

Air Conditioner Labeling in Thailand: Key Findings and Recommendations

Policy Brief

January 6, 2021

This Policy Brief presents findings from an evaluation of the Electricity Generation Authority of Thailand (EGAT) No. 5 air conditioning (AC) energy label and provides recommendations to enhance the label impact by driving the transition to higher-efficient products and achieving ambitious climate goals. The original EGAT No.5 voluntary label featured 5 efficiency levels to differentiate product performance. However, only products that achieved the highest labeling level (No. 5) were actually labeled by manufacturers, making it difficult for consumers to differentiate among the most efficient products. EGAT rescaled the labeling criteria at the end of 2018 by replacing the previous 5 levels with a three-star rating on top of level 5 (hereafter referred to as “EGAT No.5 label with stars”) to better identify more efficient ACs. CLASP, in collaboration with EGAT and with the support of Ipsos Thailand and the International Institute of Energy Conservation (IIEC), conducted a nationwide survey among manufacturers, retailers, and consumers to assess understanding and perceptions of the original No.5 label and the new label No.5 with stars.

SUMMARY OF KEY FINDINGS

- **The EGAT No. 5 label is considered a key tool for purchasing decisions, product design and marketing strategies.** Consumers see it as a guarantee for energy savings and product quality. Manufacturers see it as a minimum requirement to place products in the market even if the label is voluntary.
 - **The use of stars on the new label has proven valuable to distinguish high efficiency products.** Consumers associate a higher number of stars with higher efficiency. Manufacturers note that star ratings provide more options for product design and marketing, by facilitating comparison of energy efficiency levels among products. Retailers are stocking a larger variety of products in response to customer requests to compare products with different star ratings.
 - **The separate labeling rating criteria for inverter and fixed speed units is confusing to consumers and does not support the sale of more efficient products.** Based on the current rating criteria, fixed speed ACs can reach a higher number of stars when compared to more efficient inverter types. Since consumers rely on the number of stars to identify the most efficient AC, at least one third of consumers chose the wrong product when asked to identify the more efficient one based on the label information.
- When consumers were explained the difference between AC types, they recommended that EGAT apply the same rating scale to both fixed and inverter units.
- **The estimated annual electricity cost is one of the most useful components of the label.** Consumers rely on the annual electricity cost displayed on the label to decide which AC is more efficient, along with the information provided by the star rating. In contrast, manufacturers and retailers indicated that purchasing decisions are based only on the presence of the label.
 - **The potential addition of a CO₂ icon may confuse consumers, particularly if it only covers indirect emissions.** Although most of the consumers know what CO₂ means, they do not consider CO₂ emissions among their main purchasing criteria. In parallel, a large majority of manufacturers (85%) do not believe that emissions information will increase sales of more efficient ACs, and half of them are against the inclusion of CO₂ information on the label. Manufacturers suggest that if CO₂ information is included on the label, it should represent the direct emissions of AC products (with the type and amount of refrigerant being used) rather than the indirect CO₂ emissions from the unit operation.

- **Although the internet is a primary source of information for consumers purchasing an AC, only 10% of the retailers show labels on products featured online.** Consumers prefer to purchase their ACs in modern or traditional stores. However, the internet (i.e., Google

search and Facebook) is the first source of information used to compare among products before visiting a store in-person. With 74% of the retailers interviewed selling their products online and only 10% displaying labels, many consumers do not have adequate information to make an informed purchasing decision.

RECOMMENDATIONS

- **Implement the same rating criteria and efficiency requirements for both fixed speed and inverter ACs.** Separate criteria for inverter and fixed speed ACs confuses consumers and retailers and does not allow consumers to identify and purchase the most efficient products on the market. A technology neutral approach (in line with international best practices in India, China, Brazil, the European Union, among others) allows for a direct comparison among products using different technologies and better informs purchasing decisions.
- **Develop and communicate a mid- to long-term roadmap of policy revisions to facilitate industry support and drive climate goals.** Manufacturers support a predictable timeline of efficiency improvements that allows them to plan investments in AC production upgrades to meet increasingly stringent No. 5 label thresholds. A 3 to 5-year roadmap would provide EGAT with a tool to drive the transition towards more efficient ACs and to quantify CO₂ emissions reductions in support of climate commitments.
- **Do not include an additional CO₂ icon on the label.** Manufacturers, retailers, and consumers are not receptive to CO₂ information on the label. The addition of a CO₂ icon is also redundant since consumers are already using the star rating and electricity cost estimates to inform their purchasing decisions. Based on manufacturer feedback, EGAT should consider adding text identifying refrigerant information to the label.
- **Develop a strategy to enhance consumer understanding of the star ratings and to facilitate access to labeling information online.** Consumers frequently count on retailers to explain differences between products bearing different star ratings. Hence, retailers recommend that EGAT provide marketing materials to enhance consumer awareness about the No.5 label with stars, and address the linkage between energy efficiency and reduced CO₂ emissions. EGAT might also consider adding explanatory text to the label, e.g. by including a slogan similar to “more stars more savings” which has proven to be successful in India. Finally, EGAT should also consider facilitating access to efficiency information through online labeling to influence consumer purchasing decisions before visiting a store in person.

EGAT NO. 5 LABEL EVALUATION RESULTS

The results of the labeling evaluation are discussed in three sections:

1. **Label design and understanding** – presents the overall understanding of various key elements of the label and how consumers, retailers, and manufacturers use these elements to inform purchasing and marketing decisions.
2. **Label impact on market transformation** – describes how and to what extent the label presence, efficiency criteria, and other information displayed on the label has supported market transformation towards highly efficient ACs.
3. **Label program design** – includes specific manufacturer, retailer, and consumer feedback on the EGAT labeling program’s design, registration process, and limitations.

1. LABEL DESIGN AND UNDERSTANDING

The presence of the No.5 label (both original No.5 label and No.5 label with stars) is an important requirement for consumers purchasing an AC and its design is positively perceived by consumers, retailers and manufacturers. Nearly all consumers (94%) would not buy an unlabeled appliance. Similarly, 84% of the retailers and 90% of the manufacturers think the label is a very important factor for consumer purchasing decisions, and manufacturers consider it a quality mark for their products.¹

Almost all consumers (98%) find the color of the No.5 label with stars eye-catching and think the design supports credibility. In addition, 75% of consumers prefer the No.5 label with stars because the star rating better communicates the efficiency of the product. Three-quarters of the retailers think that the label is eye-catching, as well as clear and easy to understand. Most of the manufacturers (75%) appreciate the smaller size of the label as it fits better on ACs, while the remaining 25% state that the colors are fast-fading and that many labels are defective.

The star rating is instrumental for marketing products to different customer segments. A large portion (70%) of the manufacturers use the higher star rating label to market their products and to promote their brand. The market-leading manufacturers (representing 20% of the manufacturers) are using the higher star rating to target higher-income customers and to justify the higher cost of more efficient ACs.

Consumers use the star rating and the electricity cost estimate to inform their purchasing decisions. The majority of the consumers (85%) can easily identify the most efficient product by looking at the number of stars and the electricity cost estimate on the label (Figure 1). This is aligned with 95% of the retailers who think that stars play a critical role in supporting purchasing decisions among consumers. Retailers note that 42% of their customers inquire about annual electricity cost and product specifications (rather than energy efficiency) before making their purchase; and manufacturers consider the estimated annual energy cost information helpful for marketing AC products.

FIGURE 1 WHICH LABEL IS THE MOST ENERGY EFFICIENT?



¹ CLASP found that 71.5% of the ACs on the Thai market display an energy label although the labeling scheme is voluntary. CLASP (2019) [Thailand Room Air Conditioner Market Assessment](#).

Following the introduction of the three-star rating that goes beyond the No.5 level, more awareness raising among consumers is needed. According to traditional trade retailers, EGAT should provide marketing materials to help stimulate sales of efficient household appliances and enhance consumer awareness about the No.5 label with stars. While consumers, manufacturers, and retailers are generally positive about the star rating, more than half (57%) of the retailers reported that consumers ask for clarifications about the meaning of number of stars.

Maintaining different rating criteria for inverter and fixed speed ACs is confusing to Thai consumers and retailers. One third (35%) of consumers chose the wrong product when asked to identify the more efficient one based on the label information. Those who responded incorrectly chose a less efficient 1-star fixed speed product over a more efficient inverter with no stars (as displayed in Figure 2) because they based their decision on the number of stars on the label. Those who responded correctly did not refer to the AC compressor type on the label for making their decision; instead, they relied on the

FIGURE 2 CONSUMER UNDERSTANDING OF LABELS FOR DIFFERENT AC TECHNOLOGIES



“[EGAT] should apply the same standard when giving the star to fixed speed AC and inverter AC, like using the same ruler.”

(Songkla: Male: 35 years old: Household Income 20,000 THB)

electricity cost estimate and, to a lesser extent, on the seasonal energy efficiency ratio (SEER) value. Once the difference in rating between the two AC types was explained, consumers suggested to use one single scale for both AC types. Retailers are also confused by the different rating criteria; when asked which product they would recommend to consumers based on a similar mockup of the two labels shown to consumers, 26% of the retailers recommended fixed speed air conditioners based on the higher number of stars on their label.

Furthermore, AC compressor type terms and meaning are not clear to Thai consumers. The term “Fixed speed” appears in the English language on the label and it is not understood by Thai consumers, as they instead refer to these as “normal” ACs. Consumers do not have a clear understanding of the benefits of different technologies and only about half of them (45%) know that in general, a fixed speed AC uses more energy than an inverter to keep a room cool.

Consumers, retailers, and manufacturers are not receptive to the introduction of a CO₂ emission icon on the label. Most consumers (70%) understand the general meaning of CO₂ and support environmental friendliness. However, they do not think CO₂ emissions are the type of information to include on the EGAT label No 5. In addition, 65% of consumers do not fully understand the linkage between energy efficiency and CO₂ emissions and therefore cannot correlate higher CO₂ emissions to a

lower number of stars or vice versa. According to manufacturers, CO₂ information is duplicative because it is related to indirect emissions. Instead of CO₂, manufacturers suggest including refrigerant information on the label. In particular, this should include the type and amount of refrigerant being used.

2. LABEL IMPACT ON MARKET TRANSFORMATION

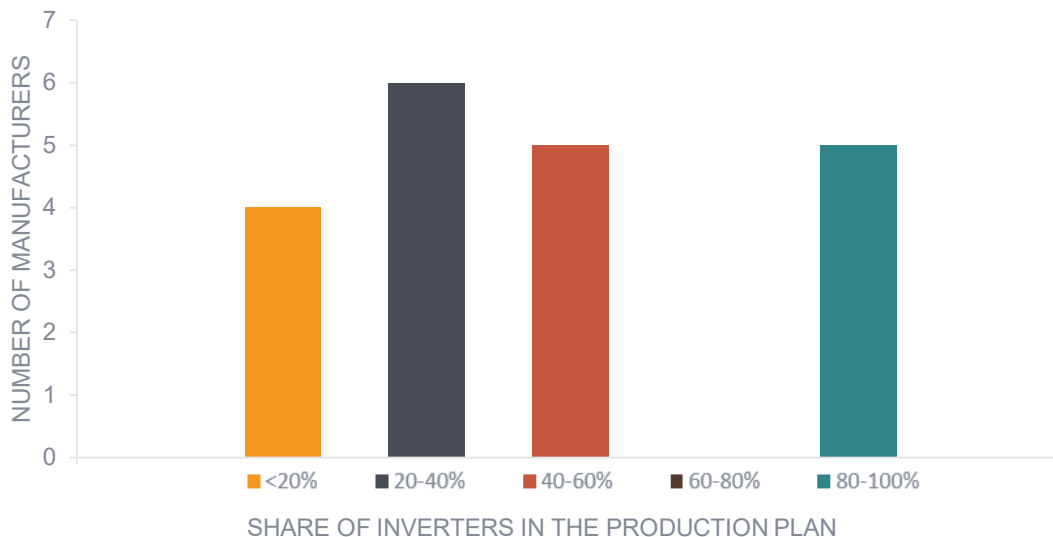
Consumers rank the presence of the label, along with energy efficiency and after-sale service (e.g. warranty options; maintenance packages; brand reputation), as their top purchasing criteria.

The majority of consumers (62%) ranked energy efficiency as a top purchasing criterion. In contrast, manufacturers believe that consumers mainly focus on price rather than on the number of stars to make their purchasing decision, despite the fact that only 48% of the consumers rank price as a top purchasing criterion. However, manufacturers agree that the No.5 energy label has been promoting production of high-efficiency ACs in the Thai market.

Consumers are willing to pay more for an inverter AC, while manufacturers expect that inverter demand will increase, lowering costs. Consumers who are aware of the benefits of inverters recognize the potential to save on energy bills and are willing to pay more upfront. Nearly all consumers would be willing to pay 1-10% more for an inverter AC; when given more time to estimate savings, nearly 80% of the consumers are willing to pay 20% more. Manufacturers also expect a growth in inverter demand and are planning to increase their inverter production to an average of 53% of total production (Figure 3). Manufacturers also expect the trend of inverter technology price to gradually decrease for some AC models, as a result of a higher inverter production.

“Yes, I consider inverters because I can gain benefit from an inverter AC in long term as it saves electricity consumption and the price of an inverter AC is not much higher than the price of normal AC, only a few thousands [THB] more.”
(Bangkok; male: 31 years old; household income 60,00THB)

FIGURE 3 MANUFACTURERS’ EXPECTED INVERTER PRODUCTION SHARE

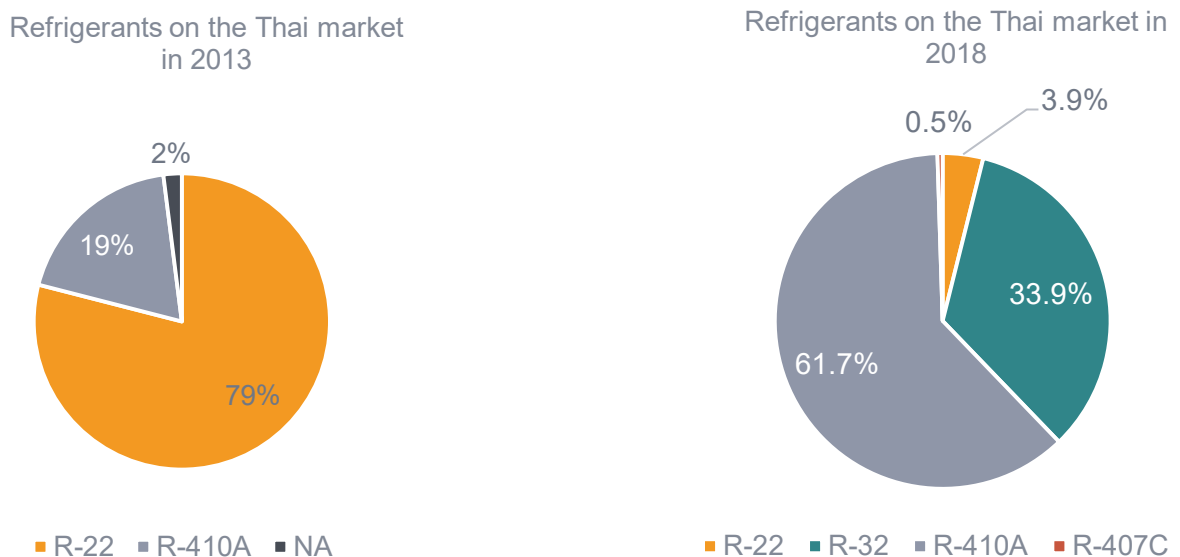


According to smaller manufacturers, the high energy performance requirements of the two- and three-star rating increases production costs, leading to a decrease in their competitiveness on the Thai market. About 50% of the manufacturers report that they have the technical potential and financial capability to meet the high-efficiency star rating. The major challenge identified by small- and medium-sized manufacturers is the R&D capability to design a product that meets the higher star levels while maintaining a competitive price. As a result, these manufacturers primarily or exclusively produce fixed speed models. However, meeting a higher star rating is not an issue for larger manufacturers, who can easily source inverter AC components. Smaller manufacturers note that higher costs and increased competitiveness with larger brands pose a barrier to their access to modern trade stores.

To help overcome research and development (R&D) and competitiveness challenges, smaller manufacturers recommend that the Thai Government support capacity building for the local upstream supply chain. If Thai manufacturers improve their capacity to source highly efficient AC components to manufacture two or three star rated products, they can increase their competitiveness against those imported by foreign technology providers.

In Thailand, the transition to energy efficient technology is happening in parallel to the introduction of lower global warming potential (GWP) refrigerants (Figure 4). Thailand has not ratified the Kigali Amendment to the Montreal Protocol yet, but the Thai market is already transitioning to R-32, a refrigerant with low flammability, no toxicity and a GWP of 675. There are no regulations prohibiting the sale of AC units using flammable refrigerants. However, ACs using R-290 - a highly flammable refrigerant with GWP of 3 - are not yet available in the Thai market. According to CLASP’s research, R-32 ACs have higher efficiency than R-410A in Thailand: while the average SEER of R-32 models is 16.25, the average efficiency of R-410A models (14.24 SEER) is below the EGAT No. 5 Label threshold for inverters (15 SEER).

FIGURE 4 REFRIGERANTS ON THE THAI MARKET IN 2013 AND IN 2018



3. LABEL PROGRAM DESIGN

Manufacturers recommend that EGAT develop and communicate a mid to long term roadmap of policy revisions to facilitate their planning for R&D investments. Furthermore, 90% of the manufacturers suggest that the suitable frequency of rescaling period is three to five years and that EGAT should announce the transition period at least one year prior to the rescaling effective date, to give manufacturers enough time to prepare.

The majority of the manufacturers (60%) are satisfied with the registration and certification processes for the EGAT label No.5. In particular, they appreciate the online labeling registration system to submit soft document copies over the previous offline, manual process. Also, the participation of private accredited laboratories to support performance testing is helping to speed up the certification process.

Retailers' online labeling practices are limiting access to energy efficiency information for potential consumers. Online sales are minor compared to in-person sales in traditional or modern retail stores. However, consumers' first source of information, before going into the store, is online research (e.g. Google or Facebook). In addition, while 74% of the retailers list their products online, only 10% display labels to help consumers make an informed decision. The voluntary characteristic of the current labeling program along with consumer purchasing habits might explain the lack of online labeling as retailers are not incentivized to include labels online.

REPRESENTATIVENESS OF SURVEY RESULTS

- **Consumer Survey:** To ensure representativeness among the 1,394,700 AC sales in Thailand in 2018 (as reported by Euromonitor), Ipsos Thailand conducted 6 focus group discussions (FGDs) with 36 consumers, 200 in-depth interviews (IDIs), and 500 online surveys. The surveys ensured regional representativeness, a balanced male to female decision-makers' ratio, along with income, age and education inclusiveness.
- **Retailer Survey:** IIEC conducted interviews with 19 retailers across Thailand covering modern trade and traditional trade retail stores in 5 provinces in alignment with those covered by the consumer survey. The total number of appliance retailers in Thailand was 3,469 in 2016 (Thai Dept. of Business Development).
- **Manufacturer Survey:** Out of the existing 42 manufacturers in Thailand², IIEC conducted interviews with 20 manufacturers in 8 provinces covering both local Non-Original Equipment Manufacturers (Non-OEM) and OEM manufacturers. Out of these, 20% are not participating in the 2019 labelling scheme.

² Niwat Phansilpakom (Electrical and Electronics Institute) for CLASP 2018. Final Report: Baseline data collection for room air conditioners (RAC) market study in Southeast Asia –Thailand.