ANSI Workshop *Toward Product Standards for Sustainability*

Workshop Report ■ June 2009

ANSI
American National Standards Institute

ANSI Workshop Summary Report:
Toward Product Standards for Sustainability

1.0 Background for Workshop

Today's consumer is shopping with sustainability in mind, placing ever-increasing value on the environmental, health, and societal aspects of product manufacture, distribution, use, and disposal. But with the concepts of "green" and "socially responsible" subject to varied interpretations in the marketplace, government, consumers, industry, and others are looking to product standards and criteria to help establish uniform technical requirements, methods, processes, and practices that address sustainability.

A workshop organized by the American National Standards Institute (ANSI) with the support of the U.S. Environmental Protection Agency (EPA), *Toward Product Standards for Sustainability* brought together a broad range of experts and advocates to share insights surrounding the market drivers for, key gaps in, and potential roles of product standards for sustainability. The workshop, which took place April 8-9, 2009, in Arlington, VA, was attended by over 240 in-person participants and over 100 more via a live webinar, representing government, industry, standards developing organizations (SDOs), consortia, academia, consumers, and other interested stakeholders[1].

To allow for a manageable and focused conversation, the workshop discussion centered on the processes by which standards and criteria are developed as distinct from the certification and labeling of products that meet particular standards or criteria. Though standards and labels are often discussed as one and the same, a credible, flexible, and responsive standards/criteria development process is key to a label's viability over the long term.

The tone of the Workshop was established early on when Dr. Mary McKiel of the EPA and ANSI president and CEO S. Joe Bhatia each noted the need for all interested stakeholders to work together to begin developing the framework necessary to establish a true understanding of what is meant by *product standards for sustainability*, and how we can successfully develop, recognize, and utilize these standards. It was agreed that meaningful conversations and collaborations on this topic are just beginning. But now is the time – facilitated by the development of credible standards and a common terminology – to work towards meeting the needs of consumers without compromising the ability of future generations to meet their own needs[2].

[1] In response to the significant interest shown in the Workshop, ANSI offered a number of participation options: 1) in-person registration on a first-come, first-served basis limited only by physical room size; 2) Webinar registration without limitation, except that due to the high volume of registrants we were unable to allow unrestricted questioning from Webinar participants; 3) document posting on a WIKI available to any interested party; and 4) the opportunity for any interested party to provide responses to survey questions and breakout-group questions. All contributions were considered in an appropriate manner.

[2] Statement adapted from "Brundtland definition" of sustainability from the 1987 Report of the World Commission on Environment and Development.

2.0 Report Format and Acknowledgements

The Workshop provided attendees with an opportunity to understand the backdrop against which standards and criteria are developed within the U.S., including ANSI's roles within this system. Following this introductory information, the discussion then centered on a keynote address, three focused panels, breakout sessions for more in-depth discussion among attendees, and a summary group discussion. Each of these components of the Workshop is addressed briefly in this report, organized in accordance with the agenda, which is provided in Attachment 1.

Representatives from a range of interested stakeholder groups participated in the Workshop; a complete list of in-person attendees is available in Attachment 2.

While speakers and panelists represented a range of views, it was not possible to provide a formal speaking opportunity for all those interested in presenting. That said, audience participation – both in person and via the webinar – contributed additional topics and perspectives for consideration.

Workshop-related presentations and collateral documents posted by participants and contributors as well as other interested parties are available at ansiposts.ansi.org.

Recognition and sincere appreciation is due to the following:

- EPA, for its support of this activity and its many contributions to advancing dialogue and solutions related to this topic of national importance. In particular, Ms. Alison Kinn Bennett and Ms. Clare Lindsay contributed their expertise, commitment, and passion.
- Dr. Urvashi Rangan, Consumers Union/*Consumer Reports*, for providing the keynote address for the Workshop.
- Dr. Mary McKiel, EPA standards executive, and Mr. S. Joe Bhatia, president and CEO of ANSI, for their introductory and concluding remarks and leadership.
- The moderators from each of the panels for their effective role in facilitating the sessions, including Mr. Chris O'Brien, Responsible Purchasing Network; Dr. Tim Smith, University of Minnesota; Mr. Jim Neill, Retail Industry Leaders Association; and Mr. Don Greenstein, The Keystone Center.
- All of the speakers listed on the agenda for sharing their expertise and introducing key ideas and concepts utilized during the open dialogue sessions.

3.0 The U.S. Standards and Conformity Assessment Systems – A Primer

In ANSI's role as coordinator of the U.S. standards and conformity assessment (i.e., certification) system, the Institute provides a neutral forum for all stakeholders – private and public sector alike – to come together to address key issues and priorities and to develop solutions. To assure that workshop attendees were familiar with the overall U.S. standardization and conformity assessment systems and its terminology, Ms. Fran Schrotter, senior vice president and COO of ANSI, and Mr. Lane Hallenbeck, vice president of accreditation services, provided an overview of the U.S. landscape; their slide set is available for review at ansiposts.ansi.org.

Approaches to standardization
As noted during the presentations, there are many approaches to standardization and to conformity assessment[3]. There is no 'one size fits all' approach to standard-setting and conformity assessment in general, and this holds true in the area of product standards that address sustainability. There is also no one-word answer to whether a product is environmentally preferable and/or socially responsible – multiple considerations come into play.[4] But by collaborating across industry sectors and involving interested stakeholders, the U.S. standardization community can build upon the excellent work that has already been done, identify gaps where new solutions will help, and start building consensus through a partnership between the public and private sectors.

Key documents, international and government involvement
Attendees were introduced to key documents that describe the U.S. system, including the *National Technology Transfer and Advancement Act (NTTAA)*, *OMB Circular A-119*, the *United States Standards Strategy (USSS)*, and the *National Conformity Assessment Principles (NCAP)*. Further, the interactions between ANSI, the International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC), and other international and regional standardization and conformity assessment bodies were described. The roles of key government agencies such as EPA and the National Institute of Standards and Technology (NIST) were also addressed, as well as key institutions in the standard development process – standards developing organizations, which include but are not limited to trade associations, societies, not-for-profit organizations, consortia, and professional associations.

By design, the U.S. standards and conformity assessment system is flexible and inclusive. ANSI welcomes and encourages contributions from all those involved in order to further these activities for the benefit of our nation and the world.

4.0 Keynote – *A Purchaser's/Consumer's Perspective*

Dr. Urvashi Rangan, senior scientist and policy analyst at Consumers Union/*Consumer Reports*, provided a thought-provoking keynote address during which she noted that consumers are increasingly considering environmental factors in their purchases. At the same time, the marketplace is confusing to them because of the proliferation of labels based on standards – some of which are viable and effective and some of which may not be. When the marketplace is flooded with vague and misleading terminology and labels, it reduces the effectiveness of credible labels because consumers feel misled.

Meaningful labels and standards
Dr. Rangan, who noted that she is an advocate at the state and federal level for stronger eco-labeling standards, implementation, and enforcement, highlighted the important role government must play to ensure that standards – and products that comply with standards – that address sustainability concerns are meaningful.

---

[3]ANSI, for example, offers accreditation programs for standards developers and for conformity assessment programs. These are distinct programs. ANSI also approves individual standards as American National Standards. Accreditation by ANSI as a standards developer is a precondition for submittal of a standard to ANSI for approval as an American National Standard. Reference on a product or label to an American National Standard, however, does not mean that the product is in some way certified by ANSI. ANSI does not develop standards, certify products, or otherwise issue product labels.

[4] For the U.S. Environmental Protection Agency's guidance on the topic of environmentally preferable purchasing considerations, please see http://www.epa.gov/epp/pubs/guidance/finalguidance.htm.

From a consumer's perspective, a standard and an associated label should truly add value, not simply contribute to the hype that can surround things labeled "green."

Single vs. multi-attribute standards
Dr. Rangan remarked on the debates between those who favor single-attribute versus multi-attribute standards, and the difficulties experienced to date in assessing compliance with even a single-attribute standard. She noted that the standard behind a label is the first thing to consider when determining whether a label is meaningful. Paramount considerations include whether a standard raises the bar over time, is available for scrutiny, and has true meaning when applied – whether narrow and deep for a single-attribute standard, or broad and comprehensive for a multi-attribute standard. Dr. Rangan commented on the potential usefulness of layering of labels, e.g., organic, fair trade, and bird-friendly, which can be combined to add more value than one label alone and appears to be an effective mechanism for communicating with consumers. That said, Dr. Rangan did not rule out the possibility of a meaningful, overarching, single-label model in the future.

Challenges associated with labels
Dr. Rangan noted the following challenges with all labels and the key role that standards play in the validity of a product label:

- Comprehension and accessibility
- Maintenance and progress of criteria in standards over time
- Consistency in meaning of standards across product categories
- Ability to respond to emerging marketplace issues, especially around health/safety (bisphenol A, phthalates, mad cow disease)

She welcomed conversations like those undertaken through the workshop as playing a critical role in debating approaches to production systems and standards that will help to shape the sustainable marketplace – from raising the baseline (i.e., the minimum requirements) of product performance to informing standards for premium (i.e., more progressive, leadership) labels.

5.0 Panel 1: *Facilitated Discussion with Standards/Criteria Developing Organizations*

The first panel, a facilitated discussion with standards/criteria developing organizations, addressed the challenges involved in the development of successful sustainable performance criteria. Panelists agreed that while there are various approaches to standards development, the single most important component of a successful standard is participation by an inclusive set of stakeholders.

Various approaches to standard development – does one size fit all?
Acknowledging that there are many approaches to standards development, including some not explicitly represented on the Panel, the Panel presented information about current activities and engaged the audience in a Q&A session, addressing such topics as Life Cycle Assessment (LCA), variations in LCA methodologies, and the multiple interpretations of the term "life cycle;" leadership standards and whether they can be developed within a voluntary consensus process; approaches that address the design of products versus "standards development;" the role of government standards like ENERGY STAR™; and single- versus multi-attribute standards and the various ways these terms are used.

Participants discussed the effects of the marketplace on their standards development activities, with general concurrence that there may not be one approach that fits all market needs. However, there is the potential for a simple communication system that would be meaningful for average consumers while also providing additional details for those consumers and institutional purchasers with more specific interest in technical data or a particular environmental or social criterion.

Prioritization of attributes
Remarks underscored the need for standards/criteria developers to employ the best available science and to listen to their stakeholders in order to effectively prioritize and "weight" the environmental and/or social criteria in a standard. Doing so would make for more credible and transparent standards, allowing users to better evaluate standards and choose the one(s) most appropriate to their needs or in line with their values.

This discussion also raised the need for more research in order for sustainability attributes to be weighted/prioritized based on robust scientific analysis and methodologies (i.e., lifecycle analysis and human and ecosystem health risk and hazard assessment).

Attendees also discussed issues such as commonalities and variations among standards development/criteria methods and among the outcomes of the application of resulting standards/criteria to products. A product deemed "green" according to one standard may not be consistent with the requirements of another "green" standard. Such disparities may be unavoidable in the short term as our knowledge about product impacts grows; therefore, all such activities should be undertaken with a goal of regular, continual improvement to the underlying standards/criteria in order to stay on the right path toward sustainability.

Beyond standards and labels
That said, it is understood that a standards/criteria development process that takes consumer/stakeholder demands into account will always be affected by a certain level of subjectivity, even when scientists are involved. Ultimately, standards and labels are just part of the solution in addressing the environmental and social impacts of products: what may be truly needed is a fundamental alteration of the way the economic system works and an acknowledgement that we may not be able to "buy our way to sustainability" through improved products that address such considerations.

As to an accurate determination of the effects on the environment of product standards that address sustainability, panelists agreed that this is difficult to do. Many are just beginning to attempt to put in place mechanisms/methodologies intended to address this need for data.

Brief slides provided by the panelists are posted at ansiposts.ansi.org.

6.0 Panel 2: *The Industry Perspective*

The industry perspective took center stage during the second panel, as representatives from four companies explained how they rely on standards and criteria to help them respond to consumer demand for environmentally and socially responsible products. Panelists agreed that – at a minimum – product standards for sustainability must be scientifically based and relevant. They should not be so narrowly focused as to stifle innovation, but they should also avoid "emotional" criteria and remain mindful of economic viability.

It was agreed that science should inform any trade-offs and that some value-added (e.g., environmental performance improvements beyond the status quo) should result from compliance with a standard or criteria. The standards/criteria development process should also be mindful of the economic viability of possible solutions while striving for societal benefits.

Standards that withstand scrutiny

Panelists noted that their customers vary in what they are asking for, but that, in general, there are now more educated consumers who are beginning to understand the difference between valid, credible claims and "greenwashing."

Though the process to achieve credible standards can be "painful," it is important that the voices of all interested stakeholders are considered. Standards that cannot withstand scrutiny (whether it is from the environmental advocacy or "mainstream" business communities) will not succeed in the long term – nor will standards that failed to consider all relevant perspectives. Furthermore, it was pointed out that there are many benefits for manufacturers to participate in standards development – e.g., to be at the forefront of understanding the implications of a new standard; to learn about best practices in the industry; and, of course, to ensure one's concerns are adequately considered.

Different circumstances for different products

Panelists also noted that considerations of environmental and social effects will vary based on the product category. Care should be taken to examine and ensure the inclusion of all product attributes that significantly impact sustainability performance, though the processes of setting criteria and conformance protocol may be quite different across products (e.g. energy using products vs. chemically intensive products vs. materially intensive products; and the sub-categories within these product types).

Some also noted that standards processes may need to be even more flexible with regard to sustainability considerations to reflect limitations in agreed upon scientific knowledge, potentially allowing for multiple standards within single product categories.

Leadership and multi-tiered standards

The concept of leadership standards that shape market demand and drive innovation was also discussed. The process by which a leadership standard – for example, one that targets a top percentage of the market – is developed may be necessarily different from a voluntary consensus standards development process in which all interested parties have an opportunity to influence the requirements of a standard. In contrast, it was noted that while leadership standards should be recognized as valuable, the benefit of standards that can be used by a broader audience is potentially greater for the environment as a larger pool of users has the opportunity to improve performance or limit negative effects.

Attendees also discussed "multi-tiered" standards that provide multiple levels (e.g., Silver, Gold, Platinum) so that everyone can participate in some way while fostering competition and innovative approaches to addressing sustainability. EPEAT – a system to help purchasers evaluate, compare, and select electronic products based on their environmental attributes – was cited frequently as a good example of this approach.

Unified standards: shorthand for consumers?

Further discussions of the need for a unified standard ensued. Some view such a proposal as unworkable because of the complexity of the issues that are addressed across products, while others embrace the notion of an overarching set of criteria that would serve as an umbrella under

which specific product standards and specific sustainability aspects would still be further addressed. Such criteria could relate to product evaluation or attributes for different product types, and/or act as a standard for eco-labels.

It was suggested that a label should be viewed as a bridge, i.e., shorthand to tell the consumer (individual or institutional purchaser) what s/he is buying, and that the standards that underpin a label should be detailed but not so detailed as to constrain innovation or so difficult to satisfy so as to be unusable. A "check box" labeling system, similar to the nutrition label model, that quickly conveys that the product is "good" (however that is defined) was suggested as a way to address potential consumer/institutional buyer confusion and lack of time.

Some commentary was also offered on the potentially more likely success of establishing standards/communication tools for institutional buyers versus attempts to address directly the variable practices and considerations of individual consumers. The latter is difficult to address, but a worthwhile effort nonetheless.

7.0 Panel 3 – *Retailers' Perspectives*

Two retailers shared their perspectives on product standards for sustainability during the workshop's third panel. Speakers described how their respective companies are working to market greener products to consumers, and how standards that address sustainability are being used in conjunction with vendor scorecards or rating systems to compare products.

"Green" vs. sustainable
Furthering the dialogue on varied terminologies, it was emphasized again that there is no such thing as a "sustainable product" and that Office Depot, through its "Green Book" catalog, is focusing on the "green" aspects of products because this is an area where measurable progress can be made. Until the "green" aspects are addressed, Office Depot will not attempt to apply to products the generally accepted definition of sustainability, which would require addressing such issues as social and economic aspects.

Communicating with consumers
Companies are finding innovative ways to help consumers – both individuals and institutions – to evaluate and select products based on the attributes that mean the most to them, such as clean water or energy efficiency. In addition, the panelists recognized that there are "shades of green" – the distinction is not simply a "green product" versus "not a green product." Also, an assessment of the degree to which a product is seen as green does not eliminate the need to assess the product in accordance with other core criteria such as durability and performance.

Walmart noted that it has introduced the first-ever scorecard on packaging; consumers want to be able to make a difference in choosing among products that have lesser environmental impacts.

It was suggested that the marketplace needs three things: clarity, consistency, and accurate but simple communications to the end user as well as to those within the supply chain.

Consumer understanding of single- and multi-attribute standards
Further discussion was had about whether a consumer appreciates the difference between a single-attribute versus a multi-attribute standard or product label as well as the potential effectiveness of an overarching "green" label based on a credible standard. Suppliers, too, must be considered in this equation: the proliferation of scorecards, certifications, and labels

can be onerous for suppliers to utilize and comply with. Moreover, the existence of too many standards can encourage an uneven playing field, i.e., differing requirements make it impossible to evaluate all manufacturers on the same basis, resulting in inequitable or inaccurate assessments. A universal framework that crosses product categories could help suppliers and retailers to address this concern.

8.0 Breakout Sessions

Attendees divided into breakout groups at the end of the first day to discuss a set of questions on standards for product sustainability. Those who registered for the webinar, as well as interested members of the public, were provided an opportunity to submit responses to the questions that the breakout groups were to address.

On day two, a summary report was presented to offer some common conclusions and take-away messages from the breakout sessions:

- There are pros and cons to each kind of standards development – proprietary, consensus-based, and government regulation. A consensus-based development process offers many advantages, but there may be a need for a multi-pronged approach, with government regulations to set the floor and voluntary standards to raise the ceiling.

- There is a need for an overarching body that will coordinate and guide the process going forward. Both the public and private sectors should have active roles in establishing next steps and examining the current standards landscape on both the U.S. and international levels.

- Consistent and globally accepted nomenclature and terminology – the fundamental building blocks for any burgeoning industry – top the list of stakeholder needs. Until there is consensus, terms like “attribute” and “certification” are at risk of being interpreted differently by consumers, standards developers, government, and industry.

- Standards should be clearly written so that they can be effectively used for reliable certification. The marketplace needs claims that can be substantiated so that consumers can reward good performance with their purchasing power and raise the baseline floor.

- Some participants noted that single-attribute standards reduce complexity and confusion in messaging, while other participants noted just the opposite: multi-attribute standards may address environmental risk-shifting or lead to increased consumer confidence.

- Labels and communications to consumers about the degree to which a product addresses sustainability concerns need to be uniform and transparent.

The responses submitted by meeting attendees, webinar participants, and others were reviewed to identify themes, issues, and commentary. The actual responses, most of which are the result of breakout-group table discussions, are available at ansiposts.ansi.org. High-level summaries are provided on the following pages.

- **What are the pros and cons of various approaches to sustainability criteria/standards development (government, consensus, private, etc.)?**

  Government
  Pros: credibility; widespread input; all have a voice; public comment; more visible/known outcome; more transparent process
  Cons: not consensus-based; just response to comments; not enough expertise brought to bear; too many comments; slow; too many inputs; limited to government's authority and political will

  Private
  Pros: speed; could be high bar that grows into industry standard
  Cons: less transparent; less credible; not known what is behind the standard

  Consensus
  Pros: broad stakeholder participation is possible; various ways to structure decision making/voting; infrastructure for standard development and tools (electronic tools); can pilot result; pretty transparent
  Cons: consensus can result in lowest common denominator (hard to get to leadership level; top 20%); can be hard to facilitate and keep participation diverse (may be too high a cost/time commitment for some key stakeholders); can go beyond government policies; can be time-consuming; may be held hostage by industry stakeholders who don't want to change and improve their products

  - Tradeoffs between speed and transparency/balance/consensus process along a continuum – private, consensus, and government

  - Need for multi-pronged approach – government regulations to set the floor and voluntary leadership standards to raise the ceiling. Variety, multiplicity of approaches provides competition and rigor, but adds to confusion

  - Many advantages to the consensus approach involving a very wide range of stakeholders, including government, and a clear separation between the standard-setting body and the organization(s) certifying against the standard

- **How does the way sustainability criteria/standards are developed affect market viability of the standard (e.g., stakeholder engagement, manufacturing, education/training, update of standards by purchasing communities)?**

  - No single process guarantees market viability

  - Different approaches to response: viability could refer to industry uptake and/or consumer recognition

  - Government standards have more viability because they are viewed like mandates and are better known, but they only apply in the U.S. possible for special interests to capture the government

  - Credible technical scientific basis leads to more uptake for industry

- All relevant/affected/interested stakeholders must be involved to achieve success. Leaving any of the groups out will result in a breakdown in market viability
- Some standards don't get uptake because, while technically viable, they are not sufficiently marketed to the public
- The buying public has very little real knowledge about the credibility of standards or process used; they go on impressions of reputation and how often they see the standard (i.e., how well the standards organization markets itself)

- **What type of guidance would be most valuable in steering the development of credible product criteria/standards that address sustainability issues? From whom?**
  - Harmonized definitions of terms
  - Have an overarching body to provide guidance
  - Roles for both government and private sector
  - International scope – look at ISO and other country approaches
  - Have an inclusive set of the right stakeholders at the table
  - Balance achievement of consensus against avoiding lowest common denominator
  - Measurable, science-based approaches that do not stifle innovation
  - Evaluate demand and ensure reasonable scope

- **What are the most important attributes to consider with respect to the development of product standards that consider/address sustainability? How are these different attributes being weighted? How should they be?**
  - Many different interpretations of "attribute"
  - Include environment, economy, social welfare
  - Varied approaches to determining attributes
  - Common set of high-level attributes for all products
  - Stakeholder groups define attributes unique to the product/category
  - Varied approaches to attribute weighting
  - Transparent reporting; allow the consumer to determine weighting (e.g., nutrition label)
  - Weighting should be science-based and/or determined via stakeholder consensus

- **What role do single-attribute initiatives play in assessing the multiple impacts of products?**

  Single-attribute approaches:

  - reduce complexity and confusion; are more easily understood; require less education
  - inform multi-attribute approaches; supply the building blocks; facilitate a module approach to multiple impacts
  - are potentially less costly; multi-attribute approaches require LCA/tools/data
  - might result in multiple, unforeseen impacts
  - could be dangerous or potentially misleading
  - might be more appropriate to specific sectors/interest groups
  - could help in simplifying messaging regarding complex product systems

  Multiple-attribute approaches:

  - are more credible because they address product impacts more holistically – lead to improved consumer confidence
  - prioritization among attributes could be an issue/problem

- **How or to what degree should Life Cycle Assessment (LCA) and risk/hazard assessment methodologies be incorporated?**

  - General confusion and lack of understanding of existing value and full potential of LCA
  - Basic confusion about how LCAs are developed and who is defining the rules of the game

- **How do you ensure that there are measurable environmental and societal outcomes?**

  - Need more research to help identify appropriate indicators of progress toward sustainability
  - Need standards for measurement methodologies (e.g., establishing the baseline)
  - Need a better understanding of what can be measured now and where there are gaps

10.0 Closing Remarks – ANSI President and CEO S. Joe Bhatia

Throughout the Workshop discussions, many said that standards should be clearly written and science-based, so that they can be effectively used for reliable certification. There is widespread agreement that claims should be substantiated. We need to reward good performance and raise the baseline floor.

ANSI president and CEO S. Joe Bhatia summarized the Workshop discussions as follows:

- First: there is no "one-size-fits-all approach" to standard-setting and conformity assessment in this complex area of sustainability. We need to consider various viable options.

- There is no one organization working to develop standards for product sustainability, there are many: standards developing organizations (SDOs), government programs, buyer specifications, and so on.

- There is no "private-sector-only" or "public-sector-only" solution . . . more likely we need to rely upon a public-private partnership.

- There is no one-word answer to whether a product is environmentally preferable, green, or not . . . more likely we will find shades of green.

- Another theme we heard repeatedly is that we need to keep in mind the economic viability of possible solutions while seeking social benefits.

- Lastly, it seems obvious that we need to focus on collaborating across industry sectors. That is how we will begin to tackle some of the issues that we identified together over the course of this workshop.

11.0 Next Steps

Formal and informal comments indicate the need to continue the dialogue that began during this workshop. The clear need for a common terminology also emerged.

It is recognized that there are numerous activities underway in this space. It is also apparent that product standards that address sustainability considerations and the claims and certifications related to the application of those standards through "green" labeling are ripe for coordination and attention.

Accordingly, ANSI will undertake an assessment of the level of resources that are available to continue the productive engagement that resulted from the Workshop. If the interest and resources exist, then ANSI will coordinate a public-private partnership to continue the dialogue on product standards that address sustainability.

Attachment 1
ANSI Workshop: *Toward Product Standards for Sustainability*
Complete List of Breakout Session Responses

1. What are the pros and cons of the various approaches to sustainability criteria/standards development (e.g., government, consensus, private)?

The International Organization for Standardization (ISO) has established the benchmark for sustainability standard development in their 14020 series, especially the 14024 standard for Type 1 ecolabels. There are organizations across the globe that have been developing successful sustainability product and service standards following this guidance since its issuance, and before - including Green Seal in the U.S. and EcoLogo in Canada. Standard development activities that are done with a specific vote predetermined (e.g. 2/3) and at all costs may compromise the goal of the standard because sustainability standards, fundamentally, may not be widely accepted. Further, many organizations' "consensus body" is not as "open" as ISO's procedures.
Multiple definitions of sustainability vary between industries or have different meanings. One of the biggest issues with sustainability is definition. Cons of Life Cycle Assessment (LCA)-based standards – Data availability is an issue with LCA-based standards. Inability to address economic aspects, only a snapshot in time. Those who ask for it or want to use it often don't understand the issues with LCA. LCAs don't capture errors associated with the data, so results can be misleading even with standardized approaches to conducting LCAs. Pros of LCA -based standards – LCA covers all aspects of potential impacts. An internal (to the company) standard for measuring sustainability can provide a consistent approach across the company's portfolio of products also as consistent use of data, but may not harmonize with industry approaches. Focus on single attribute standards can cause other sustainability issues. Comparisons on a single attribute should cover multiple phases of the lifecycle, e.g. energy in manufacturing as well as use.
Bottom up: Cons – problems with different standards between states. With less guidance from the top, American companies are getting left behind and blocked out of the European market. However, bottom-up becomes market driven, therefore coming up with standards that are needed and creating less noticeable gaps. Top-Down: Pros – one standard that applies to everyone/helps to clarify. However, their standards are less market driven, and may lead noticeable gaps.
– 'Private' is non-government and has two components: Consensus/Non-consensus. Pros – Market driven/responsive; more buy-in/self-compliance by industry without regulation. Cons – Not seen as independent/credible; entrepreneurial/profit motivation; limited number of organizations/companies that can carry brand to consumers; pay to play; self-declaration without validation; can be too sector-specific leading to divergence and lack of 'interoperability'. – 'Public' reflects a government-based approach. Pros – Regulation or de-facto regulation; inherently has 'teeth'; credibility (neutral). Cons – Not as dynamic; not as transparent; slower than other standard development organization (SDO) processes.

Attachment 1
ANSI Workshop: *Toward Product Standards for Sustainability*
Complete List of Breakout Session Responses

– Overarching recommendation private/public partnership approach:
i.e., National Level: Environmental Protection Agency (EPA) Energy Star Program; International Level: Organization for Economic Co-operation and Development (OECD) Global Harmonization System(GHS)/Mutual Acceptance of Data.
– Note: The unique and multi-faceted aspect of the concept of 'sustainability' inherently justifies such a holistic approach.

– Government – Can incentiveize (incentives to use Energy star, bio-plastics procurement) or can get in the way (e.g., corn ethanol supports without adequate sustainability analysis). e.g., China WEEE/ROHS (Waste Electrical and Electronic Equipment Directive/Restriction of Use of certain Hazardous Substances Directive) – what will be banned and can we ship? This shows that industry has to be involved to make things work, or laws cannot be applied and unintended consequences result.
– Consensus – Industry-Nongovernmental Organization (NGO) consensus may be less bureaucracy: faster to market than ANSI, but ANSI gives door to ISO: international acceptance.
– Private – e.g., Wal-Mart sustainability index (has market power to make it stick). Contrast some companies that simply trademark a "Green Product X" and make claims based on some arguable aspect (some recycled content etc.).

Pros: Consensus seeking is the preferred.
Cons: Product specificity is critical for success.

Pros: Government is in a good place to subsidize the cost where industry not able to support the process, time, staff, money and lends credibility.
Cons: Government diversity injects complexity and disparity and often based on politics

---

– Government:
Pros – Government standards have "teeth", universality, enforcement power at state, federal and country levels; standards are free.
Cons – Different criteria per state (e.g. CA vs NY vs MA); climate conditions vary per state; level of bureaucracy creates multiple costs; non-inclusive of all three legs of stool; focus on agency interest e.g. Food and Drug Administration (FDA), Department of Agriculture (USDA), economics; government does not always provide training; guidance may be difficult to obtain.
– Consensus – ISO, ASTM International, American Society of Mechanical Engineers (ASME), American Association of Textile Chemists and Colorists (AATCC), Institute for Electrical and Electronics Engineers (IEEE), NSF International, etc.:
Pros – inclusive to all stakeholders.
Cons – ISO may be at times Euro-centric; consensus sometimes has poor outreach; technically oriented; require internal budgets to join and participate (e.g. travel and membership); each country has only one vote but there exists a potential for regions to vote as a block.
– Private:
Pros – Value is in "Speed to market" - Private standards can surpass government standards due to market demand versus government consensus. Direct relationship with manufacturing stakeholders, e.g. corporations, have direct influence over suppliers to implement change in global marketplace. Economic benefit can also turn into environmental benefit and visa versa. Private standards tend to encompass the interest of the consumer marketplace in their development process. Training provided at a cost.

Cons – Less credible to the media. May prevent competition. Suppliers may have to deal with multiple standards. Policing of private standards, multiple retailer requirements. Lack of transparency. Standards are not generally free.

– General – Different levels of credibility across all Standards Developers. Some standards may become technical barriers to trade.

Pros:

Government – perception of credibility may be higher, reliable resource base for standards development, public can be influential to decision making.

Consensus – perception of credibility may be higher, government required to consider use of appropriate consensus standards, established infrastructure.

Private – depth of knowledge base, shorter potential delivery time, market driven, higher implementation loyalty.

Cons:

Government – slowest delivery time, requirement to review all comments, lower implementation loyalty.

Consensus – slower delivery time, requirements could be based on a lower benchmark.

Private – difficult to receive commentary from outside stakeholders, could be biased, may exclude specific stakeholder, potential lower benchmark, perception of credibility could be comprised.

– Consensus Standards are great but they take too long to develop.

– U.S. Government – National Institute of Science and Technology (NIST) Building for Environmental and Economic Sustainability (BEES) based on ISO principle 14042 product labeling. We are a global economy and we should look to the international standard. Should be sufficient for all industries.

– Standards development comes in many flavors – government – rule making, Non-accredited standards or processes. Should the Standard measure how important the benefit is? Subjective as a LCA.

– Is the issue on sustainability or green labeled products?

– First, second and third party certification – confusing. First may or may not be based on a standard. Separation of church and state ISO IC guide 7 talks about separating the standard from the means of certification.

– Can't put a veil over everything, need product separation.

– Government has the "power" to step in and make an overarching decision.

– The private industry can position themselves with power/money to sit at the head of the table and "govern" the way standards are written.

– Should the standards be a pass/fail or simply set guidelines?

– Not one size fits all or every industry sector – maybe there is an overall goal for a sector to reach?

– Regulatory Government:

Cons – Works very slowly, doesn't adapt quickly to the living moving target of "sustainability"; once on the books the standard tends to "sit" and not get updated.

Pros – "someone to make a decision", too hot of a topic for consensus; well vetted with stakeholders comments; very transparent.

– Voluntary Government – i.e. Energy Star, Water Sense, Design for the Environment (DFE), Federal Bio Preferred:

Cons – Influenced primarily by manufacturers; government structure will tend to focus on single attribute because the government has difficulties integrating across government offices; uneven playing field.

Pros – Water Sense is a great example of something that moved quickly through government

approval and implementation. Creates an incentive, Federal Program creates a model for trickle down replication by states, market acceptance and visibility, Raising the bar, Economies of scale – can impose tax to make things happen.

– Private Sector Consensus:

Cons – ASTM, IEEE - potential to migrate to the lowest common denominator.

Pros – Vetted out by many parties/stakeholders; maintenance is included in reviewing and updating the standards to keep it current; stays current with economics, technology, consumer demand – can handle the critical health and safety baseline requirements in the standard.

Pros:

– There is a strong market need and recognition for the need for science based sustainable standards.

– Transparency, promotes continuous improvement, consensus based; effective market driver.

Cons:

– Standards development is at the mercy of the travel budget of the stakeholders. Is there a different way to develop standards?

– Proliferation of consortia based standards – Should standards drive technology or should technology drive standards? Industry consortia develop standards then push standard into international standards organization to be adopted as a recognized international standard and run into roadblocks with other stakeholders.

– Not enough data/too early to set sustainability standards; science of sustainability needs to evolve.

– Current standards environmental development is reactive to European Union (EU) and other global regulations.

– Both Single attribute/Multi-attribute standards may not accurately reflect actual environmental performance – subjective elements requiring interpretation.

– Receiving a consensus is beneficial, being that all parties involved have a voice, yet these decisions and ideas for sustainable standards may take too much time to fully develop.
– Private approach is a helpful to the consumer that is uneducated on the various details of a product. Alternatively, the general public does not have a voice on the subject/label/ingredients and, therefore, places all trust into the hands of the private sector.

– Companies are subject to more liability under government developed standard than under NGO third-party certification program. If a company cannot meet certain contract item in the certification requirement, it can be sued and even punished by law if it is a government standard (e.g. EPA certification) program. In comparison, they would only get their certificate revoked under a NGO standard.
– Government certification program has better transparency, reputability, availability of information, and technical competency. Most standard development organizations (SDO) cannot handle the volume of getting everyone in the industry involved.
– Standard setting process from industry consortia is closed, decided behind closed door, not opened to public inputs and for the most part, with only constituent's end needs in mind.
– Government, NGO, industry consortia are different mostly in levels of public inputs.
– Sometimes, industry consortium turns into NGO. For example, Forest Sustainability Initiative started out as an industry/business consortia, and later broke away to become its own independent NGO.

– Government:
    Pros – All stakeholders will have a voice, public comment, public is more likely to know about it.
    Cons – It's not consensus-based, just response to comments, speed, not enough expertise.
– Consensus:
    Pros – All stakeholders have a voice if they can afford to come but many are also done through conference call, various modes of balance in voting and decision-making.
    Cons – Could lower the bar because everyone gets a voice, members could drop out due to lack of funding.
– Private:
    Pros – Speed, could be a high bar.
    Cons – Process documents may not be publicly available, questionable credibility, collusion.
– In general, there seems to be tradeoff between speed and transparency/balance/consensus process along a continuum – private, consensus and government.

– Everyone stereotyping their own groups is not helping.
– Lots of different standard development approaches can help elicit: competition; better standards; better results (higher/more robust processes for standard development – and better standards for themselves), also allows for innovation and creative thinking; duplication; waste; market confusion.
– People are confused about where they can participate due to limited budgets and what organizations you can support – stakeholders can only be in so many places at once. Too many standards means that they all are not good standards.
– Very large groups can create inefficiencies.
– We need a mix of all the sectors to participate in developing the criteria and the standards. No single entity (even government) should drive the process – all should be engaged in development, but an independent…

- Global economy/only one planet – standards need to take international progress of other countries into consideration (and possibly consider aligning instead of creating something totally new!).
- Supply chain supports more internationally aligned product standards.

– Where was ISO or International Electrotechnical Commission (IEC) at the meeting earlier today? Were they reached out to in organizing today?

- We heard from more regional/local standards, not the creation of good standards.
- ISO closest to an uber standard, but it is vague.

– There's not only one way to develop a standard, so creating multiple types of standards is a good exercise, but the market confusion is too much.

- U.S. takes the multi-path approach, but this has gone to the extreme.

– Suggestion – if we have another workshop like this, ISO and IEC and other international standard bodies should be at the table. Europeans should also be at the table to help things align (and learn from their experiences). ISO could help facilitate this.

– Government regulation; government-developed voluntary programs; private standards (industry, NGO, etc.); national consensus standards (ANSI).
– Leadership versus baseline standards.
– Consensus is good, but cannot reach the top 20%, doesn't raise the bar.
– Need for multi-pronged approach - government regulations to set the floor and voluntary leadership standards to raise the ceiling. Also conducive to competition, which provides rigor.
– Who decides the "top 20%"?

– Benchmark standard for manufacturers with an overarching general set of requirements or a general label for a sector.
– Transparency is a pro and con. Not always transparent to consumer or educator. What are the objectives, measures, methods?
– Add a layer of general requirements over the top of a set of industry standards for overall guidance for standards development and sustainability programs.
– LCA approach is a pro, but as one decision-making tool.
– Government programs should only be based on voluntary consensus standard.

Government:

Pros – Ttransparent; sometimes have a higher level of clout and perceived authority (e.g. making a sworn statement).

Cons – Can get 1,000 comments and 999 from one source, so possibility more skewing; government does move at self-admittedly glacial pace; depending upon the industry in which you operate, the need for the standard may have come and gone; may be some limitations due to authoritative limitations; the responsibility for enforcement can also be a con because of the jurisdictional boundaries and restrictions on a "voluntary compulsion" program.

Industry/Private:

Pros – Can move faster to put the wherewithal and focus to make it happen.

Consensus:

Pros – Market participants come together and can package it in a way to present it to the government and enact it as a regulation; it's in a read-to-use form; can study the case for a few years so that municipality can be a "petri dish" for testing the standard; have to consider and respond to all opinions and respond to them; equally as transparent as government and probably more so than private with more constituents at the table; can do or say things that you cannot do under the government.

Cons – Can take longer.

(BTW, the group preferred consensus.)

– Each approach has pros and cons. Overall, government alone is too prone to special interest lobbying and suffers from the negative marketplace perception of regulation/mandates. Consensus can be derailed by special interests when they feel it is in their best financial interests. Private runs into issues when the standard is being driven by the financial interests of the testing/certifying arm.
– The best solution overall is consensus with participation of a very wide range of stakeholders, including government, and a clear separation between the standard-setting body and the organization(s) certifying against the standard.

Sustainability is ill-defined as it is and can at best be used as a relative rating. Because the arena is moving so fast as to what criteria are important and how they should be weighted, I think a standard is not possible at this time. A relative "sustainable" standard might apply to a very well-defined product class, but even then begs the question of whether "sustainable" describes the company as a whole, an individual product or all of a company's products. As to the party sponsoring the standard – governments have too much of a regulatory/enforcement standpoint to allow sufficient flexibility; consensus standards cannot keep up with timely innovations, and private groups too often have limited biases.

Need more than one hour to answer adequately. First step is to establish clear and measurable outcomes that are science-based. Then publish and test the standard for proof of viable metrics. Then a public and transparent consensus process, with all stakeholders, including public, should follow, as it is essential to acceptance and adoption. Public/Private process that leads to government standard will have more legitimacy. Approach should measure appropriate outcome measurements, rather than trying to keep up with changing criteria.

Question for all approaches is: Are appropriate entities that represent all the stakeholders at the table? Private dominated by industry; government dominated by regulators; consensus tends to be the least common denominator. Of the three, the consensus process is the best to get all stakeholders involved. Private standards are quicker and can respond to market changes. Government can act as both the "carrot and the stick." One of the problems with all the approaches is the focus on criteria is flawed – can't keep pace with market developments, technology and consensus among expert opinions and stakeholder opinions. Measurable outcomes rather than criteria can keep pace forever. Need to move to measuring achievements rather than telling operators how to achieve.

– Government: Doesn't do enough fast enough (except California and even then it takes too long sometimes).
– Consensus: A great idea, but takes too long and can be intentionally slowed down, held up, held hostage, etc., by industry who don't want to change and improve their products.
– Private: Too much murky stuff going on behind the scenes. If it's 'proprietary' then they have something to hide, especially if they aren't able to do health and science based criteria. Too much green wash has already been done by some.

ANSI Process:

Pros – Know it's a consensus standard; allows comment period for Project Initiation Notification System (PINS) to avoid duplication of standards; if you try to make a standard international, first thing they will ask is if it's a consensus standard; balanced consensus standard brings fairness to the process; allows input from range of stakeholders; forced review of standards every five years.
Cons – SDO's can stake space by taking out broad PINS; takes long time – can stifle technology/innovation; hard to achieve balance – hard to get people to participate.

Government:

Pros – When industry can't police itself, the government can step in to regulate; forced compliance.

Cons – Costly; doesn't represent a free market, might not be marketable; enforcement component for it; incentives for compliance.

Government (only discussing voluntary government standards):

Pros – Output is standard; sets minimum base for manufacturing performance; when developed with industry (like EnergyStar); if U.S. government puts requires standard for all companies then can be used for imports as well. Offers brand recognition to consumer. Free standard.
Cons – Time to develop; general lack of harmonization between countries and states. If standard based on legislation, then tends to have political implications.

Attachment 1
ANSI Workshop: *Toward Product Standards for Sustainability*
Complete List of Breakout Session Responses

Consensus:

Pros – Opportunities for greater inclusivity, infrastructure for standard development and tools (electronic tools), reduced costs due to tool; higher level of subject matter expert involvement; democratic procedures; maintenance process for standard review and responsiveness.

Cons – Can be perceived as heavy industry influence, small/medium enterprise involvement can be limited. Variance on openness and outreach between consensus standard administrators; Consensus standard access usually incur cost.

Private (consortia or company standard):

Pros – Very focused on industry/company issue, can be gold plated standard, can be quickly developed; can be very creative/out of the box thinking; individual companies can create high level standard which can become industry standard (Walmart/Costco) worldwide.

Cons – Lack of transparency, lack of consistency, lack of confidence by consumers on credibility of standard; limited scope.

There are roles in developing sustainable criteria from government, consensus based efforts and private industry. Government should be helping to guide a process in establishing desired scoping, definitions and boundaries. The consensus based groups (ANSI, ISO, ASTM) must ensure a balanced make up of a consensus body and process for approval. The debate in private standards, such as labels, are transparency scope, definitions and boundaries, and limited stake holder input. There are also market confusion from efforts like green rating systems verses a true standard development effort. Other debate includes conflict between true consensus efforts. NIST, from a government perspective, did a study demonstrating the inconsistency in reporting from one label to another. NIST believes that standardized criteria and calibrated labs by a third party is recommended.

– Government standards are perceived as less flexible than ANSI standards for instance. But standards can take a long time to develop. If green labels are based on standards, it seems important to define how the standards are developed since green labels have such a tremendous impact on the market, government purchasing, etc. Defining that standards should be developed through an ANSI process, makes sense, but that may indicate that ANSI needs to allow for some duplication to promote competition, innovation, and improved science and research.
– Pros: Government pro is that they can have specific expertise; can set minimum levels. NGOs typically use ANSI and ASTM which helps to better define consensus. Private industry can help drive innovation and setting higher standards when they use self-declarations it creates a competitive market for others to beat the self-defined standard.
– Cons: Private—customer confusion, complexity, greenwashing. Government standards not always developed in balanced way; set a minimum level (both pro & con).

– Pros – Single attribute along side multi-attribute standards (isolates particular problem); different voices are being heard; product excellence/defining quality; having all companies meet, not only 20%.
– Cons – LCA's are biased towards energy; sector specific may not address multi-attribute; assumption is consumers are educated – not a lot of input from other interest categories; no commonality amongst groups; informing consumers of message; outreach to all those involved; personal agendas of those involved; industry is reluctant to participate in developing standard if no incentive/motivation; "Just another standard"; lack of transparency and consistency.
– Industry can create a standard faster than having all voices (consensus).

Government:

Pros – enforcement is guaranteed – a regulation; credibility – international standards development organizations; supposed to be developed with the focus on an overall best public interest; money and resources are readily available and non-biased.

Cons – different standards (regulations) for each country – trade barriers; time to develop a standard is long; not timely – hinders innovation – barriers to initiating revisions; don't have to reach consensus.

(ANSI) Consensus and private (Individual manufacturers):

Pros – all affected interests are at the table – all stakeholders represented; greater acceptance of the standard; required transparency; private - fastest mechanism; private – cheaper.

Cons – consensus can take a long time; standard may get "watered" down in order to get consensus; greater risk for overlapping/conflicting requirements if each manufacturer has different requirements; greater confusion for consumers with private; larger companies/organizations can contribute more resources to standards development; monetary barriers in the consensus process.

– Government development process – may only be recognized or relevant in the U.S.; may impact trade; but special interest groups could pose undue influence because there is not weighing of interests.
– Consensus development process – harder for special interest groups to take over process; third-party certification is important for viability and recognition; government doesn't make some disconnected regulation that won't actually work in reality.
– Private development process – depends on who private developer is; people might not trust industry-only group as much as third-party developer – for example, Forest Stewardship Council (FSC) and Sustainable Forestry Initiative (SFI) are both "private" but one is industry-based.

2. How does the way sustainability criteria/standards are developed affect market viability of the standard (e.g., stakeholder engagement, manufacturing, education/training, update of standards by purchasing communities)?

With process variety there can lead to confusion and label proliferation, especially when some organizations/processes short-cut the gold standard process established by ISO 14020/14024.
– Standards need to be simple enough for manufacturers to use. – Needs to be clear connection of value of standard to consumers. – Trade-off between simplification of standards and quality of results. What is comprised in the delivery of the standard, so that it will make sense to the user? – Standards can end up being just extra cost to the manufacturer, companies need to see the clear benefit of participating.
Stakeholders are important because if people believe their interests are represented they will be more likely to support and trust the standardization.
Response is based on the intended target of the information message/declaration: – Credibility, either the lack or a strong sense thereof matters; education and training must be part of the standardization work; assume a process occurred but it is not a concern, simply rely on inherent 'trustworthiness'(i.e., strength of the brand). – Can often result in some suspicion of competing business interests; public education not as high a priority; process more important, than eventual communication; inclusiveness is a critical element.
Have to include industry to ensure design compliance and consumers as well.
– All relevant/affected/interested stakeholders must be involved to achieve success. Leaving any of the groups out will result in a breakdown in market viability. – The total cradle to cradle supply chain must be included and the definition/makeup of the "Stakeholder" should be clearly understood.
The standards that consider more stakeholders (e.g. the marketplace interests) are more viable. How? – Outreach via media, e.g. trade journals, web, trade associations, conferences and technical meetings, consideration must be given to the time frame, process improvements available through web channels, training and education to manufacturers and buyers. Standards and government regulations written in to large procurement contracts accelerate their market viability. Cost and availability of the standards may be an impediment.

Attachment 1
ANSI Workshop: *Toward Product Standards for Sustainability*
Complete List of Breakout Session Responses

No single process guarantees market viability. Sustainability is a combination of 'have to' (government regulation), 'want to' (industry/company objective), and 'should' (NGO/public).
– Acceptability to the manufacturing end of the standard versus the consumer buying the standard is the issue. – If you could reach agreement on sustainable, then how would you measure? How does society come to agreement on what sustainable is? – Reduction of material use is key to market viability. Substitute non-renewable raw materials with renewable/recycled raw materials. – Need to break the three pillars down into measurable parameters and then figure out cross over elements. – Sustainability is market-place driven. – Need a big picture series of processes and then a subset by manufacturers that applies to specific industries. Include raw material supply, manufacturing, distribution, retail, then end of life criteria – Sustainable product that is manufactured in a non-sustainable process – define boundaries to control – LCA – have to quantify the need level of the product.
– Marketing/Education/Awareness – There is not an effective communication strategy and implementation plan to effectively communicate the value of the standard to the intended target user. The technical developers do not have the necessary skills to market the standard. How to inform that there is a new standard to the all stakeholders? Who is responsible and how to communicate? – Stakeholder engagement – Expensive and time consuming to develop standards. The organization with the largest travel budget drives the direction and tone of a standard. – Supply Chain management is a critical aspect of the standards development process. – Length of time to develop standard may reflect actual market expectations at time that the standard is published.
Market viability is increased when the process is transparent and with education through multiple media.
– Government developed standard (i.e. it is legislated) is more transparent and recognized, and there is less need to market to the public after it is published. Privately developed standard needs to market more to justify why people should use the standard. – Broad acceptance and understanding are critical for any standard, regardless of how they were developed. Standards shouldn't be so prescriptive, but should let as many players in from the beginning. Let them compete, and then they'll come up with the best in class.
– Elimination of duplication and harmonization is desirable to minimize conflict and market confusion, but competition sometimes drives innovation, efficiencies. – Greenwashing is a problem, but Federal Trade Commission (FTC) should handle it. – Certification of standard and its legitimacy will determine its viability. Who polices this and how do we instill trust in the process/system (eg. Government/private/NGO/etc.)? – Consensus standards tend to have more legitimacy. Transparency of the process needs to be publicized. – Those who create the standard need to be responsive to consumers and current trends and drivers in maintaining the standard and keeping it relevant.

– Standards development doesn't need to follow the same process as labeling programs.

Open consensus vs. closed and private; which is more accepted?
– The marketplace is confused with all that is currently out there.
– Success depends on how good the standard is and how credible the organization is that develops it.
– In categories where consumers are well-educated/knowledgeable (ex. SFE vs. SFI certification) the preference is for an open/consensus standards process.
– Science-based approaches are more likely to be accepted by industry.
– Some private standards are effective and accepted in the marketplace (Greenguard) but would it be better if it went through an open/consensus process? Would have taken more time and maybe wouldn't be as rigorous.
– The marketplace changes.
– Average consumers do not know how a standard was developed and don't really know what they are buying/looking at.
– The knowledge base of the consumer is important.
– Consumers accept brands and labels.
– Institutional/professional purchaser look at an open/consensus based approach.

– Engaging the industry that's going to apply the standard is a very important part, but it can water down the standard.
- Influence of bottom-rung manufacturers' needs to be managed.

– Some are not a fan of the voluntary consensus process because it can extend the timeframe of standard development.
- There needs to be one person who says, "Thanks for the comments, but here's how we're going to move forward."
- When timeframe is too long, the marketplace has already advanced past it.

– U.S. government HAS to use consensus standards.
– ANSI principles must be followed for U.S. government to recognize your standard – not necessarily ANSI accreditation.
– Stakeholder engagement is good, but it's the consensus process that needs to happen to make what we're all dreaming about happen needs to have a timeline/deadline on it.
- There needs to be a deadline for completing whatever we're planning on creating.

– Need to not forget the three-legged stool of sustainability.
– If EPA standards were truly consensus-based, they would be even more watered down than they are already.
– Overall, people aren't necessarily looking for an ANSI standard, but a technically based, easily applied standard that's viable.
- Whether it's used; whether it's easily updated; must be quick to market; simple to use on both the information input side AND consumer side.

– The cost of obtaining a standard can be a barrier that some can't meet.
- Does this really promote sustainability? What we want is products that have fewer environmental impacts, better social results, and that people can afford.
- Internationally, this can be a big issue because it's a barrier to acceptance.
- "Voluntary" is not often understood by other countries.

– Third-party certification agencies. – Direction is needed. – Requests are coming from consumer parties. – Consumers have a growing interest. – Manufacturers have large interest but they are being driven. – Education is key (for all those involved). – Provide value for standard development. – Timing of publication.
– Speed. – Intellectual Property. – Innovation. – Credibility of the organization publishing the standard impacts market acceptance (are they a trusted entity and perceived to be independent of those being regulated). – Need to publish standards in a timely manner for businesses to be able to minimize associated risk associated with non-compliance and plan their course; this will better foster acceptance and adoption of the standard. – Also, the standard needs to be achievable or will be ignored (e.g., the Dell Notebook example).
A successful effort needs significant critical mass in order to take a foothold in the timeframe that is necessary. Stakeholder engagement, including most of the large certification groups, is necessary. I suggest starting with a broad framework of how a standard should be structured and what attributes or impacts should be included, then tackling one or two key industries first to test out the structure and get some demonstrable, real world impact on the street.
Open, balance, consensus and due process are important; but rigor and effectiveness are also key, and when it comes to sustainability, certain attributes are more controversial than others. Historically, there have been pressures by some to create weak standards that maintain the status quo rather than to set a high bar for sustainability. The way standards are developed will lead to broader acceptance but sustainability standards are also expected to be leadership standards. “Premium labels that add value”.
The only ones who really have a good feel for how a standard is developed are the manufacturers whose products/activities are being rated. They will inevitably see bias in those standards in which they did not participate or where they felt marginalized. The buying public has negligible clue - they go on impressions of reputation and how often they see the standard (ie, how well the standards organizations markets itself).
Criteria need to be based on measurable metrics and Design Science principles or they will not stand up to scrutiny over time.
Most of the ones I’ve been involved with have included stakeholders and manufacturing. Unfortunately the biggest pieces I’ve seen that’s lacking is the education/training part.

The other challenge is the competing standards out there that are confusing for everyone but those of us working in this area (and even we get overwhelmed sometimes!).
– Irrelevant to the consumer market – they don't know how the standard was created, just depends how you market it. – Business-to-business (B2B) and institutional market different – more aware of development. – Who and how they are promoting the standards/labels makes a big difference. – Communication about how it was developed needs labeling. – To get standard acceptance, is it consensus or developed by industry? – Do other manufacturers adopt the standards – what else is everyone doing? – Long process can affect viability – users discount the standard. – Standards originally written by manufacturers and then opened up.
Standards developed by consensus address these issues best (if managed as intended); then to a lesser extent governmental standards and then much less to private standards. Education/training and outreach is critical to sustainability of a standard.
Currently there are too many confusing standards in the market place with varying approaches to required reporting/compliance. The issue becomes the question of what is creditable or not. How is a person to make an informed value judgment from one label to another? Even within specific market segments (food, agriculture, building products, computers) there are competing standards. Another issue is third party auditing and/or self-reporting of compliance to a given standard and lack of consistency in that reporting. Branding of some labels has significant market presence even though a weaker standard.
If they are not based on verifiable technical basis, the credibility is impacted. See above comments about importance of developing through defined consensus process like ANSI. Concern in our group about toxicity of chemicals and how it is or isn't included or communicated in green labels. Precautionary principle if used for marketing purposes or as a driver for creation of higher standards, can end up negating good standards.

3. What type of guidance would be most valuable in steering the development of credible product criteria/standards that address sustainability issues? From whom?

I SO 14020 series, especially 14024 for Type 1 ecolabels, is the gold standard for this type of activity.
– Creating the data for comparison, like EnergyStar's database. However, data needs to be robust; danger of everyone relying on the same, bad data. – Industry sector guidance. – Consider geographical issues. – Technical guidance from experts should be included in standards development balanced with translation to lay terms so that others can use and/or understand the standard, with consensus standard as an outcome. – A clear goal for the standard helps drive the process. Need good leadership, and a framework for the idea. Compensation for those involved can improve participation and offset company costs in this poor economy.
– They must be scientifically based (the criteria must be based upon the scientific method, there must be a REASON for having this standard), it must consider its effect on innovation and trade (it must support sustainability from an economic, social, and environmental aspect), must be transparent, it must make effort include all stakeholders, documented and substantive. – Drive continuous improvement and challenge industry to improve (ex. Energy stars top 25% or Ecologo's top 20%). – Increased public education to make these standards useful, energy star has done a great job of marketing their program and people understand it, these standardizations must be marketed to consumers so they understand what they're looking at or looking for. – It needs to be a consensus process ranging from consumers to manufacturing to government to regulator to academics, etc.
– Need to define the essential concepts as what is sustainability. – Also, more specifically, what is/should be the basic set of criteria under each pillar, environmental, social and economic. – Then it boils down further to defining what are the metrics, i.e., cost-benefits/trade-offs, weighting, target performances. – Finally, it then has to have a system for interpretation and applying the metrics. – From Whom: ANSI/ASTM/ISO standardization work?
For each class of product (electronic, aviation, etc.) existing standards bodies for industry (Electronic Industries Association (EIA), IEEE etc.) should build the first draft, using analytical processes that are reasonably robust. Guidance on how industry groups should do life-cycle analysis would be helpful – e.g., targets for industries to reach. BHAG (big hairy audacious goal). Give levels – Basic, Bronze, Silver, Gold in Electronics. "Stretch" goals at the higher levels that are out of reach of most (like Platinum Leadership in Energy and Environmental Design (LEED) building); build in a commitment to get all members into the lowest level through assistance. An ANSI Standards Coordination Panel similar to Biofuels might help here – coordinate standard setting relating to sustainability to ensure common approaches across industry.

– Provide training that teaches standards developers the process of developing affective standards. – This should include the full life cycle of standards. – Any of the qualified SDOs with related product experience and identified as best in class.
– Provide more consistent procedures from ANSI and for accreditation of SDOs. Provide consistent indicators and common measurements. – Communicate what is an environmental/green product standard (alone) versus what is a sustainability standard (social, environmental, economic viability). – Don't get stuck on an ALL for environmental product standards. – Discussion points: chemistry, water, energy. – Need a universal definition of terms relating to sustainability – triple bottom line vs. something else.
We need to develop a common criteria to coordinate the various activities, apply metrics for that information, and provide a common way to show the outcome. We need to create a new coalition of stakeholders to work together to solve these issues.
– No floor or baseline to even begin discussing products against each other – forces an apple to oranges comparison. – Define the terms using to describe Sustainable. – International markets – A U.S. standard needs to be accepted at the global level. – The whom has to be internationally accepted.
– Focus on the desired outcome of the sustainable standard to allow innovation and consensus based standards development. – Do not proscribe technology or methods on how to achieve the desired outcome. – Clear assessment of gaps in sustainability standards development with a goal towards harmonization where possible – system thinking; avoid duplication of effort where practical. – Develop an industrial/manufacturer library of use cases which illustrates the unintended consequences of implementing a standard – e.g. trade-offs not considered.
Defining the need of certain standards and not duplicating them. Developing the standards for products on sound science data and on equivalency performance. Choosing stakeholders carefully can assist with the successful development of a credible standard. Some standards though, such as sustainable agriculture, may never obtain a general standard because too many details would need to be addressed.
Involvement from organizations like ISO would be helpful. Need to have consensus across broad constituencies and need to be guided by science.
– Type of guidance – The three Es (equity, economy, and environment) or three Ps (people, prosperity, planet) would be good framework but there is still no clear definition of sustainability; with clear definition, then could proceed to define the three aspects for different industries.

– Who should guide – Government could help to build framework but long-term government oversight could be too rigid for new technological developments; government does not have resources for long-term oversight. A group like ANSI may or may not be necessary for long-term maintenance/ guidance/ facilitation. Probably depends on the circumstances – some industries might be able to maintain a system with peer review only.
– Look at the entire standards development process, including testing requirements, process, strong technical evaluations and interpretations, classification of the data into tiers, thumbs up/down, certification aspects, manufacturing aspects, marketing and promotion aspects. – Desirable to have a finite set of viable claims and clear standardized definitions and terminology as part of an overarching general sustainability standard and within industry-specific standards. – Important to engage multiple stakeholders, including consumers, focus groups for the marketing aspects, labeling programs for consumer products. – Objective, acceptable criteria needed for making judgments. – Keep end goals and end user in mind. – Benchmark other countries successes, such as Europe, Japan, Australia, others, international standards, ISO, etc.
– Labeling comes from a retail perspective. – The supply chain needs to be involved and give guidance so that it can be sustainable – Is the answer LCAs? – Individual criteria can be dangerous and misleading (ex. 100% recycled-content product could be worse for the environment than a non-recycled product). – Need to optimize on functionality. – Finding the key stakeholders is critical. – Economic, social, and an environmental component (loosely defined) needs to be taken into consideration when discussing a sustainability standard. – Definitions needed for social sustainability and economic sustainability; environmental sustainability is loosely defined. – Sustainability standard would involve a greater stakeholder group because the scope is so large.
– ISO; European Union; Other international organizations or countries doing credible work in environmental product standards. – World Bank; World Trade Organization (WTO). – LCA and risk assessment practitioners – need to understand what tools REALLY offer and then make decisions about what may be possible in a phased/stepped standard. – Engaging different groups that represent different sectors is important – Government; Industry; International; Nonprofit; NEED an international facilitating organization! – Is the barrier that there is no one organization that can facilitate and lead all of this? It's too much for an existing organization to do this along with everything else they already do. We can't think of anyone out there who can do it. They need resources and capabilities. Can't have bias. Maybe this organization needs to be created just for this point. – We may also need to create a serious steering committee (with sector subcommittees and with separate topical subcommittees) for this effort. – There is a difference between method and performance standards. Even people in this conversation are confused about the difference.

– Science-basis for decisions is required, but market viability (both economically and realistically) needs to be included – What is viable in short-term vs. long-term? Reality check must be taken.
– Our concern is to secure the public's health and environment. Is what we're planning REALLY going to serve the public in the way we want it to?

- Difference between standards that support sustainability and sustainability standards. We need to get a better idea of what we're talking about.
- Single attribute standards ARE NOT sustainability standards. They support sustainability, but you can't have single attribute sustainability standard because sustainability is, by definition, multi-attribute.

– Need some wide guidance and agreement on what factors to evaluate – is it cradle to grave? cradle to cradle? cradle to gate? toxicity? emissions, etc. What?
– Need a common language and definition of terms. What is embodied by the terminology.
– Whom? Not private industry but not government, so consensus body. ISO approach can be applied to this concept. This is where the "standard of standards" notion fits. Right now, the ISO14021 definition of sustainability dodges the issue and quotes, "5.5 Claims of sustainability: The concepts involved in sustainability are complex and still under study. At this time, there are no definitive methods for measuring the sustainability or confirming its accomplishment. Therefore, no claim of achieving sustainability shall be made."

– Providing education and providing value.
– Democratize the process.
– Database created to obtain resources.
– Attempt to define common terminology across all sectors.
– Needs to be measurable.
– One core body to coordinate.
– Multi-disciplinary group.
– Guidance provided by Academics.

LCA guidance would be most valuable, though a first round may not be LCA-centric as the data is not necessarily there yet and too many assumptions are involved. The solution may be something like an Environmental Protection Division (EPD) that incorporates LCA principles for a first round, then moving to an LCA-based scoring in a later version. It is important to remember that LCA does not cover social factors that are the critical third leg to sustainability. Social equity needs to be incorporated.

I like the FTC approach - core principles requiring accuracy and non-misleading to the consumer, illustrated by examples. That way innovation is not inhibited but companies must be able to validate their claims. Third party certification or active enforcement is necessary. My bias is toward product-specific standards and so development needs to include a broad representation by the product makers and consumers as well as public interest/government. Each product type presents its own areas of concern and opportunities for more sustainable practices and should be addressed by knowledgeable and affected stakeholders.

It is critical to measure what is achieved, not just set criteria for how to achieve.
Critical to get to approaches that emphasize science-based metrics with clear objectives and transparency. Without this, for the past 20 years, there are different sets of dos and don'ts. The more prescriptive the approach, standards favor one technology over another without a full life-cycle assessment. Assumptions drive the decisions in the absence of doing full assessment. In order to reach "requirements" leads to compromises the decisions for real sustainability.
A blend of science-based information guided by the Precautionary Principal. We're never going to have absolute proof of anything (science itself keeps learning and therefore changing its 'standards'), but have to move forward based on reasonable information and data. If the new Obama administration can help get the EPA's reputation back to its previous world class stature, then I'd go for government but with an open process and completely vetted, open and transparent. No backroom deals from industry or veto power by governors who cave to industry's influence. That said, the intent would be to make sure that industry had a place at the table but not the deciding vote. We need to foster community and how we all can help each other, not our differences.
– Government has a role in providing guidance of what they want. – Streamlined process to get things done instead of the consensus process. – Science-based, needs substantiated benefit. – Private is not credible – guidance to ensure standards not private. – Guidance that all stakeholders affected are included. – Not prescriptive, performance based. – Non-proprietary. – Guidance on how to communicate what the standards are (to consumers). – Third-party verification should be provided. – Collaborative consortium of stakeholders should provide guidance.
Sector specific guidance on components in a LCA. Possible to have government based approach focused on industry sectors (eg., Maximum Achievable Control Technology (MACT)). Should have multi-attributes reported but not weighted as consumer may value them differently.
There have to be consensus based metrics and measurements that are agreed upon by the industries impacted. Competing standards may actually create an atmosphere where the bar can be raised with industry consensus. An example would be the ongoing debate with forest certifications. This influence might come from government, standards development, or private standards.
Stakeholder groups must represent industry and all along the chain of use. ANSI guidance is important. Government providing suggestions on what stakeholders could best inform the process. Define sustainability and whether it includes social and economic. What is a sustainability standard versus a safety standard?

4. What are the most important attributes to consider with respect to the development of product standards that consider/address sustainability? How are these different attributes being weighted? How should they be?

ISO 14020 series, especially 14024 for Type 1 ecolabels, is the gold standard for this type of activity. It includes product performance to ensure that inferior products are not marketed at "sustainable" since they wouldn't be if they cannot perform. Further, ISO 14024 compliant standards are set at a leadership level to ensure the goal of sustainability is met. At this time, most matrix/point-based standards have the above as weaknesses - they do not require the product performance nor environmental/social performance as prerequisites. Further, ISO 14024 standards are based on life cycle research to ensure products that meet the standard are achieving the overall goal of lesser impacts.
– Perhaps one way to create good standards for many industries is to develop a standard approach for considering the many aspects of sustainability. With a standardized approach, different industry sectors can use it to define sustainability in their industry sectors. – Transparency of information should still protect competitive advantages. – Performance standards versus proscriptive standards, the former allow for more protection of information. – Attributes to consider: air, water, waste, climate impacts, toxicity, energy (segmented into fossil fuel and biomass), economic considerations, end use impacts (including recovery). Responsible sourcing, social responsibility (labor, health/safety of employees, wages). – Peak energy use, not just general energy use, should be an attribute with regard to energy demand. Peak energy use also covers the energy costs needed to get that energy to the user. – Weighting of attributes depends largely on the sector being targeted. The weight is relevant to the impact of the product/service, but must meet economic sustainability criteria, and product performance standards.
People-Planet-Profit, in a perfect world they should be equally weighted, by design if one falls the others fall as well, they are inter-dependent. Note: When it comes to creating these standards, the focus is undoubtedly the environment as we have spent so much time in our past focusing on business, yet even now profit and people must be considered.
– Needs to be broken out under each pillar (technical and functional performance is implicitly required in all cases): – Environmental (See Standardization ISO 14000?) – Economic (Service life planning/life cycle costing) – Social (ISO 26000, ILO, etc.) – Cost-benefit must be considered (minimize cost a/o increase benefit).
– Start with Triple bottom Line – but weighting between attributes is tricky. Can use "Must" (required) and "should" (voluntary gives some points). Planet – Environmental – need metrics for various "measurable impacts" like energy, recycling, hazardous waste, with levels within categories. People- Social – consider a range of options. (e.g., Suppliers of beans from India to make plastic; Do we have to pay them more? Set up foundation to address concerns? What are the "measurable

impacts" for continuous improvement? Profit – Economic viability – create credible credits (e.g., carbon credits for climate change), incentives to use Energy star. – Consider using an ANSI panel to evaluate/value the various elements of sustainability to ensure they are given the proper weight, based on what the experts in this area can agree on. If you make sensible decisions about the elements of sustainability to include, companies have the freedom to weight them based on their local conditions.
– Sustainability must be based on three basic pillars, environmental, economic and social aspects across the full life cycle and must be specific to the product and/or services provided. – Mostly on environmental aspects with some economical influence. – Initially weighted equally on all three basic pillars and then prioritized by appropriate stakeholders on both short and long term impacts.
It is important to define all life-cycle impacts: energy and non-energy resource depletion, habitat disruption, green house gas (GHG) loadings, oceanic acidification, ground level ozone, untreated hazardous waste, toxicity. Accessibility and economic viability are also important points to consider when producing a standard for the general public. The attributes are weighted differently for each standard.
– Need to measure all three aspects of sustainability equally: environmental, societal, and economic. When people hear the word "sustainability," people usually think only about the environment. If a "green product" is too expensive, it cannot be marketed/implemented widely. However, we are hampered by the fact that we don't have a good handle on the societal aspect of sustainability (What is it really? How do we measure it?)—maybe this is why societal sustainability is currently ranked last in the "three lags of sustainability." – For all three aspects, environmental, societal, economic, need to have all the following attributes (as mentioned by Urvashi Rangan): meaningful, verified, consistent, transparent, independent, and public input.
Most important attributes would be elements, or potential elements, of the LCA in no order of importance: embodied energy, energy to operate or maintain, maintainability, materials and resource use, renewability, durability, recyclability, upgradability, modularity, toxicity of materials, indoor air quality, reduction of competition through up front standardization (although this potentially stifles innovation… but in some cases… ahem, computer and cell phone cords… we could standardized without a huge loss to technological advancement).
– How they are weighted currently: Not all are currently assigned great importance but embodied energy, recyclability, renewability, and indoor air quality (IAQ) are currently hot issues. – How they should be weighted: All are important; those mentioned might be easier to measure or easier to market because people understand words like "recycled"; they should be weighted according to how 300 million people could have the most impact.

– Environment, social and economic attributes must be balanced.
– How do you measure progress toward targets?
– Need qualitative indicators where it's not possible to establish quantitative measures.
– Look at attributes established in ISO standards.
– Pull from existing trade association and corporate social responsibility programs, supply chain management processes.
– Compare like products and appropriately weight the impacts based on the objectives.
– Regional priorities (e.g. water, LEED).
– A problem with the weighting list can be points-chasing (e.g. LEED bike racks).
– Highlight weighting in logo/label to educate consumers and demonstrate transparency.
– Up to manufacturers to ensure a product is economically viable as a prerequisite for staying in business but standards and labeling programs should not create barriers to trade, anti-competitive practices, prohibitive costs for certification, etc.

– Different products will have different criteria/attributes for sustainability; there can be no one overarching sustainability standard.
– Can have standard guidance for what a sustainable product is – Need to consider major areas (triple bottom line) such as environmental, social, health and economic issues; Lifecycle costs – will depend on who the customer is and volume – will be difficult to quantify.
– Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI) – from EPA (weighting criteria).
– Social sustainability is very subjective (ex. What is the need for a TV in the bathroom?) – What is the value to society for having a product on the market? Social vs. cultural differences pose additional challenges.
– Too big for us to answer; this is obviously a huge issue.
– Must be broad enough to be inclusive, but the quality of data needs to be good enough (and weighted correctly) so that is also specific enough.
– Life cycle thinking and life cycle assessment data.
– We can't forget the three-legged stool. We get all caught up in the labels and certifications, but we're forgetting that even if we can't get information about it, things like equity and human health are still important.

- Will need to be a flexible standard that evolves over time; implications may change over time, but so may people's decision processes.
- Most products will not be in the middle of the circles/stools, so "optimum" may be different depending on the products/choices.
- Need ability to make it local/regional (especially what's important for products with long supply chains into developing countries, where social issues are a huge issue).

– No one's going to do it if it's not a viable standard, so we need to make sure whatever we're creating something manufacturers will do – and pursue!
– Flexibility.
– Transparency –If you're trying to raise the bar and get into real market transformation, this is key.
– Need something like Pharos lens to help people visually apply their own weightings – We need to decide what we want though. Do we need this much information? If so, what really goes behind it?
– Weighting – we shouldn't do it.

- Who are we do say what's important to others? It depends on what, where, and how they're using a product.
- We need something that applies globally, but allows people to act locally (with informed choices).

– Need international guidelines that can be applied locally, application by application, etc.
- Weighting incorporates a risk factor we're not willing to assume.

– Standards are a mixed bag – Energy Star is successful because it's wide and deep, but it's yes/no; Once you get to multiple attributes you can't get to the "yes/no" for all green products. There is no single final score. This group is adamantly against boiling everything down to a single, final score because we don't feel we can weight for others.
– We need consensus on the vocabulary we're using – Need a framework: What information is important to share? What are we going to call it?

– Broadly, the triple bottom line: people, product, profit. Many of the measures don't seem to address.
– Pharos lens approach is a starting point.
– The weighting is per user, depending upon their needs. May need to get "into the weeds." Some of the societal issues are harder to quantify, e.g. what are the impacts on someone living downstream.

– Material usage, water usage and energy usage.
– Cost effectiveness.
– Environmental effect (present and future).
– Cultural change (continuous improvement).
– Multiple life-cycles.
– Total cost of ownership.
– Infrastructure for reusability.
– Setting the standard for big buckets.
– Breaking it out so it is not overwhelmed.
– Education/training.

The market addresses economics, so product standards need to address environmental/health impacts and social equity (fair labor standards, child labor, workplace safety, slave labor, wages, working conditions, discrimination, etc.). Environmental attributes include embodied energy, recycled content, reclaimed content, recyclability, toxicity, emissions, resource efficiency, ability to conserve energy, ability to conserve water, transportation (subset of embodied energy), fossil fuel vs. renewable energy, and packaging. These can mostly be converted to some element of an LCA analysis.

Very product specific. Life cycle risk management needs to be addressed - which will depend on the nature of exposures, materials used, performance requirements, user and geographical and demographic concerns for a given product class. The purchaser/consumer should do the weighting based on good information, not the supplier or certification program.

The bar must keep moving higher, i.e. the results must be measured over time for continuous improvement.

Destructive impacts on the environment. All product categories will differ, though in what is important. There are not simple answers, need full reporting. Can't prioritize or weight the attributes and shouldn't because each product category and product is different. Social standards may be the one area that criteria

are needed to measure sustainability. Our knowledge is criteria-driven at the current time. Need more experience to set measurable outcomes.
Let's get beyond recycling. That's an easy way out for some manufacturers to continuing to use toxic materials and especially to hide behind a green curtain instead of cleaning up their product in the first place. The best idea is to use less in the first place. This makes sense for industry because most industrial processes are quite inefficient.
– Economic/Social/Environmental attributes. – Above areas refined by product category/industry as applicable. – Create uber set of principles and attributes and each industry adapts from this list. – Stakeholders involved should develop weights.
Depends upon the product – attributes and weighting should change by product type. Recyclability of material, Safety, Performance, Cost – attributes that should be. Family of documents needed versus one standard.
This is where it gets complicated to come up with boundaries that work for multiple product categories. It depends. The requirement is that a balanced approach that includes environmental impacts, economics and social impacts/benefits. It is also critical to include in-use performance (if appropriate). This would indicate LCA that is either Cradle to Cradle or Cradle to Grave scope.
Use life cycle categories (ISO) as well as health categories. There needs to be a decision making process like Analytic Hierarchy Process (AHP) that can be applied with flexibility based on regionality and other issues. It will change based on national/global priorities and therefore the decision making process needs to be evaluated regularly (to adjust weightings re: water vs. carbon, etc.).

5. What role do single attribute initiatives play in assessing the multiple impacts of products?

They help set the ground work for multi-attribute programs. For example, it has been difficult to address tree fiber sourcing before chain of custody programs like FSC. Now, however, a multi-attribute standard can include comprehensive criteria from raw material sourcing, manufacturing, packaging, distributions, product performance, and end of life considerations.
– Single attributes can be misleading, and even lead to negative trade-offs for sustainability. – Single attributes can be combined across multiple considerations (e.g. energy, recycled content) to lay out the full picture of impacts between different alternatives. – The role of single attribute initiatives is in addressing very specific questions for consumers, but trade-offs with other sustainability considerations still exist. – Possibly the only role for single attribute standards is in getting to multi-attribute standards (see 2nd comment under this question).
Applying multiple single attribute initiatives allows different consumers to choose what is important to them, it also allows producers to build their environmental portfolio piece by piece. It also may allow them to charge a premium to consumers willing to pay a little more for what they care about it.
Sometimes you have to walk (single attributes like on-farm carbon credit standard can lead to energy, water, etc.). Harder to do multiples -- Contrast controversy in sustainable lumber (American Forest and Paper Association (AFPA) challenged Forest Stewardship Council) with the dolphin-safe tuna label (single attribute). Can easily go astray – 'green aggregates" in LEED building can backfire. Hauling materials over long distances unnecessarily just to meet the overly prescriptive criteria.
– Stepping stone to eventual holistic system. – Individual initiatives can be combined to provide a result. – Can remain in place for continual evolution on specific attribute within a larger framework. – Maintaining them will support interested parties who may be very focused on a specific aspect for very specific needs. – Note: In any case, cannot let single attribute reflect the total 'impact' of the product system.
– Single attribute initiatives can be valuable for providing the foundation for determining the best weighting of multiple impacts both long and short term. – Care must be taken to assure that single attribute initiatives do not mislead the efforts of the development process. These can provide a source of key learning both positive and negative.
Examples - Energy Star – Water Sense: – Consumer Relevance – recognized umbrella brand – e.g. Energy Star. – Useful in educating the consumer but may not be representative of all features and benefits. – Single attributes may confuse the procurement process when there are multiple procurement requirements.

Single attributes are only useful if they are relevant to a particular product category and measured against a specific product baseline.
– There are too many single attribute labels, and putting them all on a product is almost impossible. – Consumers will often see one green label, and assume everything about the product is green – manufacturing process might be completely toxic and un-environmental. – Single attribute standards can do a good job of transitioning a market place to a green belief. – Education of the consumer about green principles is key, they are so washed with so many labels that no one can tell which ones are accurate. – Some single attributes are very simple and easier to quantify versus multiple attributes – i.e. Energy Star. Gives you a reference to what is out there.
They're relevant where there are institutional guidelines that are specified.
Limited and incomplete role, can be possibly misleading.
Single attribute initiative is a starting point before going into multi-attribute. It's a migration strategy. (Analogy: kids learning 4-wheel -> tricycle -> bicycle).
Examples of single attribute initiatives: free range chickens, IAQ, Energy Star. Their role: they provide hope for the success of future initiatives; they provide case studies to guide other standards initiatives; provide metrics; to conduct a successful LCA, need to take small pieces; working on a single attribute highlights connections to other attributes (e.g., reduce water consumption with low flush toilet and reduce wastewater).
A part: – Single attributes can be weighted more if it is a specific, high priority social/environmental or regional issues? E.g. Fair Trade. – Single attributes can destroy or catapult the credibility and acceptance of the product. – Existing single attribute standards can be used to inform and advance multi-attribute standards. Important to consider who created the single-attribute standard. The risk is that you miss pitfalls if you do not look at how the single attribute standard and its competition play against each other. – Multi-attribute standards can reduce risk but create greater market confusion and complexity. – Need to include an education and awareness campaign.
– Single play a role in sustainability standards (i.e. Electronic Product Environmental Assessment Tool (EPEAT) considers EnergyStar as a crieteria). – Single can cover a wide range of impacts. – Provide the building blocks for the overall sustainability process.

– What consumers take away from it.
– They are deeper.
– Organic and total cost of ownership.
– Consideration of future impact.
– A single attribute may carry more weight in one industry compared to others.

– Single attribute work informs a sustainability path.
– Multiple attribute systems certainly have a benefit: better assessment; more confidence in results; contribute to true sustainability.
– BUT by just referencing one single attribute certification for a product, you're almost doing a disservice to consumers by not mentioning the other things it might (or might not consider) – MORE CONSUMER EDUCATION IS NEEDED.
– Single attribute allow people to prioritize on something.
– Is it possible for them all to role up into a larger certification?
– You don't get a true sustainability analysis by just focusing on a single attribute.
– If you focus too much on a single attribute, you lose too much touch with sustainability.
– BUT, if people can use single attribute certifications in conjunction with each other and outside information, they are helpful.
– Even in figuring out single attribute information, you have the potential to gather more information to figure out multiple attribute impacts at the same time.

– At first, the group said never, but then shifted because things like GreenGuard and Green Seal are becoming more popular, it's harder for the single attributes to play a role. They tend to be at the lower level of the chart presented by the morning keynote speaker.
– However, they do play a valuable role in regard to some products. Appliances and energy were so closely aligned, it makes it much easier for the consumer to understand and decide. We considered a scenario where each product could have a series of single-attribute labels. For example, a TV could have an Energy Star label and a hypothetical label in regard to off-gassing, making it easy for the consumer to make an apples-to-apples comparison. But with a more complex product like a house, the single attributes break down. For a component or less complex product, it is harder to use them in comparison. Perhaps the best place for single-attributes is where they warn of "high danger" like the way we thought of the Underwriters Laboratories (UL) label in the past – it ensured that you would not be electrocuted when you plugged in the device. As a consumer, we'd like to be able to use single attribute approaches, but things are more complex.
– The single attribute measures could play a role in a larger schema of multi-attributes as reference standards. For example, in Pharos style lens, if water things are measured by Water-Sense, and energy matters are measured by EnergyStar, then each single vector can leverage the true asset of a single-attribute measure: narrowness but depth. Even Pharos aside, if a person can conduct research on the web to find a multi-faceted label and then drill down to the various single factors that matter most to them and weight their evaluation accordingly, that is a good use.
– How legitimate are the multi-faceted? Are they tangible, quantifiable? What do they mean? These, too, can be confusing because it's not always what is considered and how they prioritize.

Single attributes are certainly much easier to set up standards and measure. But they must be considered within a context of life cycle impacts and benefits. They are useful as informational input for consumers in

making their own life cycle determinations using their own values/needs. e.g., for a company who needs to reduce net water use, looking at the water impact of a raw material may be more important than buying something with recycled content.
I think there are certain single attributes that cross many product lines that should be considered as platforms. Examples include energy (consumption; type; EnergySTAR) and chemical hazard/green chemistry (e.g. as assessed by EPA DFE). Other multi-attribute product standards may benefit from taking a modular approach; bringing together appropriate individual attributes.
Single attribute measurement risks being inaccurate. Every system has a different set of impacts.
Single attribute initiatives have created a market demand but there should be a more comprehensive approach which looks at the multiple impacts of the product. Otherwise there are multiple labels (requirements, standards, criteria, etc.) for each product. Single attributes have to choose the single largest impact, for instance, appliance use of energy. If a systems analysis is used to determine the largest impact to address in a single attribute initiative then the single attribute initiative does result in a priority of positive/negative impacts. Single attribute initiatives will be different in their results based on source and transportation.
Depends so much on the single attribute. If it's toxic then, yes, it could be a "No go". If it's just recycled content, then, no, that's not enough of a reason.
– Single attributes allow consumers to select things that are important to them. – Consumers understand single attributes – don't understand complex initiatives. – Easy to simplify things down for single attributes when they are very complex. – As long as label is clear on what the claim is, no problem with single attribute on multiple impacts. – Phase-in process with single attributes and move towards multiple attributes over time. – Multiple impacts can be very important when declaring single attributes – based on what you do or what the other impacts are associated with the single attribute. – Need to know all single attributes to understand multiple impacts. – Too many single attributes can be confusing to consumers.
May provide useful information but generally limited in assessing multiple impacts (e.g. Reduce toxics but increase energy consumption).
Many of the current single attributes (volatile organic compounds (VOC), Recycled Content) are part of a life cycle assessment that also includes energy consumption and GHG in the manufacturing processes. The single attribute perspective can help understand trade-off opportunities. It's a narrow focus that goes deep into the subject. Like Energy Star, problems with unintended consequence if a consumer focuses on just energy and ignores water or indoor environment issues. However, we feel that single attributes still have value. We feel that the purpose of green labels is to drive education. Since there are no hard and fast rules, and extreme debate on science, we need to allow the market to evolve so that it naturally creates incentives

to further educate consumers and raise the bar on environmental reporting. Checks and balances in terms of consumer reporting and analysis and NGO involvement will help balance green washing.

6. How or to what degree should Life Cycle Assessment (LCA) and risk/hazard assessment methodologies be incorporated?

LCA and hazard/precautionary principles are essential tools for the development of sustainability product standards. Use of other tools like risk assessment are used for different purposes (e.g. regulations) - not for sustainability standards.
LCA is a great tool, it can help producers figure out how they can build on their sustainability efforts, however it should not be used to compare my product to your product because across company assumptions cannot be standardized, it can be too easily manipulated. If you are going to use it to compare products you must comply with ISO standards in order to make comparison unbiased.
– Risk assessments should cover all exposures of the same ingredient(s). – Risk assessments can be burdened with poor exposure data and skepticism by public or advocacy groups. – Any of these tools can be plagued by lack of available data, or accurate data. In determination of which tool to use, one should minimize uncertainties in decision-making.
Life Cycle Analysis is prone to misuse by special interests – Wild West approach to claims being made. You can use LCA "thinking" without have to use this term. ISO 14040 and 14044 standards.
– There has to be inter-related component in each and identified in both. – If possible, a combined approach so that mutual impacts can be understood and risk hazard evaluated (cause-and-effect).
– LCA is a good analysis tool, but not an entire decision making tool. – For higher cost items, LCA makes sense in the procurement process. – Harmonization should be incorporated to avoid consumer confusion in product positioning. – Does it need to be mandatory, or are the results for stakeholder or product differentiation & marketing tool. – Risk & Hazard is mandatory.
– Stakeholders should determine the relevance of LCA to any product category and if relevant the extent to which it is used. – Stakeholders should determine the relevance of risk/hazardous assessment methodologies to any product category and if relevant the extent to which it is used.
LCA should be used as a minimum as the baseline for the biophysical impacts. LCA cannot address social or economic issues. Risk/hazards may be used to balance/compliment LCA as the baseline.

– Need a "nutrition label" of greenness that allows a consumer to compare product to product. – ISO 14000 standard and work from there with a comprehensive Product labeling program. – Should you put a mark on a product based on a LCA? The answer is NO. As you move along the baseline will move up. Organics is a process program not a product program. It doesn't say this product meets any organic standards. – Some products have very high levels of offending raw materials and LCA tends to dilute and elevate the end product. – Manufactured products need LCA. If the person doing procurement thinks with sustainable thoughts – less material is a good thing, less raw goods is a good thing. Strategic focus of company is key.
– Sustainability standards will not be credible without a risk/hazard prioritization assessment or a life cycle based assessment. – Need to be able understand the LCA tool and the limitations; transparency of assumptions made for the LCA.
LCAs and risk/hazard assessments should not be used as a single determinate; they are just one factor with many others.
A general, consistent framework of LCA should be incorporated into all standard development. LCA should address all three aspects of sustainability. Waste disposal information- especially hazardous waste disposal method- should be included on product label to help guide purchasing decision.
Using LCA as a methodology for overall measurement of sustainability may not be the desirable until the method for conducting them can be standardized to some extent. Sustainability standards must consider risks, especially when materials are being used in new ways (e.g., formaldehyde in flooring). Every time something new comes, there are lessons to be learned.
– LCAs are coming as a tool; needs to be considered in standards development. – Lifecycle thinking needs to be incorporated. – Should be used depending on the product, marketplace. – LCA would be most valuable when criteria for each product category is determined. – LCAs could be a barrier for acceptance of the standard due to the need for expertise to conduct that LCA.
– LCA should be used as one tool to inform product design and product standards development, by someone who is competent to do LCA. – Barrier to entry for product to get certified must not be created by the standard. – Need cost/benefit analysis to incorporating these approaches, to save costs, industry grouping together to complete LCA. – Data quality and availability are challenges for LCA. Need a mechanism to encourage sharing of existing LCA data. Proprietary data and ownership is an issue that needs to be addressed. – Important to not only look at hazard assessment, but also risk assessment.

– Risk and hazard/exposure approaches have their own limitations. How do you balance risk versus perceived risk? – Risk-based standards don't need to replace regulations. Regulation should cover these concerns. Liability becomes a serious concern. Tools and indices can be useful.
– LCA and risk assessment practitioners – NEED TO TALK TO THEM – Need to understand what tools REALLY offer and then make decisions about what may be possible in a phased/stepped standard. – Application of LCA methodologies is obviously confusing to people. We need a way to translate LCA results to the populace to make it more credible. – LCA at least forces you to think more deeply. – If you do a LCA, you have more information than you might otherwise – could help inform policy MUCH more – add credibility to decisions. – At the beginning and end of the day, LCA is a decision-making tool. It's not a be all, end all. – LCA is important, but there are so many people offering the service, that it's hard to balance. Check with the American Center for LCA, which is implementing an LCA certification, which may help provide quality control to the LCA inclusion. – We're all for the inclusion of LCA data. We think more data is needed out there, and it needs to be shared and transparent – BUT not weighted! Need not only overall life cycle impacts by category (energy, water, etc.), but also by life cycle phase (raw materials, use, end-of-life), etc. LCA is not a single attribute consideration! – Most people don't understand risk assessment enough. If there's data to back it up we might want to include it, but you shouldn't make the value judgment for people. – Good LCA and risk practitioners STOP before the subjective state. – Expansion of the U.S. Life Cycle Inventory Database may help support better utilization and standardization of LCA data.
– Good thing – LCA serves as a starting point is to document what they are doing in order to better engineer their product. – Bad things – Risk assessment, cost-benefit analysis, and some of the other inputs; best correlation between the expectation correlates to who sponsors the assessment. – The self-reporting or self-evaluation may work but it's very hard for the reviewer to distinguish the validity. – We want to start to use LCA as a screening tools. Despite its potential for inconsistent and appearingly dissimilar but equally valid results, it still has value. We should push the consensus process applied rigorously to the LCA process. Force all of the stakeholders under the tent and conduct an LCA until all are satisfied with it and live with it. – Similarly, if we anticipate requiring LCAs, we need to put in place a mechanism for building up a "benchmark" LCA for various inputs. Today, if a manufacturer's inputs all have benchmarks that already exist, it's much easier to conduct an LCA. So, it seems to be penalizing some to require an LCA if a coincident effort isn't initiated to also start to build up these benchmark measures.
– Difficult to have a standard with only one. – Positive effects are seen. – Hazard assessment can be incorporated in LCA's. – To the point it becomes measurable.

LCA should be a goal but may not be the first step. The first step should set up a framework that provides for and actually facilitates migration to LCA as LCA matures. A standard could significantly feed the development of LCA. Risk/hazard assessment is a good start at "minimizing the negative" but the goal should also ultimately include "enhancing the positive". That's probably too touchy-feely and ethereal for a first round. Again, LCA does not take into account social equity issues that are critical to sustainability.
Absolutely. But they should be kept separate. They provide perspectives on different attributes and should not be aggregated. I do not trade off energy for toxics. Let assessment of each attribute be visible.
Quantitative LCA can be entirely too intimidating in its need for data and social arguments in weighting criteria. Furthermore, there isn't a single number that qualifies as a Sustainable Life Cycle. Life cycle thinking and review should be encouraged, however. Certainly a standard should require some evidence of consideration of life cycle impacts and possible improvements - but since it by definition considers the totality of complex system, there isn't necessarily one right way to create an overall "sustainable" product, nor is all the information knowable to review all impacts. Perhaps a standard can come up with "knock out" actions that disallow a sustainability claim for egregious actions at any given life cycle stage, e.g. if your recycle step involves manual disassembly of hazardous components by employees who do not use appropriate personal protective equipment, you get no credit as a sustainable product. Life cycle thinking also would say standards should include ongoing evaluation of impacts - intended and unintended that may have been missed or newly arise (e.g. corn ethanol).
100%
LCA is proven as the most effective way to consistently measure results. ISO 14044 has proven this out. LCA should be conducted in every case on every product or product category to determine which product impacts are occurring and how, to establish baselines for measurement, and as the viable alternative to measuring temporary criteria.
They must be incorporated to a much greater degree BUT not if they are not standardized. ISO 1444 does this but it is ignored. LCA should be used as a full life cycle assessment on any category to establish a reference baseline. Should be conducted to determine the environmental impact of the product and product category and environmental trade-off in that product or product category; and to be able to measure outcomes.
Until there is a standard for LCA it just doesn't make sense to base all decisions on results from an LCA report. They can vary widely depending on who commissioned them, if done independently, etc. Risk and hazard assessments are based on "how much bad can we get away with" as opposed to an alternatives assessment which is "how much good can we do" or what other ways could something be accomplished.
– LCA is informative to the process, but not necessarily entirely based on LCA. – Whenever possible, should incorporate LCA results to what you are doing – but LCA is not single

deciding factor. – Would be nice to have standardized process that says how to do LCA – most likely in the future. – Risk/hazard assessment should always be incorporated in standard development. – LCA does not address risk/hazard, they should be taken into consideration separately. – LCA could be relevant based on the product category the standard applies to.
Should be an important consideration. Risk/hazard assessment should be conducted prior to LCA.
LCA provides environmental impact data from a perspective depending on scope, boundaries and functional units. Separate from LCA risk and hazard assessment, health, safety and welfare, product limitations, testing and performance certifications as well as other technical performance data in making a balanced product evaluation.

7. How do you ensure that there are measurable environmental and societal outcomes?

LCA based standards (e.g. ISO 14024) have demonstrated environmental improvement. For example, Green Seal developed a standard for restaurants and food services (GS-46) after having conducted life cycle studies. The standard was set using this information and as a result, a service that can meet the standard has quantifiable environmental benefits.
You must have metrics! A sustainability standard will sustain itself!
On the environmental side, establish baseline that all can agree to, and begin stepwise improvements over that baseline.
– Good clearly defined metrics/indicators. – Provisions for both qualitative and quantitative considerations. – Clear rules for weighting and aggregation. – Verifiable data. – Avoidance of double counting (but not exclude multiple-effects). – Predetermined benchmarks, reference levels and/or scales of value for overall 'evaluation'. – Note: For majority of standards the SDOs/users do not have an infrastructure in place to report baseline or measurable outcomes.
You cannot "ensure" this but you can "promote" measurable outcomes.
Develop and deploy product relevant, standardized internal and external metrics that can be applied consistently.
– Benefits calculators in many categories. – Scientific matrices – Keystone benchmarks. – Utilize fair trade standards. – Employment in sustainability technology fields. – How can traceability of products in the supply chain be traced through economic (sales), social (employment) and environmental (clean air, reduced waste)? Environmental outcomes can be audited, societal is measured by private industry and the government (employment). – Stick with environmental labeling first, then look at how you can connect social and economic at the product level.
Establish a baseline, model the anticipated outcomes, and measure performance versus model. Measurement and verification need to be a part of the standard. There needs to be ownership of the process and outcome.

– Establish and create the baseline, you can only manage what you can measure. – Define what you are measuring first. – Science based statistical data – not the touchy feely data or criteria. – We need to practice economic environmentalism – manufacturers could take things to perfect greenness, but would anyone really buy the products because the cost would be so high. – Business cases at different levels – cottage industries versus big business and global products versus local products.
– Case studies of standard's impact – Commonly agreed upon measurable performance criteria in the standard, and an agreed upon methodology on how to measure and report the performance criteria. – Certification bodies for verification – Neutral monitoring organization – NGO, academia, market surveillance, government sponsored.
Measure what you can. For those environmental and societal impacts that you cannot measure or do not fully understand, have a process in place to ensure that standards continue to be re-reviewed and are capable to evolve with changes in society and improvement in measurement technology/technique.
Carefully select metrics to prevent them from crowding out other issues that can be measured simply.
– There are three categories, technical standard-setting with no impact for sustainability, technical standard-setting where sustainability is a concern, and standards designed specifically for sustainability. Standards specifically for sustainability should focus on the attributes mentioned in Q #4 which address the concerns of the stakeholders. – Standardization does not always mean it's sustainable. Conformity assessment process should verify that we have evaluated a list of sustainability metrics (marked with a designation) and then these same metrics should be reevaluated at the end of re-approval stage (e.g., 5 years) – this obligates standard-setters to close the loop at some point by re-evaluating the success of standards.
– It is important to have in place marketing systems intact prior to release of the standard to better understand how the standard/logo/etc. will impact the end user. – Need to establish the measures, performance indicators. – Focus groups, bottom line. – Measure: changes in habits, shifts in common practice, performance.
– Just because you can't measure something doesn't mean it shouldn't be an attribute. – Effective, adoption in the marketplace, compliance, criteria should be testable and the results should be able to be duplicated are important for a standard to have. – To what degree are societal outcomes measurable? – Subjective; Qualitative. – Realistic.

– Test over time.
– Baselines or other points of comparisons – Will probably not be universally implemented; may need to have overall program and targeted programs for different aspects.
– Monitoring.
– Set up milestones.
– Constantly evolving standards.
– Must say something about societal outcomes in your standard if you want something to happen – must include a way to evaluate it.
– Goals must be consistent with national priorities.
– We tend to mix regulations and standards in our discussions – Regulations occur when the market fails; Standards, we deal with hundreds on a daily basis.
– Standard needs to have a built in way to measure its own progress (e.g. Energy Star).
– The program should not just encourage reductions, but also reward those who already don't include harmful ingredients/impacts.
– What are you measuring and comparing to? How do you do it consistently? What information is required to make smart environmental decisions – and how do you arrive at it?

– Compiling data to assist (beginning).
– Establishing benefits within.
– Metrics.
– Creating formulas for benefits.
– Behavioral changes.
– Purchasing behavior.
– Benchmarking - Millennium eco system assessment – 60% of the world's ecosystem are in jeopardy. More resources are being used and not being returned.
– Montreal process criteria indicators of eco system health.

– Need a mechanism to modify over time. We don't understand all of the consequences and outcomes today. We know better now than our grandparents but need to do better. Our grandchildren will say the same thing of us.
– Generally, the group felt that it was important to establish some standard versus none. This pushes things forward. For example, when we find out that a product is harmful, we force the industry to re-formulate.
– We should consider mandatory and optional portions to standards. The optional section should note "look into this portion." It may not point to a solution but acknowledges the need.
– If I know that I have not created a problem to my knowledge base or those that I know that they already exist, can you measure that as a societal good? You may not be able to always accurately measure for now but should still require to "do no harm."
– If there is an economic benefit, it will take care of itself. If there is not an obvious economic benefit, the government has an obligation to step in and push things along, like the Clean Air Act.

I think there is a role for government in identifying key targets. The standards could help to address national sustainability targets (e.g. waste reduction; detoxification; material recovery, etc.).

The need for a given sustainable product-specific standard should be driven by concerns to reduce some issues of adverse impacts. Presumably, the more products that receive certification, the less the adverse impacts will be seen. Part of the receipt of a certification should be some measure of impact - reduced waste, reduced water use, reduced exposure levels, reduced GHG emission, higher quality of life (don't know how you measure this - cheaper product or expenditures to meet a need?) etc. across the user community for a given product manufacturer. The surrogate for impact may need to be release/exposure rather than outcome (e.g., you won't see lower GHG due to switching over a single consumer product). It'd also be nice if there was a requirement to look for and report on unintended life cycle consequences (especially as "sustainable" products scale up in use).
Need to set out baseline metrics at launch and measure future results against them. Research is key (and expensive).
For Environmental outcomes, systems analysis by doing Life Cycle Assessment and establishing a measurable baseline and desired outcomes. For societal outcomes, we still are limited to establishing criteria, but as we learn more, we should move to the outcome and LCA approach.
Do a systems analysis and set a baseline to measure against.
Just get started and see what works. Get feedback, revise and try again. There isn't a road map or manual for all of this! Get smart people involved and honor their expertise. Think beyond first cost and to the value that improved products bring beyond quarterly profits. Sometimes the improvements can bring significant revenue to companies. There are dozens and dozens of examples out there.
– Ensure the criteria used in the standard is measurable, otherwise results can never be measured to begin with. – Need verification or substantiation for environmental claims. – Sometimes societal outcomes aren't measurable – depends on what it is. – Cost of products should come down in long-run as a result of improved sustainability. – Identify the environmental and societal outcomes you want to achieve. – Determine ways that the relevant outcomes can be measured.
Need for consistent, quantifiable metrics; management performance standards needed. Recognition that there are environmental, societal and economic impacts for all standards.
To ensure measurable environmental and social outcomes must first define the proper metrics, scope and boundaries and you design a program to measure the desirable output. More funding for research on this topic is recommended. How does the industry ensure that a standard achieve the stated goals that incorporates social, environmental and economical outcomes.

Need to develop baselines and decide where we are today. Need validation and verification, continuous improvement. Must be part of the scope and criteria. What is the overall goal? Should have baseline and timeframe built in on which to measure.

8. What is most needed to help increase the creation of credible and robust product standards that consider/address sustainability?

Funding for existing programs and recognition that ISO 14024 (namely 14024) is the gold standard. This will help reduce label proliferation.
Refer to Question #3.
Powerful, market demand for sustainable products, or a funded government mandate.
– All of the above. – Dedicated and funded group of interested parties. – Broad-based involvement. – Better coordination. – Long-term process to bring people together regularly to ensure eventual streamlining of the systems.
Economic drivers and "collaborative network" to determine the science, logistics issues, so you can encourage competition not one-size-fits-all. Effective branding like "UL" for electrical safety.
Sustainable solutions must be defined by product category and have relevant metrics that are consistently measured. There must be credible data available for any metric that is recommended or a strategy for obtaining it.
– Focus on environmental first. – Decide whether single attribute is the market's point of entry, prior to moving to multiple attributes. – Involve key stakeholders in the development process – consumer, manufacturer, retailer, academia, branding experts (labeling). – Need one entity to take the subject of product standards e.g. EPA for environmental – develop product standards on the same template. – Requirement for certification.
Resources. Leadership. Collaborative model. Transparency.
– Definitions – a baseline. – Education and awareness of product labeling. – Credible and robust standards are difficult, when even the experts are confused about what criteria are important and are not important. – Fast track consensus process – consortia is faster.

– Resources and subject matter experts/stakeholders engaged in the standards development process. – LCA and or risk hazard/assessment, environmental impact consideration. – Market relevance. – Continuous improvement built into maintenance cycle. – Effective marketing/communication plan to ensure effective implementation of standard.
Consumer demand AND government demand. When choosing between products, most people will choose "green" if it is economic equivalent and it's essentially the same product, or if it's mandated by the law. Need to have a clear legislated mandate so people will follow.
– A clear definition of sustainability. – A clear definition of LCA (with toxicity definition included). – A cooperative effort to create a publicly-accessible database of information to quickly measure LCA attributes; for example – you could enter specs on ingredients and production processes, and then you could get a number for "embodied energy" or "recyclability".
– What are the incentives? – Demand from institutional purchasers not so much in the consumer education – buyer education and demand for sustainable products is needed. – Greater cooperation needed; incentivized or regulated. – Verification of claims is important in developing a credible and robust standard to minimize "greenwashing". – Credibility of who put the standard together; who would review the standard to determine the credibility and robustness of the standard?
– Funding for program development, volunteers, time, expertise. – Need someone to go through a priority-setting process, roadmap and end goals. – Congressional mandate could be sought to drive the effort. – Stimulus money. – More communication amongst stakeholders and with end users. – Bring academics to the table, to make theories and processes more robust.
– INFORMATION!! The right information is needed. We need to ask the right questions and share the information. – DO: – Involve all necessary stakeholders (which includes the public and consumers). – Work with international organizations that can help/are already doing something that there might be synergies with (e.g., ISO, EU, etc.). – Make final version transparent. – Include life cycle thinking, if not LCA data. – Provide consumers with enough data (whether visual or numeric) to apply their own preferences. – Educate consumers about what's included! – Consider single attribute standards at part of the solution.

– Realize that multiple attribute standards are needed to make a true sustainability assessment. – DO NOT: – Give a final "score". – Weight different categories, applying our own preferences so that everything is overall comparable. – Forget that our purpose is to protect public health and the environment. – Assume that all companies will be able to pay for/afford to obtain such a high level certification even if they are already doing everything right. – watch out for equity/small business issues!
Simple and logical – we sometimes forget about this entirely when producing standards. Needs to be a basic benchmark guidance as in question #3, considering that everyone's logic is different. Introduce some environmental concerns and sustainability standards into the Stage-Gate process for product development…and getting the purveyors of this commonly used product development process to adopt these measures. This would force these questions as a product is being considered.
– Funding/sponsor. – Data. – Stakeholder forums. – Resources.
Consumer (any type of purchaser) education. People need to do more life cycle thinking and evaluating information to make better overall decisions. Standards should be directed at providing validated useful information for their decision making.
Willpower, consensus, constructive government leadership, resources. If clarification does not happen soon in the marketplace, manufacturers will continue to expend more resources on certifications that have less impact because they are drowned out in the marketplace noise AND the public will become cynical to certifications in general when they realize the dubious label they relied upon was a marketing effort rather than something meaningful.
Sustainability must include social, environmental, and economic metrics. The societal benefits must be measured and included.
Full life cycle assessment that include labor, environment, and economic impacts. Greater emphasis on scientific measures of environmental impact. Too little discussion about the honest science and technical assessment. Not only a better or improved process for science but also some standardization of a process to measure.
Consumer education for what they really need. They have been overwhelmed by advertising and had 'green' stuff thrown at them. Consumers are pretty smart given half a chance. They need information and they have a right to know what's in the products they're using and eating.

– Holding workshops like this is a start. – Providing incentives.
Scientific studies needed. Consumer demand for sustainability is the most effective driver. Consumer education critical. Functionality of product key.
Research on all global competing standards needs to be conducted and differences should be noted. Then something like what NIST has recommended – where criteria is established, consistent testing or reporting is established and if labs are involved they should be calibrated.
Personal and industry commitment, time, money, and baselines/data. Implementation and acceptability.

9. Are there any other comments that you would like to share?

ISO 14020/14024 was developed as the global guidance (a means to harmonize global efforts) for the development of sustainability product and service standards. This standard was approved by the ANSI/U.S. representatives. As a result, it should be recognized as the gold standard. Other processes used as the primary guidance have proven to weaken the objective of getting to more responsible products and services. There are organizations following this guidance in the world and the U.S. (e.g., Green Seal in the U.S., EcoLogo in Canada).
Great first start, you will soon need to start splitting groups apart to accommodate more specific interests.
Need to address labeling either in the development of the methodology or through the third party certification process.
We can have high level dialogues but ultimately the volunteer-grunts will have to do all this. We're getting spread too thin. Focus venues, don't create more of them. This process seems to have momentum and could lead to a measurable outcome. ASMT E60 decided NOT to do an American National Standard (ANS) so that it could become an international standard – ASTM does its own track outside ISO.
Additional discussion points on whether there is one logo that can transcend products and markets with credibility. If a safety incident occurs, how does that impact the value of a sustainable brand? What did the carbon footprint say to the carbon offset? Together we are nothing.
What is the process needed for true innovation? How do you stop proliferation?
– Utilities are worried about green house gases – air. – End use and disposal of products. – Toxicity in chemicals is key.
Review other countries' processes, such as Europe, Japan, Australia, others groups and consortia.
– Common framework for making sense of all the standards currently out there. – Competition is a good thing but not always; in regards to standards it is not a good thing. – Market will determine the most robust standard. – Government to be involved in harmonization of standards: there is an international dialogue (United States Trade Representative (USTR), TCO, Blue Angel, etc.); mutual recognition; communication globally is important; involved at the end at a higher level, not at the minutia level of detail; advantages and disadvantages. – Use studies from other organizations/governments so that we're not recreating the wheel. – The small roundtable discussions were much more effective than panel discussions: less presentation

more interaction; didn't need each panelist to answer each question – it was very repetitive; this is a big conference for a very complex issue – maybe have separate conferences for each aspect of the triple bottom line (environmental, social, economic). – Next steps? What should ANSI do? – Sustainability standards should be kept relatively broad keeping in mind that the more broad they get the more you lose stakeholder participation; Can ANSI be an informational clearinghouse – standard development happenings; what standards are already out there?
– Jargon. We need to get the terms and definitions we're using for this effort straight. – Who's Involved. ISO and other international efforts need to be at the table. – LCA. There's a lot of misunderstanding about LCA's capabilities and ability to be compared over different methods and data sources. – Weighting. – Just say "no" to forcing others to conform to our preferences between global warming potential, human health, etc.
Sustainability is not an endpoint. It is a path we meander trying not to cause catastrophic changes that ecosystems (including human populations) cannot adapt to. I'm not sure how you devise a standard requiring you to stay on a path that we don't really know where it is and that never ends.
It is a fundamental urgency that the U.S. government take the time to influence the European Commission DIRECTLY (not indirectly via the UK). We need to share the same standards at least for Green Information and Communication Technologies (ICT) to have the most successful impact. We need dedicated U.S. government staff to take up the challenge.
These questions appear to assume that a multiple criteria approach is the current state of the art, but LCA should be given serious consideration. Wish I had more time to prepare answers to these questions.
The way the questions are framed, it seems to assume that multiple criteria approach is the way to go but it has been proven to move beyond that model to a life cycle assessment model.
This is another important opportunity to advocate for what I term the "Slinky Approach" to creating positive change. The approach involves setting out consensus, flexible, voluntary standards and programs that encourage industry/society leaders to step out in front of the market and take action in the direction of a positive policy goal. Also involved is providing financial and non-financial incentives to encourage risk and account for additional financial costs the leaders take on. As the leaders are encouraged to lead, they eventually bring along the bell-curve of mainstream industry/society. Then, it is important to bring up the rear through mandates by raising the minimum acceptable bar for behavior (e.g. code). There will always be bottom feeders and it is important that they do not gain or maintain too large of a cost advantage over the leaders and mainstream. Subsequently, the voluntary standards and incentives are moved out further in the direction of the policy goal in order to encourage the leaders to take another risk. This dual approach of step-function voluntary leadership standards and mandatory minimums creates significant market/societal movement while minimizing the understandable negative reaction industry and people have to "being told what to do."

There is a role for both single and multi attribute standards. I think that energy and toxics are key product attributes that require great depth and can be used "democratically" as Dr. Rangan noted in conjunction with other labels to create more sustainable products.
Whatever is done, economic viability is required.
Education, education, education with easy to understand information.
– The presence of a label encourages the consumer to RELY on it and TRUST it to mean something. But the true meaning of the labels themselves needs to be clearer to the consumers. For example, on a plastic bottle, the presence of the moving arrow recycling symbol indicates to the consumer that it can be recycled, but that is not true. The arrow and number together simply indicate which stream it needs to enter for recycling. "7"/Other may be a bioplastic but may also be a polymer that is incompatible with anything else. – The standards should perhaps give better stipulation or guidance on usage of the symbols like the arrows. OR – the standards might want to come up with a requirement for all manufacturers to add to the product label how to actually dispose of it. That may not be the right path. However, the group felt that a standard should somehow ensure that the end consumer will be made aware of how to dispose of the product or return it to the manufacturer in an environmentally appropriate manner. – ASTM/ANSI have a role in helping to drive some consolidation in standards and especially making it easier across international boundaries. This will help with standards but won't really address the question of proliferating labels. We think that the market will solve this but hope for it to happen sooner. We did not want to see it to be mandated; voluntary standards and government authority can establish a level playing field. Even in its current state, our economic size and strength can be an influencer. Others may be likely to follow the U.S. standard. – There is a difference in what a B2B and what a business-to-customer/consumer need from a label or may know about it. Also, we thought we ought to clarify what we mean about labels and attributes. Is it a nutrition-style label or something like Pharos? Or a certification like GreenGuard or GreenSeal? Or a label like EnergyStar? Need to clarify the conversation. – At the point of purchase, it's a different attribute and label evaluation that goes on in a more sophisticated purchasing evaluation that involves research. The old Energy Star label used to show the comparison of energy consumption of new paradigm vs. old.

Attachment 2
ANSI Workshop: *Toward Product Standards for Sustainability*
Complete List of In-person Attendees

First Name	Last Name	Organization
Stephen	Ashkin	The Ashkin Group, LLC
Heather	Benko	American National Standards Institute
Cate	Berard	U.S. Environmental Protection Agency
Paul	Bertram	North American Insulation Manufacturers Association
Joe	Bhatia	American National Standards Institute
Michael	Biddle	MBA Polymers, Inc.
Marilyn	Black	Greenguard Environmental Institute
Joseph	Bocchiaro	InfoComm International
Sharon	Bomer	Biotechnology Industry Organization
Tina	Borger	National Institute of Government Purchasing
Michael	Boyles	U.S. Department of Commerce
Randall	Bright	Laticrete International
Deborah	Brody-Hamilton	The Keystone Center
Pamela	Brody-Heine	EPEAT
Linda	Brown	Scientific Certification Systems, Inc.
Meredith	Bruce	CropLife America
Christy	Buckham	Clorox
John	Buffington	BluSkye Consulting
Mary	Burgoon	Rockwell Automation
Kelsey	Burns	National Institute of Standards and Technology
Laureen	Burton	U.S. Environmental Protection Agency
Anne	Caldas	American National Standards Institute
Rick	Cantrell	Sustainable Forestry Initiative, Inc.
Ashley	Carlson	American Chemistry Council
Kristin	Carter	Calera Corp
Scot	Case	TerraChoice Environmental Marketing, Inc.
Stephanie	Castorina	IPC
Scott	Cedarquist	American Society of Agricultural and Biological Engineers
Chet	Chaffee	Scientific Certification Systems, Inc.
Christine	Chase	Green Seal, Inc.
Richard	Church	C. M. Services, Inc.
Tim	Cole	Forbo Flooring Systems
Jennifer	Cooper	Five Winds International
Margaret	Cooper	American National Standards Institute
Scott	Cooper	American National Standards Institute
Amy	Costello	Armstrong World Industries, Inc.
Larry	Cox	American Composites Manufacturers Association
Ryan	Crane	ASME
Gregory	Crawford	Steel Recycling Institute
James	Darr	U.S. Environmental Protection Agency
Kirby	Davis	Laticrete International
Richard	Davis	Georgia Pacific Corporation
Daryl	DeJean	Emerging Technologies Associates, Inc.
Pete	DeMarco	International Association of Plumbing and Mechanical Officials
Edgar	Deomano	National Wooden Pallet & Container Association
Julia	Doherty	U.S. Trade Representative
Robert	Doudrick	U.S. Forest Service

Attachment 2
ANSI Workshop: *Toward Product Standards for Sustainability*
Complete List of In-person Attendees

First Name	Last Name	Organization
Paul	Earhart	K Consulting
Kevin	Edwards	SGS
Don	Erbach	American Society of Agricultural and Biological Engineers
Ric	Erdheim	North American Philips Corporation
James	Ewell	McDonough Braungart Design Chemistry
Javier	Fajardo	U.S. Department of Agriculture, Foreign Agricultural Service
Siavash	Farvardin	International Code Council
Andrea	Fava	Intel Corporation
David	Felinski	Association for Manufacturing Technology
Shaw	Feng	National Institute of Standards and Technology
William	Flanagan	General Electric Global Research
Shela	Fletche	OfficeDepot
Katia	Fowler	American Herbal Products Association
Leslie	Gage	Greenguard Environmental Institute
Annie	Gardiner	Green Penguin Communications
AnnMarie	Gebhart	ToxServices, LLC
Sujit	Ghosh	Maritime Administration
Gordon	Gillerman	National Institute of Standards and Technology
Maryann	Gorman	ASTM International
Roger	Grant	Construction Specifications Institute
Don	Greenstein	The Keystone Center
Elizabeth	Grimes	Arkema, Inc.
Heather	Haigh	ExxonMobil
Jessica	Hall	North American Horticultural Supply Association
Lane	Hallenbeck	American National Standards Institute
Renee	Hancher	US Department of Commerce
Andy	Harlan	Rochester Institute of Technology
John	Hausoul	Wallcoverings Association
John	Heckman	Five Winds International
Carol	Hetfield	U.S. Environmental Protection Agency
Howard	Hime	U.S. Coast Guard
Melissa	Hockstad	The Society of The Plastics Industry, Inc.
Kate	Howard	Center for Integrated Manufacturing Studies
Anny	Huang	Carnegie Mellon University
Chris	Hudgins	ISPA
Josh	Jacobs	Greenguard Environmental Institute
Stephen	Jadatz	SE Jadatz, Inc. (Schering-Plough)
Kirsten	Jaglo	U.S. Department of Agriculture, Foreign Agricitultural Service
I.S.	Jawahir	University of Kentucky
Anne	Johnson	Green Blue Institute
Jay	Johnson	Thomas Associates, Inc.
Scott	Kapelanski	Masco Corporation
Katharine	Kaplan-Osdoba	U.S. Environmental Protection Agency
Bill	Karsell	
Scott	Kaufman	The Carbon Trust
Thomas	Kenney	National Association of Home Builders Research Center, Inc.
Christopher	Kent	U.S. Environmental Protection Agency

Attachment 2
ANSI Workshop: *Toward Product Standards for Sustainability*
Complete List of In-person Attendees

First Name	Last Name	Organization
Norma	Keyes	Cotton Incorporated
Alison	Kinn	U.S. Environmental Protection Agency
Marcia	Kinter	Specialty Graphic Imaging Association
Suzan	Klein	The Keystone Center
Bill	Koch	United States Pharmacopeia
Jeffrey	Kohn	U.S. Environmental Protection Agency
John	Krowka	Personal Care Products Council
Rena	Krumholz	American National Standards Institute
Robert	Kwartin	ICF International
Beth	Law	Consumer Specialty Products Association
Katy	Lellelid	Specialty Graphic Imaging Association
Kate	Lewis	U.S. Department of Agriculture
Nancy	Liaboe	Abbott
Clare	Lindsay	U.S. Environmental Protection Agency
Hung	Ling	Alcatel-Lucent USA
Kenneth	Lowery	U.S. Department of Agriculture Foreign Agricultural Service
Kevin	Lyons	National Institute of Standards and Technology
Montana	Mallett	National Institute of Standards and Technology
Diane	Martel	Tarkett
Chuck	Martin	U.S. Department of Agriculture
James	Mason	Arkema, Inc.
Khaled	Masri	Standards Managment International
Mili	Mavely	American Industrial Hygiene Association
Steve	Mawn	ASTM International
Kathleen	McAllister	The National Academies
Jack	McAneny	Procter & Gamble
Tom	McCarty	FM Approvals
Michael	McDavit	U.S. Environmental Protection Agency
Emily	McDermott	McDonough Braungart Design Chemistry
William	McElnea	National Institute of Standards and Technology
Michael	McGuire	John Deere
Mary	McKiel	U.S. Environmental Protection Agency
James	McNew	Outdoor Power Equipment Institute
Rodney	McPhee	Canadian Wood Council
Charles	McShane	Cooper Power Systems
Druenette	Meadows	The Greenteam, Inc.
Brian	Meincke	American National Standards Institute
Brad	Miller	The Business and Institutional Furniture Manfacturer's Association
Andrei	Moldoveanu	National Electrical Manufacturers Association
Joshua	Mooney	American Council of Independent Labs
Kristin	Moore	Renewable Fuels Association
Karen	Moran	Defense Logistics Agency
Katharine	Morgan	ASTM International
Vladimir	Murashov	National Institute of Occupational Safety & Health
Chip	Murray	American Forest & Paper Association
Jim	Neill	Retail Industry Leaders Association

Attachment 2
ANSI Workshop: *Toward Product Standards for Sustainability*
Complete List of In-person Attendees

First Name	Last Name	Organization
Elizabeth	Neiman	American National Standards Institute
Ann	Ngo	U.S. Department of Commerce
World	Nieh	U.S. Department of Agriculture
Gregory	Norris	Sylvatica/Harvard
Josip	Novkovic	CSA America, Inc.
Chris	O'Brien	Responsible Purchasing Network
Leila	Odom	U.S. Department of Commerce
Jim	O'Leary	U.S. Environmental Protection Agency
Brendan	Owens	U.S. Green Building Council
Stuart	Parker	Inside Washington Publishers
Sueanne	Pfifferling	Pfifferling & Associates, LLC
Cassie	Phillips	Weyerhaeuser
Colleen	Pickford	Information Technology Industry Council
Edwin	Pinero	Parsons Corporation
Bill	Pritchard	Daily Environment Report
Erik	Puskar	National Institute of Standards and Technology
Jabeen	Quadir	Sustainability Edge Solutions
Anthony	Quinn	ASME
Sudarsan	Rachuri	National Institute of Standards and Technology
Verena	Radulovic	U.S. Environmental Protection Agency
Urvashi	Rangan	Consumers Union/Consumer Reports
Michelle	Ranville	U.S. Environmental Protection Agency
Amanda	Raster	Leonardo Academy
Charles	Rau	ExxonMobil
Marlene	Reddoor	U.S. Environmental Protection Agency
Thomas	Redick	Geeclaw
Sylvana	Ricciarini	International Code Council
Wayne	Rifer	Green Electronics Council
Barbara	Robinson	U.S. Department of Agriculture
John	Rodgers	Leonardo Academy
Laura	Rowell	MeadWestvaco
Daniel	Ryan	Underwriters Laboratories Inc.
Mark	Ryland	Microsoft
Abdelhadi	Sahnoune	ExxonMobil
Stanley	Salot	The Electronic Components Certification Board
Michael	Sanders	Information Management Network
Prabir	Sarkar	National Institute of Standards and Technology
Amy	Schaffer	American Forest & Paper Association
Jan	Schieffer	Industrial Fabrics Association International
Frances	Schrotter	American National Standards Institute
Rudi	Schubert	IEEE
Marc	Schurger	Eastman Chemical Company
Ray	Sharples	Johnson & Johnson
Aurora	Sharrard	Green Building Alliance
Sally	Shaver	Shaver Consulting
Yalmaz	Siddiqui	OfficeDepot
Daniel	Silk	Georgia Pacific Corp.

Attachment 2
ANSI Workshop: *Toward Product Standards for Sustainability*
Complete List of In-person Attendees

First Name	Last Name	Organization
Christine	Sloop	U.S. Department of Agriculture
Timothy	Smith	University of Minnesota
MaryJo	Snavely	New American Dream, Responsible Purchasing Network
Libby	Sommer	U.S. Environmental Protection Agency
Ram	Sriram	National Institute of Standards and Technology
Kathleen	Stanton	The Soap and Detergent Association
Lee	Stevens	Emerging Technologies Associates, Inc.
Jennifer	Stradtman	U.S. Department of Commerce
Hyowon	Suh	Korean Advanced Institute of Science and Technology
William	Talbot	U.S. General Services Administration, Federal Acquisition Service (GSA-FAS-IWAC-3QSAB)
Stephanie	Tanner	U.S. Environmental Protection Agency
Roland	Temple	AZS Consulting, Inc
Bob	Thompson	U.S. Environmental Protection Agency
Dean	Thompson	Resilient Floor Covering Institute
Doug	Thompson	The Keystone Center
Kathleen	Trepper	Construction Specifications Institute
Brian	Trimble	Brick Industry Association
Lucian	Turk	Dell, Inc.
Bruce	Uhlman	BASF Corporation - The Chemical Company
Theresa	Vanna	Pace Industries
Denise	VanValkenburg	Masco Retail Cabinet Group
Venkatesh	Vasudevan	ExxonMobil
Jill	Vohr	U.S. Environmental Protection Agency
Kathleen	Vokes	U.S. Environmental Protection Agency
Rand	Waddoups	Wal-Mart Stores, Inc.
Phillip	Wakelyn	Wakelyn Associates
Colleen	Walker	Technical Association of the Pulp and Paper Industry
Michele	Wallace	Cotton Incorporated
Craig	Wallwork	Environmental Industry Association
James	Walters	Air-Conditioning, Heating and Refrigeration Institute
Michelle	Wegener	BMT Designers & Planners
Joseph	Wendler	International Trade Administration, Office of the Standards Liasion
Jay	West	American Chemistry Council
Sherri	White	U.S. Environmental Protection Agency
Margaret	Whittaker	ToxServices, LLC
Steven	Wicelinski	Duracell Inc.
Matthew	Williams	Association of Home Appliance Manufacturers
George	Willingmyre	GTW Associates
Jane	Wilson	NSF International
Aubrey	Woolley	Canon USA
Vicki	Worden	The Green Building Initiative
Malia	Zaman	IEEE
Jeaneen	Zappa	Green Building Alliance
John	Zlockie	Project Management Institute

AMERICAN NATIONAL STANDARDS INSTITUTE

1819 L Street, NW
Sixth Floor
Washington, DC 20036
Headquarters

25 West 43rd Street
Fourth Floor
New York, NY 10036
Operations

212.642.4900
General Information

212.398.0023
Telefax

www.ansi.org
On the Internet

ANSI Workshop *Toward Product Standards for Sustainability*

hosted by the American National Standards Institute

www.ansi.org/events