

Oxford Climate Policy Blog

Initiating debates on international climate policy

International Bulk Purchasing for Technology Transfer



UJALA marketing poster, by courtesy of EESL

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Understanding Art. 6.8 'non-market collaboration'

Anyone following the UN climate negotiations in recent years will be aware of the problem that is Article 6, one of the two remaining issues of operationalization of the Paris Agreement (PA) that have so far eluded a solution.^[1] The Article deals with 'voluntary cooperation' between Parties of the PA in implementing their targets ('Nationally Determined Contributions' NDCs). While Art. 6.2 considers the international transfer of mitigation outcomes, and Art. 6.4 establishes a mechanism whereby emission reductions generated in a 'host' Party can be transferred for use by another Party to fulfil its NDC, Art. 6.8 introduces the general idea of 'non-market' collaborative approaches to assist Parties in implementing their NDCs. All of these require a considerable amount of clarification to be operationalized, a process which it is hoped will conclude in COP.26, whenever that will be.

Conceptually, Art. 6.8 was from the outset a bit of a cuckoo's egg: it was originally not part of the negotiations that led to Art. 6 and was added mainly due to the insistence of a few Parties hostile to markets on anti-capitalist grounds.

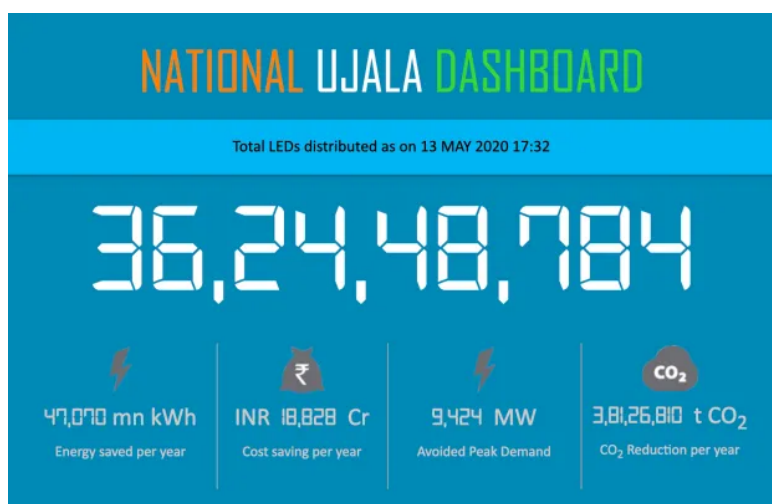
Moreover, it was from the beginning by far the least well understood, and indeed talked about, of the collaborative approaches introduced in Art. 6.

For example, in the context of the events held annually under the auspices of the [ecbi Fellowship Programme](#), the topic of non-market approaches made its first appearance only in 2018. As documented in the [2018 Oxford Seminar Report](#) it was given a separate slot for discussion, kicked off with a presentation by a AOSIS lead negotiator. Both the presenter and the European respondent admitted that 'non-market approaches' are not understood well. Indeed, during the Fellows Colloquium that preceded the Seminar, no one was able to give a concrete example of such approaches. All that was clear is that they were not meant to involve the sale of emission reductions ('mitigation outcomes').

At the time, I had just come across the Indian UJALA programme which, as mentioned in the Report, was "designed to lower the price of LED lighting and make it desirable for consumers". Having published a blog post on the need to harness social marketing techniques,^[ii] which has since been taken up here in Oxford by the 'COOL4climate' initiative, I stressed that aspect of the programme. However, over the next twelve months, I realized that bulk purchasing, as practised under UJALA (see below) could be a type of non-market collaboration as envisaged under Art. 6.8.^[iii]

UJALA – Affordable LEDs for All

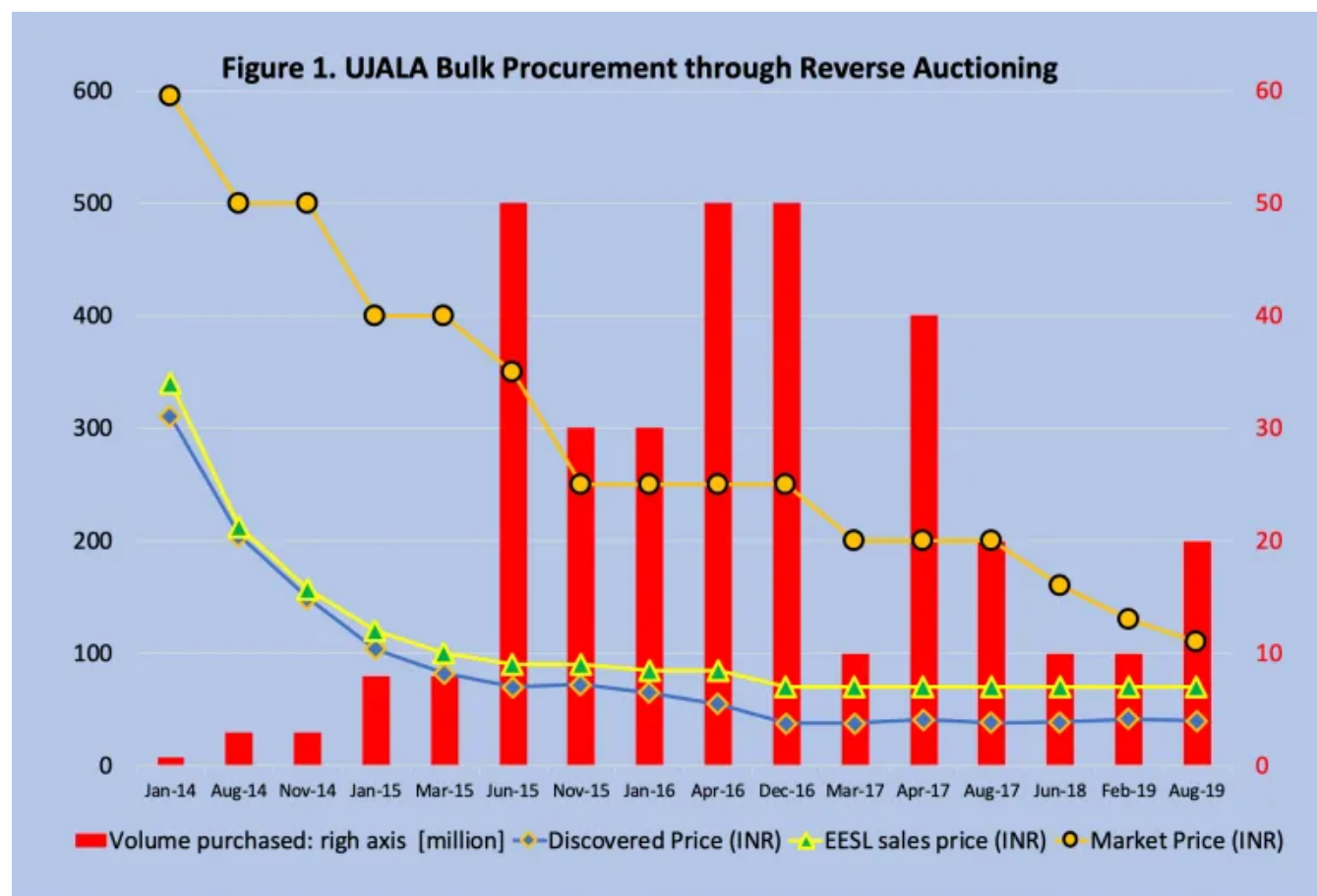
Unat Jyoti^[iv] by Affordable LEDs for All (UJALA) is a government LED lightbulb distribution scheme driving the transition to low-carbon LED lighting in India. Since its launch in 2015, UJALA has emerged as the world's largest unsubsidized LED bulb programme for households. To date, the [National UJALA Dashboard](#) lists the fact that more than 360 million LED bulbs have been purchased by Indian households, with estimated savings of more than 47 TWh. These savings are equivalent to the annual electricity consumption of Portugal, and represent 38 Mt CO₂ annually, making it a striking story of developing country technology transition.



<http://ujala.gov.in/>, accessed 13 May 2020

In January 2014, **Energy Efficiency Services Ltd. (EESL)**, the UJALA operator, floated the first open tender for the procurement of 750,000 LED bulbs for the Indian State of Puducherry. The procurement was done through reverse auctioning where, in its simplest form, vendors offer to sell the quantity sought at a certain unit price, and the buyer purchases from the vendor bidding the lowest price, which is known as the price 'discovered' by the auction. The price thus discovered in the initial bulk procurement was INR 310 (USD 4.08) per bulb, just over half of the open market price of INR 595.

The expansion of the UJALA scheme across India meant that the procurement quantity was increased over time (see Figure 1) with the prices discovered decreasing continually, to INR 39.9 in August 2019, (87% lower than in January 2014). It is noteworthy that the market price also declined by 82% to INR110 over that period, mirroring in part a decline in the average global retail price of about 70%.^[v]



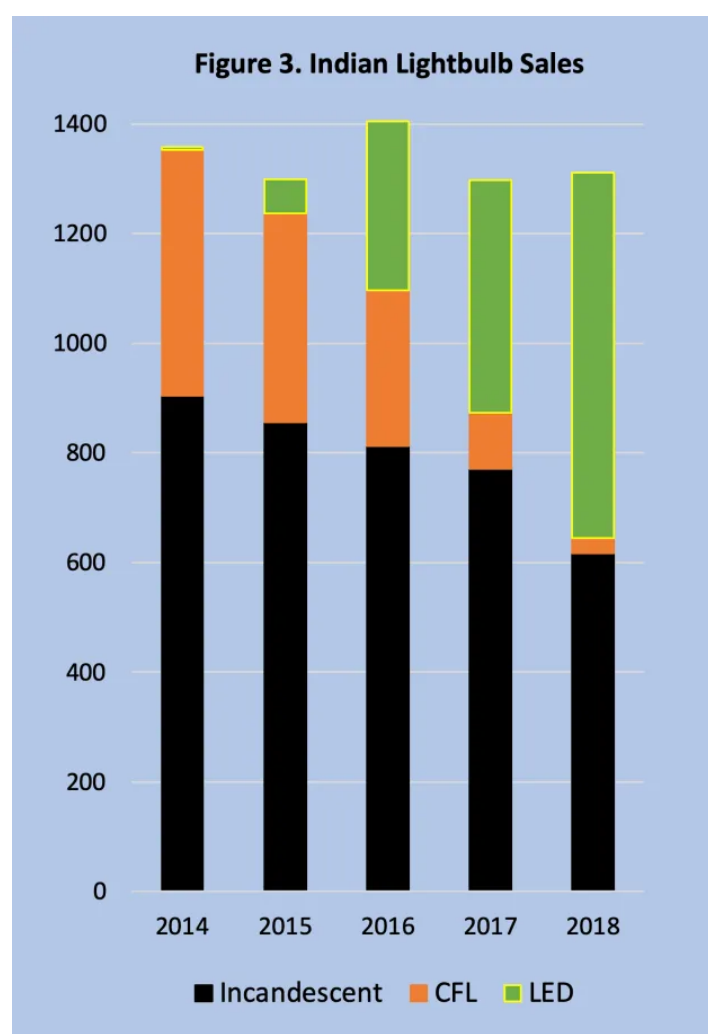
Data courtesy of EESL.

The data reflected in Figure 1 imply a total procurement cost incurred by EESL between January 2014 and August 2019 of just under USD 260 million (see Table 1). This is not an insignificant amount to invest, which is probably why EESL arranged loans and guarantees from a number of multilateral donors, including most recently, an agreement with the World Bank for 2019-22 (USD 220m loan, USD 80m guarantee).

Table 1. UJALA Sales Scenarios [USD million*]				
Time Period	Jan 14 - Aug 19			Dec 16 - Aug 19
Procurement cost to EESL	256			83
Spot sale percentage**	100%	40%	0%	100%
Total sales revenue	373	257	180	147
Sales revenue surplus	117	1	-76	65
	46%	0%	-30%	78%

* USD 1 = INR 76 ; ** remainder @ USD 0.53.

Given the figure for the number of bulbs distributed to date (see above), clearly all the bulbs procured by August 19 have been sold. Unfortunately, the Figure 1 data cannot be used to estimate the total EESL sales revenue without some additional assumptions, in particular regarding how many bulbs were sold at which of the listed EESL sales prices. Table 1 reflects scenarios in which a certain percentage of the bulbs acquired at an auction is sold on the spot at the sales price listed on that date, and the rest at the lowest (August 19) price of USD 0.53. It shows a considerable range of outcomes from 46% profit if all had been sold on the spot, to a 30% loss if all had been sold at the August 19 price, with a break-even point of 40% spot sales. Given that the prices did not fluctuate significantly after December 16, it can safely be assumed that the sale of the bulbs procured after that date yielded a healthy surplus of an estimated USD 65m (78%).



It is worth mentioning that annual sales of LED bulbs grew by more than 130 times to over 650 million bulbs between 2014 and 2018. Initially LED bulbs were mostly displacing CFL bulbs (Figure 2[vi]), but since 2018 their sales have overtaken those of incandescent bulbs in absolute terms. The question of how the UJALA bulk procurement, the global and domestic market prices, and the growth in annual sales are related is not trivial, but is beyond the scope of this post. What is clear is that there has been a technology transition in the Indian domestic lighting sector.[vii]

Data Source: *Kamat, Khosla and Narayanamurtia (2020)*

Bulk Purchasing as Art. 6.8 TT collaboration

Technology transfer, particularly as envisaged under the Paris Agreement, is, as The Four Aces song goes, “a many splendored thing!” The term ‘technology’ itself is, according to the [ecbi Pocket Guide to Technology](#), used to encompass what is referred to as ‘hardware’ (physical tools), ‘software’ (knowledge and skills required to use the technology), and ‘orgware’ (institutions, policies, rules, and legislation). According to the ecbi Guide: “Countries rely on different modes of technology transfer, depending on their stage of industrial development. UNCTAD identifies three stages of industrial development in the context of technology transfer:

- Initiation, when technologies are acquired from other countries through the acquisition of machinery and equipment and reverse engineering. The situation in least developed countries (LDCs) in particular, with many other developing countries, corresponds with this phase.
- Internalisation, when local firms can learn through imitation under a flexible Intellectual Property Rights (IPRs) regime. (IPRs refer to the legal protection of inventions or creations used in commerce through patents, copyright, and trademarks, which enable people or companies to earn financial benefit from what they invent or create).
- Generation, when local firms carry out their own R&D and generate IPRs.” [page 4]

It thus stands to reason that bulk procurement, as international non-market collaboration, would be specially suited to the technology transfer needs of LDCs, particularly if combined with the sort of financial support (loans and guarantees) given to the UJALA programme by multilateral funds and donor agencies. But why bring in Art. 6.8?

I have been told by a friend of mine that one of the reasons why non-market approaches to international collaboration have been somewhat marginalized is that: *“industrialized countries wanting to engage in markets do not like it and see it as an attempt to set up yet another climate finance mechanism, to which they would have to contribute.”* This attitude could explain the prevailing lack of concrete examples. I hope that the idea mooted here demonstrates, for one, that it is possible to engage in economically motivated international collaborations that do not involve emission trading or simple monetary transfers.

Having said this, such collaborations do not rely on Art. 6.8, but the work programme that was established in Paris with the objective to consider “how to facilitate the implementation and coordination of non-market approaches” could be used to identify how such bulk procurements could be most effectively applied in the process of transferring technologies to countries like LDCs that are in the technology transfer ‘initiation stage’.

Acknowledgments

The author is grateful to Mr Saurabh Kumar and Mr Ashish Malviya from EESL for the permission to use the UJALA marketing poster and for the data graphically represented in Figure 2, and to Axel Michaelowa and Radhika Khosla for the feed-back provided.

[i] The other being, of course, [Common Time Frames](#), as dealt with in an earlier post: [A “Glasgow Ambition Cycle”?](#).

[ii] ‘We need Geo-engineering . . . of Consumer Aspirations!’

[iii] “On Article 6.8, Müller said ... smaller and poorer countries could use it to ‘bulk purchase’ energy efficient technology through a joint call for tender, like India had bulk purchased 700 million energy efficient LED bulbs to drive down their price under the Ujala programme.”[[2019 Oxford Seminar](#)]

[iv] ‘Progressive light’.

[v] See, for example, ‘Global LED Lighting Products Price Trend’, [LEDinside.org](#), 16 August 2018.

[vi] Data Source: [Kamat, Khosla, and Narayanamurtia](#) (2020).

[vii] In total, 1.5 billion bulbs were sold in that period, just over a fifth of which through the UJALA programme.

Article 6.8 of the Paris Agreement

8. Parties recognize the importance of integrated, holistic and balanced non-market approaches being available to Parties to assist in the implementation of their nationally determined contributions, in the context of sustainable development and poverty eradication, in a coordinated and effective manner, including through, inter alia, mitigation, adaptation, finance, technology transfer and capacity-building, as appropriate. These approaches shall aim to:

- (a) Promote mitigation and adaptation ambition;
- (b) Enhance public and private sector participation in the implementation of nationally determined contributions; and
- (c) Enable opportunities for coordination across instruments and relevant institutional arrangements.

This entry was posted in Uncategorized on 19 May 2020 [<http://blog.oxfordclimatepolicy.org/international-bulk-purchasing-for-technology-transfer/>] by Benito Muller.

