Lighting Global Quality Assurance

Developing Standards and Compliance Frameworks to Ensure Success

BEST PRACTICE

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Efficiency and Quality Standards

Raise Average Performance and Quality of Products on the Market

- **Minimum Performance Standards**
  - Set minimum efficiency for each product, with no specific technology or design requirements
  - Based on market data, to avoid market barriers
  - Removes bottom 20% of the market (worst performing products)
- **High Performance Standards**
  - Set ambitious levels for products to endorse top performing products
  - Promotes top 20% of the market (best performing products)
- **Prescriptive standards** require that a particular feature or device be installed in all new products
- **Class-average standards** specify the average efficiency of a manufactured product to allow each manufacturer to select the level of efficiency for each model to achieve the overall average
- **Quality Requirements**
  - Typically used in certification programs, such as LG QA or KEBS / CE Markings
  - Sets standards for durability, safety, warranties etc

Efficiency / Quality Labels

Encourage Manufacturers to Produce & Consumers to Choose Better Products

Comparative Labels

- Tiers of efficiency
- Compare different products
- Displays more information

Endorsement Labels

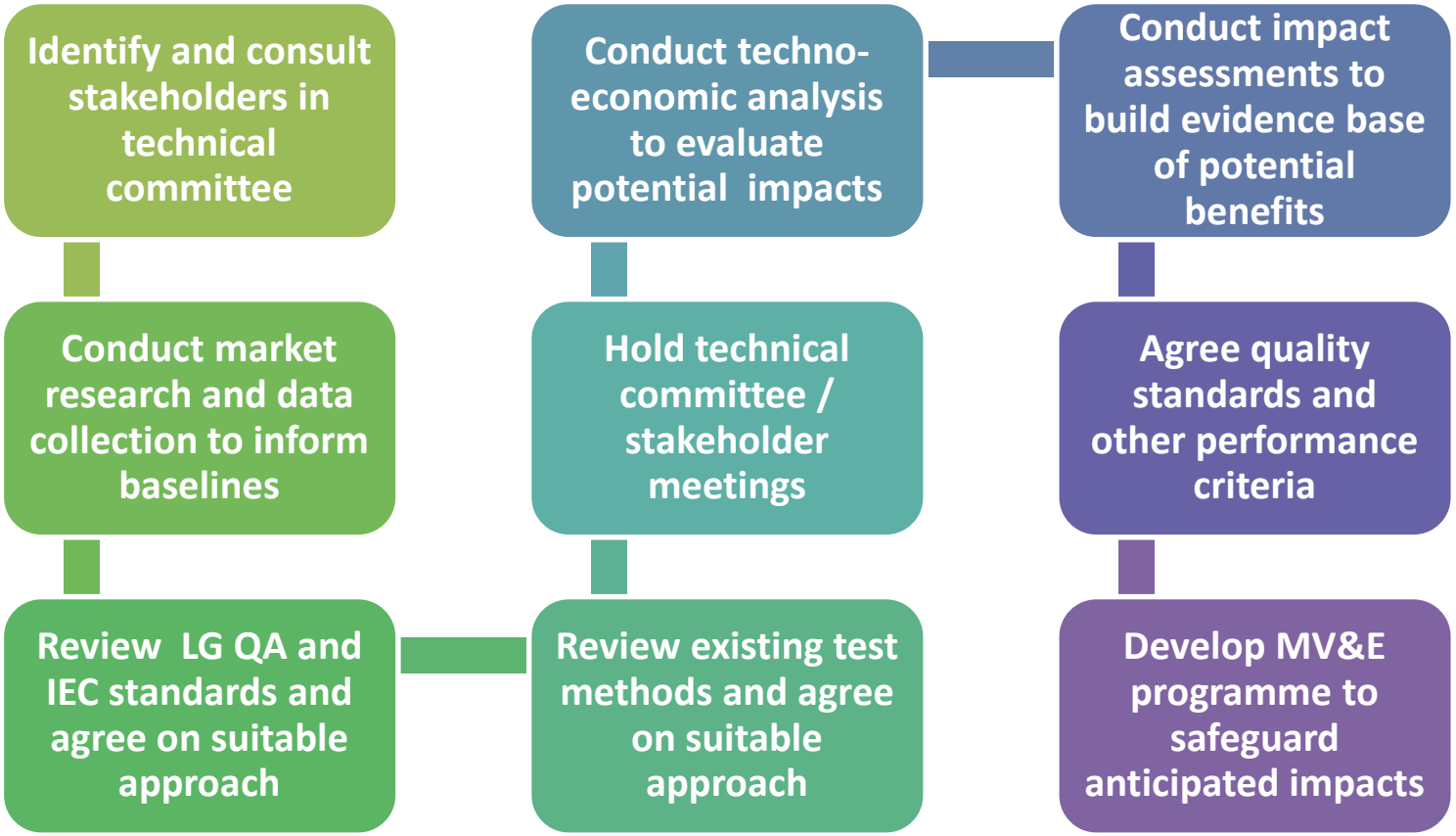
- Set efficiency level
- Simple design
- “This product is efficient”

Certification / Quality Marks

- Criteria for market entry
- Cross-cutting for multiple products
- “This product meets quality standards”

Consider program goals, audience needs, and existing labels to avoid confusion. Seek consumer feedback.

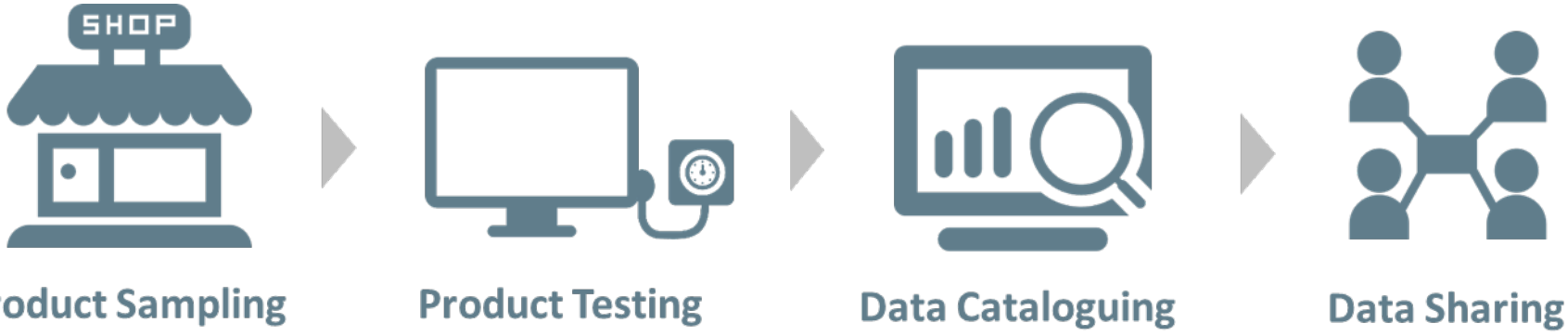
Collaborative Standards and Labelling / Certification Program Development



Market Data Informs Program Ambition

Technical potential of standards and labels should be based on reliable and up to date market data

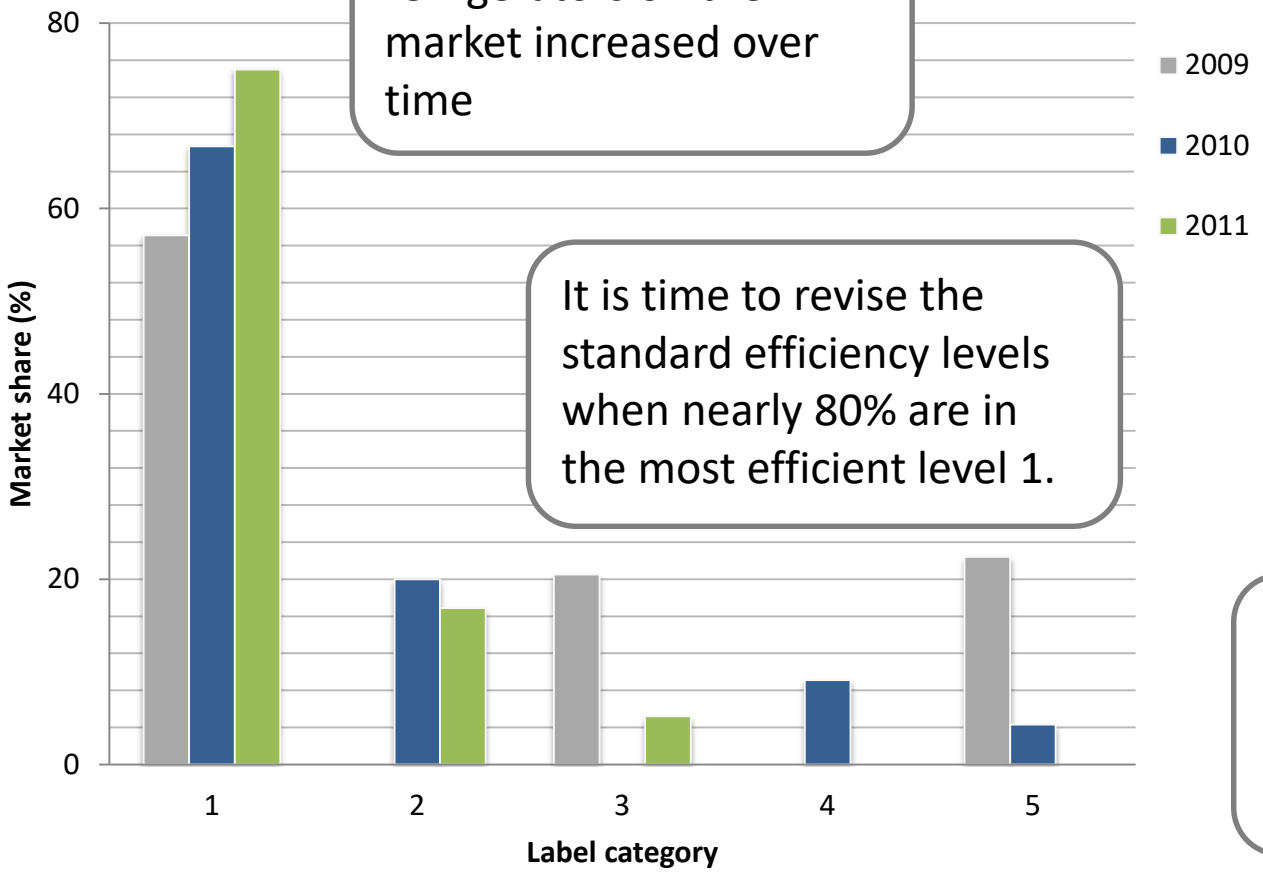
- **Current performance levels and forecasted trends**
- Technology on the market
- **Product characteristics** for domestic and imported products
- Existence and levels of **standards in other countries**



Revise Efficiency Criteria Over Time

China Refrigerators Energy Efficiency Level Distribution by Model Type

Models of more efficient refrigerators on the market increased over time



It is time to revise the standard efficiency levels when nearly 80% are in the most efficient level 1.

Efficiency levels should be ratcheted up after a cycle to keep up with market trends

Models of more inefficient refrigerators on the market decreased over time

Test Procedures and Facilities

Reliable test procedures and test facilities are the foundation of successful standards-setting and labeling initiatives.

Test procedures need to:

- Reflect typical usage;
- Yield repeatable and accurate results;
- Be relatively inexpensive to perform;
- Test procedures can be developed either in country or **adopted from an international body**;
- Testing should be conducted in an accredited laboratory to ensure that tests are being conducted properly.

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Alignment of Policies and Test Procedures

- Makes results comparable
- Reduces policy development costs
- Allows for faster and less expensive testing
- Simplifies customs procedures among countries
- Facilitates the development of Mutual Recognition Agreements
- Reduces costs and compliance burden for manufacturers
- Encourages learning and collaboration from other countries

Energy efficiency policies are aligned when test procedures used to measure the energy use of a product reference an internationally recognized test method.

Why not align?

Alignment is not always practical or feasible. Some important differences among economies contribute to variations in policy coverage and stringency, such as:

- ✓ Climate conditions
- ✓ Energy prices
- ✓ Product ownership
- ✓ Product usage patterns

The performance of air conditioners varies across climatic conditioners. Test procedures may diverge to reflect local or regional conditions.

Examples of International Alignment

- Motors
  - IEC 60034-30 standard establishes efficiency tiers
  - Countries can easily increase stringency to accommodate changes in market and technologies
  - Standards are comparable across economies

- ENERGY STAR
  - A voluntary endorsement label established by the US EPA and has been adopted by Australia, Canada, the EU, Japan, New Zealand, Switzerland, and Taiwan.
  - Reduces burden for private sector participation

Strategic Framework for the Harmonization of EE Standards for ACs in ASEAN

Action Plan

- **WP1**: Establishment of the EU-ASEAN Energy Efficiency Standards Harmonization Initiative
- **WP2**: Harmonize standards for testing methods (Co-funding by APEC)
- **WP3**: Recommend MEPS and HEPS and develop regional policy roadmap
- **WP4**: Develop national policy roadmaps for MEPS and HEPS
- **WP5**: Capacity building for testing laboratories
- **WP6**: Capacity building for AC manufacturers
- **WP7**: Consumer awareness

Source: ICA Asia

Link S&L to Market Transformation Projects

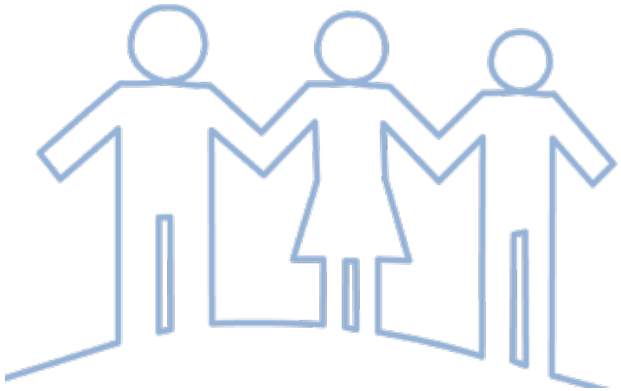
Secure commitments from other projects or market transformation programmes to refer to the certification / quality mark when setting criteria

- For example, procurement, subsidy, incentive programmes can be designed to use the certification as the qualifying criteria for eligible products
- Encourages buy-in to the certification programme from participants and other stakeholders
- Can increase impact of the programme savings
- Helps secure more support for checking compliance and counterfeit labels from programme participants and other organisations

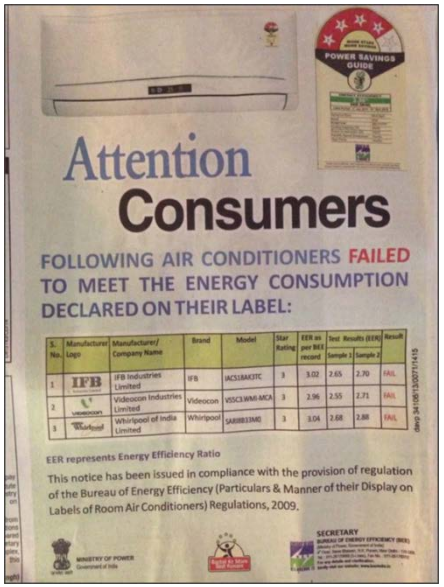
Communications

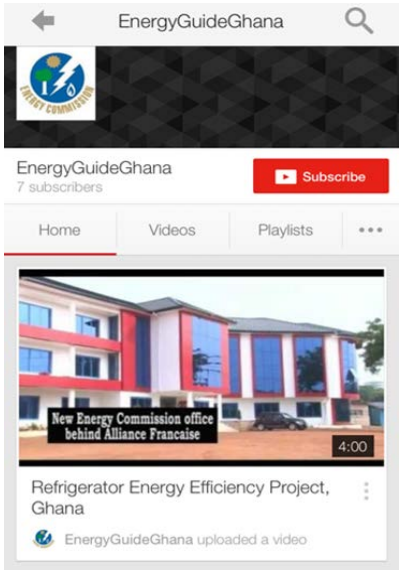
Include a communications campaign at the outset of the design of any market transformation program…

…to educate and mobilize consumers, industry and retailers



There are many different examples – consider what works for your local audience





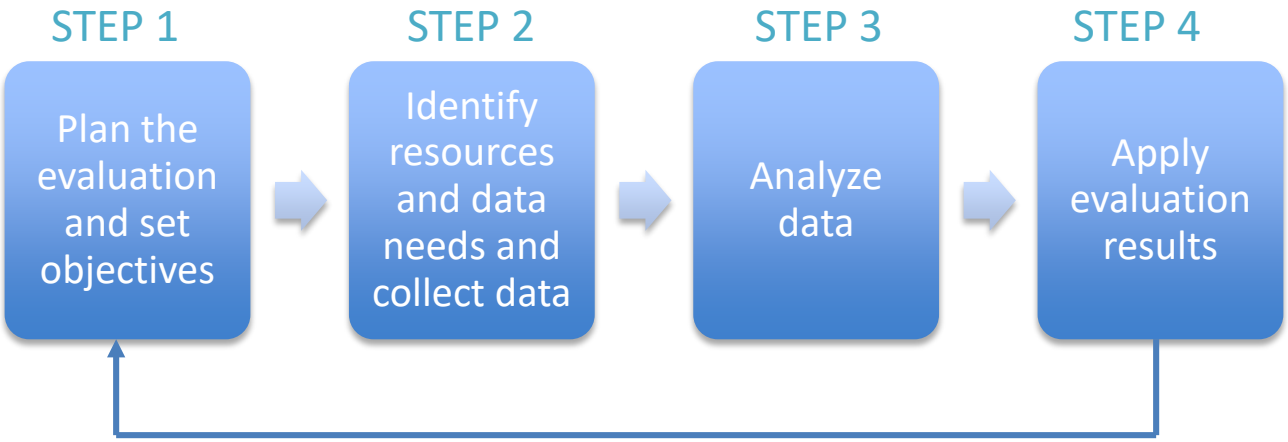
Why Evaluation is a Must

- Evaluations are needed to “prove” program impacts
  - Benefits of energy-efficiency programs need to be clear, measurable, verifiable, and transparent
  - Quantifiable benefits needed to justify funding and (government) resource allocation
- Evaluations assess the efficiency and effectiveness of the program process, revealing weaknesses in program implementation
- State of the Art
  - **Ex-ante** evaluation based on forecasted information about product shipments and customer use
  - **Ex-post** evaluation based on actual sales data and consumer behavior

Why Evaluation is a Must

- Pre-program market assessment to establish reference baseline

- Major approaches to assess program effectiveness:
  - Process evaluations: examine program operations (applications, procedures, dissemination, awareness, etc.)
  - Impact evaluations: evaluate program impacts (equipment sales, energy saved, emissions reduction)



Last but not least….
How to Use Evaluation Results

- Refine labeling and standards programs
  - Use the results from evaluations to improve the design, implementation and future evaluations of labeling and standards-setting programs
- Support other energy programs and policies
  - E.g. appliance rebate programs, negotiated agreements, procurement actions, labeling programs for other appliances
- Forecasting energy use and strategic planning
  - Comprehensive data established by the evaluation can be used as inputs to an end-use stock model to make long-range energy consumption and emissions forecasts
- Using evaluation results and data for other regulatory purposes

Impacts Assessments in Mexico #1

- Impacts form standards implemented between 1995 and 2004 were evaluated for 4 product categories
- These standards reduced energy consumption by **46 TWh** and avoided **30 Gt** of CO_2 emissions between 1995 and 2004
- Energy demand was reduced by 9.6% in 2005
- Impacts were found to be 25% greater than original estimates

CLASP in partnership with LBNL and IIE completed this first study in 2006

Impacts Assessments in Mexico #2

- Impacts form standards implemented between 1995 and 2014 were evaluated for 2 product categories
- National electricity savings of **5.2 TWh of electricity in 2014**, roughly equivalent to **two 500 MW power plants**
- Cumulative CO2 emissions mitigation of **23 million metric tons through 2014**
- Avoided electricity bills of over 40 thousand million Mexican pesos (**3 billion USD**) through 2014.

Average efficiency improvement for refrigerators of 17% to 27%

Average efficiency improvement for air conditioners of 4% to 7%

CLASP in partnership with LBNL and IIE completed this second study in 2015

Non-Energy Benefits in Mexico

In addition to calculating benefits to Mexican society directly arising from energy savings, the project also evaluated non-energy benefits through stakeholder interviews:

- Representatives from the private sector who were interviewed for this study acknowledged the introduction of standards as a positive mechanism, which creates a leveled playing field for manufacturers while sending a clear signal to industry that investments can be made safely.

- The introduction of standards has led to increased awareness of energy efficacy among Mexican consumers; energy efficiency is now one of the five most important factors considered by consumers when purchasing a refrigerator.

- The announcement or publication of efficiency standards has often resulted in technology changes, as manufacturers work to improve products by including new components or more efficient parts.

- The introduction of standards has boosted Mexico's infrastructure for compliance; Due to the program, Mexico now boasts 56 testing laboratories, 7 certification bodies and 1 accreditation agency.

Thank you!

Nicole Kearney, CLASP
nkearney@clasp.ngo

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