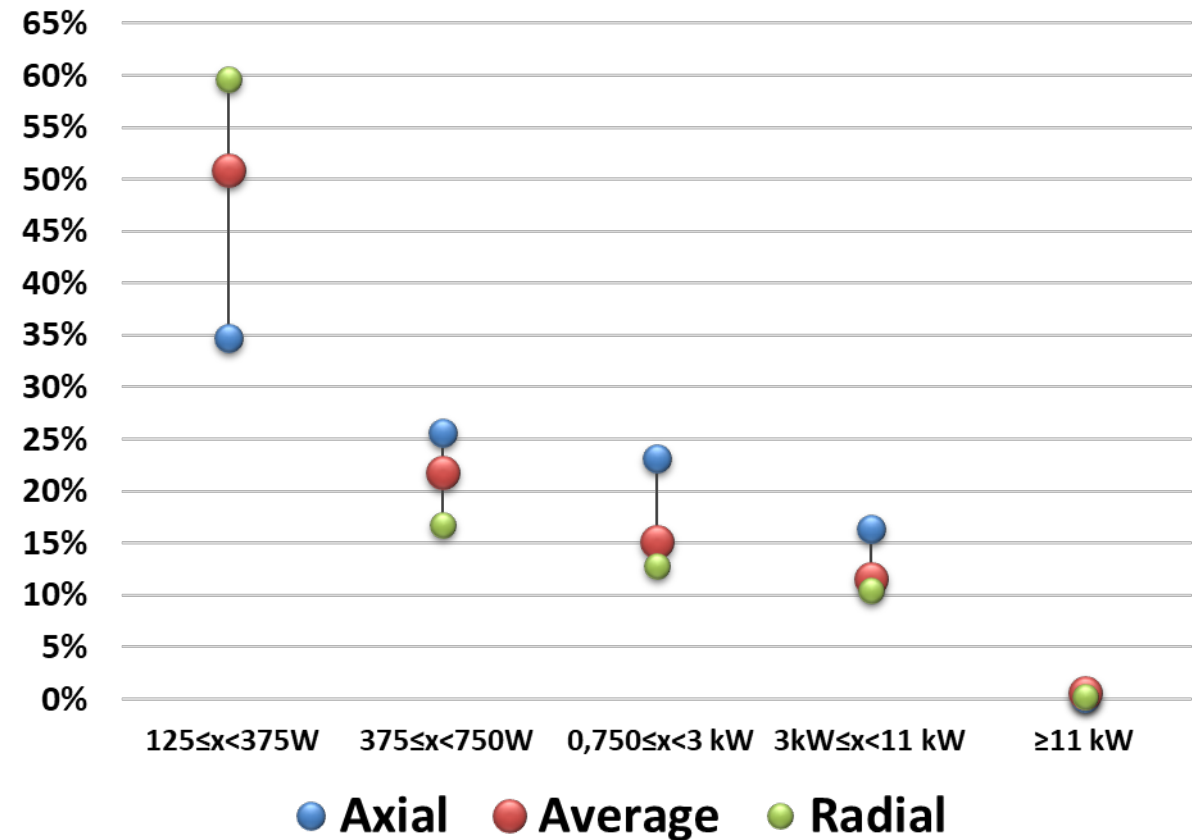
- $125 \leq x < 375W$
- $375 \leq x < 750W$
- $0,750 \leq x < 3 \text{ kW}$
- $3kW \leq x < 11 \text{ kW}$
- $\geq 11 \text{ kW}$

### ■ Some manufacturer delivered only data as

- a mix of axial and radial fans
- A mix of different sizes

### ■ -> shift of average value

Market Share Axial - Radial - Average  
pcs.



## Market Share and Energy Impact - Size

### ■ Energy impact was estimated with average Electrical Power in each group:

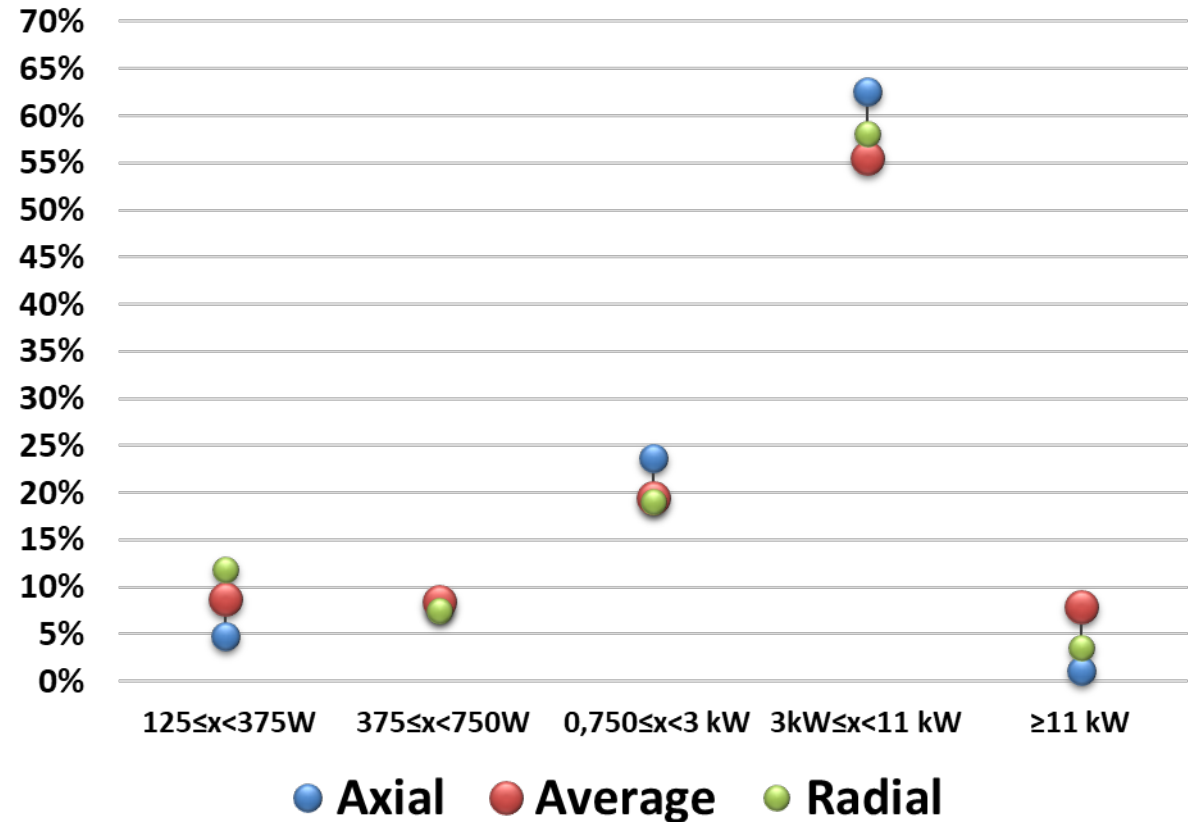
■ $125 \leq x < 375\text{W}$	0,25
■ $375 \leq x < 750\text{W}$	0,56
■ $0,750 \leq x < 3 \text{ kW}$	1,88
■ $3\text{kW} \leq x < 11 \text{ kW}$	7,00
■ $\geq 11 \text{ kW}$	18,00

### ■ Some manufacturer delivered only data as

- a mix of axial and radial fans
- A mix of different sizes

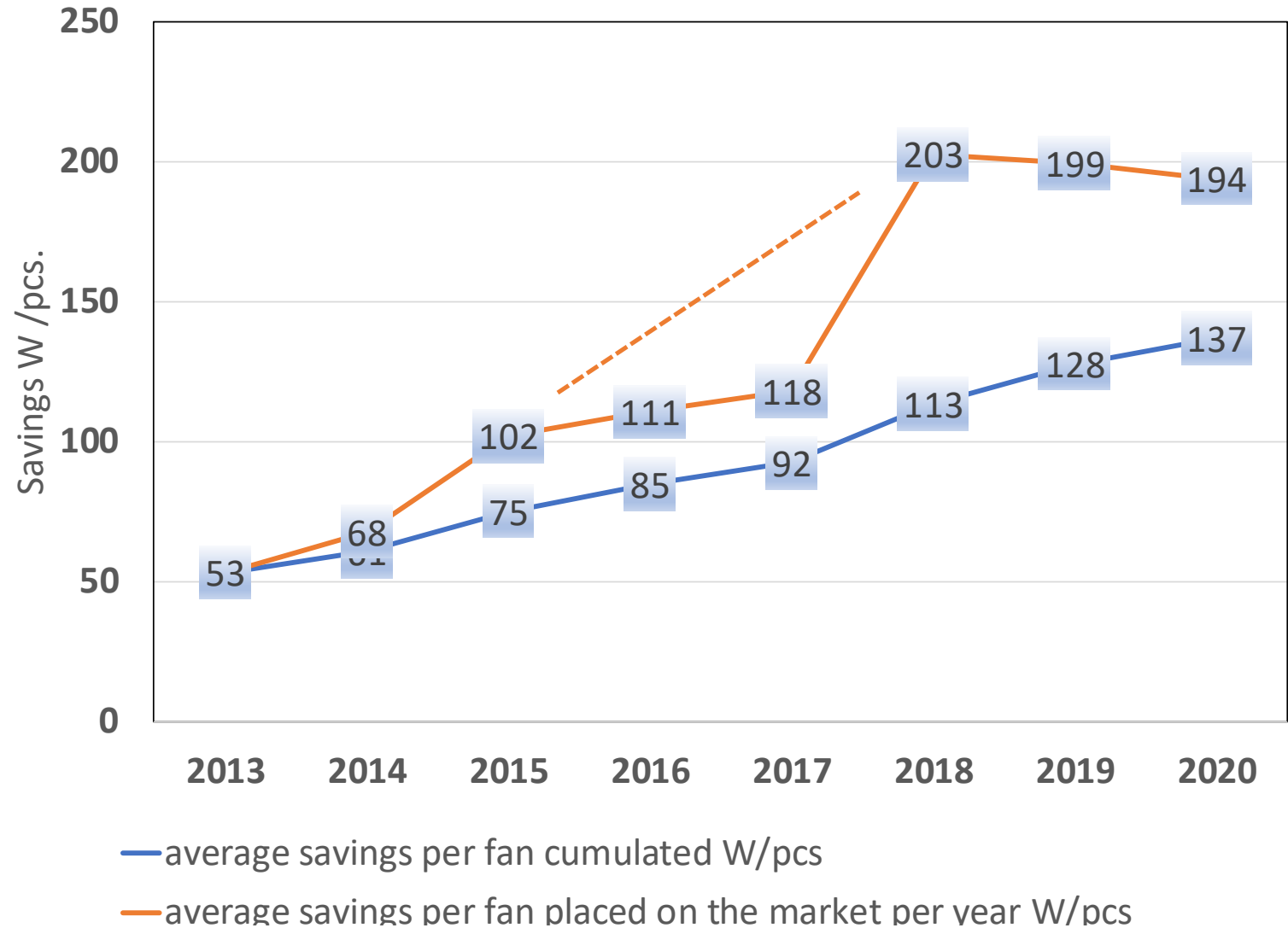
### ■ -> shift of average values

Energy Impact Share Axial - Radial - Average  
pcs. \* Pel.



## Average savings when placed on the market and cumulated

- Average Savings for all sizes
- Based on estimated Baseline 2012
- Placed on the market each year
- Average on the cumulated fan starting in 2012
- 202x requirements considered in the survey starting 2018

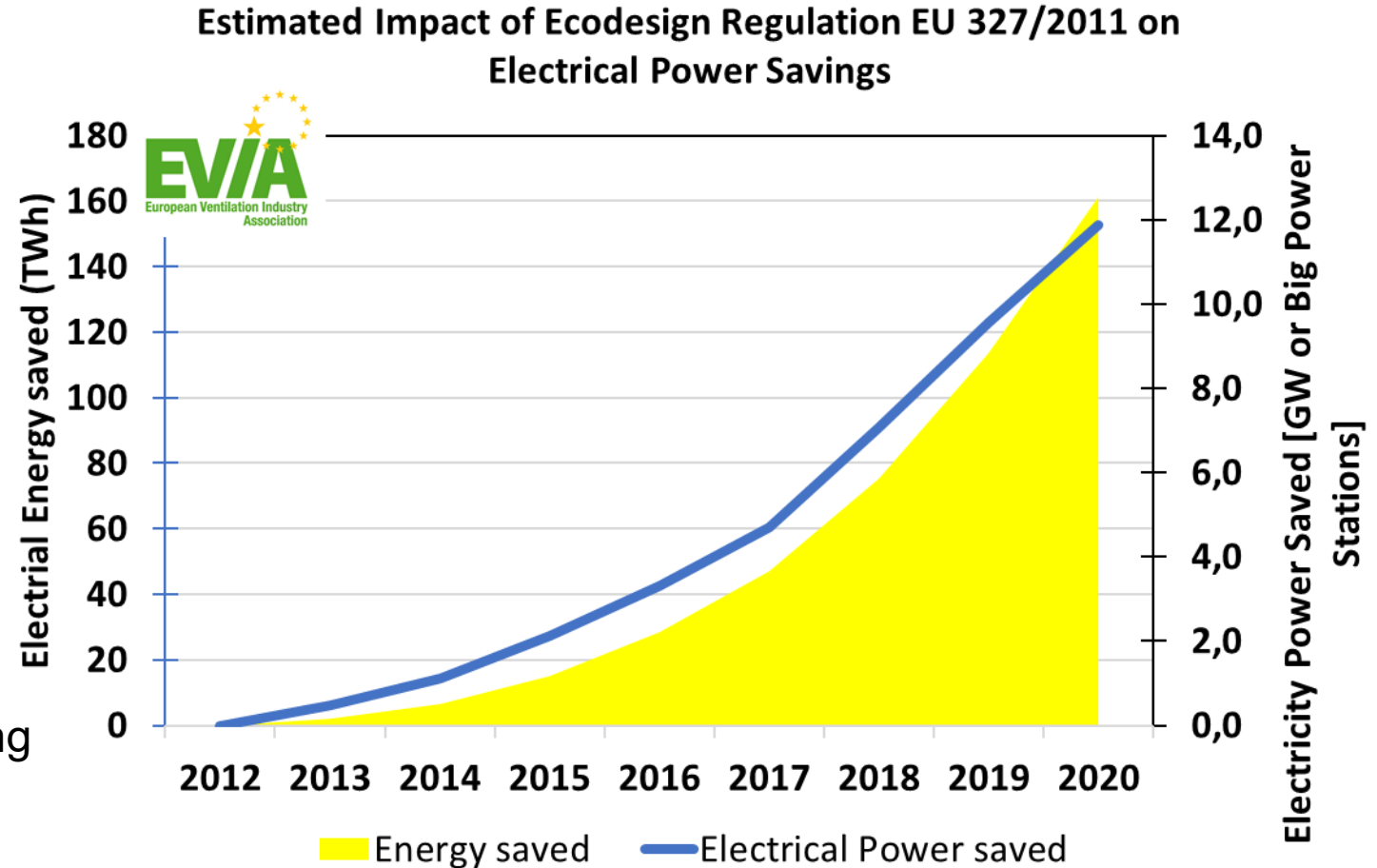




## Estimated Saved Electricity Power and Consumption

### ■ Cumulated

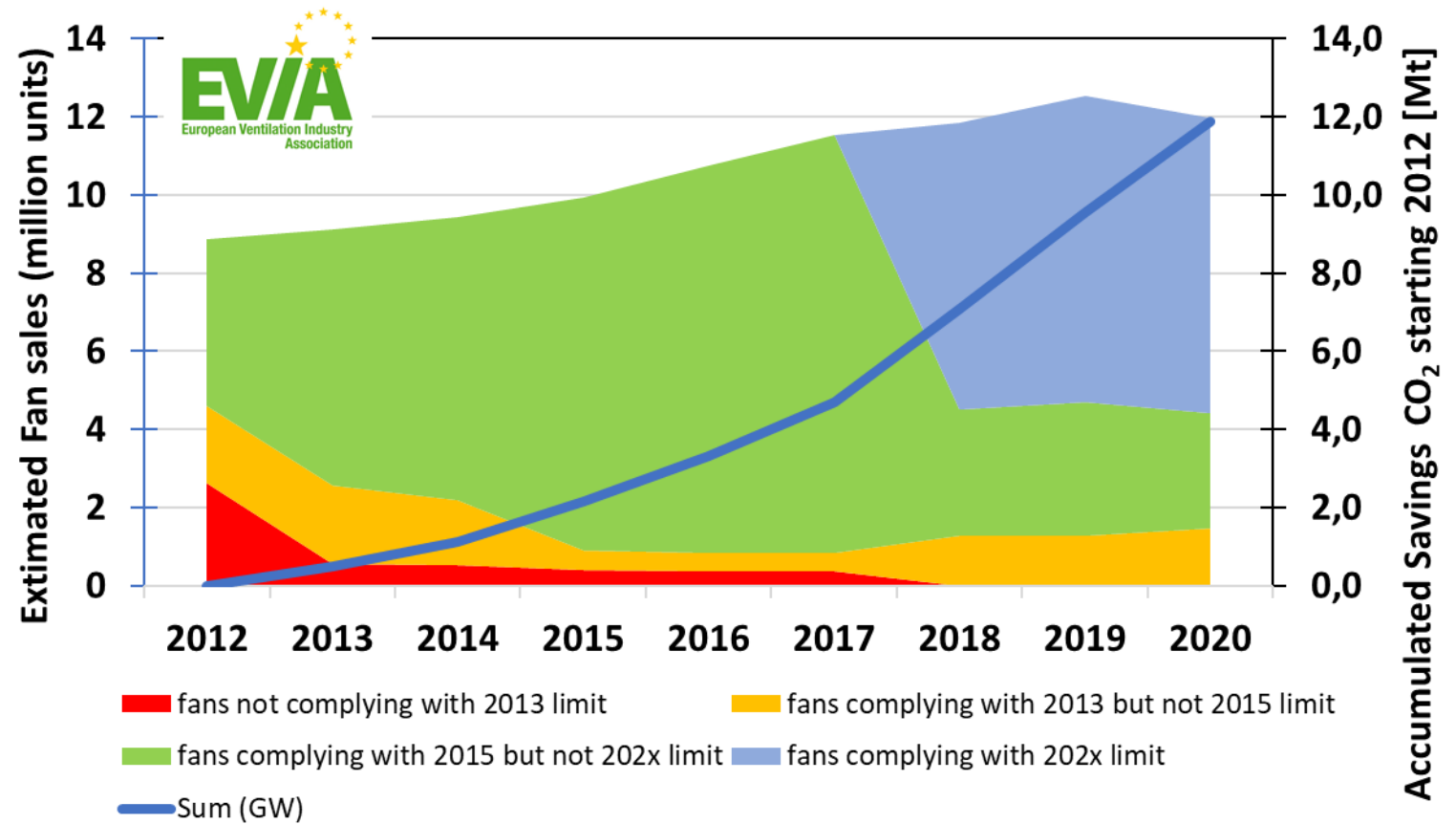
- Electrical Energy and
- Electrical Power saved
- Start in 2012 and based on the Estimated market share of
  - Compliant and
  - Non EU 327/2011 compliant fans
- Energy calculated with
  - 4000 operating hours
  - based on BEP (optimistic) but not including variable speed drive (conservative).



## Accumulated CO<sub>2</sub> Savings

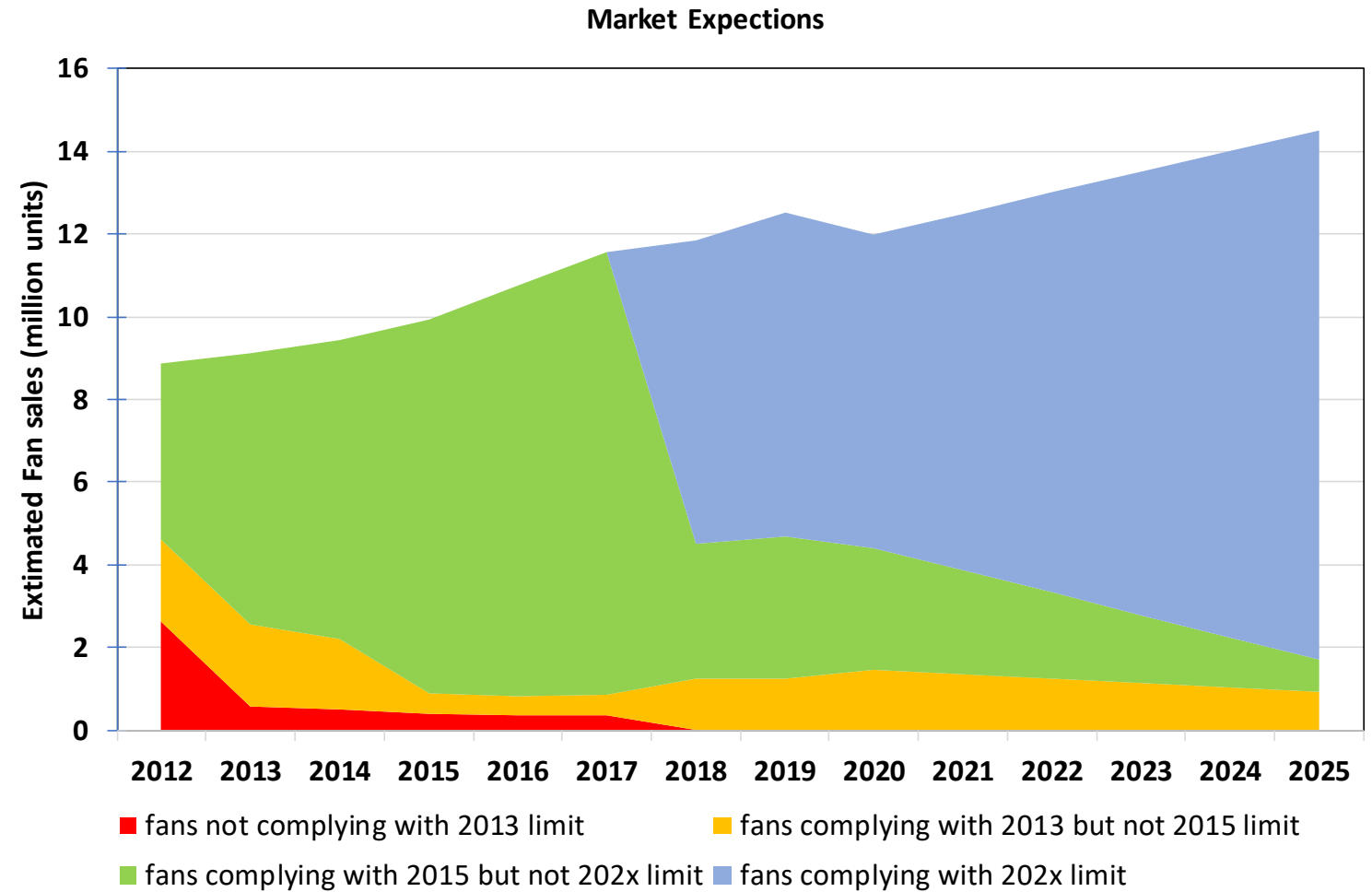
- Same basic data as previous slide
- CO<sub>2</sub>-Faktor for Electricity  
460 g CO<sub>2</sub>/kWh<sub>Electricity</sub>
- Cumulated starting 2012

Estimated Impact of Ecodesign Regulation EU 327/2011 on Energy Savings



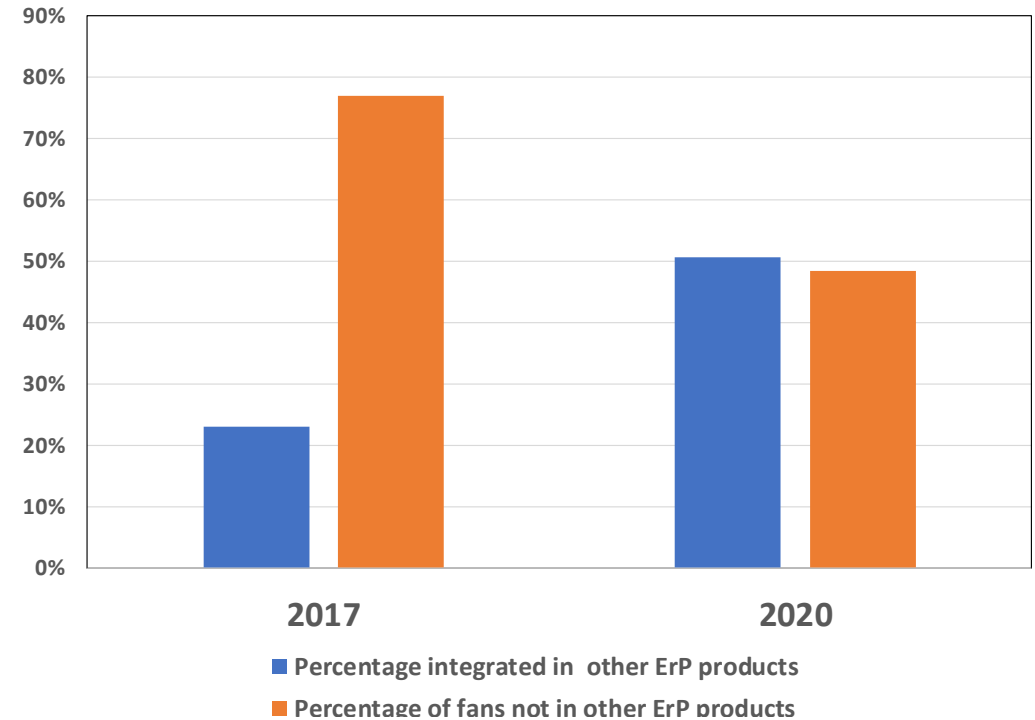
## Expectation for development up to 2025

- **Estimated outlook to 2025**
- **Starting 2020 and interpolated linear between**
- **Expecting the EU 327/2011**
  - Published within next months
  - Comes effective within a year



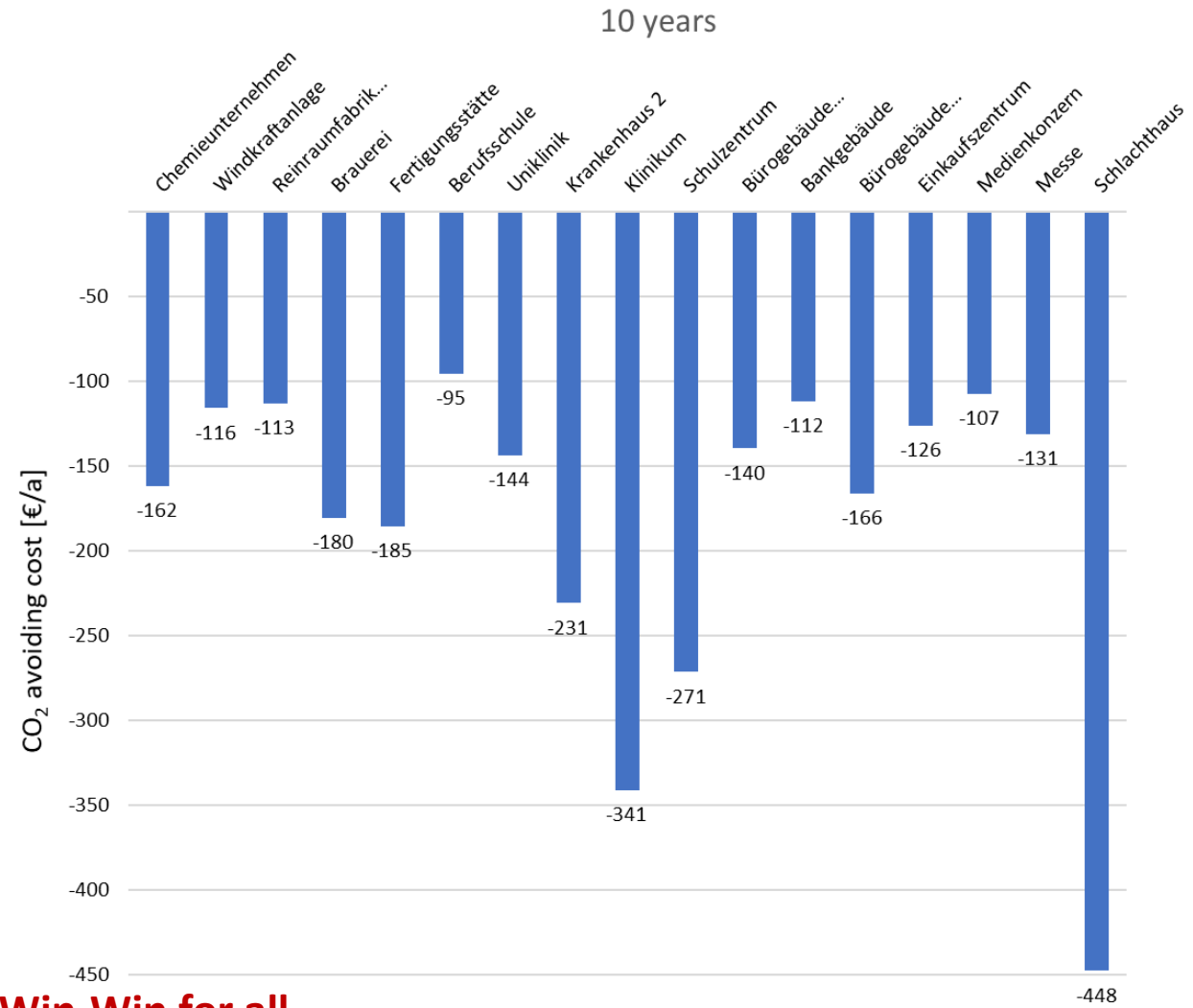
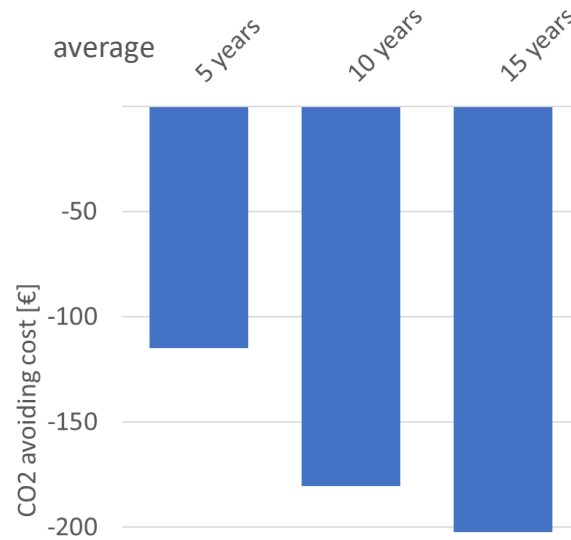
## Fans in other ErP Product - 2017

- Based on qualitative answers from Manufacturer
- Weighted by their sales
- Growing share of fans implemented in other products with ErP Regulation. For example
  - EU 2281/2016 on Air heating and cooling devices
  - EU 1188/2015 on Warm air heaters
  - EU 1253/2014 on Ventilation units
  - Etc.
- Still a high share for not regulated products
- Energy savings estimations might be double counted when fans consumption is considered in other product regulation.



# Is Fan Changing Economical? – Cost for avoided CO<sub>2</sub> Emission

- Fan changed in existing applications
- All projects calculated with real full cost.
  - Investment
  - Energy savings 5/10/15 years
- Fixed energy prices
- No increases in energy prices
- No interests



**Negativ Cost -> Win-Win for all**

## Summary

- **Ecodesing regulation for fans is an important driver for energy efficiency**
- **Impact of fans is significant**
- **Savings in electrical energy achieved since 2012**
  - 12 GW electrical power
  - 150 TWh electrical energy
  - 12 MT CO<sub>2</sub>
- **Revised fan regulation is urgently needed for**
  - Clarification
  - Definition
  - Market transformation to more efficient products and components
- **Investment in efficient fans may lead to a negative CO<sub>2</sub>-reduction cost**



## *The Voice of the European Ventilation Industry*

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