ASIA CLEAN ENERGY FORUM 2017

THE FUTURE IS HERE: ACHIEVING UNIVERSAL ACCESS AND CLIMATE TARGETS

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HOW CAN DIGITALIZATION IMPROVE THE EFFICIENCY OF OUR GOVERNMENT EFFICIENCY PROGRAMS AND OUR BUSINESSES?

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Dr. Walia is a development professional with 23 years of experience on policy & program strategies in the field of energy and environment.

As Director-CLASP/India, she provides leadership and strategic direction to all programs to ensure the efficient use of resources and achievement of results and overseas India's participation in the Global programs under CEM.

Archana served as the deputy director, Energy and Environment, USAID providing intellectual leadership to programs on clean energy, sustainable landscape and water, which includes financial, institutional, technological and environmental costs and benefits analysis of various regulatory and policy measures. She has worked with DFID on Power Sector Reforms and British Council division on Environment programs.

Archana holds a Ph.D degree in environment.

Role of digitalization in appliance energy efficiency programs

Dr. Archana Walia
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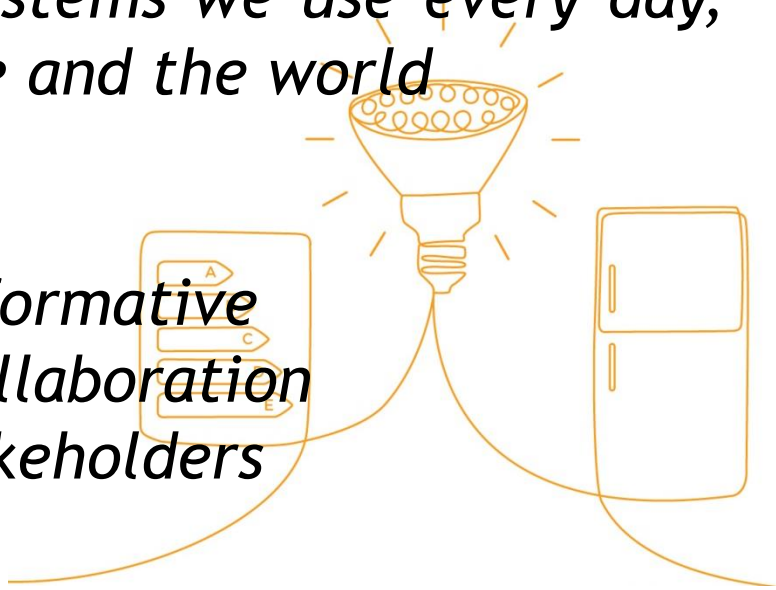
ACEF, Manila

About CLASP

CLASP is an impartial and independent nonprofit organization, established in 1999 to mitigate the growing energy demand resulting from the use of appliances, lighting, and equipment with a mission:

"To improve the environmental and energy performance of the appliances and related systems we use every day, lessening their impacts on people and the world around us."

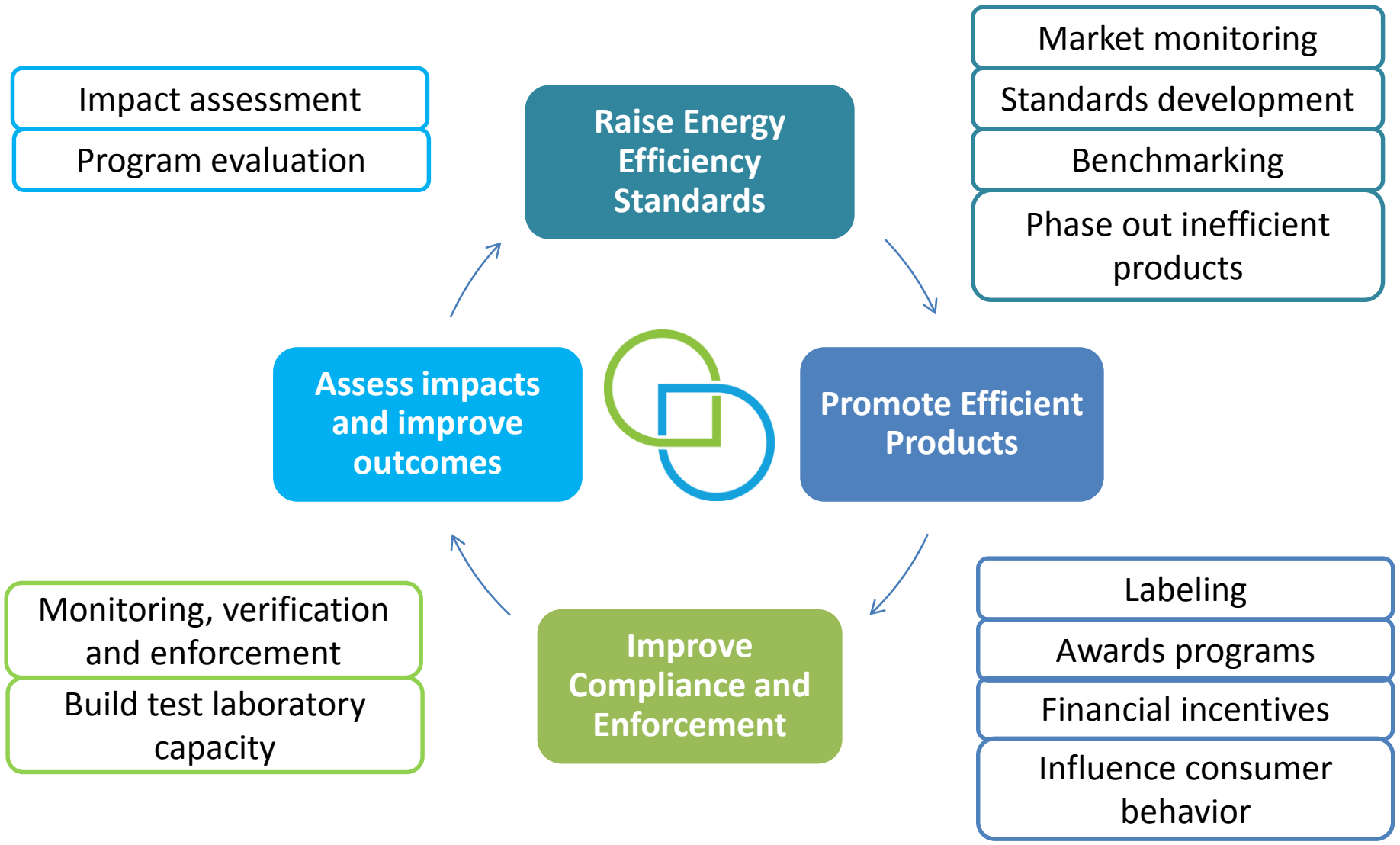
CLASP develops and shares transformative policy and market solutions in collaboration with global experts and local stakeholders



CLASP improves the environmental and energy performance of appliances & equipment

- Policy design & implementation
- Promoting highly efficient products
- Monitoring & evaluation
- Resources & tools for practitioners
- Training & capacity building
- Off-grid & energy access
- Phase down of HFCs and high GWP refrigerants
- Raising consumer awareness & comprehension

The virtuous cycle of appliance energy efficiency programs



Digitalisation and its importance

- **Digitalization** is the adoption or integration of digital technologies into everyday life by the digitization of everything that can be digitized

  Vision of Digital India : a *programme to transform India into a digitally empowered society and knowledge economy.*

- Digital technologies are therefore emerging to become integral to 21st century low-emission energy systems as these can play a major role in delivering effective solutions
- Enable policymakers to meet the energy efficiency targets
- They have a huge potential to reshape the consumer perceptions on the services and interactions.

Relevance to appliance energy efficiency

Data collection and management	Sales, stocks, usage patterns, energy use
Tools for data analysis	Trends, policy impact, market changes, energy savings
Product Registration	Transparency, streamlining processes, information for consumers
Monitoring and Compliance	Effectiveness of policy measures, transparency and accountability,
Awareness and Outreach to consumers	Information and education, Access to relevant information for informed decisions, engaging consumers to provide feedback , complaints redressal

India as case study

- Product registration system

  https://beestarlabel.com/Home/Searchcompare
- Information on energy savings and number of appliances in each star rating band for all appliances under labeling program on the website

  https://beestarlabel.com/Home/EnergySavings
- PPAT tool for prioritization of products for labeling program and policy analysis
- Mobile application for informed purchased decision making and features such as information on monetary savings and product related feedback

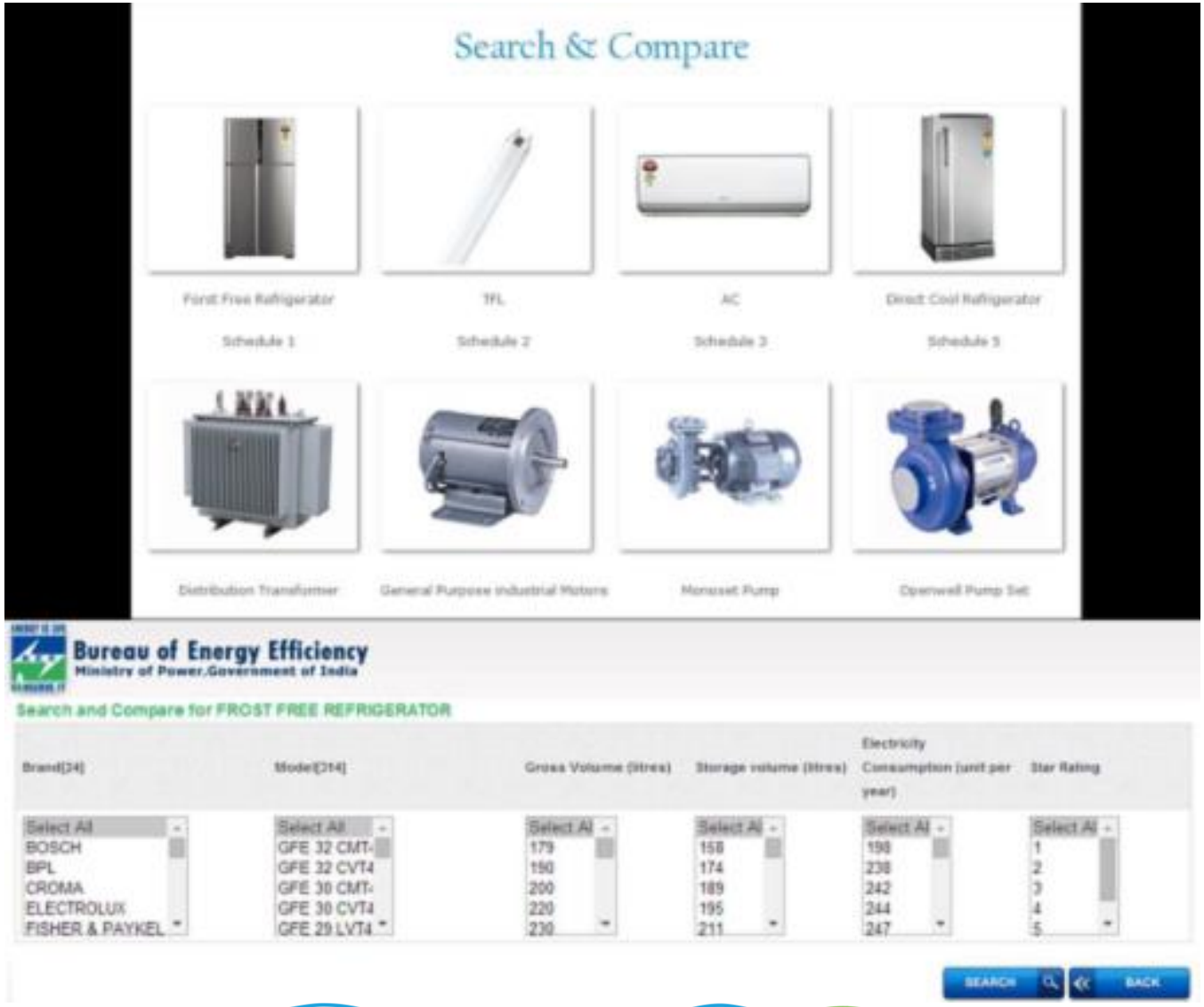
  https://beestarlabel.com/Home/MobileApp
- Consumer behaviour study to get real time data on appliance usage pattern and behaviour to support policy decision, revision and evaluation

Product registry and database

- Product registration is a key component of appliance energy efficiency programmes
- Works as an initial compliance gateway wherein manufacturers and importers register eligible products with the regulatory authority prior to market entry
- Products registered with required documentation to demonstrate product compliance
- Aspects of product registries and databases
  - Record of registered products in public domain
  - Alerts/notifications of regulatory announcements and changes
  - database of the stakeholders (manufacturers, test labs, monitoring agencies) and products with all the required information

Product Registration System

Product Registration Database



Tools and Technique

- Calculation of appliance energy consumption and savings
  - Tools for product prioritization, policy analysis and energy savings
  - Mobile App.
  - QR code

Advantages

- Selection and prioritization of products, projections for market growth
- Estimation of energy saving potential for policy decisions and impact analysis
- Support data acquisition, handling and visualisation
- A historical view of electricity consumption over time (also indicating the resulting costs)
- Provide labelled appliance data in accessible manner influencing purchase decisions
- A household-specific recommendation service on how to save energy

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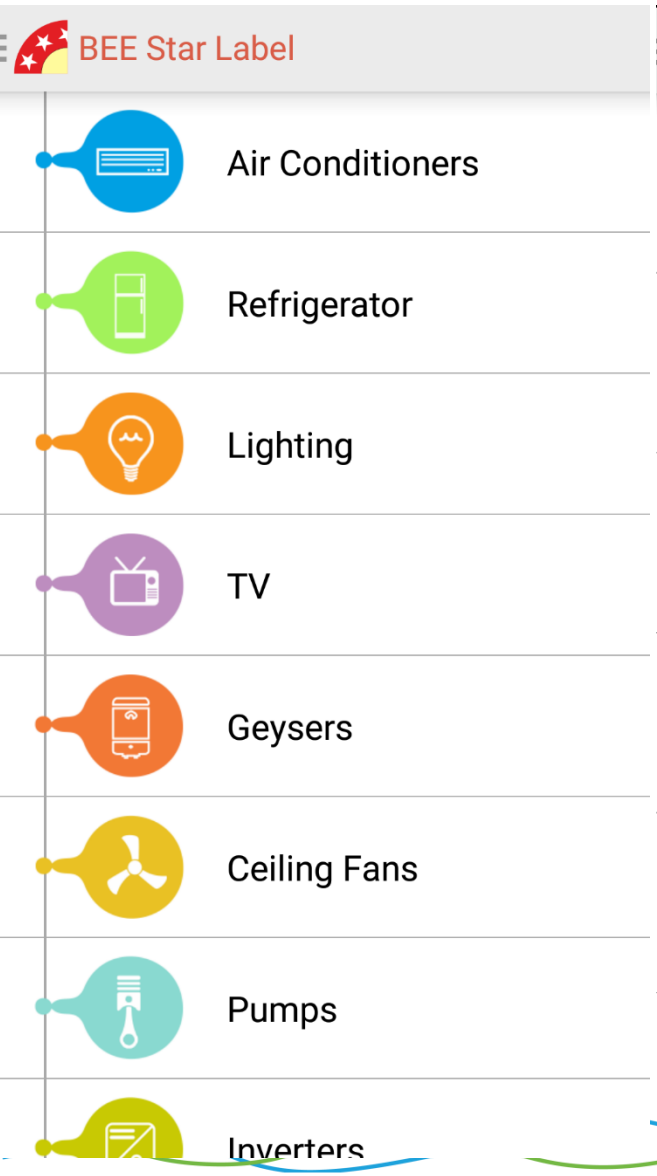
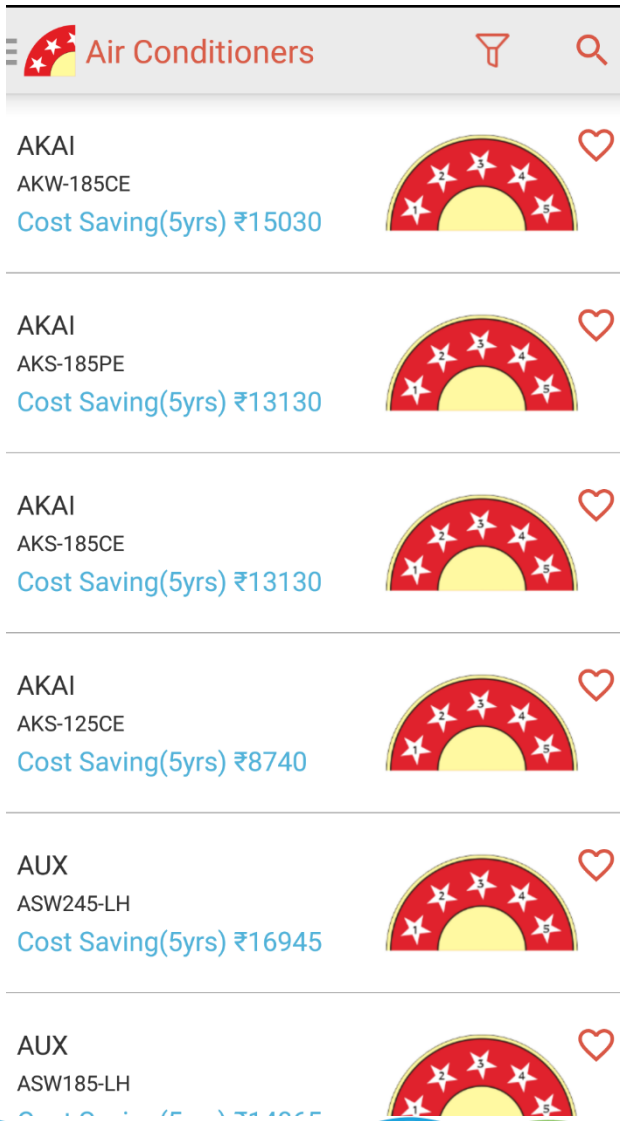
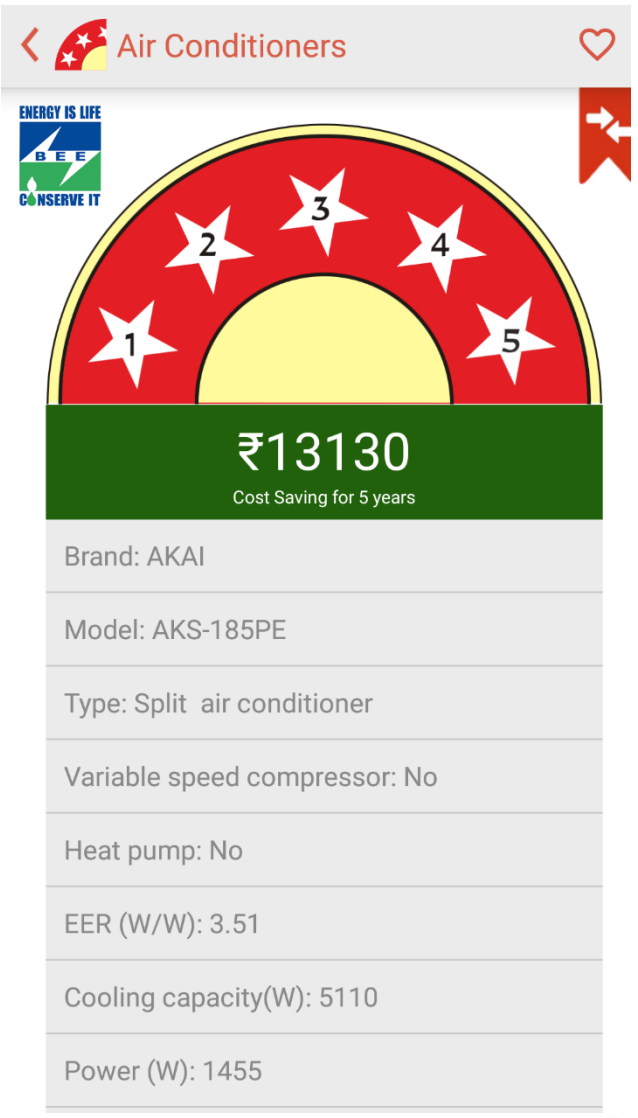
Mobile application







Tools and Techniques-looking ahead

- Non-intrusive analytical IT enabled devices for disaggregated appliance data
  - Understanding appliance usage pattern
  - Understanding household routines through time of use and energy consumption from daily activities
  - Live visualization of current total electricity consumption
  - Prediction of energy demand from households and appliances
  - Energy feedback generation
  - Opportunities for load shifting

IT enabled and smart technologies

- **Automation-** system changes to reduce energy are made without human intervention
  - Eg thermostat using machine learning and predicts heating and cooling pattern
- **Real time use-** device provides information to consumers, who make changes to improve efficiency
  - Eg. Smart meter measuring behaviour
- **Substitution/dematerialisation-** internet connected devices are used to displace energy intensive activities
  - Eg. Replacement of on site server with cloud based virtual server

Barriers

Social	Financial
Lack of awareness amongst consumers and government	High upfront cost and lack of understanding on return on investment
Uneasiness with new technologies	Difficulty in calculating overall system benefits
Complex nature of devices and tools	Lack of understanding on energy savings
Exponential pace of technology evolution	Lack of established mechanism on monitoring and verification of savings
	Privacy, interoperability and security

Benefits for stakeholders

Policymakers

- Establish baseline data to support policy decisions and policy impact
- Database of Manufactures
- Trend analysis such as product performance data, sales volume and technology transition
- Information essential for programme design, implementation and evaluation
- Market surveillance and reporting non compliance
- Support product selection process for verification testing
- Track energy use at
  - Aggregated level - Residential sector, Public sector, etc.
  - Detailed level- Per household, Per appliance type, etc.
- Tool for dissemination and consumer education

Benefits for stakeholders

Manufacturers

- Information on product innovation and design
- Build credibility of their products in the market
- Level playing field by eliminating unfair competition from non-compliant products

Distributor

- Product compliance information

Consumers

- Product specific information in public domain
- Easy accessibility and user friendly tools
- Enable product comparison
- Library of knowledge and training material
- Reporting of non compliance

Benefits-contd.

Regional Harmonization

- Supports co-ordinated MVE planning and efficient use of resources when a regional market shares similar products
- Enables immediate sharing of information on test results and compliance related information between authorities
- Reduces cost, avoids duplication of efforts, facilitates global trade, and encourages product performance improvements

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THANK YOU

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