EEB-CLASP-CLiC Additional information submitted towards the study for the Revision of the Mercury Regulation, concerning mercury added lamps

23 September 2022

Following the Stakeholder meeting on the 15 September 2022, presenting the latest status of the consultants' study to support the Revision of the Mercury Regulation, we would like to submit a few additional comments and information.

Thank you in advance for considering our concerns while reviewing and finalising the study.

General comments

We are of the view that the EU should move towards banning the exports of all (mercury-containing) lamps which are banned in the EU market.

However, especially with reference to the linear fluorescent lamps (LFL), it must be assumed that a global ban will follow soon after, particularly given the EU political commitments on chemicals and climate, and the views of the Parties at the last Minamata Convention COP. The tentative dates for that ban as discussed in the Annex A&B Contact Group at COP4 were 2025, 2027 and 2030, with all but one country agreeing to 2027 for an LFL ban.

This very likely assumption needs to be taken into consideration and be clearly reflected when looking at job losses, revenue losses and even mercury content in potentially exported lamps. Consequently, it needs to be clearly considered and reflected in the discussion when analysing the different policy scenarios presented in the report.

Comments relevant to issues that arise from the slides

1. Numbers of FL exports vs. LED, substitution rate and relevant revenues/losses.

i. From the industry annual reports, already today industry has been very successful in transitioning global lighting markets from fluorescent lighting towards LED lighting. Growth in LED revenues, more than exceeds the decline in fluorescents. As a result, the estimate and presentation of costs (under impacts) should consider that, at the end there may not be a real issue of revenue losses for industry. LED European exports are expected to rise as trends show.

- Signify Lighting (formerly Philips) – the global #1 lighting company and owner of the Pila, Poland fluorescent lamp manufacturing lines has clearly stated that the transition to LED lighting is urgent and benefits everyone. Eric Rondolat, CEO of Signify said "One of the quickest wins within energy renovation is lighting," he said. "Replacing the EU's 2.3 billion conventional light points with energy-efficient LED would save €40 billion per

year and eliminate 50.9 million tons of CO_2 emissions per year. It's a quick, non-intrusive intervention that benefits everyone, with an unparalleled payback in speed, cost, and effectiveness."

ii. Given that LEDs are also the main priority - the future of lighting – the European lighting industry could play an important role into assisting in the global transition; assuming an EU LFL ban, to avoid losing their developing country clients importing until now LFLs, they could offer them fully compatible linear LEDs in better prices – leading to a win-win situation both for EU exporter and non-EU importer, in terms of costs and benefits considering the energy/monetary savings.

- Signify's Annual Report 2021 shows the growth in the LED market and the reduction in the conventional lighting market. The sales growth is much stronger for "Digital Products" (LED lighting) and it is negative for "Conventional Products" (mainly fluorescent and HID), however it is interesting to note that the EBITA margin is 18.4% for Conventional Products while it is 13.2% or Digital Products, meaning the EBITA is 40% higher for Conventional Products – hence the likely commercial interest of Signify, and thus the position of LightingEurope to maintain exports. This point is very important to note given that the European lighting industry is contributing feedback and data to this process and they are not a disinterested party.

Divisions	Digital Solutions	Digital Products	Conventional Products
Sales *	3,524	2,452	861
Comparable sales growth	3.4%	8.8%	(6.9)%
Nominal sales growth	8.3%	7.2%	(8.7)%
EBITA margin	9.0%	13.2%	18.4%
Adjusted EBITA margin	11.3%	13.8%	18.7%

* In EUR million

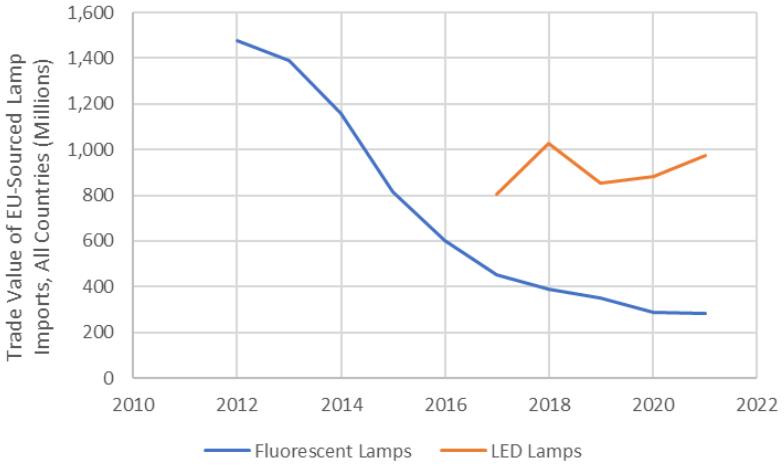
iii. Given the LED production is increasing, which could also lead to more jobs created, this should be considered - and therefore the FL related job losses would be minimal in actual numbers; and could easily transition into the respective LED branches of the companies given the higher demand for LEDs. Signify's 2021 Annual Report states that they have approximately 30,000 people employed in Digital Solutions (mainly LED services) and Digital Lighting (mainly LED products), and approximately 7000 employed in Conventional Lighting, down from 8000 the previous year. Thus, at this point in time, they are employing more than 4 times as many people in LED-based businesses, whereas the sales are 7 times higher for LED over Conventional products, so the sales per employee is higher in LED, reflecting the value proposition and value-add to lighting as a service.

In slide 49- summary of impacts, the cost column should be revised to reflect as above – the positive aspects of the transition to LED lighting. These concerns should appear and discussed clearly in the text and in an additional column in the summary.

iv. The numbers of FLs to be 'substituting' EU exports and the relevant potential losses from these exports, have to be seen in conjunction with current policies in the importing countries.

- California, which represents around 15% of the US economy and would be the 5th largest economy in the world if it were independent, just banned (sales ban) integrally ballasted CFLs starting on 1 January 2024 and everything else (LFL and CFLni) starting 1 January 2025. Please **click here** to see a copy of the law, including scope of coverage and phase-out date.
- UK, Norway and Switzerland are expected to follow EU RoHS decision made in December 2021 to phase-out virtually all fluorescent lamps.
- In November 2021, the UK issued a draft proposal (**Energy-Related Policy Products Framework**) for all lighting technologies to be 120 lm/W, a level which is higher than all fluorescent general purpose lighting technologies can achieve, thus it is effectively a phase-out of fluorescent lamps
- The Southern Africa Development Community –16 African countries - adopted **regionally harmonised** quality and performance standard HT 109:2021 in June 2021, which sets an efficacy level in that regional standard that is above what fluorescent lamps can achieve – effectively a phase-out of fluorescent.
- East African Community – 7 countries – also adopted on 1 July 2022 a phase-out of fluorescent through a technology-neutral minimum energy performance standards:
  - EAS 1064-1:2022, Lighting Products - Minimum Energy Performance Standard - Part 1 - Lamps (1st Edition). This East African standard covers the energy efficiency and functional performance requirements, sampling and test methods for general service lamps and tubular lamps.
- See the graphs below with new analysis CLASP conducted, on exports which show that countries around the world are consuming EU-27-sourced LED lamps faster, and at greater trade value, than they are consuming EU-27-sourced fluorescent lamps. This trend shows there is an on-going consumer preference for switching to LED, and if the EU-27 were to ban exports of fluorescent lamps, the substitution estimate would be much less than 50% and far from 90%.

- **Figure 1. EU-27 produced fluorescent and LED lamps, Exports to All Countries**



For this figure, please note that the slope of LED exports increase is basically consistent with the rate of decline in fluorescent lamp exports for the EU-27 countries. This shows that the value of the LED exports to EU-27 countries is not only multiples higher than fluorescent exports, but also replaces those revenue losses from fluorescent lamps at the same rate, so losses to EU-27 lighting companies nets to zero (N.B. all companies producing fluorescent lamps in the EU-27 also offer LED alternatives).

- **Figure 2. EU-27 produced fluorescent and LED lamps, Exports to non-EU Countries**

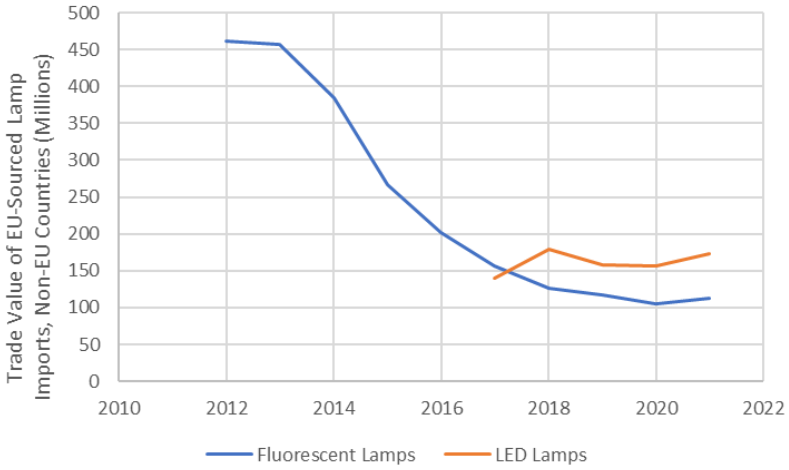


Figure 2 depicts the specific substitution effect of non-EU countries importing from EU-27 sourced lamps. This figure shows that the EU is earning about 50% more revenue – and has done since 2018 – from LED light sources compared to fluorescent. This shows that countries who import EU-sourced fluorescent lamps are switching to EU-sourced LED lamps, particularly from 2017 to 2018, and again from 2020 to 2021.

- **Figure 3. EU-27 produced fluorescent and LED lamps, Exports to Norway**

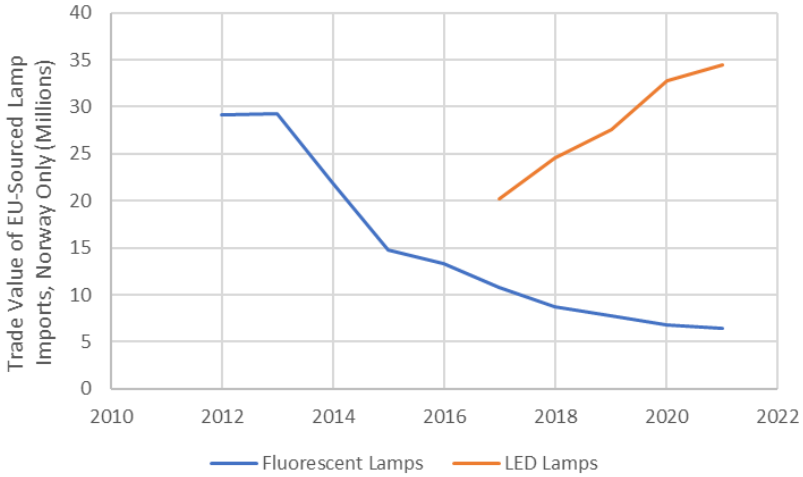
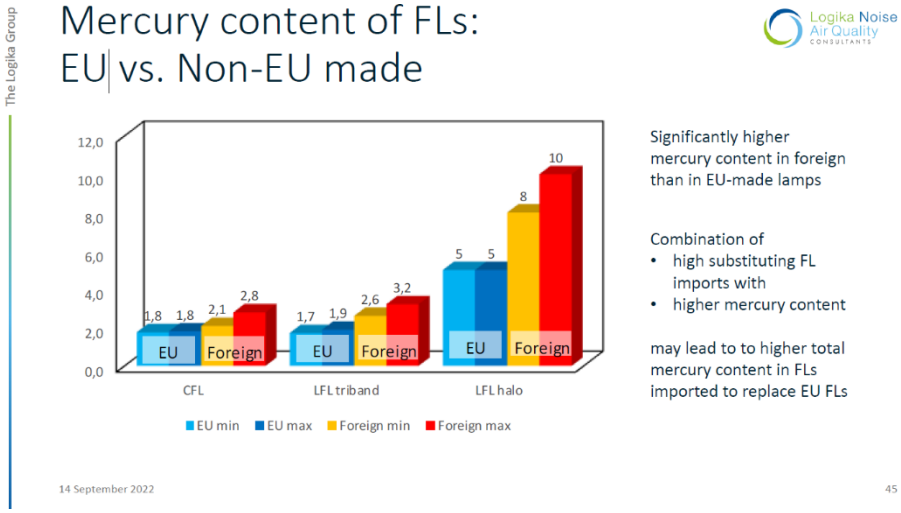


Figure 3 depicts the specific case Norway, one of the largest non-EU importing countries of lighting products sourced from the EU-27. For this country, the rate of adoption (the slope) of LED lighting exceeds the rate of decline of fluorescent – showing that each year Norwegian consumers are welcoming and purchasing more mercury-free LED lighting from the EU than they did fluorescent, both in terms of trade value and rate of change.

2. Concerns about mercury content estimates

We have concerns on the assumptions of mercury content in lamps to be exported by other than the EU, which in theory may replace the EU exports.



Slide 45 (above) shows that while the EU mercury content of FLs will actually be less than the actual maximum limits set by RoHS, the foreign mercury content would be much higher than it may be. Such an assumption would skew the estimate of total mercury, that would potentially end up as mercury waste in an importing country. Our concerns are based on the following elements:

i. We would assume, that the exporting country to replace the EU, would be China.
ii. Many if not all the EU companies also have plants in China, and on the basis of corporate agreements we would assume that those would manufacture FL lamps with same content as in the EU.
iii. Please see the attached "**China's roadmap** to gradually reduce mercury content in fluorescent lamps", and note this specific table which shows a gradual phasing down of mercury content per lamp from 2013, 2014 and 2015. This 2013 China Roadmap to reduce mercury in fluorescent lighting is a policy document issued by three government ministries including Ministry of Industry and Information Technologies, Ministry of Environment and Ecology, and Ministry of Science and Technologies.

The final levels by 31 December 2015 are as low as – 0.8mg per CFL <30W. 1.0 mg per LFL <17mm diameter. These are more than two to three times lower than the content figures in the slide assumption. If such numbers were used, the total content in slide 46 would be much different.

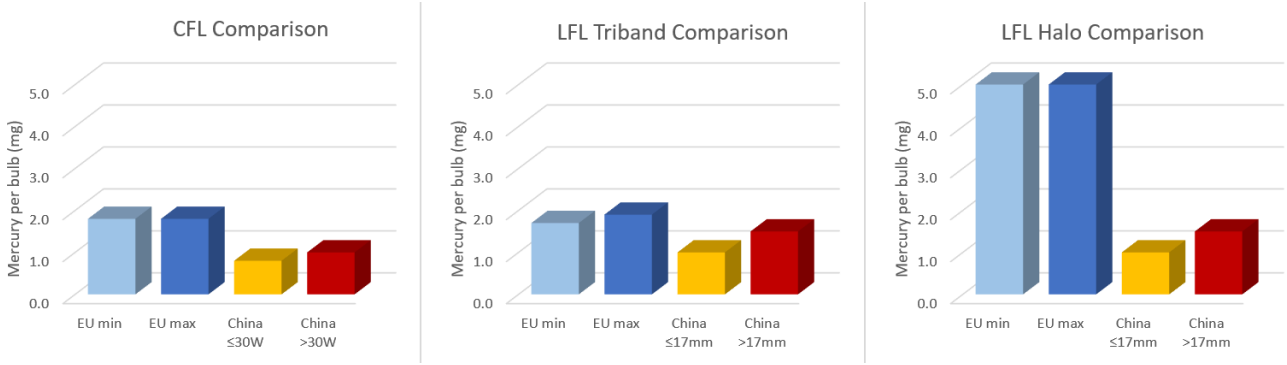
附表：

逐步降低荧光灯含汞量时间表

阶段	时间	产品		目标值（毫克）	与现行标准比含汞量削减
1	2013 年 12 月 31 日止	紧凑型荧光灯	功率≤30W	1.5	70%
			功率＞30W	2.5	50%
		长效荧光灯		4.0	50%
		其他荧光灯	管径≤17mm	2.5	75%
			管径＞17mm	3.0	70%
2	2014 年 12 月 31 日止	紧凑型荧光灯	功率≤30W	1.0	80%
			功率＞30W	1.5	70%
		长效荧光灯		3.0	63%
		其他荧光灯	管径≤17mm	1.5	85%
			管径＞17mm	2.0	80%
3	2015 年 12 月 31 日止	紧凑型荧光灯	功率≤30W	0.8	84%
			功率＞30W	1.0	80%
		长效荧光灯		2.5	69%
		其他荧光灯	管径≤17mm	1.0	90%
			管径＞17mm	1.5	85%

注：1. 紧凑型荧光灯俗称节能灯，长效荧光灯指寿命大于 25000 小时的双端荧光灯；
2. 含汞量削减效果指目标值与现行产品标准（《照明电器产品中有毒有害物质的限量要求》QB/T 2490-2008）有关要求相比，单只荧光灯产品含汞量的削减比例。

China (in this table) appears not to differentiate between halophosphate[1] and triband, thus the target values for halophosphate lamps manufactured in China may have less mercury that halophosphate in Europe. This is an extremely important point because of the assumptions being made in the analysis – China is the world's largest supplier of fluorescent lamps globally and – in addition to branding lamps for all EU-based lamp brands – they have the most advanced manufacturing lines with the lowest levels of mercury globally. For this reason, we question the assumption that phasing-out EU-supplied fluorescent lamps will increase mercury because this official roadmap from China conveys the opposite. To illustrate this point, we prepared the following histograms for the mercury content on China's production lines compared to those in Europe.



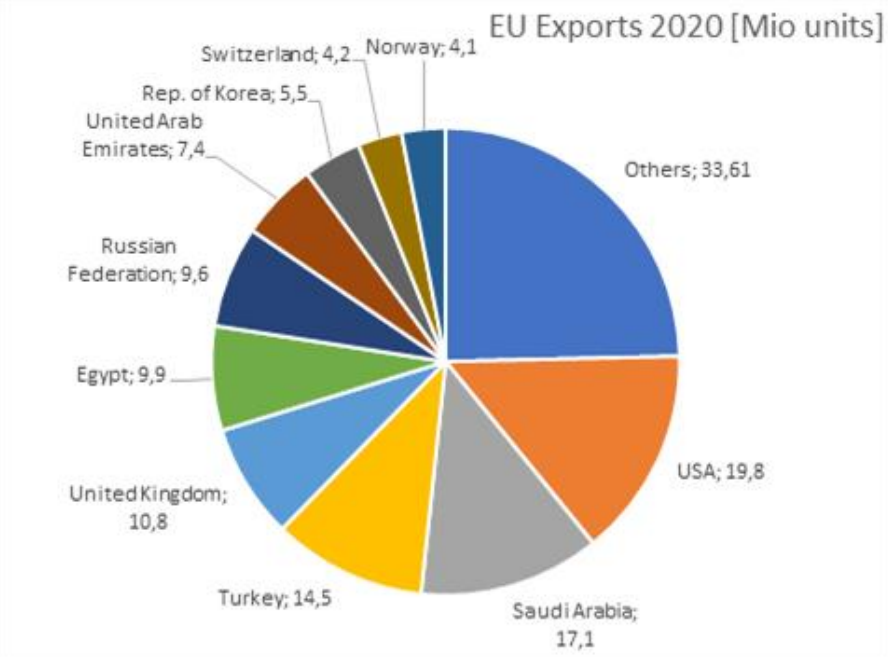
The cover page for this Roadmap reads as follows: "*1. The necessity of gradually reducing the mercury content of fluorescent lamps.* Fluorescent lamps are currently widely used energy-saving lighting sources, which are divided into straight tube fluorescent lamps, ring fluorescent lamps, compact fluorescent lamps (commonly known as energy-saving lamps) and electrodeless fluorescent lamps. The light-emitting principle of fluorescent lamps determines that a small amount of mercury vapour must be contained in the lamp tube. Mercury is a toxic and harmful heavy metal element, and it is difficult to effectively recycle after the fluorescent lamps are discarded. The leakage of mercury not only pollutes the environment but also threatens human health."

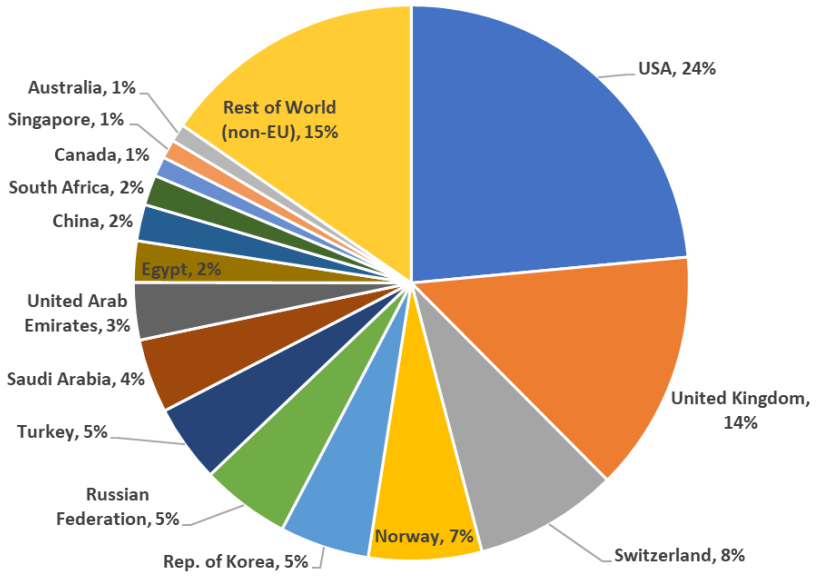
To that end it would be worth that the mercury content values used in the study are checked in light of the information above.

[1]To our understanding from talking to experts, the Chinese target value for halophosphate assumes that the glass tube is coated in such a way so to prevent the adsorption of mercury, thus enabling the lamp to have as low a mercury content as the typical triband phosphor lamp (which already has this necessary coating).

3. Importing country information

See below additional information concerning countries importing fluorescent lamps from the EU. CLASP made the following analysis/assumptions: We downloaded the 2017-2021 trade value (UN Comtrade) of EU-27 sourced fluorescent lamps for all countries globally. We then removed the EU-27 countries (due to the RoHS ban) and plotted the cumulative trade value over that five-year period by country. The USA is the largest non-EU consumer of fluorescent lamps exported from the EU, with 24% of the export trade value. They are followed by the UK with 14%, Switzerland on 8% and so-on.





What is important to note from this diagram is that more than half of the value of the revenue from EU-27 sourced exports are going to countries which in 2022 are moving to phase-out fluorescent lamps through legislation that either aligns them with the EU-27 decision on RoHS in December 2021 (including the UK, Switzerland and Norway), or through their own legislation which is based on a decision to eliminate toxic mercury-containing fluorescent lamps (including the USA). Recently, the states of California and Vermont have both adopted state-wide legislation to phase-out fluorescent lamps, and legislation aligned with the state of California bill (which is comprehensive in its phase-out, please see the new law and an article) will be introduced into 15 state legislatures in Q3/Q4 of 2022 and dialogue has already started on Capitol Hill about the possibility of Federal action.

We believe it is critical that the analysis reflects the fact that half of the EU-27 exports of fluorescent lamps are banned, and that other countries in the remaining half including Canada, Australia and Singapore are all actively working on legislation to phase-out fluorescent lamps as well. These national initiatives are of course above and beyond what is happening through the Minamata Convention on Mercury and the global agreement. The trend to phase-out fluorescent is important and urgent, and the EU-27 has an opportunity to lead the world by making a responsible decision to ban exports.

India

1. Elcoma Vision 2024

   Please consider the Elcoma Vision 2024. This is a roadmap which was voluntarily developed by the Indian lighting industry, and which sets out a schedule of investment and research in order to position India as the world's number 2 producer of LED lighting (after China). In this roadmap, you will find considerable discussion on the supply chain, standards, market incentive schemes and consumer awareness efforts which are all directed towards making India an LED country by 2024. The roadmap stops short of calling for regulatory measures to phase-out fluorescent lighting which we attribute to the fact that this document was developed by the Indian lighting industry, however building on the 10-year success of the Ujala programme and the world of Energy Efficiency Services Limited (EESL) in India.

   Vision 2024 seeks to ensure India is vertically integrated to supply 600 to 700 million LED lamps annually by 2024, while simultaneously positioning itself as world #2 exporter. The fluorescent lamp market is dwindling in India, like everywhere else and the Indian companies are investing and focusing on the next generation technology, LED. As discussed earlier, the assumption of such a high rate of substitution (50-90%) of non-EU sources fluorescent lamps is not warranted in this business context and focus on the transition to LED.

   We also need to consider India's position during the COP4, where they indeed supported a global ban on all linear fluorescent lamps by 2027.

2. Imports and trends[2]

India imports fluorescent lamps from some of the countries in Europe. Attached the link here: https://tradestat.commerce.gov.in/eidb/Icomcnt.asp
However, no specific information is available on import of triband or halophosphate.

Country	**Values in INR (lacs)**			**Quantity in thousands**		
	2021-2022	2020-2021	2019-2020	2021-2022	2020-2021	2019-2020
Germany	73.82	24.65	51.14	2.11	0.07	9.73
Hungary	0.94	6.91		0.15	0.90	
Austria			0.08			
Czech Republic		0.02				
France		3.04			0.04	
Ireland			0.31			0.01
Netherland			0.16			0.01

[2] Information provided by our partners in India, Toxics Link

India is already importing from other countries such as China, Indonesia, USA, Singapore, Korea etc. China is the biggest supplier of fluorescent lamps.

In India there is major shift happening to LEDs and the market share of LEDs has increased immensely during these few years. However, FLs are still in use in very limited quantity. Moreover, the price of LEDs has also decreased; Cost of LED bulb was Rs. 400 in 2015 and came down to Rs. 50 in 2016 due to bulk procurement program initiated by the Energy Efficiency Services Limited (EESL; a joint venture of PSUs under the Ministry of Power, Government of India).

3. Energy policies in the country.

In 2021, at global climate negotiations, the government established a new commitment to reach net-zero green-house gas emissions by the year 2070. It also reaffirmed its aim to install 500 GW of non-fossil power capacity by 2030. This is up from 159 GW of non-fossil capacity as of February 2022. https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1809372.

So the Government has a push to meet the target of covering 500 GW energy from the renewable energy sources.

4. Initiatives promoting LED lamps

The Government of India has already taken several initiatives to promote the use of LED Lamps in the country.

- Energy Efficiency Services Limited (EESL; a joint venture of PSUs under the Ministry of Power, Government of India) Bulk procurement program,[3]
  - Cost of LED bulb was Rs. 400 in 2015 and came down to Rs. 50 due to bulk procurement process.
- Mandatory use of LED in government offices
- Free distribution of lamps to Below Poverty Line (BPL) houses
  - To date more than, 367 million LED bulbs have been distributed in 120 cities across the country.
- BEE launched Star labeling program[4]
  - voluntary phase in 2015 and mandated from 2018, 0.8 billion LED lamps were labelled till date
- EESL recently announced Gram Ujala program to replace 15 million incandescent lamps with LED bulbs in five rural areas with cost of INR.10 for each bulb[5]
  - §The world's largest zero-subsidy LED bulb programme
  - §UJALA had the target of replacing 770 million incandescent lamps by 2019
- Street Lighting National Programme (SLNP)[6]

[3] https://eeslindia.org/en/ourujala/
[4] https://beeindia.gov.in/news-events/led-bulbs-are-now-star-labelled-bee
[5] https://pib.gov.in/Pressreleaseshare.aspx?PRID=1707220
[6] https://eeslindia.org/en/ourslnp/

- is the world's largest streetlight replacement programme
- around 1.04 crore streetlights were replaced as on November 2019

- Production Linked Incentive Scheme[7]
  - To make LED manufacturing in India

Moreover, various municipal corporations and states have also moved beyond the households. The authorities have now started replacing the regular streetlight masts with LED streetlight.

- State sponsored Demand Side Management Schemes (DSM)

It is very difficult to ascertain the type of LEDS are being used in India. In the distribution of LED program that has been initiated by the Government they are mostly distributing compact LED. However during these last few years the market share of linear LED has increased.

Besides various initiatives by Government of India, states and ministries are also taking various steps on this issue.

- Ministry of Railways announced that it planned to make all stations completely LED-lit by March 31, 2018. Besides, It is actively working to provide 100% LED lighting for its most of the Non-traction Energy needs like Railway Staff Colonies, Railway Stations, Railway Platforms etc.[8]

The railway network in India is huge. There is a gradual shifting taking place in the railway. The South Central Railways zone with 733 stations was shifted in 2018.reference However there are no specific information on the other zones of railway.

Recently the Ministry of Railway has released a document "Environment Conservation: A way of life for Indian Railways". In this document, its mentioned that 100% LED replacements done in railway stations (more than 8000), railway installations and buildings (more than 20,000) during 2014-20. All residential quarters (about 5 lakhs quarters /homes) have also been shifted to LED by May 2020.

https://indianrailways.gov.in/railwayboard/uploads/directcontent/1624430347085-Environment%20Conservation_A%20Way%20of%20Life%20for%20Indian%20Railways.pdf

Ministry has recently uploaded a ppt on its website on its energy saving initiatives. There is one slide in which it mentioned about the shifting to LED lights.

4. On waste management

In India the management of mercury-bearing lamps is under the purview of the E-waste Rules (Management) Rules, 2016 issued by the Ministry of Environment, forest and Climate change, Govt

[7] https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1835560
[8] https://pib.gov.in/Pressreleaseshare.aspx?PRID=1598481

of India based on the principle of "Extended producer Responsibility".
https://archive.pib.gov.in/documents/rlink/2016/mar/p201632302.pdf

However, at present there are challenges in the collection and disposal of mercury bearing lamps in India. Toxics Link has conducted a survey study in 2021 to assess the situation of handling of mercury-containing lamp waste in India, here is the link of the report:
http://toxicslink.org/docs/End%20of%20Light_EPR%20compliance.pdf

5. Exposure - incidents

There are no specific case studies on mercury poisoning in India linked with lamps however there are few case studies representing exposure due to other sources of mercury.

- Small-scale gold artisans use mercury to amalgamate gold from jewellery works, exposing them and their families to the toxic element. In 2017 a jeweller's wife was admitted in AIIMS, New Delhi for mercury poisoning and had renal failure.
- In 2019 an exploratory study has been reported on the levels of mercury exposure in 668 volunteers from three cities - Hyderabad in Telangana, Nellore in Andhra Pradesh and Vasco da Gama in Goa. Researchers observed that total mercury burden in those who frequently consumed fish was higher than those who ate less fish. Besides, fish-eaters had significantly higher mean value of mercury compared to vegetarians.[9]
- In 2001, the town of Kodaikanal suffered mercury contamination due to the improper storage and disposal of mercury by a local thermometer factory. The Study found that total mercury concentration in water samples from Kodai Lake and Gymkhana Marshland. Total mercury (Hg T) of 0.17-0.54 µg l-1 was seen in Kodai Lake waters while Gymkhana Marshland showed values of 0.16-1.20 µg.[10]

Malaysia

i. It has been difficult to find evidence from the market – bottom up – that EU lamsp are being imported in Malaysia. While carrying out the market surveys for CLiC[11] the lamps found in shops were mainly manufactured in China with a few from India.
ii. Having spoken to electrical shops and professional electricians, the market is phasing out CFLs and LFLs and replacing them with LEDs.

[9] Subhavana, K.L., Qureshi, A. & Roy, A. Mercury levels in human hair in South India: baseline, artisanal goldsmiths and coal-fired power plants. *J Expo Sci Environ Epidemiol* **29,** 697–705 (2019).
[10] Lin HO (2015) Mercury pollution in Kodaikanal caused by a thermometer factory spill in 2001. Biol South India A6–A1
[11] https://cleanlightingcoalition.org/wp-content/uploads/sites/96/CLiC-Regional-Profiles-Asia-Pacific.pdf

Russia

1. https://base.garant.ru/400165422/?

The Government of the Russian Federation decides:

In accordance with Part 9 of Article 10 of the Federal Law "On Energy Saving and Energy Efficiency and on Amendments to Certain Legislative Acts of the Russian Federation:

To approve the attached Rules for handling production and consumption wastes in terms of lighting devices, electric lamps, improper collection, accumulation, use, neutralization, transportation and disposal of which may cause harm to life, health of citizens, harm to animals, plants and the environment.

This decree shall come into force on January 1, 2021 and shall be in force until January 1, 2027.

2. https://base.garant.ru/400165422/#block_1000

APPROVED BY
Decree of the Government of the Russian Federation
Russian Federation
from December 28, 2020 N 2314
Rules
Waste management of production and consumption waste in terms of lighting devices, electric lamps, improper collection, accumulation, use, neutralization, transportation and disposal of which may cause harm to life, health of citizens, harm to animals, plants and the environment

Below is the comparison of two governmental decrees on this matter issued in 2010 and 2020 respectively.
https://demo.garant.ru/#/diff/77260644/entry/2222/77260645/entry/2222/77260644/77260645:3

Also, here are the links to the website of a company that deals specifically with mercury continuing lamps and other mercury waste:
https://www.waste.ru/modules/section/item.php?itemid=319
https://www.mercom-1.ru/