

Evaluating the Carbon-Reducing Impacts of ICT

An assessment methodology developed in
cooperation with the Boston Consulting Group

Danilo Riva

About the Global e-Sustainability Initiative

- GeSI was launched in 2001, and brings together leading ICT companies – including service providers and equipment manufacturers as well as industry associations – and non-governmental organisations committed to help improve the global environment and to enhance human and economic development, thereby making a key contribution to a global sustainable future.
- In June 2008 GeSI was re-established as a legal independent entity in the form of an international non-profit association.

GeSI Commitments

1. Develop an agree ICT industry-wide methodology for the carbon footprinting of ICT products and services
2. Put more emphasis on climate change issues in our supply chain work so we influence the end-to-end manufacturing process for electronic equipment
3. Ensure that energy and climate change matters are fully considered by the organisations that set the technical standards for our industry
4. Work with organisations in the key opportunity areas – travel/transport, buildings, grids and industry systems – to help turn potential CO2 reductions into reality. This will include a strong emphasis on the significant opportunities offered by dematerialisation
5. Work with public policy makers to ensure that the right regulatory and fiscal frameworks are in place to move us all in the right direction.

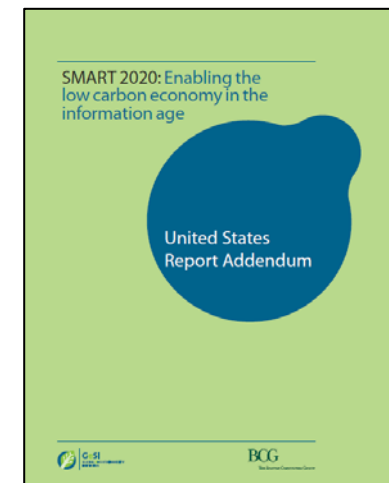
GeSI's SMART 2020 report series identified ICT as a major low carbon enablement opportunity

2008 SMART 2020 Report

- Globally, ICT solutions have the potential to reduce by 15% (7.8 Gt CO₂e) of the remaining 98% CO₂e emitted.

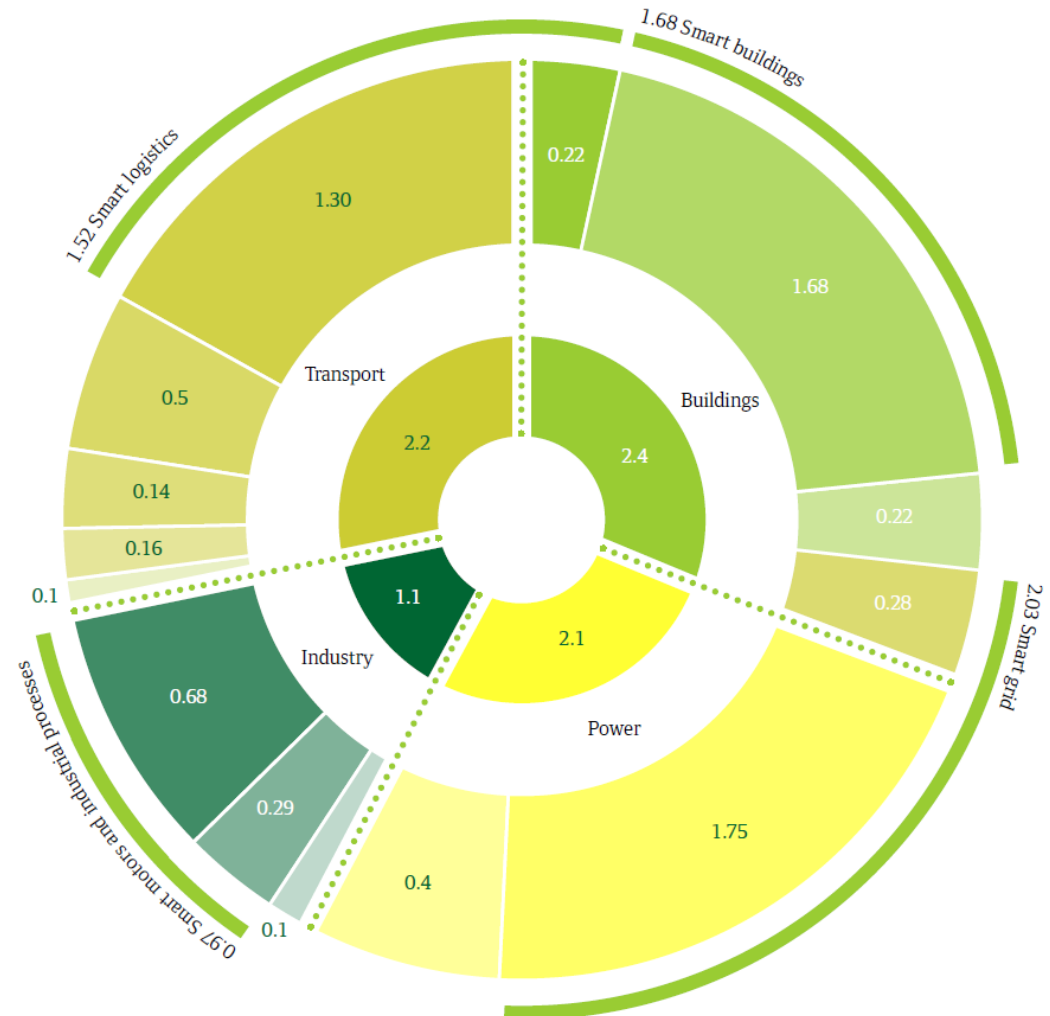
2008 U.S. Addendum

- ICT enabled solutions could cut annual CO₂e emissions in the U.S. by 13–22% from business as-usual projections in 2020.
- This translates to a gross energy and fuel savings of \$140-240 billion dollars. These savings are equivalent to a reduction in total oil consumption by 11-21% and a reduction of oil imports into the U.S. by 20-36%.



The enabling effect covers 4 primary areas

- Industry**
 - Smart motors
 - Industrial process automation
 - Dematerialisation* (reduce production of DVDs, paper)
- Transport**
 - Smart logistics
 - Private transport optimisation
 - Dematerialisation (e-commerce, videoconferencing, teleworking)
 - Efficient vehicles (plug-ins and smart cars)
 - Traffic flow monitoring, planning and simulation
- Buildings**
 - Smart logistics
 - Smart buildings
 - Dematerialisation (teleworking)
 - Smart grid
- Power**
 - Smart grid
 - Efficient generation of power, combined heat and power (CHP)



The reports identified government support needed to accelerate adoption

Create policies that build overarching framework for encouraging CO2 reduction and ICT solution adoption

Over-arching policies

Use targeted policies to accelerate adoption and address specific technical, economic and behavioral challenges

Targeted policies

Principles for effective government policies

Smart Grid

Create an enabling regulatory framework

- Aim for consistent legislation that supports market-based solutions

Road Transport

Enable development of solutions

- Conduct fundamental research benefiting all stakeholders
- Encourage innovation, not specific technologies
- Encourage investment in required infrastructure

Smart Buildings

Support the business case when necessary

- Create the right incentives
- Ensure that markets create desired environmental and social outcome

Travel Substitution

Encourage positive behavior change

- Lead by example and support pilot projects
- Facilitate and coordinate the sharing of information

Source: GeSI policy expert interviews; BCG analysis; SMART 2020 United States Addendum Report

ICT enablement methodology study context and objectives

Context

Despite the positive reception of these reports, the lack of policy- and commercially-relevant assessments is preventing the full realization of benefits from smart use of ICT

- ICT industry unable to clearly define the specific benefits of different types of ICT investments
- Policy-makers unable to create appropriate incentives for the government, commercial and residential sectors

Project objectives

- Survey and evaluate existing methodologies relevant for assessing enabling impacts of ICT
- Highlight key characteristics of existing methodologies
- Develop an optimal "next step" methodology
- Apply methodology to selected case studies
- Identify issues for application and path forward for the ICT industry

18 international ICT companies sponsored and provided input to the study



Developed methodology meets specific needs

Comprehensive

Captures all major impacts, both positive and negative (i.e., direct ICT emissions, enabling effects, and rebound effects)

Burden-limiting

Limits burden of assessment: Minimizes time and resources required by facilitating exclusion of negligible components of net effect

Communication-friendly

Supports clear, transparent communication of methodological approach and findings to broad stakeholder audience

Applicable for varying scope

Widely applicable for assessing impact of ICT products and services and ICT category levels

Applicable across geographies

Effective when applied in both developed and developing world settings

Flexible

General and flexible enough for large-scale adoption – will meet current and future stakeholder needs as sector innovation occurs

Adaptable

Can adapt as more detailed guidance, industry-wide standards and software assessment tools are developed

ISO compliant

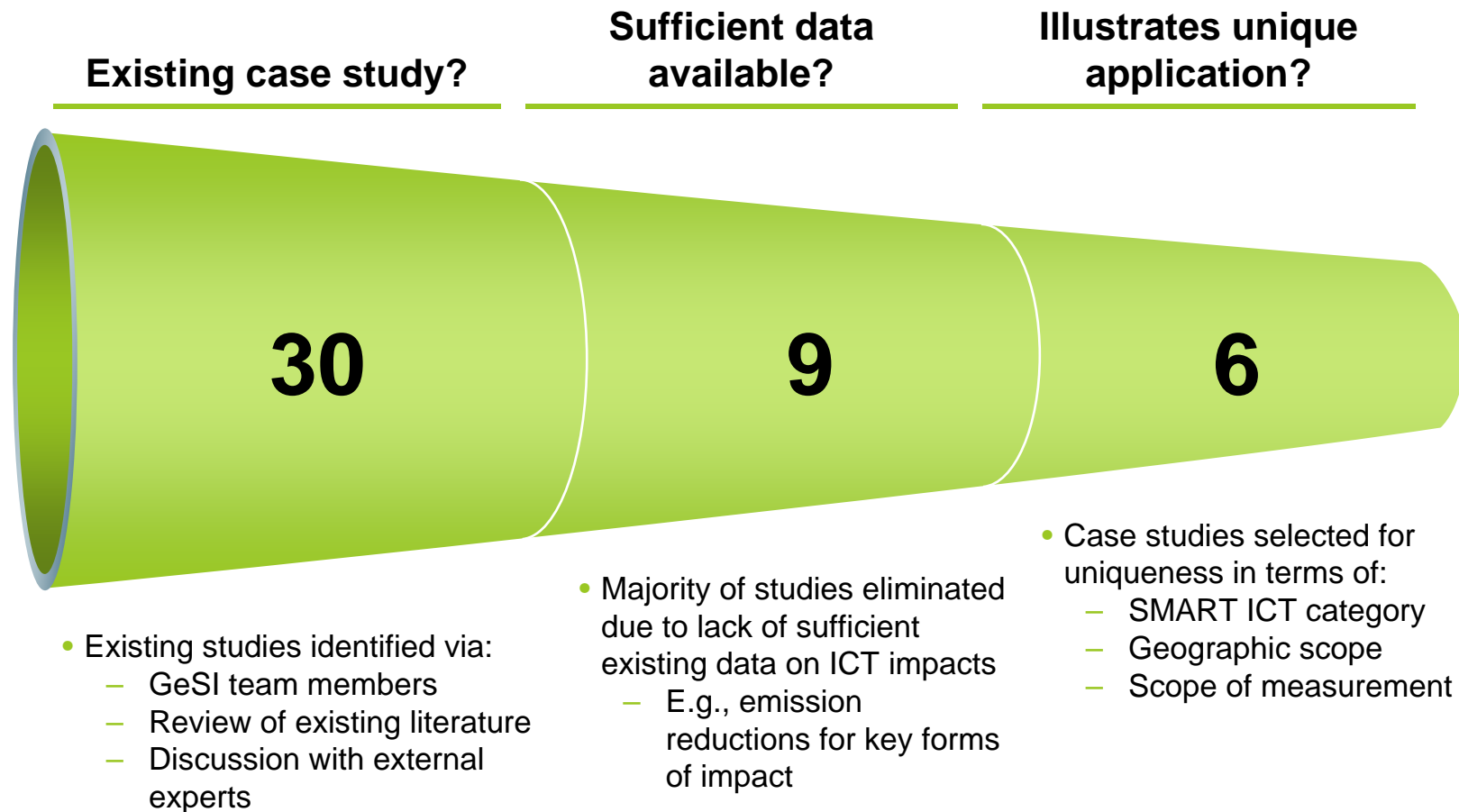
Based extensively on ISO 14040-series standard, but introduces additional guidance specific to assessing enabling effects of ICT

Case studies intended to demonstrate use and applicability of assessment methodology

Case studies utilized to test the relevance and effectiveness of methodology in real-world setting

- Diverse set of case studies developed to illustrate applicability across:
 - ICT solution areas (dematerialization, SMART logistics, SMART grids, SMART transportation)
 - Unique audiences: end-consumers, business customers, policymakers
 - Diverse geographies: developed and developing world
- Existing case studies and research data used as starting point
 - Studies identified and aggregated from GeSI team members as well as external resources
 - Key criteria for inclusion: existing robust quantification of key impacts

6 case studies selected from 30 identified and evaluated

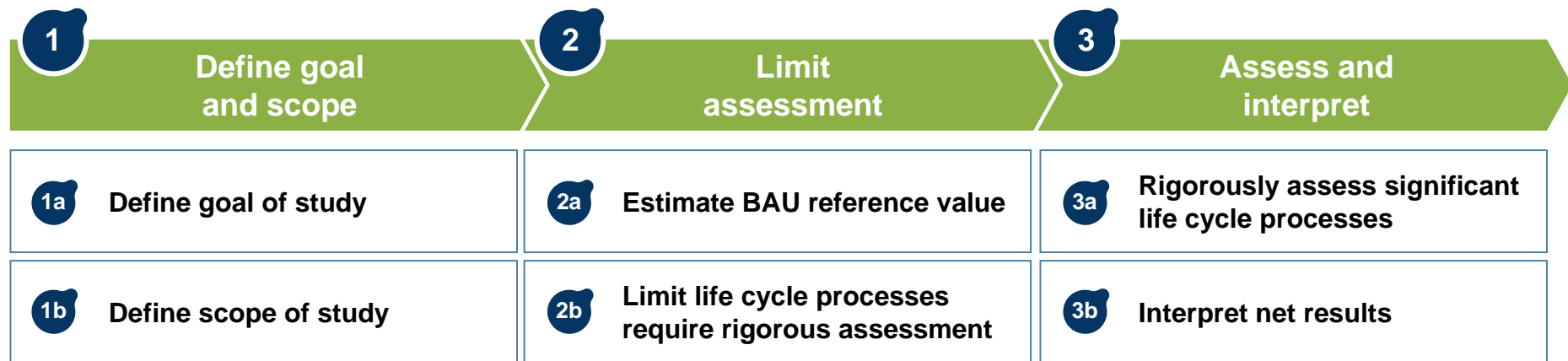


Six case studies included in the report

		SMART area	Location	Assessor	Description
1	Home energy monitoring kit	SMART grids	United Kingdom	AlertMe	Energy savings in household before and after installation of AlertMe home energy monitoring system
2	HVAC automation system	SMART buildings	United States	Cypress	Energy savings in building complex after installation of HVAC automation system
3	Eco driving software solution	SMART logistics	United Kingdom	Microlise	Fuel efficiency gains across 350+ vehicle fleet after software implementation
4	Telecommuting	Dematerialization	United Kingdom	BT	Assessment of whether telecommuting has positive net enabling effect despite rebound effect of increased home energy use
5	E-health delivery system	Dematerialization	Croatia	Ericsson	Emission-reducing impact of e-referral and e-prescription services in Croatia
6	Telepresence system	Dematerialization	Multinational company	Cisco	Assessment of net enabling effect from company-wide adoption of telepresence

Source: BCG analysis

ICT enablement methodology



Methodology uses a Life Cycle Assessment (LCA) approach to guide the assessment of changes to an existing system resulting from the adoption of an ICT solution

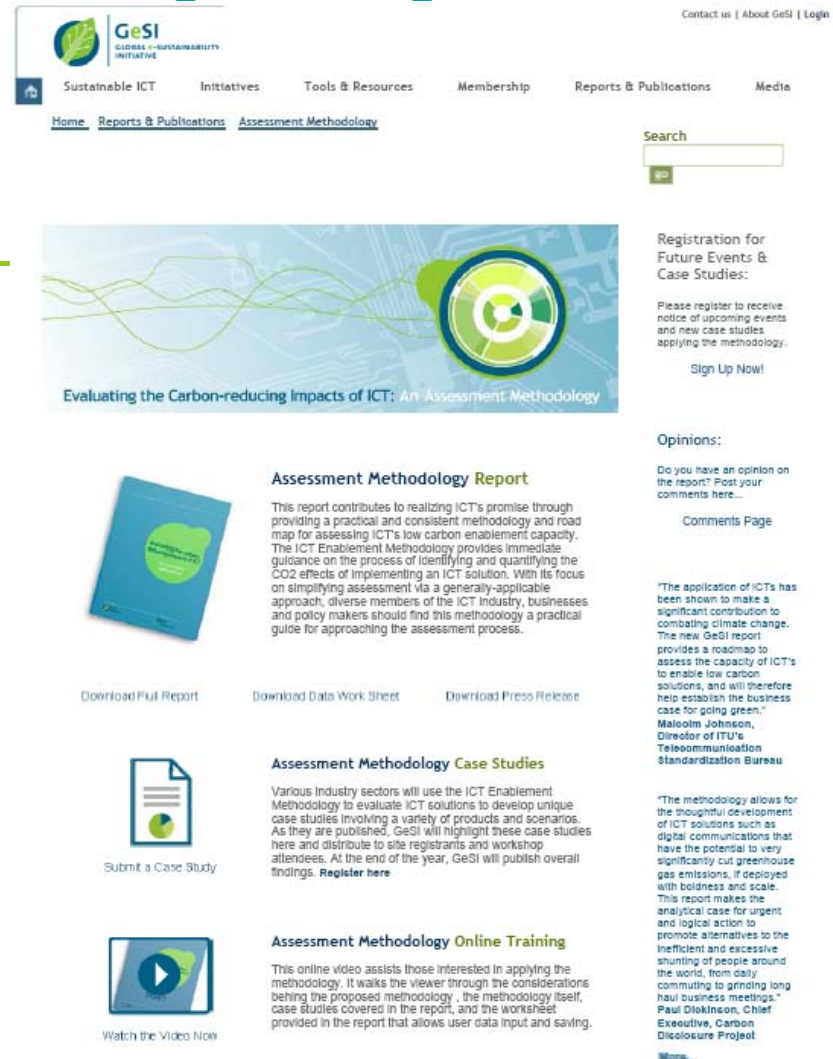
The way forward

- Development of additional case studies
 - Additional real-world case studies to demonstrate successful application of methodology
- Expansion of shared data
 - Increased volume of, access to primary data to more accurately capture real-world impacts (especially those driven by adoption rates and behavioral changes)
- Development of assessment tools and databases
 - Continued development of tools to support application of methodology
 - Integration of tools and aggregation of underlying data
- Standardization of impacts and life cycle processes included in assessment
 - Establishment of agreed-upon approaches for assessing effects of specific ICT product or service categories

The launch website at www.gesi.org is the starting point

There, you can:

- Download the Report
- Download methodology worksheets you can use to guide your own assessment and track your data
- Review the latest case studies
- Watch a video explaining the study
- Register your interest in future workshops and published case studies



Contact us | About GeSI | Login

Sustainable ICT Initiatives Tools & Resources Membership Reports & Publications Media

Home Reports & Publications Assessment Methodology

Search

Registration for Future Events & Case Studies:

Please register to receive notice of upcoming events and new case studies applying the methodology.

Sign Up Now!

Opinions:

Do you have an opinion on the report? Post your comments here...

Comments Page

"The application of ICTs has been shown to make a significant contribution to combating climate change. The new GeSI report provides a roadmap to assess the capacity of ICT's to enable low carbon solutions, and will therefore help establish the business case for going green."

Malcolm Johnson, Director of ITU's Telecommunication Standardization Bureau

"The methodology allows for the thoughtful development of ICT solutions such as digital communications that have the potential to very significantly cut greenhouse gas emissions, if deployed with boldness and scale. This report makes the analytical case for urgent and logical action to promote alternatives to the inefficient and excessive shunting of people around the world, from daily commuting to grinding long haul business meetings."

Paul Dickinson, Chief Executive, Carbon Disclosure Project

More...

Assessment Methodology Report

This report contributes to realizing ICT's promise through providing a practical and consistent methodology and road map for assessing ICT's low carbon enablement capacity. The ICT Enablement Methodology provides immediate guidance on the process of identifying and quantifying the CO2 effects of implementing an ICT solution. With its focus on simplifying assessment via a generally-applicable approach, diverse members of the ICT industry, businesses and policy makers should find this methodology a practical guide for approaching the assessment process.

Download Full Report Download Data Work Sheet Download Press Release

Assessment Methodology Case Studies

Various industry sectors will use the ICT Enablement Methodology to evaluate ICT solutions to develop unique case studies involving a variety of products and scenarios. As they are published, GeSI will highlight these case studies here and distribute to site registrants and workshop attendees. At the end of the year, GeSI will publish overall findings. [Register here](#)

Submit a Case Study

Assessment Methodology Online Training

This online video assists those interested in applying the methodology. It walks the viewer through the considerations behind the proposed methodology, the methodology itself, case studies covered in the report, and the worksheet provided in the report that allows user data input and saving.

Watch the Video Now

That's all.

Thank you very much
for your kind attention.