
Green Cloud Computing: Case Study Sri Lanka & Pakistan

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Recalling ITU –TRCSL Workshop in 2013

- ITU TRCSL Workshop on “Greening the Future: Bridging the Standardization Gap on Environmental Sustainability” 3-4 Oct 2013, Colombo, Sri Lanka
- It was attended by 74 participants where six international experts including chairman and vice chairman of ITU-T Study Group 5 Working Party 3
- Chairman of TRCSL reaffirmed commitment of Sri Lanka to establish Smart Sri Lanka which received full support from industry.
- ITU proposed two concrete actionable items on smart sustainable society using ICT in Sri Lanka.
 - i. Development of e-waste policy
 - ii. Standardized Green Data Center Protocol

Development of e-waste policy

- i. Analyze current country waste practices;
- ii. comparing country e-waste management with the description contained in the Toolkit on environmental sustainability for the ICT sector
- iii. develop a written questionnaire to seek input from stakeholders in Sri Lanka on the e-waste management possibility as collection recycling;
- iv. consult with key stakeholders as appropriate;

Development of e-waste policy

- v. prepare a Draft National e-waste Policy focused on achieving affordable e-waste management);
- vi. conduct a national workshop aimed at informing, educating, gathering information from the stakeholders and sharing proposals;

Concrete Deliverables

- Consultation Paper containing detailed analysis including items 1-6 above;
- Draft National e-waste Policy for Sri Lanka (incorporating implementation guidance) with Annexure containing country context and analysis
- Mission Report immediately after the field mission

Standardized Green Data Center Protocol

1. Create a Data Center landscape (“state of Data Centers in Sri Lanka”) including
 - a. all the key stakeholders – government, ICT industry, energy efficiency organizations, academia
 - b. Develop a complete list of currently operating data centers in Sri-Lanka with high level details including size, energy footprint and power metrics, capacity, current operational practices – including green
 - i. Using publicly available data
 - ii. Consultation with local data center personnel
 - iii. Written Questionnaire

Standardized Green Data Center Protocol

2. Select 3 data centers from the above list (1b). The Criteria for selection (needs to be proposed and agreed to by the Senior Advisor), but could include – not limited to
 - a. Ownership / Operation : Government vs. Private
 - b. Age
 - c. Size
 - d. Energy Performance

Standardized Green Data Center Protocol

3. Conduct a 1st level detailed physical Energy Audit of the 3 selected data centers. This data center inspection and data collection will include
 - a. Overall Facility
 - b. Racks & Cabling
 - c. Power Metrics
 - d. Cooling Metrics
 - e. Environmental Conditions & Air Management Metrics
 - f. Overall Data Center Performance Metrics

Standardized Green Data Center Protocol

4. Detailed Analysis to compare Global Best Practices with that in Sri Lanka to make a set of specific recommendations to the Sri Lanka data center industry. Use benchmarks and information from
- ITU Recommendation L.1300 on Best Practices for Green Data Centers
 - Lawrence Berkeley National Laboratories (LBNL) Benchmarks and Guidelines
 - Singapore Standards (SS 564) on Green Data Centers

Standardized Green Data Center Protocol

5. Consult with key stakeholders as appropriate;
6. Prepare a Draft a Sri-Lanka Data Center Policy focused on specific actionable items such as recommended energy usage levels, protocols for auditing and detailed measurement methodologies for both existing and new data centers in Sri Lanka.
7. Conduct a national workshop aimed at informing, educating, gathering information from the stakeholders and sharing proposals

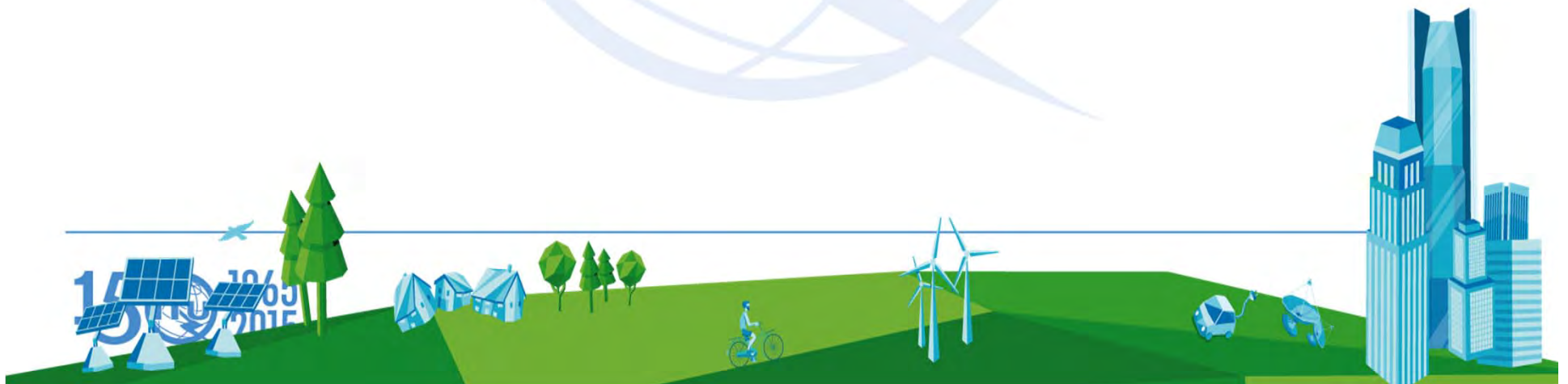
Concrete Recommendations

- Consultation Paper containing detailed analysis;
- Draft National Data Center Policy for Sri Lanka (incorporating implementation guidance) with Annexure containing country context and analysis

Next Steps

- Agreement and consensus on the two proposals
- Adoption and endorsement by TRCSL , Industry and ITU as outcome
- Nominate industry focal points
- Carry out the study in specific time frame
- Partnership / Funding ?
- Any other?

Enabling Energy Efficiency through ICTs: Pakistan



Objectives

- Identify areas and best practices through which energy efficiency and reduction of energy consumption may be achieved in different sectors of the country through ICTs, with focus on power sector.
- To identify the potential impact of ICTs on the power/energy sector using pre-existing knowledge and experience from International best practices and ITU-T Recommendations.
- To evaluate potential for improvement and barriers to reaching full potential.
- To propose recommendations, actions and a roadmap which can be undertaken to achieve the identified potential.

Deliverables

- A report and a roadmap including guidelines and an action plan highlighting potential areas of improvement and an approach to achieve a low carbon economy through ICTs.
- Viable plan for a publicly held distribution company for transmission and distribution energy optimisation.
- Presentation slides of entire report.

3 ways to reduce energy consumption through ICTs

1. Reduce losses from power generation, e.g. optimise electricity grid, use more renewables.
2. Use ICTs to reduce energy consumption in other sectors (15%).
3. Improve energy efficiency of ICTs themselves (2.5%).

Problems with Pakistan's Electricity Grid

- Demand is growing faster than supply (and is underestimated)
- Inefficiency of power grid
 - transmission losses 2%
 - distribution losses 34% (average)
- Widespread electricity theft

Smart Grids

- ICT can play important role in increasing energy efficiency while providing positive economic impact.
- Smart meters in power system would play a significant role in identifying and correcting inefficiencies in power grid.
- Need for policy intervention to realise potential.

Roadmap to Smart Grids

Phase 1 Smart Meter (AMR) deployment

Phase 2 Demand Side Management (DSM)

Phase 3 Integration of large-scale
Renewables

Phase 4 Integration of Electric Vehicles (EVs)

Options to reduce energy consumption of ICTs

- Set procurement limits in conjunction with other countries in region (e.g. EC CoCs).
- Use eco-design (global) standards in procurement.
- Use energy efficient network architectures – e.g. mobile network site sharing.
- Encourage best practices in ICT design – e.g. use of low power states for equipment.
- Use local renewable power supplies – e.g. wind and solar on mobile base stations.

Options explored to reduce energy in other sectors

- Smart grid
- Telepresence
- E-commerce
- E-civil service
- E-logistics
- Real-time navigation
- E-government
- Smart motor
- Home energy management system
- Digital contents
- Smart work
- E-learning
- Bus information system
- E-health care