Sustainability Accounting Standards Board

Industry-Based Standards to Guide Disclosure and Action on Material Sustainability Information

Presentation to CalPERS Investment Committee
March 14, 2016

Jean Rogers, PhD - *CEO and Founder*
Janine Guillot - *Director of Capital Markets Policy and Outreach*

The SASB Mission

Improved non-financial disclosure enhances market efficiency

The mission of SASB is to develop and disseminate sustainability accounting standards that help public corporations disclose material, decision-useful information to investors.

That mission is accomplished through a rigorous process that includes evidence-based research and broad, balanced stakeholder participation.

Facts about SASB

- Independent 501(c)(3) nonprofit
- American National Standards Institute (ANSI) accredited standards developer
- Developing industry-specific standards for 10 sectors and 79 industries
- Guided by the U.S. Supreme Court's definition of materiality, SASB prioritizes material sustainability factors for disclosure to investors

Strong Leadership

SASB Board of Directors: Informed by experience, commitment, and vision

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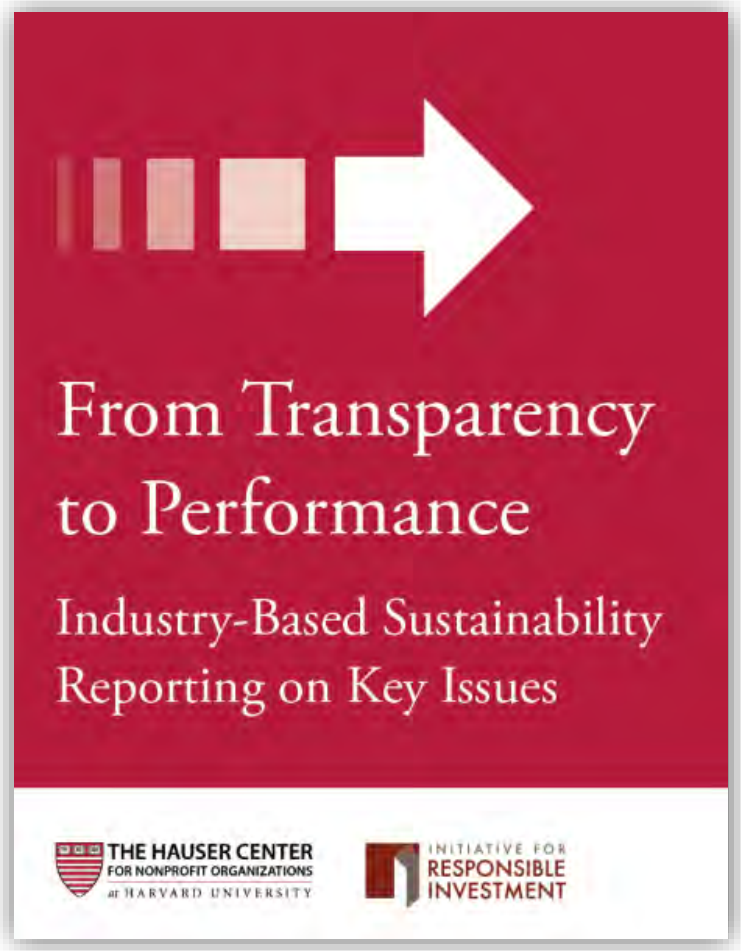
The Materiality Method

SASB's approach grew out of research done at Harvard University

HARVARD UNIVERSITY
JOHN F. KENNEDY SCHOOL OF GOVERNMENT

From Transparency to Performance

Industry-Based Sustainability Reporting on Key Issues
July, 2010



- Steve Lydenberg
  Domini Social Investment and IRI Fellow, Harvard University
- Jean Rogers, PhD
  SASB, formerly Arup and Loeb fellow, Harvard University
- David Wood, PhD
  Initiative for Responsible Investment, Harvard University

The SASB Difference

SASB standards are created for the market, by the market

- **Material**
- **Decision-Useful**
- **Cost-Effective**
- **Industry-Specific**
- **Evidence-Based**
- **Market-Informed**

SASB's View of Sustainability

SASB identifies disclosure topics across five key dimensions of sustainability

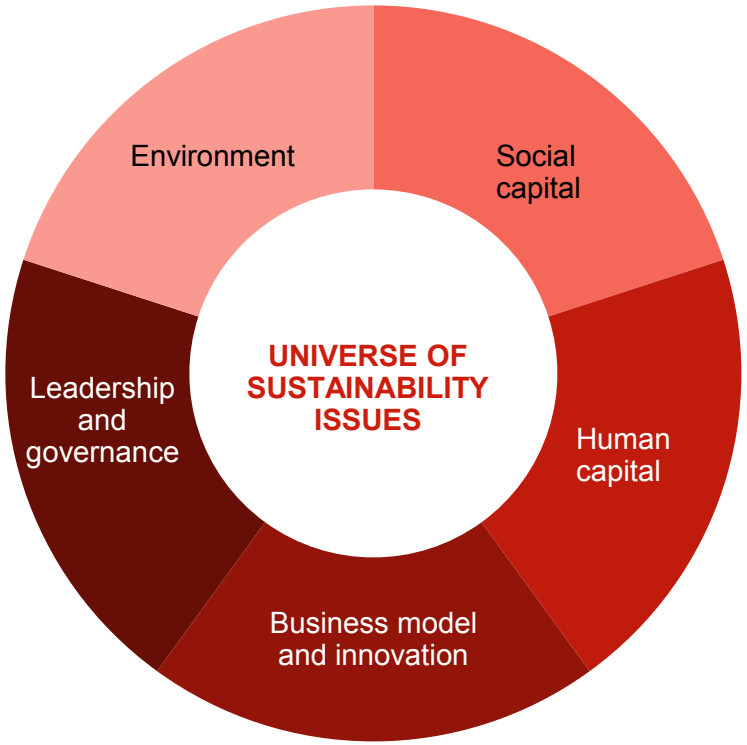
Environment
- GHG emissions
- Air quality
- Energy management
- Fuel management
- Water and wastewater management
- Waste and hazardous materials management
- Biodiversity impacts

Social capital
- Human rights and community relations
- Access and affordability
- Customer welfare
- Data security and customer privacy
- Fair disclosure and labeling
- Fair marketing and advertising

Human capital
- Labor relations
- Fair labor practices
- Diversity and inclusion
- Compensation and benefits
- Recruitment, development, and retention

Business model and innovation
- Lifecycle impacts of products and services
- Environmental and social impacts on assets and operations
- Product packaging
- Product quality and safety

Leadership and governance
- Systemic risk management
- Accident and safety management
- Business ethics and transparency of payments
- Competitive behavior
- Regulatory capture and political influence
- Materials sourcing
- Supply chain management



Designed for Integration Into Mandatory Public Filings

An integrated reporting environment without regulation

Definition of Materiality from an Investor's Perspective

SASB is guided by the U.S. Supreme Court definition in identifying disclosure topics

*"Material information" is defined by the U.S. Supreme Court as presenting a substantial likelihood that the **disclosure** of the omitted fact **would** have been viewed by **the reasonable investor** as having significantly altered **the "total mix" of information** made available.*

TSC Industries, Inc. v. Northway, Inc., 426 U.S. 438 (1976)

A Market-Driven Response

SASB addresses needs of all market participants—both investors *and* issuers

Issuers

- A minimum set of disclosure topics that are likely to have material impacts on companies in an industry
- Cost-effective disclosures using industry-standard metrics
- Ability to benchmark performance against competitors and set targets for improving performance
- A way to satisfy the requirements of Regulation S-K in the U.S. and Directive 2014/95/EU in Europe

Investors

- Standardized, publicly available information on material sustainability factors
- Comparable data for benchmarking and evaluating company performance
- Reliable information in a trusted channel subject to internal controls (i.e., 10-K and 20-F)
- Metrics to guide more focused corporate engagement efforts

Balanced Participation

SASB's standards-setting process is inclusive and informed by industry expertise

SASB INDUSTRY WORKING GROUPS REFLECT BROAD-BASED INTEREST

IWG Participation

>2,800

PARTICIPANTS

$23.4T

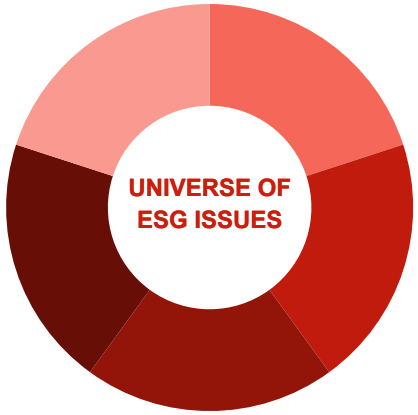
ASSETS UNDER MANAGEMENT

$11.0T

MARKET CAPITALIZATION

Rigorous, Transparent Process

SASB standards are rooted in evidence and shaped by consensus



Industry Research

Evidence-based discovery

Vetting

Industry working group engagement and evaluation

Standards Development

Disclosure topics and metrics consensus and definition

Public Comment

Feedback and refinement

Provisional Standards Release

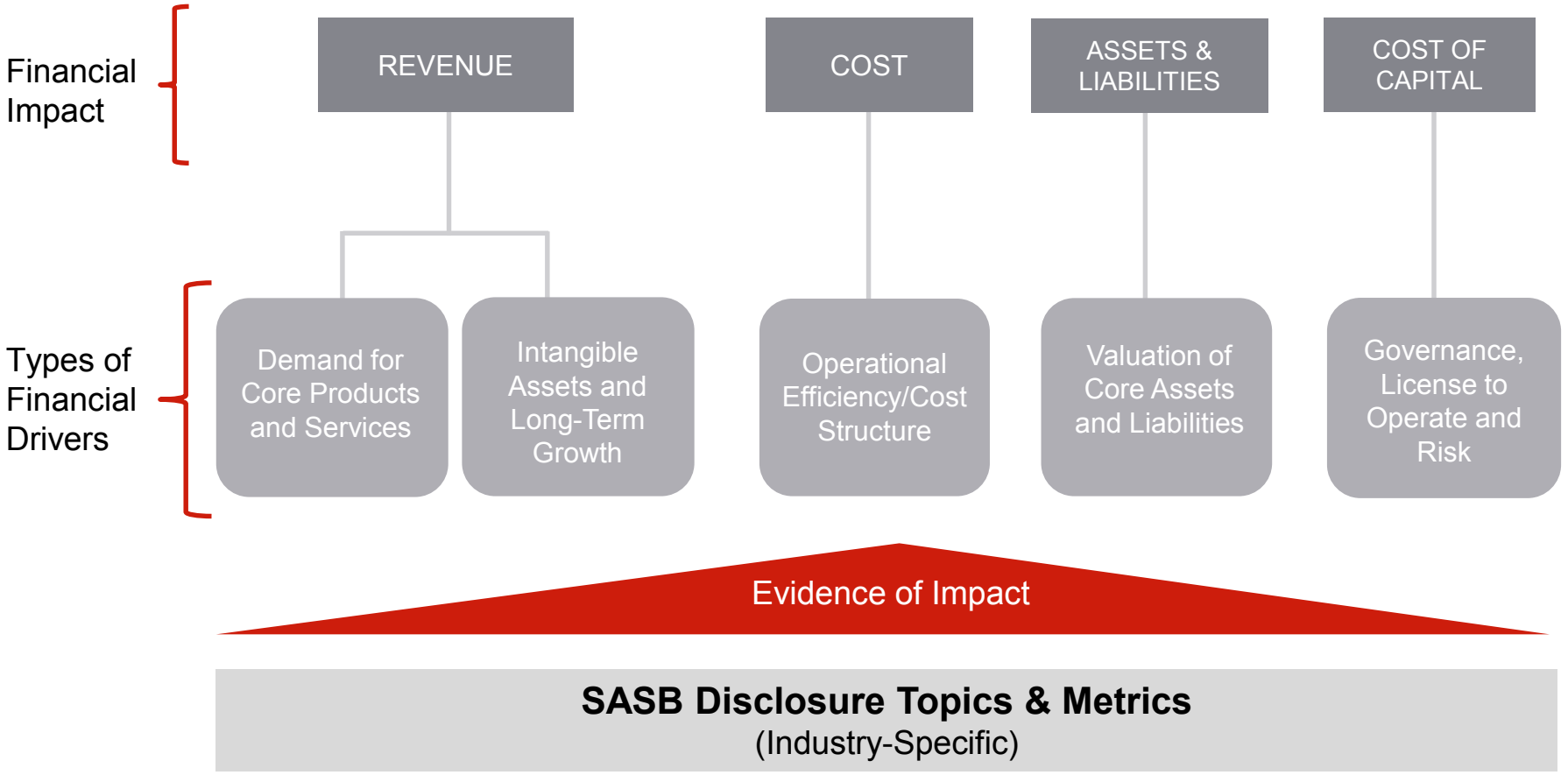
Road testing by companies

Codification

2016: Deep consultation with issuers, internal review, cost-benefit analysis
2017: Code and basis for conclusion

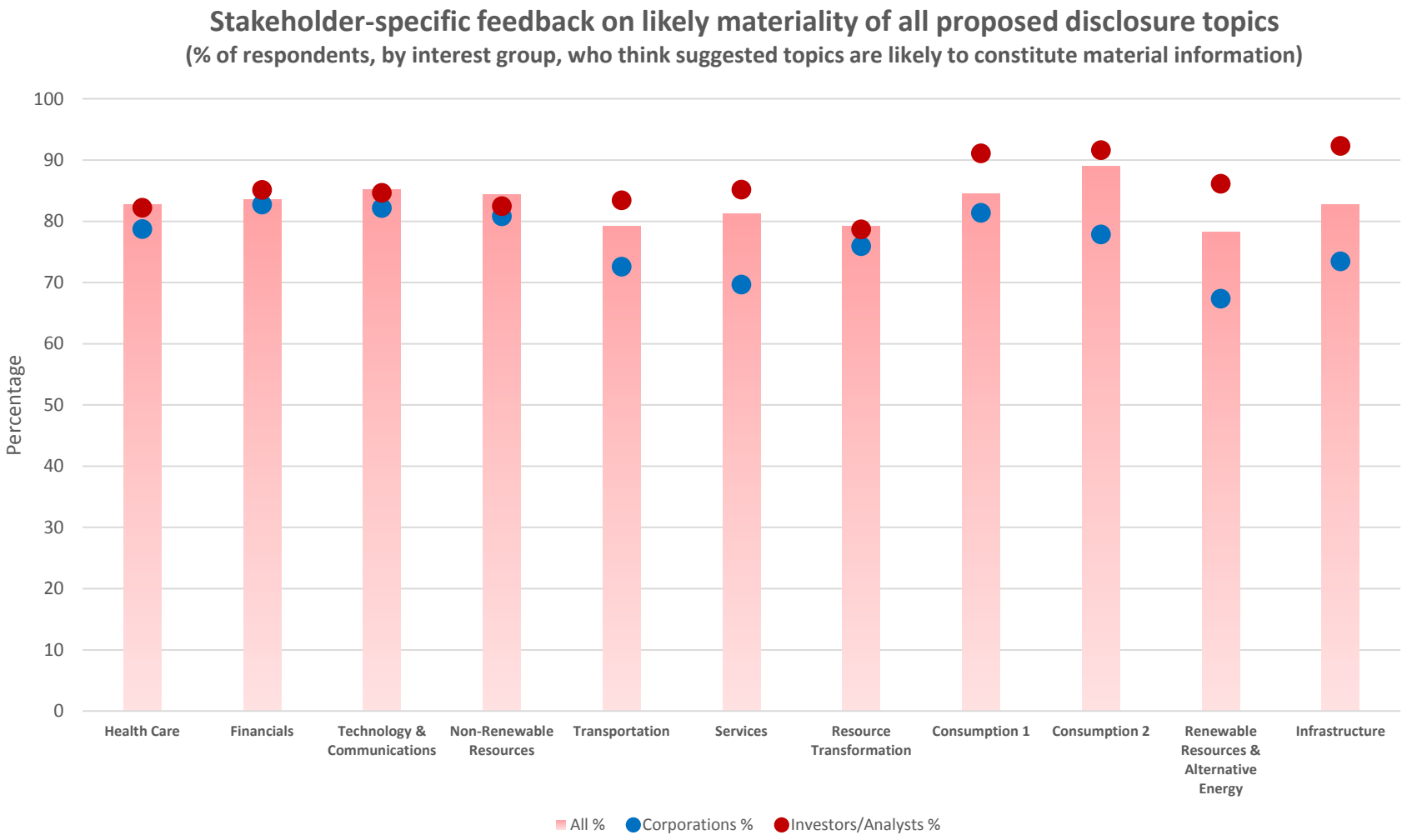
Known Value Drivers

SASB standards address business issues known to impact value creation and risk



Shaped By Consensus

SASB topics must achieve a high level of consensus among all stakeholder types



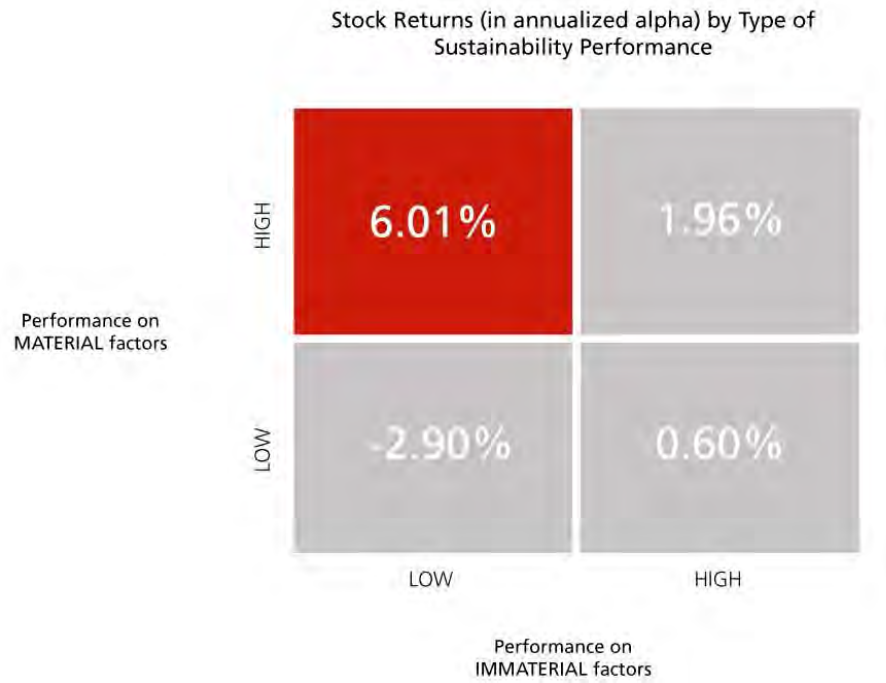
Supported by External Research

Harvard research validates SASB's standards-development process

"Corporate Sustainability: First Evidence on Materiality,"

Working Paper by Mozaffar Khan, George Serafeim, and Aaron Yoon

Harvard Business School, 2015



Findings:

- Using SASB's framework, Harvard researchers found that **firms with good performance on '*material* sustainability issues' and concurrently poor performance on '*immaterial* sustainability issues' enjoy the strongest financial returns**. These results speak to the efficiency of firms' sustainability investments, and also have **implications for asset managers** who have committed to the integration of sustainability factors in their capital allocation decisions.
- They also found that **80 percent of disclosures are immaterial,** having no correlation to positive performance.

Robust Standards

SASB standards contain industry-specific disclosure topics, metrics, and guidance

SASB Standard

Industry-specific disclosure topics

Accounting metrics for each disclosure topic

Technical protocol for compiling data

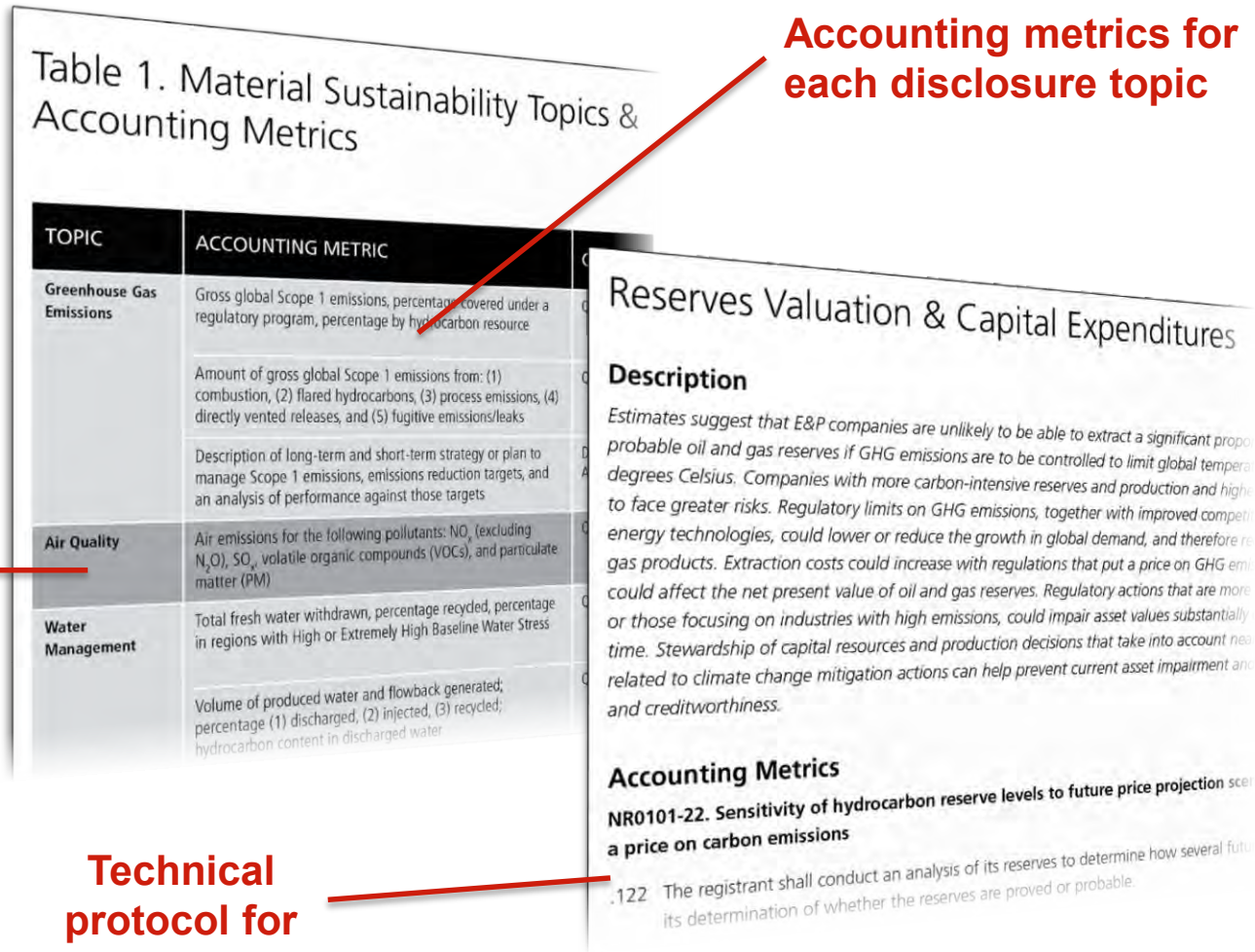


Table 1. Material Sustainability Topics & Accounting Metrics

TOPIC	ACCOUNTING METRIC
Greenhouse Gas Emissions	Gross global Scope 1 emissions, percentage covered under a regulatory program, percentage by hydrocarbon resource
	Amount of gross global Scope 1 emissions from: (1) combustion, (2) flared hydrocarbons, (3) process emissions, (4) directly vented releases, and (5) fugitive emissions/leaks
	Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets
Air Quality	Air emissions for the following pollutants: NO_x (excluding N_2O), SO_x, volatile organic compounds (VOCs), and particulate matter (PM)
Water Management	Total fresh water withdrawn, percentage recycled, percentage in regions with High or Extremely High Baseline Water Stress
	Volume of produced water and flowback generated; percentage (1) discharged, (2) injected, (3) recycled; hydrocarbon content in discharged water

Reserves Valuation & Capital Expenditures

Description

Estimates suggest that E&P companies are unlikely to be able to extract a significant propo probable oil and gas reserves if GHG emissions are to be controlled to limit global tempera degrees Celsius. Companies with more carbon-intensive reserves and production and high to face greater risks. Regulatory limits on GHG emissions, together with improved compet energy technologies, could lower or reduce the growth in global demand, and therefore re gas products. Extraction costs could increase with regulations that put a price on GHG emi could affect the net present value of oil and gas reserves. Regulatory actions that are more or those focusing on industries with high emissions, could impair asset values substantially time. Stewardship of capital resources and production decisions that take into account nea related to climate change mitigation actions can help prevent current asset impairment and and creditworthiness.

Accounting Metrics

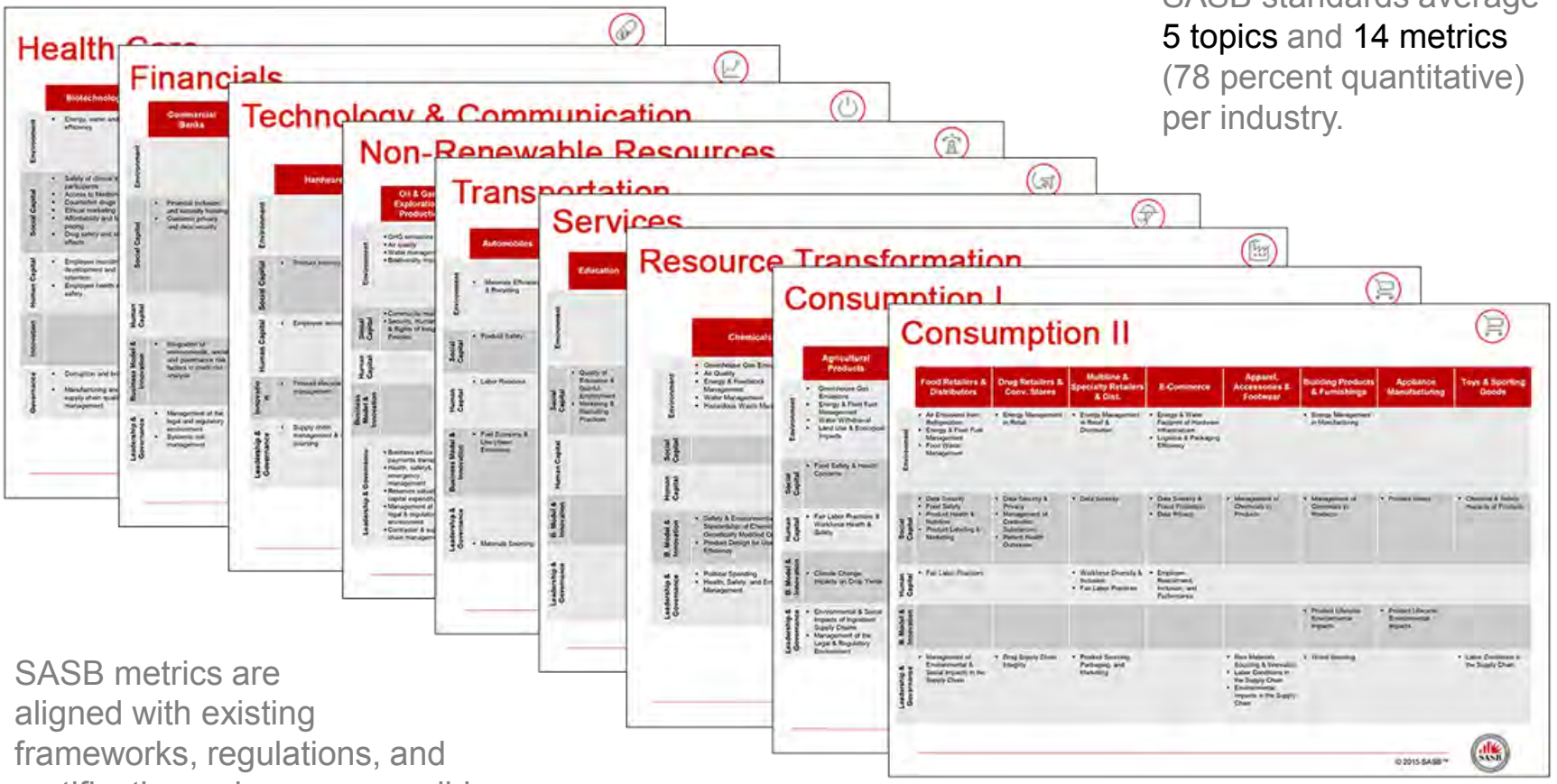
NR0101-22. Sensitivity of hydrocarbon reserve levels to future price projection sce a price on carbon emissions

.122 The registrant shall conduct an analysis of its reserves to determine how several futu its determination of whether the reserves are proved or probable.

Cost-Effective Disclosures

SASB provides a cost-effective way to report on material sustainability factors

SASB standards average **5 topics** and **14 metrics** (78 percent quantitative) per industry.



SASB metrics are aligned with existing frameworks, regulations, and certifications whenever possible.

Major Themes from Standards Setting

Interesting patterns have begun to emerge after 10 sectors and 79 industries

	Market cap of companies affected	Percentage of U.S. equity market
CLIMATE CHANGE		
Event readiness in health care delivery, carbon intensity of reserves in oil and gas, emissions from refining, vulnerability of real estate and insurance, impact on crop yields	$33.8T	93%
PRODUCT ALIGNMENT & SAFETY		
Counterfeit drugs, food quality and nutrition, car and airline safety, responsible gambling and drinking, product design and take-back	$29.1T	80%
RESOURCE INTENSITY & SCARCITY		
24/7 health care facilities and data centers, fuel management in transportation, rare earth minerals in manufacturing, water consumption in beverages, oil and gas, and agriculture	$26.9T	75%
ACCESS & AFFORDABILITY OF SERVICES		
Orphan drugs and pricing, access to medicine and coverage, transparency in procedures and billing, financial inclusion and capacity building	$8.3T	23%
FINANCING & RESPONSIBLE LENDING		
Responsible lending and transparency of terms in mortgages, consumer finance and education, financial literacy initiatives	$3.9T	11%

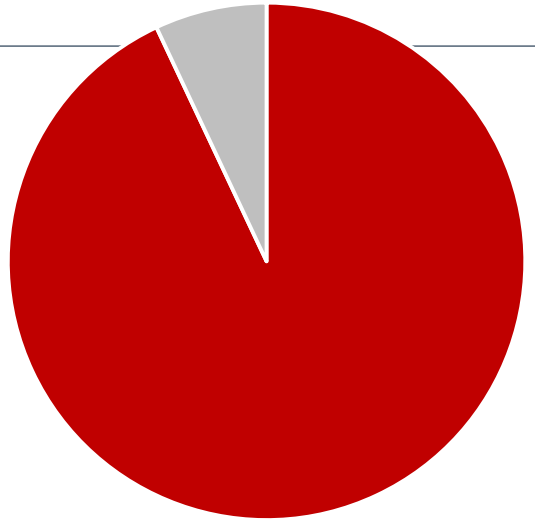
Climate Change: Ubiquitous But Differentiated

Climate change affects majority of capital markets, but industry impacts are unique

CLIMATE CHANGE

Impacts 72 of 79 industries

- *Event readiness* in Health Care Delivery
- *Carbon intensity of reserves* in Oil & Gas – Exploration & Production
- *Emissions from refining* in Oil & Gas – Refining & Marketing
- *Vulnerability of real estate* in Insurance
- *Impact on crop yields* in Agricultural Products
- *Financed emissions* in Commercial Banks



93%

Percentage of U.S. equity market impacted

$33.8T

Market cap of companies affected

Source: SASB Research, September 2015

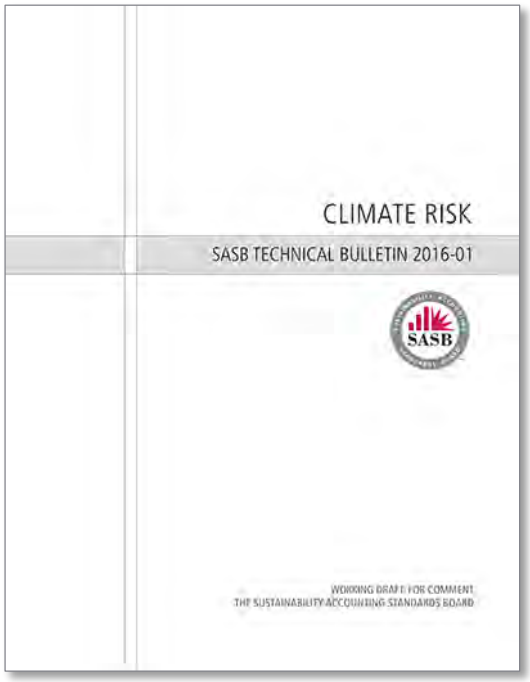
Analysts Need Specialized Information

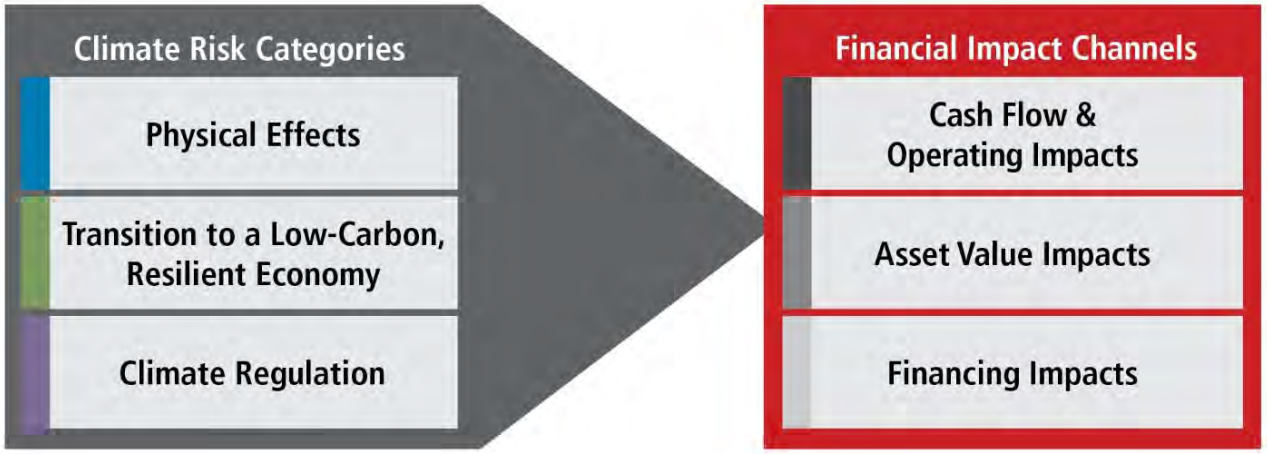
Impacts and actionable metrics differ at the industry level

	Industry	Topic	Metric
	Real Estate	Energy Efficiency of Buildings	Energy consumption intensity of portfolio *(Rate)*
	Processed Foods	Water Management	(1) Total water withdrawn and (2) total water consumed, percentage of each in water-stressed regions (m^3, %)
	Oil & Gas	Reserves Valuation & Capital Expenditures	Sensitivity of reserves to carbon pricing *(MMbbls, MMscf)*, estimated emissions embedded in reserves *(CO^2)*
	Electric Utilities	GHG Emissions & Energy Resource Planning	Scope 1 emissions *(metric tons CO2-e)*, percentage covered under a regulatory program *(%)*
	Automobiles	Fuel Economy & Use-phase Emissions	Sales-weighted average passenger fleet fuel economy, consumption, or emissions, by region *(Mpg, L/km, gCO2/km, km/L)*
	Banking & Insurance	Vulnerability of Assets to Climate Change	Amount *($)* and percentage *(%)* of lending and project finance that employs integration of sustainability factors.

SASB's Climate Risk Framework

SASB frames the impacts of the climate change in a way that is relevant to investors





Types of Climate Risk Across Industries

SASB has mapped climate risk for all industries of the economy

Sector & Industries	Climate Risk Category		
	Physical Effects	Transition To A Low-Carbon, Resilient Economy	Climate Regulation
Health Care			
Biotechnology	■	■	
Pharmaceuticals	■	■	
Medical Equipment & Supplies	■	■	
Healthcare Delivery	■	■	
Healthcare Distribution		■	
Managed Care	■		
Financials			
Commercial Banks		■	
Investment Banking		■	
Asset Management		■	
Consumer Finance			
Mortgage Finance	■		
Security and Commodity Exchanges		■	
Insurance	■	■	
Technology & Communications			
Hardware		■	
EMS & ODM	■	■	
Semiconductors	■	■	■
Software & IT Services	■	■	
Internet & Media Services	■	■	
Telecommunications	■	■	
Non-Renewable Resources			
Oil & Gas - Exploration & Production	■	■	■
Oil & Gas - Midstream			■
Oil & Gas - Refining & Marketing	■	■	■
Oil & Gas - Services		■	
Coal Operations	■	■	■
Iron & Steel Producers	■	■	■
Metals & Mining	■	■	■
Construction Materials	■	■	■

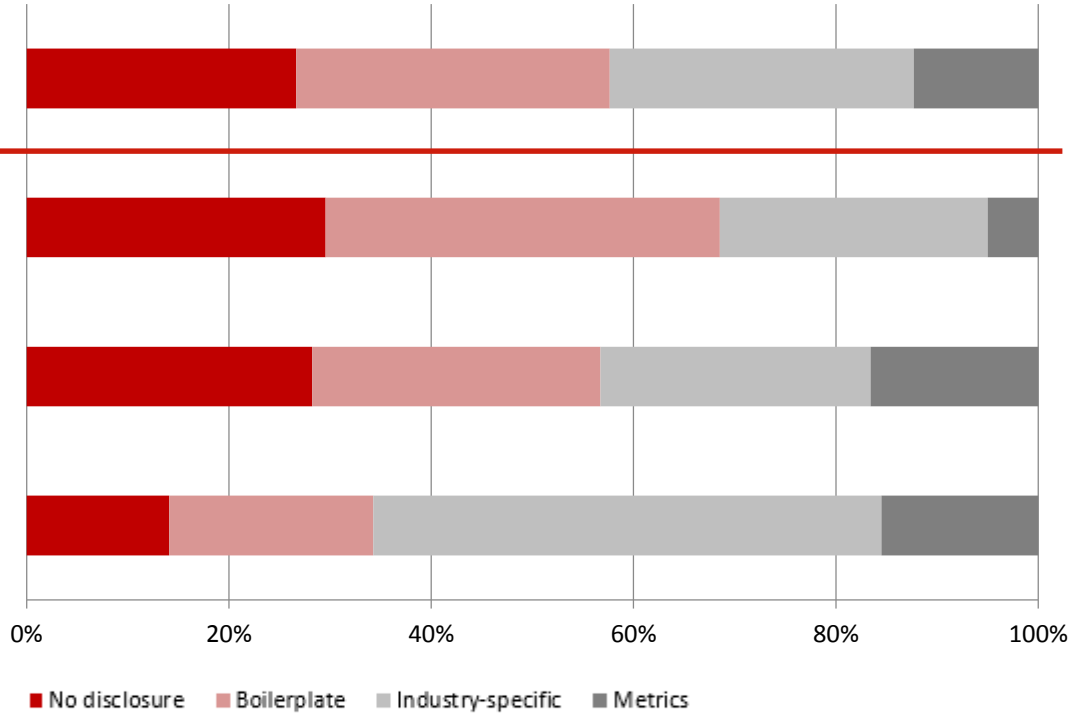
Sector & Industries	Climate Risk Category		
	Physical Effects	Transition To A Low-Carbon, Resilient Economy	Climate Regulation
Transportation			
Automobiles		■	■
Auto Parts		■	
Car Rental & Leasing		■	
Airlines		■	■
Air Freight & Logistics		■	■
Marine Transportation		■	■
Rail Transportation		■	■
Road Transportation		■	■
Resource Transformation			
Chemicals	■	■	■
Aerospace & Defense		■	
Electric & Electronic Equipment		■	
Industrial Machinery & Goods		■	■
Containers & Packaging	■	■	■
Services			
Education			
Professional Services			
Hotels & Lodging	■	■	
Casinos & Gaming		■	
Restaurants	■	■	
Leisure Facilities		■	
Cruise Lines		■	■
Advertising & Marketing			
Media Production & Distribution			
Cable & Satellite		■	
Consumption I			
Agricultural Products	■	■	■
Meat, Poultry & Dairy	■	■	■
Processed Foods	■	■	
Non-Alcoholic Beverages	■	■	
Alcoholic Beverages	■	■	
Tobacco			
Household & Personal Products	■	■	

Carbon Footprint is Not Enough

GHG emissions are important, but other more prevalent risks are poorly disclosed

Type of risk	Affected market cap	% of U.S. equity market
OVERALL CLIMATE RISK	$27.5T	93%
Physical Effects	$18.1T	61%
Transition to a Low-Carbon Economy	$26.3T	89%
Climate Regulation	$6.3T	21%

State of Disclosure on Climate Risk in 10-K and 20-F



Capital markets data from Jan. 4, 2016; figures for U.S.-listed, non-OTC securities; figures include impacts from both primary and secondary risk types; disclosure data from FY 2012-2014 10-K and 20-F filings of the top 10 U.S.-listed companies by revenue for each industry, resulting in a total of 690 companies.

Cost-Effective Alignment

Sample of how SASB climate metrics align with a variety of approaches already in use

ELECTRIC UTILITIES				
Topic and Climate Risk	**Metric**	**Category**	**Unit of Measure**	**Alignment/Source**
Greenhouse Gas Emissions & Energy Resource Planning ■	Gross global Scope 1 emissions, percentage covered under a regulatory program	Quantitative	Metric tons CO_2-e, Percentage (%)	CDP Information Request, World Resource Institute (WRI) Greenhouse Gas Protocol, Global Reporting Initiative (GRI) G4 EN15
	Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Discussion and Analysis	n/a	SEC Guidance Regarding Disclosure on Climate Change, CDP Information Request, CDSB Framework, GRI G4 EN19
Downstream Energy Stewardship	(1) Customer electricity savings from efficiency measures and (2) percentage of regulatory savings requirement achieved	Quantitative	Megawatt-Hours (Mwh), Percentage (%)	GRI G4 DMA, EN27
■ ■	Percentage of electric load served by smart grid technology	Quantitative	Percentage (%) by Megawatt-Hours (Mwh)	GRI G4 DMA
Water Management ■	(1) Total water withdrawn and (2) total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress	Quantitative	Cubic Meters (m^3), Percentage (%)	CDP Water Information Request, CEO Water Mandate, WRI Aqueduct; GRI G4 EN8-EN9
	Discussion of water management risks and description of strategies and practices to mitigate those risks	Discussion and Analysis	n/a	CDP Water Information Request, CEO Water Mandate, WRI Aqueduct; GRI G4 EN8-EN10
Management of the Legal & Regulatory Environment	(1) Population served in markets subject to renewable portfolio standards (RPS) and (2) percentage fulfillment of RPS target	Quantitative	Number, Percentage (%)	State Renewable Portfolio Standards, CDP Information Request, CDSB Framework; GRI G4 EN3. EU1-2
■ ■	Amount of energy generated through net metering contracts	Quantitative	Megawatt-Hours (Mwh)	CDP Information Request, CDSB Framework

SASB and Climate Risk

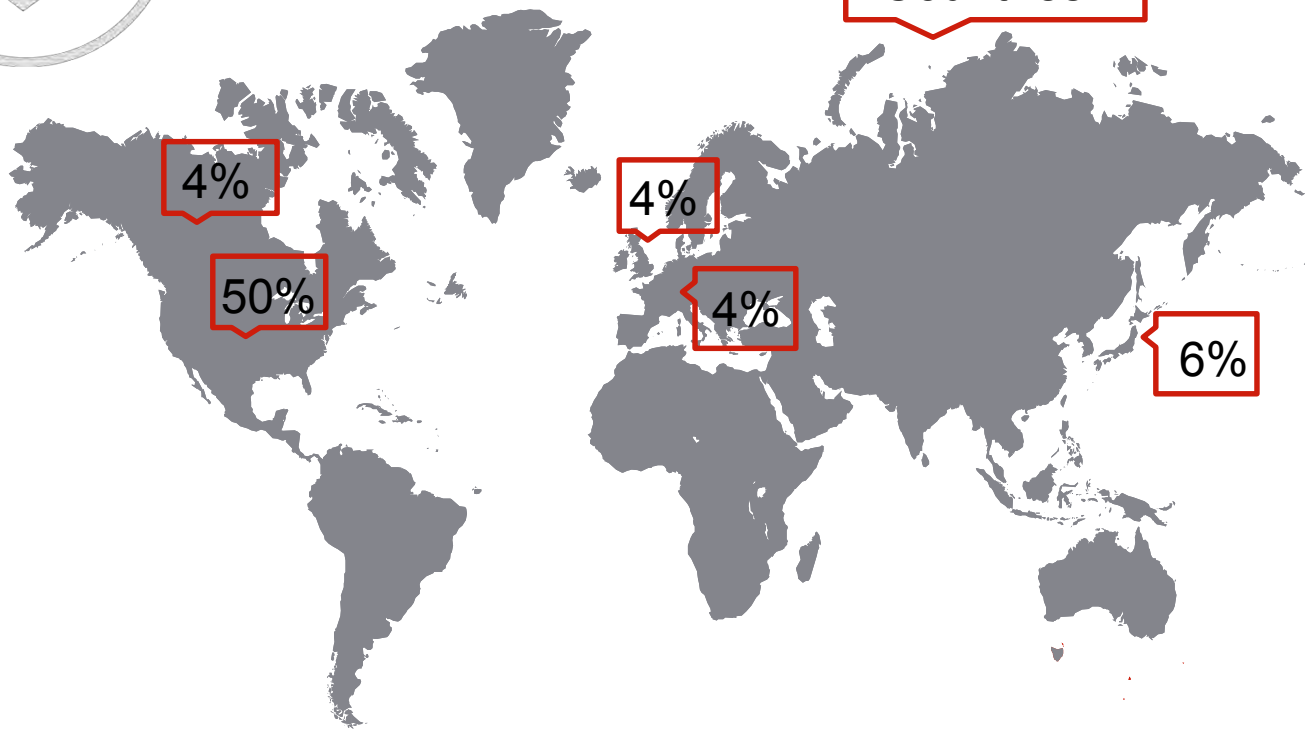
A look at investor exposure to climate risk and an analysis of corporate disclosure

- **Climate risk is systemic in nature**
- **Climate risk manifests differently in each industry**
- **Understanding climate risk requires specialized disclosures**
- **Climate risk has tangible, identifiable financial implications**
- **Climate risk is not adequately disclosed**

Making An Impact

SASB standards draw wide interest across the global capital markets

>55,000
STANDARDS DOWNLOADS
by
>6,000
USERS
in
>110
COUNTRIES



Figures represent percentage of total standards downloads by region

Top Equity Markets

1. U.S. ($26.1T)
2. E.U. ($7.6T)
3. China ($6.3T)
4. Japan ($4.5T)
5. India ($3.3T)

Equity Market Source: WFE, January 2016

Toward a Market Standard

Standardized disclosure promotes market efficiency and sustainable outcomes

SASB provides a market standard for the public disclosure of *material sustainability information*

SASB standards are designed for use by investors, supplying information that is *material, decision-useful,* and *cost-effective*

SASB standards are developed through a rigorous process, that is *evidence-based, transparent,* and involves *broad market participation*

Accounting for a Sustainable Future

Appendix

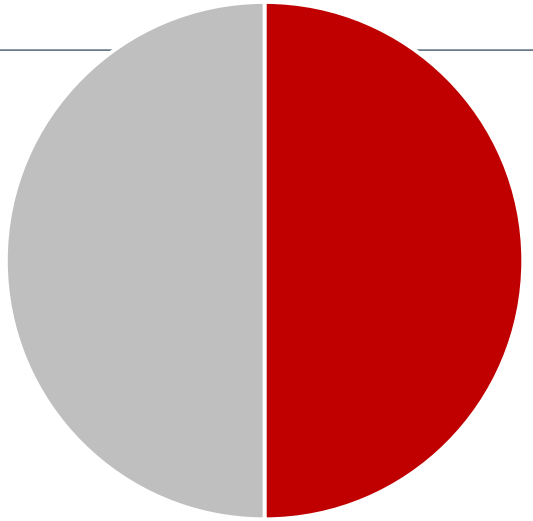
Water Risk

SASB's disclosure topics cover a range of industry-specific impacts from water risk

WATER

Impacts 32 of 79 industries

- *Crop cultivation and product processing* in Agricultural Products
- *Environmental footprint of hardware infrastructure* in Software & IT Services
- *Access and production efficiency* in Alcoholic and Non-Alcoholic Beverages
- *Water-intensity of manufacturing* in Chemicals
- *Water use for hydrating, cleaning, cooling, and waste disposal* in Meat, Poultry & Dairy



50%

Percentage of U.S. equity market impacted

$18.0T

Market cap of companies affected

Source: SASB Research, September 2015

SASB's Water-Related Disclosure Topics and Metrics

Impacts and actionable metrics differ at the industry level

	Industry	Topic	Metric
	Pharma-ceuticals	Water Efficiency	Process Mass Intensity (PMI) for water *(kg input to kg API output)*
	Semi-conductors	Water Management in Manufacturing	Total water withdrawn *(m^3)*, percentage *(%)* recycled and from water-stressed regions
	Processed Foods	Environmental Impacts of Ingredient Supply Chains	Food ingredients sourced from water-stressed regions *(%)*
	Oil & Gas	Water Management	Hydraulically fractured wells where ground or surface water quality deteriorated compared to a baseline *(%)*
	Chemicals	Water Management	Number of incidents of non-compliance with water quality permits, standards, and regulations *(#)*
	Meat, Dairy & Poultry	Environmental Impacts of Animal Supply Chains	Contract producers in water-stressed regions *(%)*