# BRESL - Overview

## (*BARRIER REMOVAL TO THE COST-EFFECTIVE DEVELOPMENT AND IMPLEMENTATION OF ENERGY EFFICIENCY STANDARDS AND LABELING PROJECT*)

Presented in

***lites.asia - Seventh Regional Meeting***
**Four Seasons Hotel, Jakarta, Indonesia**
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# Content



1. • Updates on BRESL Program
2. • Harmonization of Standard and Label
3. • ES&L Situation of CFL in BRESL Countries



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# Content



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- **Updates on BRESL Program**



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# BRESL Project Introduction



**IND VIET PAK BNGL CHINA THAI**

Total USD 7.8 million

IND : USD 1.17 million (gef)
USD 0.491 million (jpf)

## Activities 2009 – 2014:

1. ES&L Policy Framework
2. Capacity Building : Lab Uji, Lembaga Pemerintah
3. Manufacture Support Program
4. Regional Cooperation Program: Standard harmonization
5. ES&L Pilot Project in individual country

Widespread Utilization & Increase Market of Energy-Efficient Appliances:
**AC, Refrigerator, Fan, Ballast, CFL, Rice Cooker, Electric Motor**

**End of Project (2014)**

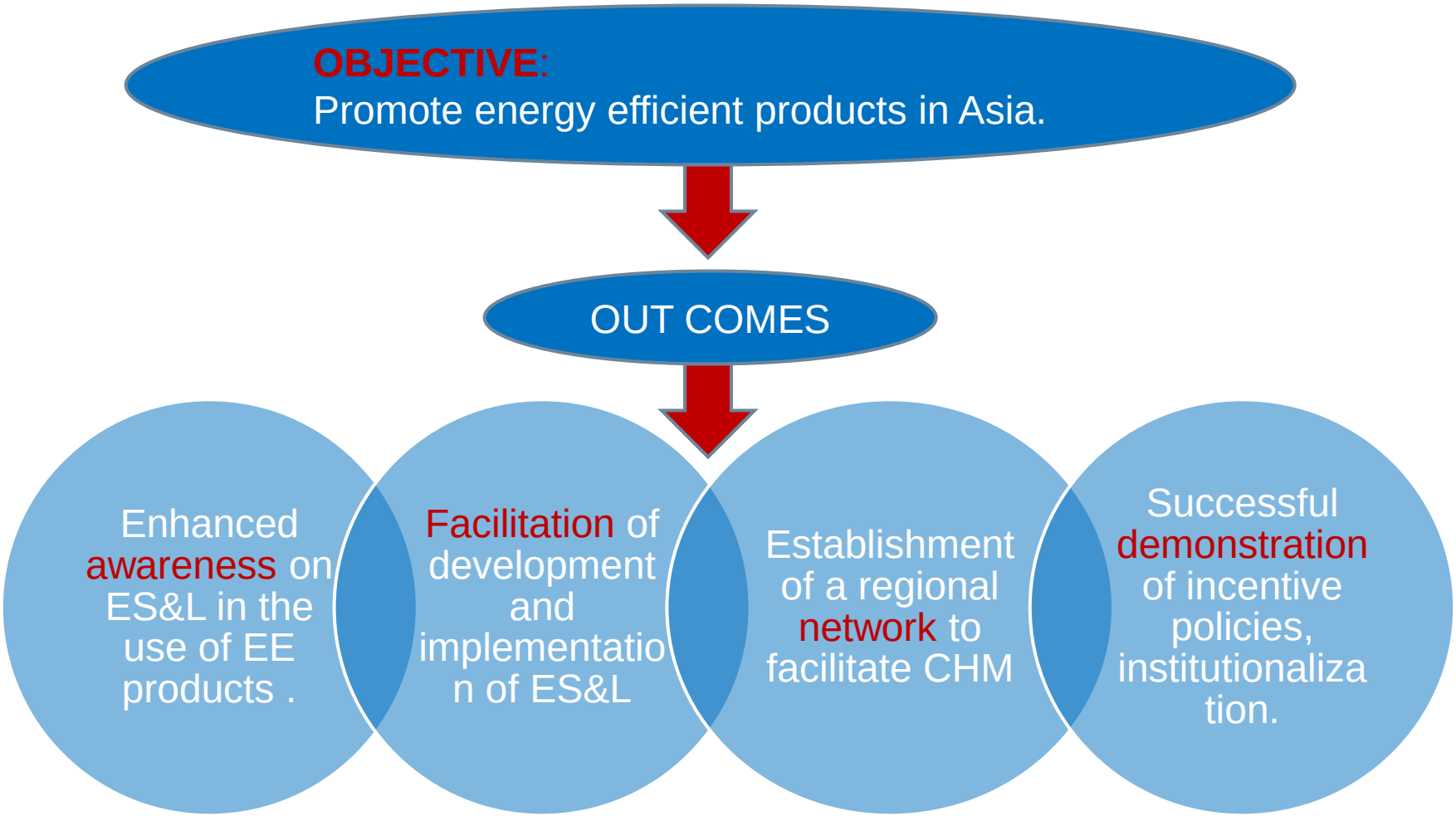
GHG Emission Reduction
1.52 million ton CO2

Reduction in Total
Electricity Use 2000 GWh

Increase Market of EE
appliances 25%

# Objective and outcomes





# Project introduction



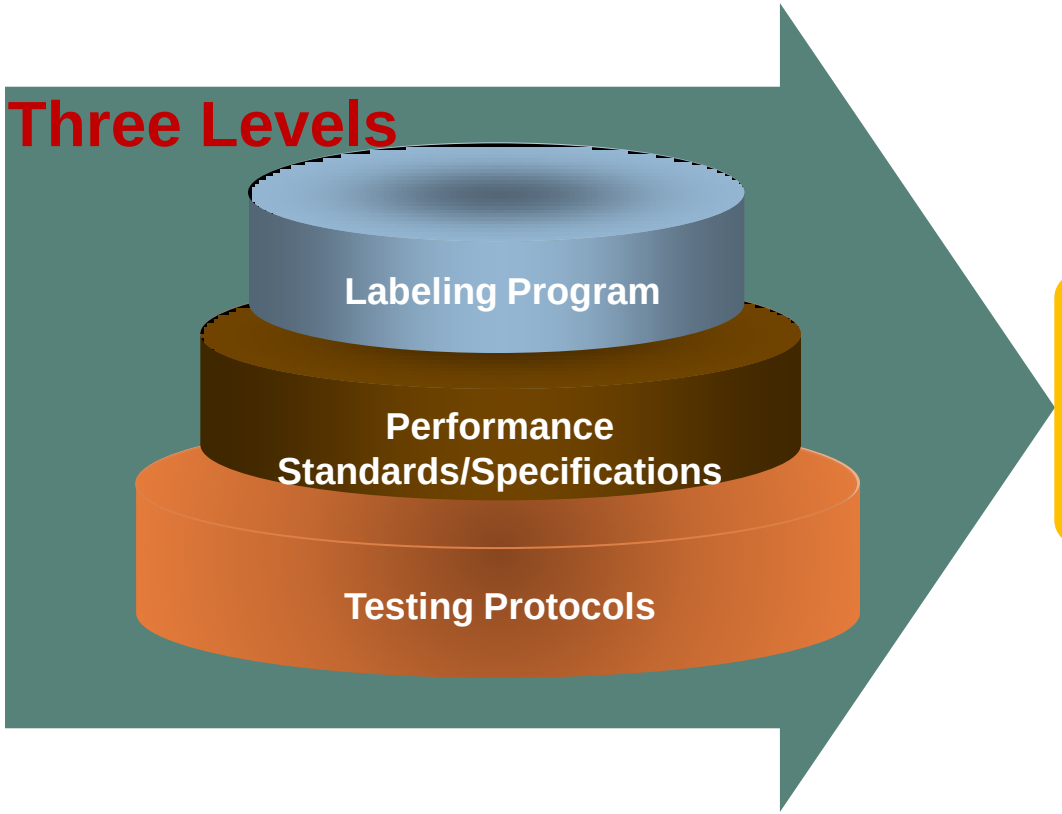
The BRESL project facilitates cooperation, harmonization and mutual-recognition (CHM) of ES&L among developing countries in Asia.

**A regional initiative in Asia.** The project will focus on regional ES&L program cooperation, harmonization with provision for general information, tools and training to all interested developing countries in the region.

**National technical assistance to the participating countries.** The project will focus on capacity building and assisting the relevant stakeholders to implement the ES&L program.

# BRESL Focus of ES&L Cooperation, Harmonization and Mutual-recognition






Reduce EE Program Costs and Foster Global Trade



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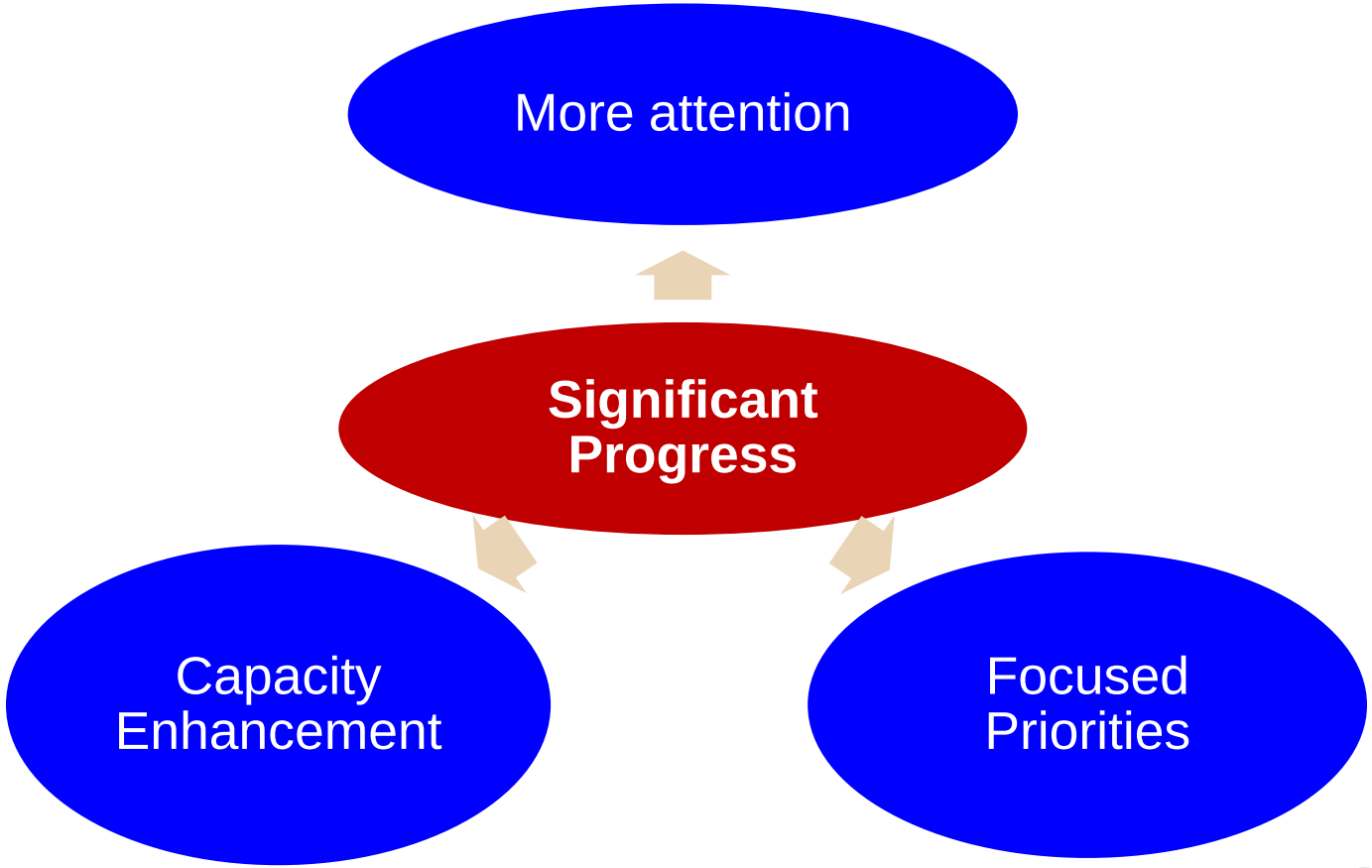
# Progress overview





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# Progress overview



## More attention

- Higher attention from Implementing partners in each country, UNDP and PCs
- Others – such as UNESCAP, APEC, Australia
- Remarkable “south-south” cooperation

# Progress overview



## Focused Priorities

- Intensive Training & Workshops
- Technical Working Groups (TWGs)
- Regional Energy Efficiency Standard and Labeling/Certification Network (REESLN)
- Consolidation towards regional harmonization objectives

# Progress overview

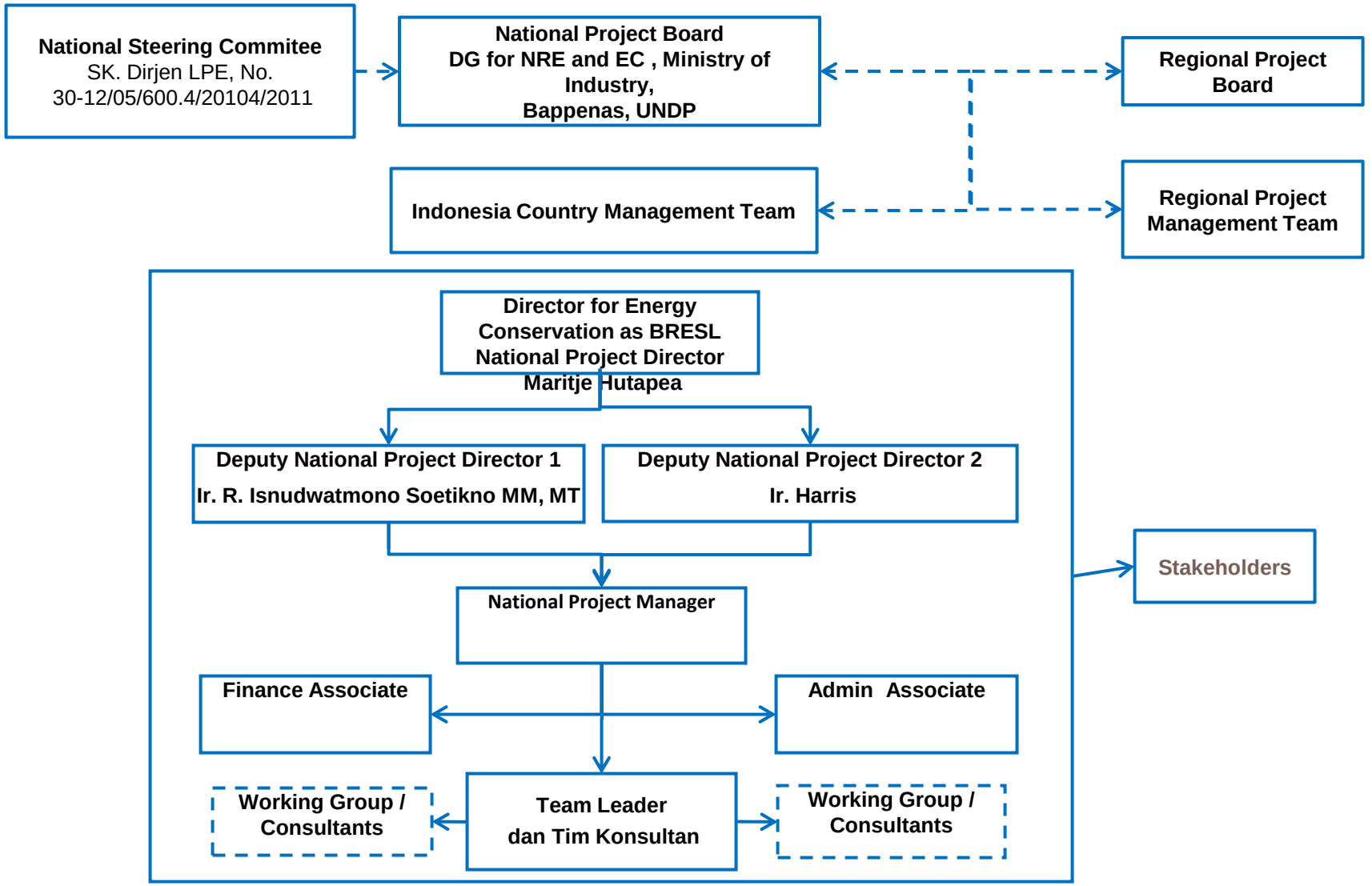


## Capacity Enhancement

- Project Coordination
- Officials and Experts from PCs
- Synergism
- Strong Support & Results from Co-financed activities

# BRESL - Organization in Indonesia





# Content



# Role of TWG



- The TWGs were established by Regional Project Management Unit (RPMU) with the guidance and/or support of UNDP and Country Teams (CTs).
- The TWGs will mainly be in charge of developing the harmonized testing protocols, EE standards/specifications and labeling programs.
- The TWGs will provide technical support for national activities and regional activities.
- All TWGs will co-operate under the umbrella of the Regional Energy Efficiency Standard and Labeling Network (REESLN) on the promotion of ES&L in the region.

# Harmonization of Performance Standards



Through a step by step process, work to develop harmonized performance standards (including test protocols):

- Product Selection
  - Conduct feasibility assessment study (already done);
  - Select products based on feasibility study (already done);
  - Determine harmonization level for selected products:
    - Test protocol only (levels I );
    - Test protocol + performance criteria (levels II).
- Assess capacity needs for harmonization of performance standards

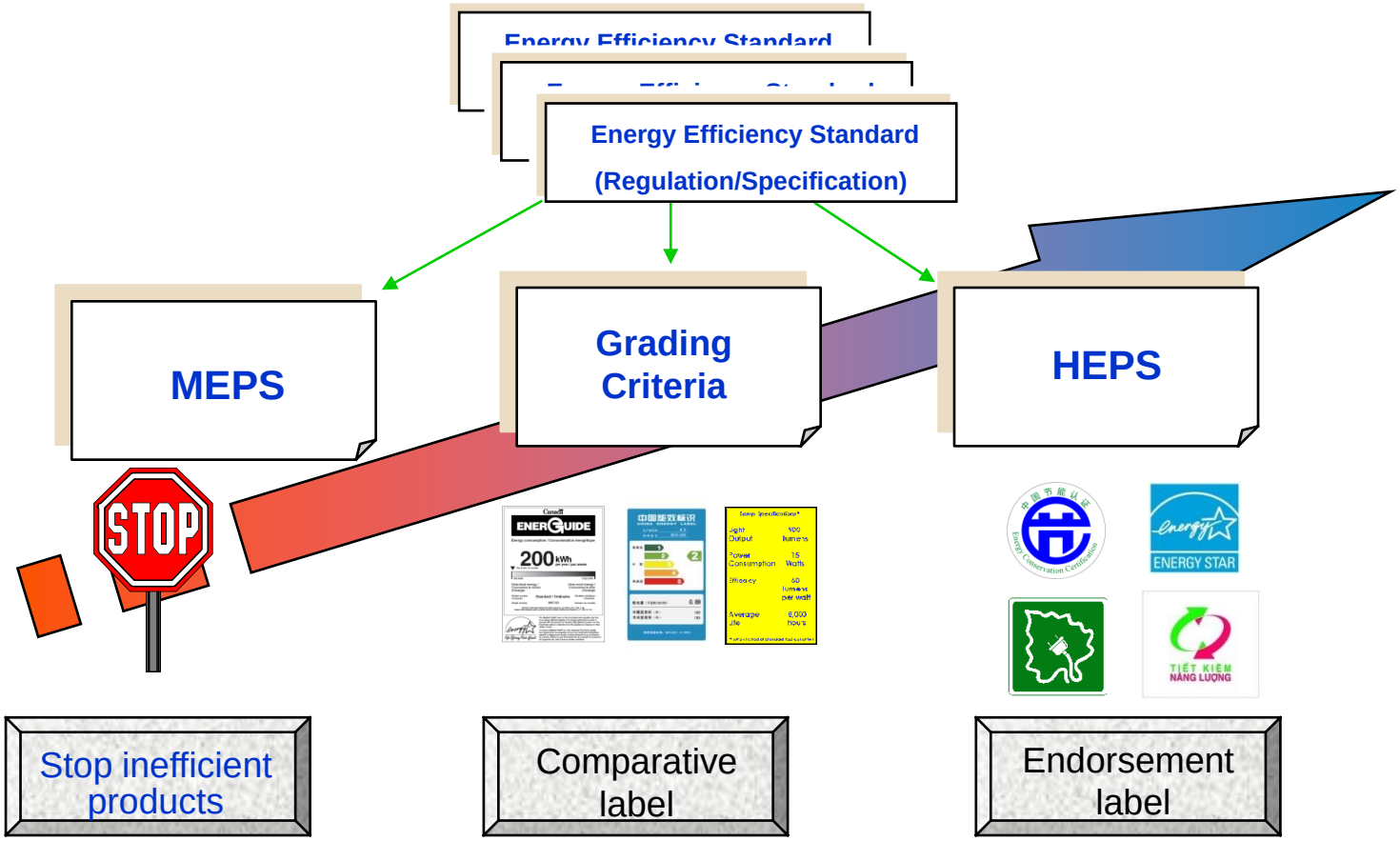
# Energy-efficiency Standard



- Energy-efficiency standards are procedures and regulations prescribe the energy performance of energy-consuming products:
  - Define the testing protocols;
  - Determine value of energy performances.
- Energy-efficiency standard include MEPS, Grading Criteria and/or HEPS.

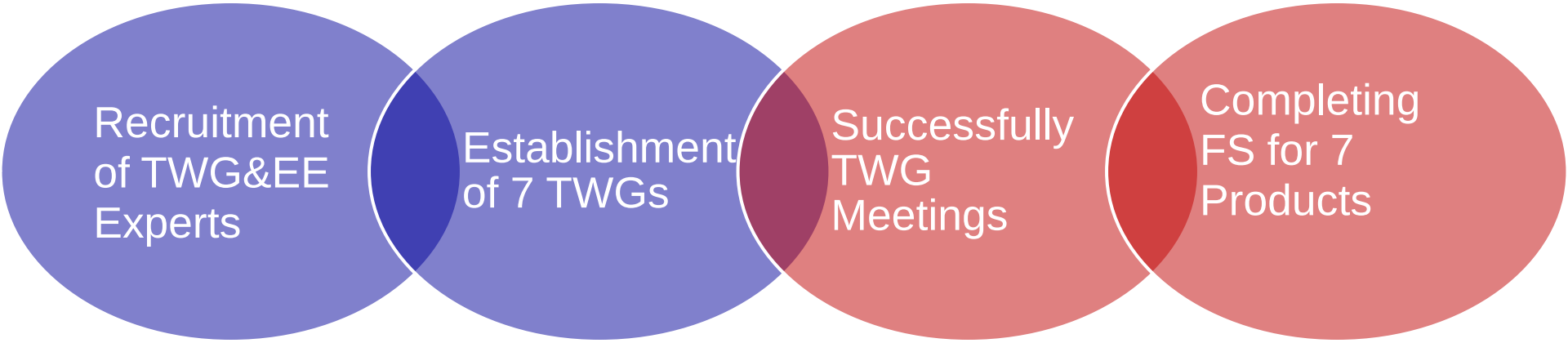
# Framework for EE Standards and Labeling Programs





# Progress on Feasibility studies for Regional Harmonization






**Significant progress has been made. All TWG members are working hard to complete the project objective, and through the TWG work, each expert has enhanced the capacity and improved efficiency**



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# ES&L Regional Cooperation Program



***Regional E S&L network (REESLN)***

## Goals

- Promoting adoption of ES&L
- Sharing the resources and achievement;
- Facilitating regional CHM of ES&L programs.

| Information Sharing | Technical Assistance | Training | Harmonization Initiatives |
|---|---|---|---|
| • Information<br>• Policy, project and program<br>• EE Products<br>• tool-package | • Provision of technical support materials<br>• Sharing of experts<br>• Assistance to develop ES&L programs | • Design and conduct of training courses on request<br>• Host regular training, training-trainer program<br>• Accreditation training for professional | • Sharing of experiences and enhancing cooperation<br>• Facilitate regional harmonization and mutual-recognition |

# Progress of REESLN



## Priorities for REESLN

- Investigation on ES&L Status and Best Practice
- Establishment of Operation Mechanism
- Member Recruitment
- Promote TWG Outcomes



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# Content



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- **ES&L Situation of CFL in BRESL Countries**



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# Policy and regulation



| Country | Institution / Regulation | Incentive Policy | FIscal Policy |
|---|---|---|---|
| **Bangladesh** | Dhaka Power Distribution Company (DPDC) | Free distribution of CFLs. | Since 2010 distributed a few million free CFLs |
| **China** | Energy Conservation Law of the People's Republic of China | Fund management Interim financial subsidies for efficient lighting products promotion. | Fund management Interim financial subsidies for efficient lighting products promotion, MOF [2007]1027 |
| **Thailand** | Electricity Generating Authority of Thailand (EGAT) | Discount Tax | Since 2007, given away 800,000 CFLs to residential and public sectors and expects to phase out 30 million incandescent in three years (2007-2010). |
| **Pakistan** | Energy Conservation Law implemented in 2006 and ENERCON is the implementing agency | Discounted Price | 30 million CFL shall be distributed to customers to replace incandescent in 2 years 2012-13 |
| **Indonesia** | Energy Law No 30/2007 and Energy Conservation Government Regulation No. 70/2009 | Discount Tax | Revolving fund program is under discussion in the government, and rebate program is being assessed |
| **Vietnam** | Law on Energy Efficiency and Conservation | None | Carry out a bulk purchase and distribute five million CFLs throughout the Country 2007 – 2010 |

# Testing standard



## Relationship between national standards and IEC standards

| PCs | National standards | IEC standards | Differences |
|---|---|---|---|
| Bangladesh | BDS IEC 60969<br>Specifications for energy efficiency labelling | IEC 60969:2001 ed. 1.2 :<br>Self-ballasted lamps for general lighting services – Performance requirements | No difference |
| Pakistan | PS-IEC 60969 :<br>Self-ballasted lamps for general lighting services – Performance requirements | IEC 60969 -2001 ed. 1.2:<br>Self-ballasted lamps for general lighting services – Performance requirements | No difference |
| Thailand | None (Draft) | IEC 60969-2001 ed. 1.2:<br>Self-ballasted lamps for general lighting services – Performance requirements | No difference |
| Vietnam | TCVN 7541-2:2005 Part 2 :<br>Methods for determination of energy performance | IEC 60969-2001 ed. 1.2:<br>Self-ballasted lamps for general lighting services – Performance requirements | No difference |
| ELI | ELI-T01-2011:ELI<br>Voluntary Technical Specification for Self-Ballasted Compact Fluorescent Lamps (CFLs) | IEC 60969-2001 ed. 1.2<br>Self-ballasted lamps for general lighting services - Performance requirements | No difference |

# Testing standard



## Relationship between national standards and IEC standards (cont')

| PCs | National standards | IEC standards | Differences |
|---|---|---|---|
| Indonesia | SNI IEC 60969 : 2009 Self-ballasted lamps for general lighting services – Performance requirements | IEC 60969-2001 ed.1.2<br>Self-ballasted lamps for general lighting services – Performance requirements | No difference |
| China | GB/T17263:2002<br>Self-ballasted lamps for general lighting services – Performance requirements | Neq IEC 60969-2001 ed. 1.2 : | Yes, see Table 6 |

## Differences between China National Standards and IEC Standards

| GB/T 17263-2002 (IEC 60969(ED1.2)NEQ) | | |
|---|---|---|
| No. | IEC standards | National standards |
| 1 | 5.4Lamp wattage The initial wattage dissipated by the lamp shall not exceed 115 % of the rated wattage. | The difference between initial wattage dissipated by the lamp and rated wattage shall not exceed 15 %. |
| 2 | 5.6 Initial lumen efficiency<br>No requirement | Initial lumen efficiency shall not be less than the value |
| 3 | 5.5 Power factor<br>No requirement | The actual power factor shall not be less than the rated factor by 0.5. |

# Testing standard



## Comparison of the Testing Facilities in BRESL Countries

| Country | Available Laboratories | Number of labs accredited | Name of Certification | Laboratory Accreditation Body |
|---|---|---|---|---|
| Bangladesh | More than 4 | 0 | None | Bangladesh Standards and Testing Institution(BSTI) |
| China | 21 test labs for EE labelling and 11 test labs for CQC Energy conservation certification | 21 | ISO 17025 | China Quality Mark Certification Group(CQM)<br><br>China Quality Certification Centre(CQC) |
| Indonesia | 8 | 3 | ISO 17025 / KAN | National Accreditation Committee of Indonesia (KAN)/ |
| Pakistan | 3 | 0 | PNAC/NAD | Currently none, accreditation plan in 2013 |
| Thailand | 4 | 1 | (ISO/TLAS) | Thai Laboratory Accreditation Scheme (TLAS) |
| Vietnam | 5 | 5 | ViLAS | Vietnamese Standard and Measurement Center |

## Test equipment for performance standard- IEC 60969-2001(Ed.1.2)

| Clause | Measurement/testing | Testing / measuring equipment / material needed | Whether the national standard meets the requirements or not | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Bangladesh | China | Indonesia | Pakistan | Thailand | Vietnam |
| 4 | Method of measuring lamp characteristics | Draught proof cabinet (25°C), stabilized supply voltage | Yes | Yes | Yes | Yes | Yes | Yes |
| 5 | Starting and run-up time | Voltmeter, Timer controller | Yes | Yes | Yes | Yes | Yes | Yes |
| 6 | Dissipated wattage measurement | Wattmeter | Yes | Yes | Yes | Yes | Yes | Yes |
| A.3.2 / A.4.3 | Ageing period / starting cycle | Test racks for lamp operation (ageing period), timer controller, voltmeter, cycling device (10-15 minutes off / at least 10 minutes on every 24 h) | Yes | Yes | Yes | Yes | Yes | Yes |
| 7 / 9 | Luminous flux measurement | Goniophotometer or Ulbricht sphere, integrator, photocell, calibrated lamp source | Yes | Yes | Yes | Yes | Yes | Yes |
| 8 | Colour measurement | Colorimeter or spectroradiometer | Yes | Yes | Yes | Yes | Yes | Yes |

## Test conditions of Laboratory for performance standards- IEC 60969:2001(Ed. 1.2)

| IEC Required conditions | Bangladesh | China | Indonesia | Pakistan | Thailand | Vietnam |
|---|---|---|---|---|---|---|
| The test conditions are specified in IEC 60969 (ED1.2) | Meet the requirements | Meet the requirements | Meet the requirements | Meet the requirements | Meet the requirements | Meet the requirements |

Table 10. Test items for performance standard- IEC 60969:2006(ED.1.2)

## Test items for performance standard- IEC 60969:2006(ED.1.2)

| Test items | Testing ability to satisfy the requirements | | | | | |
|---|---|---|---|---|---|---|
| | Bangladesh | China | Indonesia | Pakistan | Thailand | Vietnam |
| 1.Dimensions | Yes | Yes | Yes | Yes | Yes | Yes |
| 2.Starting and run-up | Yes | Yes | Yes | Yes | Yes | Yes |
| 3.Lamp wattage | Yes | Yes | Yes | Yes | Yes | Yes |
| 4.Luminous flux | Yes | Yes | Yes | Yes | Yes | Yes |
| 5.Colour | Yes | Yes | Yes | Yes | Yes | Yes |
| 6.Lumen maintenance | Yes | Yes | Yes | Yes | Yes | Yes |
| 7.Life | Yes | Yes | Yes | Yes | Yes | Yes |

# Testing standard



6 differences criteria/parameter among PCs and the ELI Specification, the differences are because of the IEC does not specify the criteria or the PC determine own specification.

| Sr. # | Parameter | IEC 60969 | ELI | BRESL |
|---|---|---|---|---|
| 1 | Run Up Time | 80% of final flux within 60 seconds | Up to 3 minutes to reach 80% of light output | Comply with IEC 60969 standard |
| 2 | Lumen Maintenance | The lumen maintenance shall ≥ 0.8 of the measured 100h lumen level after 2000h operation and 0.8 after 5000h operation. | The lumen maintenance shall ≥ 0.8 of the initial level at 40% of rated life | Comply with IEC 60969 standard |
| 3 | Efficacy | Not defined | Defined | Difference |
| 4 | Sampling size | Not defined for EE | 8 pcs | 1pc : Vietnam<br>3 pcs : Bangladesh<br>6 pcs : Indonesia<br>8 pcs : ELI<br>12 pcs : China<br>15 pcs : Thailand<br>Pcs : Pakistan |
| 5 | Warranty | No defined | 12 Months replacement | Comply with IEC 60969 standard |
| 6 | Mercury Content | Maximum of 5 mg as per IEC 62554 | Local regulations | Comply with IEC 60969 standard |

# Energy Efficiency Standard



## Comparison of MEPS and HEPS

| Country | Minimum Efficiency Performance Standards (MEPS) | High Efficiency Performance Standard (HEPS) |
|---|---|---|
| Bangladesh | Yes (V) | No |
| China | Yes (M) | Yes (V ) |
| Thailand | No | Yes (V) |
| Pakistan | Yes (V) | No |
| Indonesia | No | No |
| Vietnam | Yes (V) | Yes (V) |

# Energy Efficiency Standard



## Comparison of Grading criteria of Energy Efficiency

### Bangladesh

| Performance Grading (PG) | STAR RATING |
|---|---|
| PG > 70 | Five star ***** |
| 65 < PG < 70 | Four star **** |
| 60 < PG < 65 | Three star *** |
| 55 < PG < 60 | Two star ** |
| 50 < PG < 55 | One star * |
| PG =< 55 | No star |

PG= (E x A) + (Pf x 100 x B), E= Efficacy

Pf= Power factor, and A=0.8, B= 0.2 (weight rating)

### China

| Range of nominal wattage | Initial luminous efficacy (Lm/W) | | | | | |
|---|---|---|---|---|---|---|
| | level(6500K,5000K) | | | level(4000,3500,3000,2700 | | |
| | 1 | 2 | 3 | 1 | 2 | 3 |
| 5~8 | 54 | 46 | 36 | 58 | 50 | 40 |
| 9~14 | 62 | 54 | 44 | 66 | 58 | 48 |
| 15~24 | 69 | 61 | 51 | 73 | 65 | 55 |
| 25~60 | 75 | 67 | 57 | 78 | 70 | 60 |

### Indonesia

| Capacity Power (Watt) | Lumen/Watt | | | |
|---|---|---|---|---|
| | ★ | ★★ | ★★★ | ★★★★ |
| 5 – 9 | 45 – 49 | >49 – 52 | >52 – 55 | > 55 |
| 10 – 15 | 46 – 51 | > 51 – 54 | > 54 – 57 | > 57 |
| 16 – 25 | 47 – 53 | > 53 – 56 | > 56 – 59 | > 59 |
| ≥ 26 | 48 – 55 | > 55 – 58 | > 58 – 61 | > 61 |

### Pakistan (on development, refer to China)

| Range of nominal wattage | Initial luminous efficacy (Lm/W) | | | | | |
|---|---|---|---|---|---|---|
| | level(6500K,5000K) | | | level(4000,3500,3000,2700 | | |
| | 1 | 2 | 3 | 1 | 2 | 3 |
| 5~8 | 54 | 46 | 36 | 58 | 50 | 40 |
| 9~14 | 62 | 54 | 44 | 66 | 58 | 48 |
| 15~24 | 69 | 61 | 51 | 73 | 65 | 55 |
| 25~60 | 75 | 67 | 57 | 78 | 70 | 60 |

# Energy Efficiency Standard



## Comparison of Grading criteria of Energy efficiency (cont')

### Thailand

| Watt | Lumen/Watt < 4400 k | Lumen/Watt > 4400 k |
|---|---|---|
| 5...8 | 50 | 45 |
| 9...14 | 55 | 50 |
| 15...20 | 60 | 55 |
| 21...24 | 60 | 60 |
| 25...60 | 65 | 60 |

### Vietnam

| Watt | Lm/W <4400K | Lm/W >= 4400 K |
|---|---|---|
| 5-8 | 45-55 | 40-50 |
| 9-14 | 50-60 | 45-55 |
| 15-24 | 55-65 | 50-60 |
| 25-60 | 60-70 | 55-65 |

### ELI Specification

| Input Power of Lamp (W) | Initial Luminous Efficacy (lm/W) | | | | | |
|---|---|---|---|---|---|---|
| | Correlated Color Temperature (CCT) | | | | | |
| | 6500K | 5000K | 4000K | 3500K | 3000K | 2700K |
| ≥ 5 to <9 | 46 | | 50 | | | |
| ≥ 9 to <15 | 52 | | 55 | | | |
| ≥ 15 to <25 | 57 | | 60 | | | |
| ≥ 25 to ≤ 60 | 62 | | 65 | | | |

# Energy Efficiency Labeling

## Status of EE Standards for Endorsement Label



| Bangladesh | China | Indonesia | Pakistan | Thailand | Vietnam | ELI |
|---|---|---|---|---|---|---|
| **None** | GB19044-2003 (GB 19044-201X) Limited values of energy efficiency and rating criteria of self-ballasted fluorescent lamps for general lighting service | None | Labelling procedure #EES-02/7-2011 of<br><br>Oct.5, 2011) Minimum Energy Performance Standard (MEPS) for Self Ballasted Fluorescent lamps | Requirement for the label 5 program by EGAT | TCVN 7896 : 2008 Compact Fluorescent Lamps-Energy Efficiency. | ELI-T01-2011 |

# Energy Efficiency Labeling



## Endorsement label

| Country | Voluntary/Mandatory | Label figure |
|---|---|---|
| Bangladesh | None | None |
| China | Voluntary |  |
| Indonesia | None | None |
| Pakistan | Voluntary |  |

# Energy Efficiency Labeling



## Comparative Label

| Country | Voluntary/ Mandatory | Label | Grading | High | Low |
|---|---|---|---|---|---|
| Bangladesh | Voluntary |  | Star labeling | 5 | No star |
| China | Mandatory |  | 3 | 1 | 3 |
| Pakistan | Under consideration | Under consideration | Under consideration | Under consideration | Under consideration |



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# Energy Efficiency Labeling



## Comparative Label (cont')

| Country | Voluntary/ Mandatory | Label | Grading | High | Low |
|---|---|---|---|---|---|
| Indonesia | Mandatory after 27 month transition period |  | Star labeling | 4 star | 1 star |
| Thailand | No | No | No | No | No |
| Vietnam | No | No | No | No | No |

# Conclusion



| Conclusion on Feasibility | Reason of Feasible / Not Feasible |
|---|---|
| Testing protocols<br><br>(Feasible) | • All of 6 the PCs applied IEC 60969-2001 ed. 1.2<br>• All 6 PCs have test laboratory facilities.<br>• All 6 PCs meet the test equipment of IEC standards. |
| Energy Efficiency Standards | • Differencies on the EE parameter. Bangladesh developed Performance Grading system.<br>• Differencies on number of bins.<br>• However , BRESL will further study on the harmonization |
| Labelling Procedures | • Participant Countries implement different Labeling program (Endorsement and Comparative)<br>• Participant Countries implement different Labeling regime (Mandatory and Voluntary).<br>• However , BRESL will further study on the harmonization |

# Thanks!

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