

## Technical Session

# Transitioning to Mercury-Free Lighting in Asia-Pacific Countries

19<sup>th</sup> and 20<sup>th</sup> June 2023

The event was convened by the UNEP Global Mercury Partnership and its area of work on Mercury in Products, in collaboration with the UNEP United for Efficiency (U4E) programme and the Clean Lighting Coalition (CLiC), with the support of the Government of Switzerland. The workshop provided a forum for exchanging information on the transition to mercury-free lighting, and sharing experiences on best practices, market trends and mercury-free lighting technology with countries from Asia-Pacific and Africa.



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## Key takeaways and lessons learned

### Sector overview

1. **Global mercury consumption for use in lamps** ranged between 112 and 173 tonnes in 2015.<sup>1</sup> While not the largest source of mercury in products and processes, these products are ubiquitous globally, which can present challenges regarding control, substitution and waste management.
2. **The global momentum for switching to mercury free lighting is now** – alongside the Minamata Convention's provisions, new labels, policies, legislations to phase out fluorescent lighting are appearing every week. More than 60 countries representing over 70% of the global market have initiated efforts to phase out fluorescent lighting through energy efficiency or mercury policies.<sup>2</sup> These policies enhance a smooth transition away from fluorescent lighting. Moreover, various tools, including model legislation and sustainable public procurement guidelines exist to further support the global shift.<sup>3</sup>
3. **Markets for fluorescent lighting across the world are disappearing fast through progressive national and regional actions.** For instance, the European Union, the UK,

<sup>1</sup> source: UNEP, 2017 *Global mercury supply, trade and demand*

<sup>2</sup> Source: Clean Lighting Coalition

<sup>3</sup> For example United for Efficiency Model Regulations Guidelines:

<https://united4efficiency.org/resources/model-regulation-guidelines/> and Sustainable Public Procurement tools: <https://united4efficiency.org/sustainable-public-procurement/>



Pakistan as well as in the United States the states of California and Vermont will ban most fluorescent lamps this year (2023). Harmonization of energy efficiency standards at the regional level further prepares many countries for full transition to LED, for instance, minimum energy performance levels for lamps are set in the Southern Africa Development Community (SADC), East African Community (EAC), and for many countries in the Association of Southeast Asian Nations (ASEAN).

4. Worldwide, China is the largest manufacturer and exporter of mercury free LED lamps (estimated around 56% in 2020), followed by Germany and Poland. However, there is a **huge opportunity for local assembly of LED light sources** – which in turn creates opportunities for local employment. E.g., new LED lamps assembly and manufacturing is taking place in Africa in Zambia, Rwanda, Mozambique and South Africa, as well in Asia, including Indonesia.
5. **Estimated global benefits of phasing out fluorescent lamps are significant** (cumulative 2025-2050)<sup>4</sup>:
  - 232 tonnes of mercury usage reduction,
  - 3.5 Gigatonnes of CO<sub>2</sub> emissions reductions and
  - US\$1 trillion in electricity bill savings

*For example, if the full phase out of fluorescent lighting happens by 2025 in China it is estimated that the cumulative energy cost savings (2025-2050) will be 279 billion USD Net - based on the estimated national electricity savings of 3,484 TWh. This further translates into 1.5 GT of CO<sub>2</sub> mitigation from avoided electricity use – equivalent to taking 334 million gasoline powered passenger vehicle off the road for a year.<sup>5</sup>*

### Rationale for fluorescent light phase out

1. **Economic:** higher energy prices mean payback periods are even shorter.
2. **Technical:** most LEDs are compatible and directly retrofittable into existing luminaires.
3. **Market:** LED retrofits and alternatives are widely available globally.
4. **Non-hazardous:** LEDs do not contain mercury unlike all fluorescent lamps.
5. **Energy:** LED lamps use half the power of fluorescent lamps.
6. **Less waste to manage:** “Turning Off the Tap” through full phase-out implies the immediate decline in the amount of fluorescent lamp waste to be managed in an environmentally sound manner.

### Key challenges raised during the discussion

1. **Process might be lengthy** - it takes time to consult with stakeholders, update or develop inventories that are necessary to set effective national policies to ban fluorescent lighting and switch to mercury free alternatives. Therefore, coordinated

<sup>4</sup> Source: Clean Lighting Coalition

<sup>5</sup> Source: Clean Lighting Coalition – presentation on “Fluorescent Lamps Country Profiles and Country Market Potential” - June 2023



approaches at regional<sup>6</sup> and global levels in line with the Minamata Convention could help reinforce these fragmented national policies.

**2. Risk of obsolete fluorescent products -**

while moving towards mercury free lighting, it is crucial to avoid any potential risks associated with the remaining fluorescent light manufacturing shifting its mercury-based production to the markets and countries with no or weak regulations to phase out mercury containing fluorescent lamps. As such, the potential risk for some of the developing countries becoming dumping grounds for mercury-containing lamps that no longer have a viable domestic market in their places of origin has to be carefully mitigated.

**3. Initial costs of LEDs might be higher** than those of fluorescent lights on the market—however payback periods are on average between 2 to 10 months.<sup>7</sup> In addition, due to sharp decline in fluorescent manufacturing and material availability for conventional lighting, certain types of fluorescent lamps are diminishing (for instance, T12 and T5), and some are even priced higher due to limited availability.

**4. Hazardous waste management of fluorescent lights is a challenge** - from transportation – due to the large volume of lamps - to transitional storage, sorting, processing and disposal mechanisms. Moreover, global recycling rates of fluorescent lighting lag due to high costs of environmentally sound management (ESM) and disposal which are often considered prohibitive - especially in most developing countries. More broadly, environmentally sound disposal of mercury-lamp wastes is not occurring in many parts of the world, with estimated only 20% recovery in OECD countries, 5% in developing countries and is inexistent in least developed countries.<sup>8</sup> There is a need to ensure sustainability of waste management initiatives including regarding their financing – e.g. through integration of waste management in national strategies and linking it to the climate strategies, introduction of Extended Producer Responsibility (EPR), and national or regional initiatives to promote sound waste management.

**5. Introduced LEDs must be effective and meet the needs of consumers** otherwise we might experience pushbacks. Implementation of relevant international safety and performance standards is key in protecting consumers and preserving fairness and transparency in lighting markets around the globe.

### Ways forward proposed by participants

1. Among ways forward proposed by participants, **the phase-out date proposal to be discussed at the fifth meeting of the Conference of the Parties to the Minamata Convention (COP5) was presented.** The **Africa Region** has submitted a proposal to

<sup>6</sup> For example, In June 2021, the sixteen countries of South African Development Community adopted regionally harmonized quality and performance standard SADCSTAN HT 109. And in July 2022, the seven countries in Eastern African Community have adopted a regionally harmonized quality and performance standard, EAS 1064 1:2022.

<sup>7</sup> Source: Clean Lighting Coalition “Technical & Economic Assessment of Mercury-Free Lighting: Global Overview” – March 2022

<sup>8</sup> Source: Zero Mercury Working Group



amend Part I of Annex A to the Minamata Convention to eliminate fluorescent lighting.<sup>9</sup> The proposal builds on discussions at COP4, which decided to phase out two of the three proposed categories of fluorescent lighting. The Africa region considers that the remaining exemptions for fluorescent lamps are no longer necessary, and has put forward phase-out date of 2025 or 2026 for other four product categories, including:

- compact fluorescent lamps (CFLs) for general lighting purposes,
  - compact fluorescent lamps with a non-integrated ballast (CFL.ni) for general lighting purposes that are  $\leq 30$  watts with a mercury content not exceeding 5 mg per lamp burner,
  - Linear fluorescent lamps (LFLs), and
  - Non-linear fluorescent lamps (NFLs).
2. **Avoiding any delay to the phase-out dates** is crucial to claim the global benefits of phasing out fluorescent lamps. The question is not whether the transition will take place, but rather how quickly it can happen. Earliest phase-out year decision will not only stop mercury emissions from lamps as mercury-containing products, but most importantly also mitigate significant energy use and the associated greenhouse gas emissions, well-aligned with the 1.5-degree climate targets.
  3. **Improve public awareness** - consumers need to be well informed about the rationale to switch away from fluorescent lighting, from urban to rural populations, as well as commercial and public entities.
  4. **Increase awareness that phase out does not increase mercury waste** - Phasing out mercury containing fluorescent lamps does not mean disposing of all existing fluorescent lamps at once, rather it means that no new fluorescent lamps are manufactured or introduced to the market and the existing fluorescent lamp are replaced when they reach end of lifetime with non-mercury alternative. Phase out will not therefore create any more mercury waste than it does now, it will simply reduce it over time while increasing energy savings.
  5. **Improve waste management of mercury containing lamps**. The priority action to “turn off the mercury tap” by phasing out fluorescent lighting - should be accompanied by solutions to adequately manage the mercury containing lamp waste in the transition, while seeking opportunities for sustainable funding and viable ESM and disposal options. For example, through employing collaborative approaches, environmentally sound waste management and disposal infrastructures could be developed or enhanced within national strategies.
  6. **Build synergies and explore possibility of joint - cross cutting projects** – e.g. building on the linkages with the climate change cluster and energy efficiency agenda- through Green Climate Funds and other funding opportunities.

<sup>9</sup> <https://mercuryconvention.org/en/news/proposal-botswana-and-burkina-faso-behalf-africa-region-amend-part-i-annex-minamata-convention>