Goldman Sachs | Equity Research

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GS SUSTAIN: Investing in the Sustainable Development Goals

Social Capital: How business can drive impact through affordability

Economic slowing and re-stoked inflation are bringing social challenges into greater focus. Key social spending categories that have grown as a share of consumer wallet for decades, such as education and healthcare, are being joined by more recent acceleration in affordability challenges for basics such as food, housing & transportation, underscoring a need for business models able to mitigate costs for consumers.

We revisit our impact-oriented approach to the UN Sustainable Development Goals, with a focus on the 'S' of ESG. From a product impact perspective, most S-linked goals have to do with expanding access to needed goods or services. Tech-driven business models are some of the more promising enablers of access and affordability, accelerated in many cases by the COVID-19 pandemic.

We spotlight businesses contributing to the expansion of access and increased affordability in four SDG-aligned categories, often with a dual environmental benefit:

1) Affordable food (SDG 2). We highlight enablers of lower-priced groceries (e.g., COLR.BR, DG, JMT.LS, WMT), including business models offering the dual benefit of reducing food waste (e.g., GO).

2) Cost saving solutions in healthcare (SDG 3). We highlight tech-driven enablers of access to healthcare, personalization and cost reduction (e.g., ACCD, HCAT) and biosimilars (e.g., AMGN, HIK.L, NOVN.S).

3) Education innovation (SDG 4). We highlight enablers of expanded access to online learning and career skills development (e.g., LTGL.L, PSON.L, TWOU, VTRU).

4) Housing & transport affordability (SDG 11). We highlight suppliers of entry-level homes (e.g., KBH, LEN) and enablers of micro-mobility & public transportation (e.g., BYD) with a dual benefit of emissions mitigation.

We update our SDG Alignment tool to capture more ideas, including: 1) a new underlying revenue mapping dataset that deepens granularity and expands idea generation by nearly 600 aligned & misaligned (and 1,750 eligible) companies; 2) incorporation of GS analyst Green Capex estimates; and 3) simplification of summary alignment scoring.

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Impact through Affordability
in numbers

98%
of thematic ESG equity assets incorporate an environmental focus compared to just 12% for social-linked themes (including overlap)

125%
of after-tax spending from lowest-income quintile is spent on food, shelter, utilities, transportation, healthcare & education

FOOD

765mn increase from 2014-21 in moderately & severely food insecure people globally

35% of US households with income below the poverty line & **28%** of single women with children are food insecure

UN FAO Food Price Index reached an **all-time high of 160** in March 2022

HEALTHCARE

1 in 3 US adults or household family members forego physician recommended treatment due to cost

$18bn saved globally over past six years through prescribing biosimilars

5.2% of US insurance claims in were telehealth in June 2022 compared to <1% pre-COVID

EDUCATION

Nearly 20% jump in the proportion of 10-year-olds in low- and middle-income countries unable to read or understand basic text from pre-pandemic to 2022

$1.75tn collectively owed by US student loan borrowers as of April 2022

HOUSING & MOBILITY

Lowest housing affordability in the US since 1996; affordability fell **~37%** from mid-2021 (per GS Housing Affordability Index)

70% of respondents globally open to taking daily commute via micromobility and **~$8.4 bn** in public investment from Asia, North America, & Europe since 2018

Exhibit 2: Social Capital: What matters most for companies & investors, and what we seek to measure for the 'S', in context of the SDGs
Focal areas of this report highlighted in blue

Social - Operational

Focal stakeholders: Employees

5 Gender Equality; 10 Reduced Inequalities
- **Diversity, equity & inclusion** (5.1, 10.2, 10.3)
- **Opportunities for leadership** (5.5)

4 Quality Education
- **Training & upskilling** (4.3)

8 Decent Work and Economic Growth
- **Worker safety** (8.8)
- **Combat forced & child labor** (8.7)
- **Supply chain labor** (8.7, 8.8)

Other
- **Employee compensation & benefits**
- **Employee engagement**

Where to find

GS SUSTAIN **Operational E&S**

Social - Product Impact

Focal stakeholders: Customers & Communities

2 Zero Hunger
- **Access to affordable, nutritious food** (2.1)
- **Agricultural productivity** (2.3)

3 Good Health and Well-being
- **Access to affordable healthcare** (3.8)
- **Combating targeted diseases** (3.3, 3.4)
- **Auto safety** (3.6)

4 Quality Education
- **Access to affordable education** (4.1, 4.6)
- **Job training, upskilling & reskilling** (4.3, 4.4)

8 Decent Work and Economic Growth
- **Access to financial services** (8.3, 8.10)
- **Small business enablement** (8.3)
- **Recruiting & hiring** (8.5)

9 Industry Innovation And Infrastructure
- **Advance industrial capabilities** (9.5)
- **Access to communication networks** (9.c)

11 Sustainable Cities and Communities
- **Access to affordable housing** (11.1)
- **Access to safe, affordable transportation** (11.2)

16 Peace Justice and Strong Institutions
- **Defense & law enforcement** (16.3, 16.4)
- **Cyber-security**
- (16.4)

Other
- **Product & service quality**
- **Product risk / safety**

Where to find

GS SUSTAIN **Product Alignment**

GS SUSTAIN **SDG Tool**

Source: United Nations, Goldman Sachs Global Investment Research

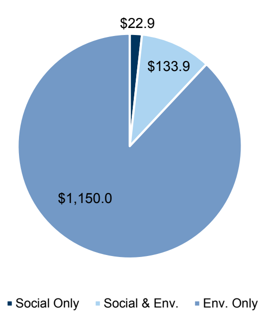
Overview: Enabling social-linked access & affordability through the SDGs

Expanding the search for impact. ESG investments to date have overwhelmingly emphasized the 'E.' 98% of thematic ESG equity assets currently incorporate an environmental focus, compared with just 12% for social-linked themes according to Morningstar (including overlap, Exhibit 3). Social thematic penetration showed a steady climb before plateauing since early 2021 Exhibit 4. However, we believe that increasing penetration and competition in ESG-linked assets places a growing premium on differentiation for ESG asset managers looking forward, while re-stoked inflation, economic slowing and the Russia/Ukraine conflict have also served to bring more focus to social challenges.

We see the 'S' as a key source of ESG discovery value

The search for 'less obvious' thematic winners will catalyze an expanded search for products and services well aligned to key sustainability themes, in our view, including increased considerations of social impact. We also see social themes as providing a source of opportunity for greater ESG 'discovery value', with most S-oriented themes owned at lower weights than key E-oriented themes (especially clean energy, water & circularity) vs. benchmark (Exhibit 5), while we count just 8 out of our latest impact-leaning *ESG Nifty 50* Relative Overweight list as primarily S-focused.

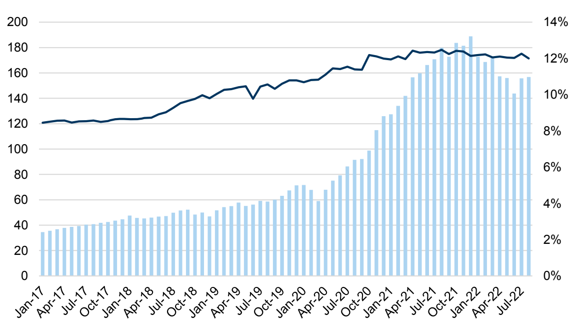
Exhibit 3: Among ESG assets with a thematic emphasis, those including a Social focus make up only about 12%
AUM breakdown of thematic ESG assets by E and/or S thematic focus



Social and Environmental categories are not mutually exclusive

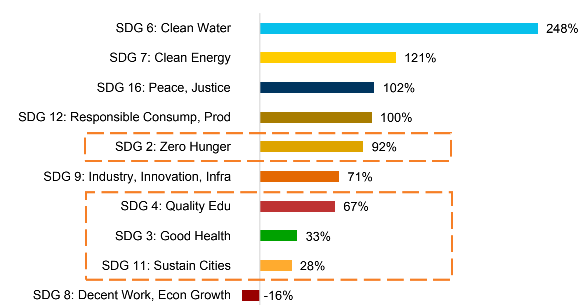
Source: Morningstar, Goldman Sachs Global Investment Research

Exhibit 4: Emphasis of Social themes in ESG thematic funds has plateaued since early 2021
ESG Social thematic AUM in $bn (left); % of total thematic AUM (right)



Source: Morningstar, Goldman Sachs Global Investment Research

Exhibit 5: Themes of Social/Access tend to be under-represented in ESG funds
Avg weight (vs. ACWI) of companies with net positive SDG alignment in ESG funds (trimmed mean)

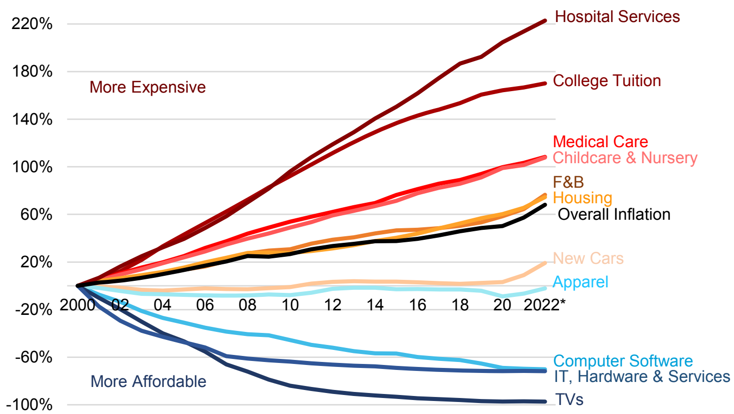


Source: Morningstar, Goldman Sachs Global Investment Research

We see economic challenges contributing to a greater focus on consumer access to fundamental goods and services. Product impact from a social perspective is commonly linked to the enablement of access to products and services that are aligned with Sustainable Development Goals (SDGs). This includes modern services such as education, healthcare and financial services, but also basics such as food, housing & transportation—categories that have seen particular acceleration in pricing in recent years. In many of these cases, price inflation in the current environment is weighing further on access challenges, especially for lower-income consumers, where costs for basic needs can exceed 100% of after-tax income (Exhibit 7).

Exhibit 6: Healthcare, education, food and housing are among areas for which costs have been rising the most

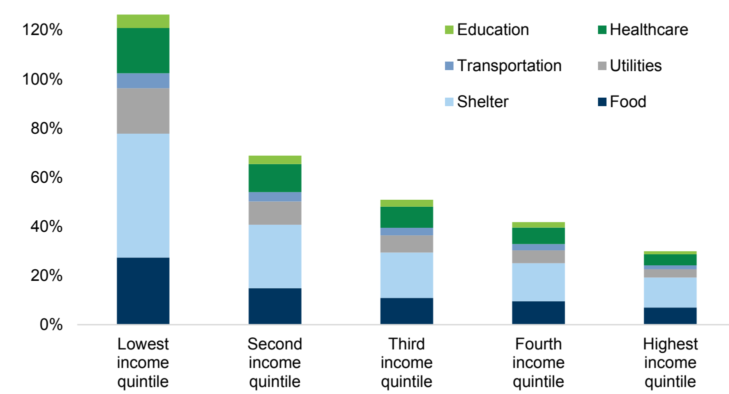
Indexed change in price levels of select categories since 2000



Source: US Bureau of Labor Statistics, US Federal Reserve Bank, Goldman Sachs Global Investment Research

Exhibit 7: The cost of basic necessities weighs far heavier on lower income quintiles

US spending as percent of after-tax income quintiles, 2020 (totals can exceed 100% due to transfer payments, borrowing, use of savings, etc.)



Transportation excludes Vehicle Purchases, Other Vehicle Expenses

Source: US Bureau of Labor Statistics, Goldman Sachs Global Investment Research

Where we focus in this report: Access to affordable food, healthcare, education, housing & transportation. We emphasize housing, education and healthcare as areas that have seen costs outpace overall price indices for many years, while food and transport are inflationary areas that have more recently come into greater focus (Exhibit 6). Within our focal SDGs in this report (2, 3, 4 & 11) we focus on economic activities that are both aligned with SDG sub-goals and investable in the public markets, though we also highlight some private companies to watch. While we recognize impact can also be had through operational initiatives such as resource efficiency and organizational inclusion (Exhibit 2), we focus here on product impact through the lens of SDG alignment.

Exhibit 8: In this report, we focus on access & affordability in the context of SDG 2 (Zero Hunger), 3 (Good Health and Well-Being), 4 (Quality Education), & 11 (Sustainable Cities and Communities)

Source: United Nations, Goldman Sachs Global Investment Research

We highlight companies, unique business models and impact measurables aligned with our focal access-oriented SDGs. The exhibit below summarizes the SDG-aligned business models and companies we cover in this report that help to enable access, especially through greater affordability in a difficult economy. In each case, we also seek examples of how impact might be measured in each category, noting that different companies articulate and measure their impact in different ways—if at all—and it remains a challenge to identify quantifiable and comparable impact metrics across firms.

Technology has been an important enabler of access expansion through the pandemic, often yielding dual environmental benefits

Common threads: tech-driven access, personalization and concurrent environmental benefits. We see tech-driven business models as some of the most promising enablers of greater access and affordability, accelerated in many cases by necessity during the COVID-19 pandemic—including app-based ordering from unique food inventories (e.g., surplus or imperfect), virtual healthcare visits, and online education. We note that, in many instances, these models also serve to enable better outcomes through greater personalization, such as through online education platforms or tech-enabled healthcare benefits navigation (e.g., Accolade). We also find several businesses that enable dual benefits of environmental impact, including waste mitigation (e.g., food waste), emissions reduction (e.g., micro-mobility, virtual healthcare) and resource efficiency (e.g., homebuilders).

Our focus in this report tends toward franchises with more direct links to the end consumer in terms of impact on wallet, predominantly in developed markets where modern products and services are already widely available, but where access and affordability present challenges, especially for lower-income segments of the market.

Exhibit 9: Select business models and companies linked to access & affordability across four focal SDGs

SDG	Focal Sub-goals	Focal Business Models	Example of Impact Measurables	Select Companies
2 Zero Hunger	Access to nutritious food (2.1, 2.2)	2.1, 2.2 • Price leading supermarkets • Food-waste-fighting retailer models • Cosmetically imperfect grocery delivery services • Surplus discount meals apps	• Amount of food prevented from going to waste in the supply chain • Customer savings from affordable food prices • Reach of customers for widespread access to food	• Colruyt • Dollar General • Grocery Outlet • Jeronimo Martins • Walmart • *Imperfect Foods (private)* • *Misfits Market (private)* • *Too Good To Go (private)*
3 Good Health and Well-being	Access to affordable healthcare (3.8)	3.8 • Tech-enabled benefits navigation • Telehealth • Prescription savings • Biosimilars • Healthcare data warehousing & analytics	• Improved health outcomes • Holistic, simplified care for the under- or uninsured • Broadening of healthcare reach to lower-income populations • Cost savings in the healthcare system • Discounts on prescriptions • Revenue from biosimilars	• Accolade • Amgen • Goodrx • Health Catalyst • Hikma • Novartis • Teladoc • *Cost Plus Drug Company (Private)*
4 Quality Education	**Access to affordable education** (4.1, 4.2) **Job training, upskilling & reskilling** (4.3, 4.4)	4.1, 4.2 • Online learning platforms • Assessments & qualifications 4.3, 4.4 • Online degrees, lessons & bootcamps • Job skills training & credentials	• Number of students enrolled • Number of classes offered • Number of university & company partners • Student satisfaction	• 2U • Coursera • Learning Technologies Group • Pearson • Prosus • Vitru
11 Sustainable Cities and Communities	**Access to affordable housing** (11.1) **Access to safe, affordable transportation** (11.2)	11.1 • Entry-level-focused homebuilders 11.2 • Micro-mobility • Public transportation enablers	• % of customers that are entry-level & first-movers • Increased availability of affordable housing • Utility savings granted by energy-efficient homes • Micromobility sales • Revenue from transit • Fuel efficiency	• D R Horton • KB Home • Lennar • Meritage Homes • *Sunstone Properties Trust (private)* • BYD • Lion Electric • Shimano • Wabtec

Source: United Nations, Goldman Sachs Global Investment Research

Expanded & more granular SDG screening tool

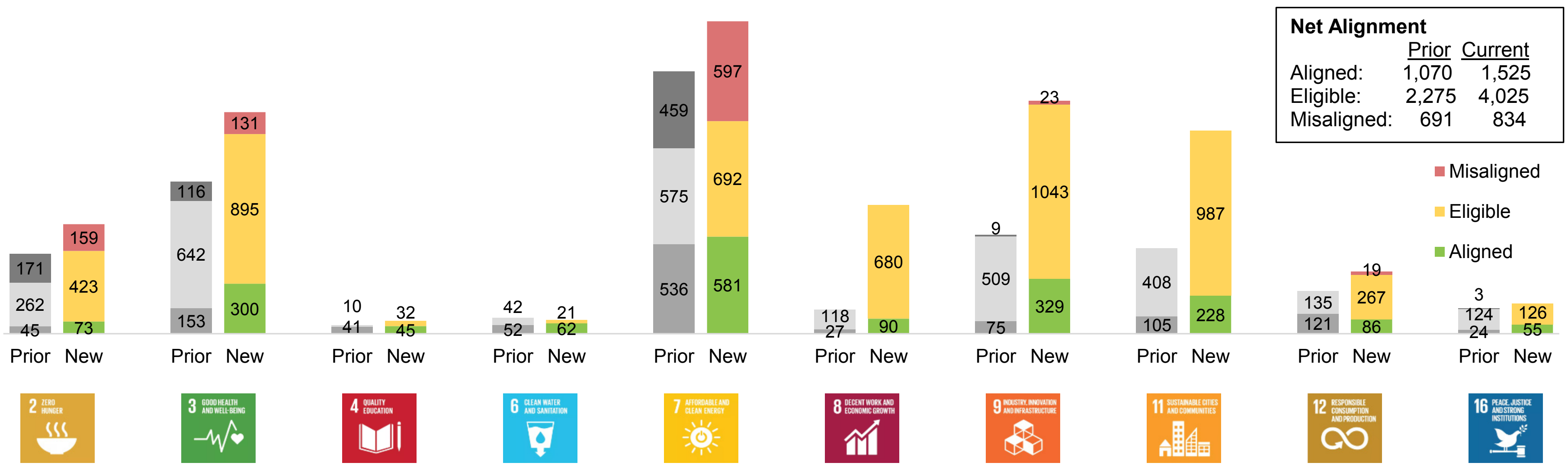
Our revised SDG tool has augmented our ability to map alignment and eligibility across a broader number of companies. Across like-for-like coverage of 6,279 companies, an additional 598 companies (+34%) are able to have revenues be mapped as aligned or mis-aligned to an SDG vs. our original tool. 4,025 companies across this same coverage are able to have revenues be mapped as eligible, a 77% increase vs. our original tool. Overall, slightly less than one-third (28%) of companies in the MSCI ACWI map as having revenue aligned to at least one SDG vs. two-thirds with eligible revenues.

We have significantly expanded the number of companies able to be mapped with our GS SUSTAIN SDG Alignment Tool

Some of the largest increases in number of companies mapped with eligible or aligned revenues in our new tool are for SDGs 2, 3, 7, 8, 9 and 11 (Exhibit 10). SDG 2 (Zero Hunger) saw 161 more companies with eligible revenues vs. like-for-like coverage in our previous tool, driven by more detailed coverage of Food Delivery Services, Convenience Stores and Animal Feed Manufacturing, and the inclusion of several Restaurant categories to our eligibility mapping. A further 253 companies now have revenues mapped as eligible to SDG 3 (Good Health) due to more detailed insurance activity exposure (e.g., Div. Life & Health Insurance, Annuities). SDG 8 (Decent Work) saw an increase of 562 eligibly-mapped companies, largely influenced by remapping of many bank-related activities (access to financial services & MSMB development sub-target). Some more detailed payments and loan data also helped to expand coverage (e.g., Electronic Payment Processing, Mortgage Origination Services and Personal Loans).

SDG 9 (Industry, Innovation & Infrastructure) saw increases in both the number of mapped eligible revenue (534) and mapped aligned revenue (254) businesses. The increase in eligibility mapping was influenced by a variety of more nuanced industrial activity data as well as an inclusion of some critical infrastructure materials being mapped to SDG 9. Greater mapping of SDG 9 alignment was most influenced by several new classifications around advanced industrial instrumentation and services (e.g., Monitoring & Control Sensors/Instruments and Manufacturing & Scientific Technical Services). SDG 11 (Sustainable Cities & Communities) saw the largest increase in newly mapped eligible companies (579), mainly due to broader inclusion of real estate activities being mapped as eligible to the 'sustainable building(s) products & services' sub-target.

Exhibit 10: The number of companies with revenues mapped as aligned, eligible or misaligned to SDGs has increased 43%, 77% and 21%, respectively vs. like-for-like coverage from our previous tool
Number of companies mapped to specific SDGs; mapping to alignment/eligibility/misalignment as well each SDG is not mutually exclusive



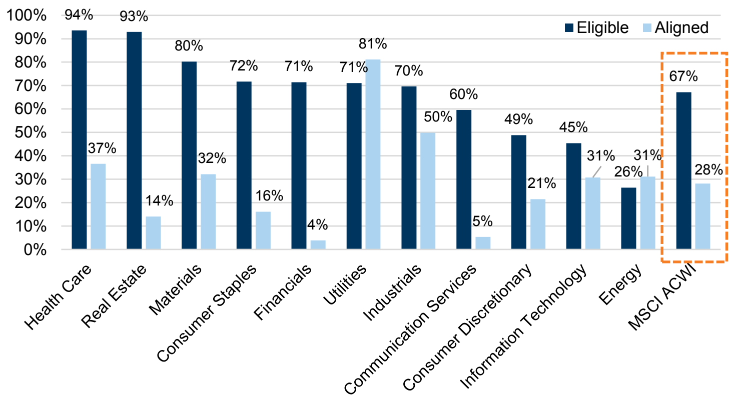
Source: Goldman Sachs Global Investment Research

From a sector perspective, Utilities and Industrials have the greatest degree of alignment, driven primarily by exposure to SDGs 7, 9 & 11. Regionally, W. Europe and Japan have the highest share of SDG aligned companies in our tool, influenced by higher shares of thematically-aligned industrials vs. other regions (Exhibit 12).

Proportions of SDG eligibility and alignment across sectors are not directly correlated given the challenges of determining alignment to certain SDGs. Healthcare's near 100% eligibility across the sector is illustrative of the sector's broad potential to fulfill many of the stated targets of SDG 3: Good Health & Well-Being. However, identifying companies based on available data with businesses that distinctly enable targeted outcomes (e.g., affordable healthcare, pollution control & sanitation, and addiction prevention & treatment) yields a significantly lower rate (37%) of outright alignment (Exhibit 11). The same applies to both Real Estate and Financials where the construction and maintenance of sustainable buildings and access to financial services & medium-and-small-business development are broadly applicable to the whole sector, respectively. Yet again, discerning suitable alignment in both of these cases is a higher standard requiring additional data or context. See the section entitled 'SDG Tool Updates' later in this report for more on the screening tool.

Exhibit 11: Utilities and Industrials stand out as having the greatest share of alignment in our tool

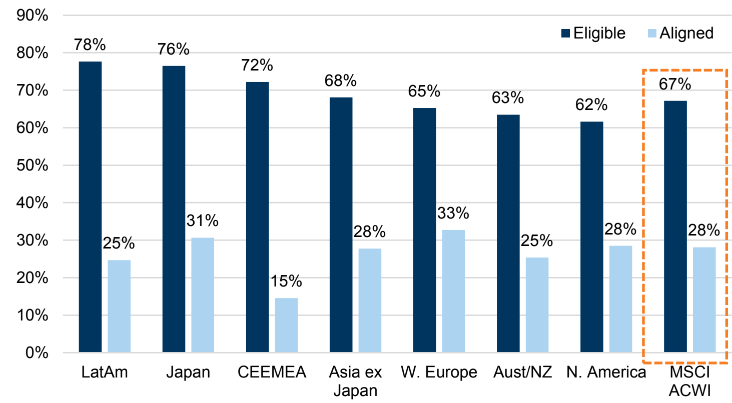
% of eligibility / alignment to at least one SDG by GICS 1 sector; MSCI ACWI



Source: Refinitiv Eikon, FactSet, Goldman Sachs Global Investment Research

Exhibit 12: W. Europe and Japan have the most proportional SDG-alignment by region in our tool

% of eligibility and alignment to at least one SDG by region, MSCI ACWI

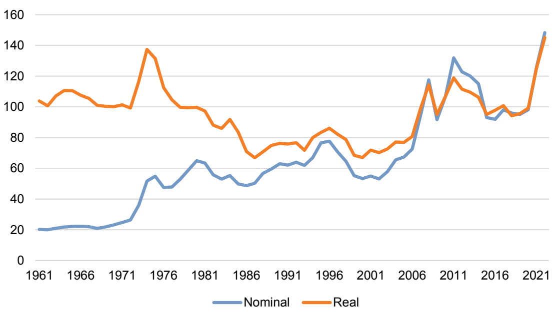


Source: Refinitiv Eikon, FactSet, Goldman Sachs Global Investment Research

SDG 2: Zero Hunger — Focus on grocery price leaders and food waste mitigators

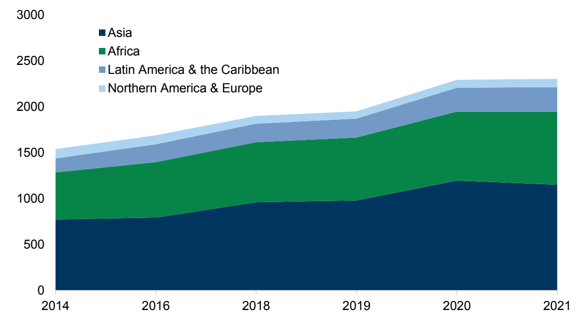
The number of moderately or severely food insecure people[1] worldwide jumped by approximately 350 mn between 2019 and 2021, according to the UN World Food Programme, a challenge which has likely intensified in 2022, spurred by economic slowdown, inflation and conflict. The Russia-Ukraine war is disrupting a combined agricultural export worth approximately 27% of the world's barley, 25% of wheat and 72% of sunflower oil (UN Food and Agriculture Organization), while a decrease in fertilizer and energy exports from Russia further strains the cost of food. The UN Food and Agriculture Organization's Food Price Index has subsided since peaking in March at 160, but remains near all-time highs at 138 as of August 2022.

Exhibit 13: The UN FAO's Food Price Index (FFPI) stands near record highs
FFPI considers five commodity baskets: cereal, vegetable oil, dairy, meat and sugar price indices (annual data shown)



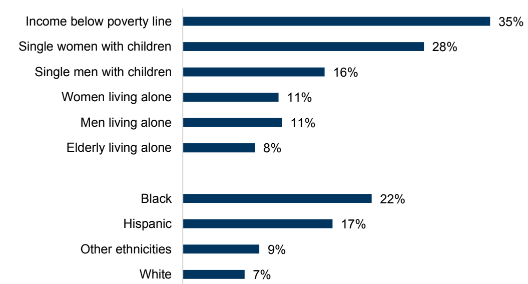
Source: United Nations Food and Agriculture Organization, Goldman Sachs Global Investment Research

Exhibit 14: 765 mn more people became severely or moderately food insecure 2014-2021 and likely grew in 2022
Number of severely or moderately food insecure people (mn)



Source: Food and Agriculture Organization of the United Nations, Goldman Sachs Global Investment Research

Exhibit 15: Developed economies are not immune from challenges of food insecurity
Prevalence of food insecurity in the US by select household characteristics, 2020



Source: USDA Economic Research Service, Census Bureau, Goldman Sachs Global Investment Research

We highlight price leaders that provide more affordable access to food, such as **Dollar General** and **Walmart** in the US. From our Consumer team's latest pricing survey that compares the prices of 38 SKUs in dairy, frozen goods, HPC, dry grocery and grocery categories, Walmart was found to offer the lowest prices among its peers at 10.6% below the average price of the grocer group, while Dollar General listed prices cheaper than most at -4.2%. Companies with more unique business models like **Grocery Outlet**, **Imperfect Foods** (private) and **Too Good To Go** (private) help offer deeply discounted food while simultaneously reducing waste by sourcing surplus or expiring items from suppliers.

[1] The UN FAO defines severe food insecurity as having no food for a day or longer. Moderate food insecurity is when an individual is reducing food quantity—skipping meals due to uncertainty of food obtainment, insufficient resources for a healthy diet, or occasionally running out of food.

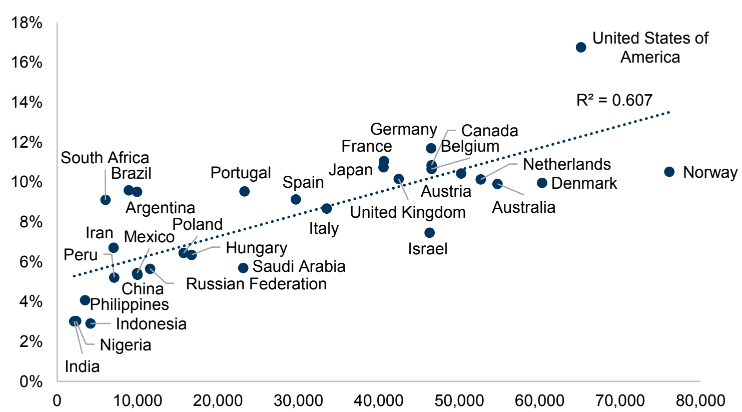
Approximately 50% of Grocery Outlet products are opportunistically sourced from the excess inventory of packaged food providers such as Kellogg's, Campbell's and P&G, then sold to the consumer at up to 40-70% discounts relative to conventional retailers. Since its founding in 2015, Imperfect Foods has diverted more than 145 mn pounds of food from going to waste by redirecting cosmetically imperfect produce from growers to consumers and creating new products with leftover, upcycled or rescued ingredients. Too Good to Go has saved over 52 mn meals that would have been thrown away by restaurants, bakeries and others.

Though this report focuses more on business models with more direct links to consumers, enablers of greater agricultural productivity can also contribute to mitigating food costs (see our report *Five shifts in Sustainability investing from Russia-Ukraine conflict* for more).

SDG 3: Good Health & Well-Being — Focus on cost reduction enablers

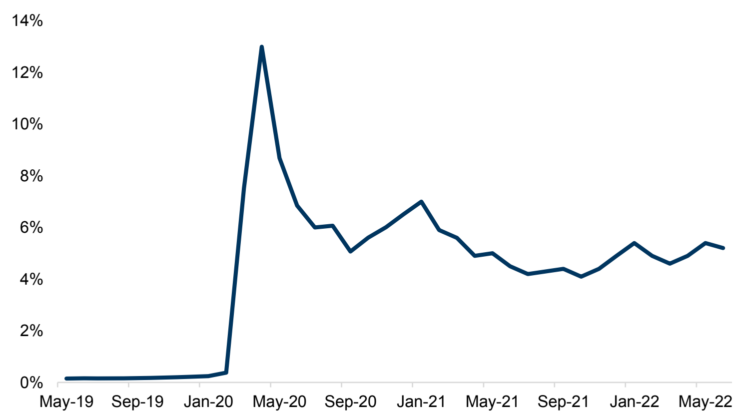
The high cost of healthcare in the US causes one in three adults or their household family members to forego doctor-recommended treatments and medical tests, while four in ten adults are left with medical or dental debt (Kaiser Family Foundation). Encouragingly, the COVID-19 pandemic helped to accelerate technology-driven solutions capable of increasing access and reducing costs. For example, adoption of telehealth has jumped from less than 1% of total insurance claims in the US pre-pandemic to now more than 5% (Exhibit 17).

Exhibit 16: Healthcare costs in the US appear most out of line with per-capita GDP Total healthcare spending as a % of GDP vs. GDP per capita, 2019 ($ USD)



Source: World Health Organization, Goldman Sachs Global Investment Research

Exhibit 17: Telehealth is an example of an access-enhancing technology catalyzed by the COVID-19 pandemic
Monthly telehealth insurance claim lines as a % of total monthly claim lines



Source: Fair Health, Goldman Sachs Global Investment Research

Technology is being used to improve access, reduce costs or improve outcomes in other ways. Health Catalyst claims to have driven $1.5 bn+ in healthcare improvements since 2013 including blood management and waste reduction in asthma care leveraging data from over 100mn patients. **Accolade** helps guide employees with technology-enabled benefits navigation, resulting in more effective patient care decisions. A study conducted by Aon found that Accolade customers in 2019 faced lower costs for members with one or more chronic conditions or aged 30 to 59 compared to similar players in the market. Allowed claims cost from the peer market group rose by 8.3% yoy, while Accolade's allowed claims remained nearly unchanged for customers implementing in 2019.

The emergence of biosimilars is helping to drive costs lower in high-priced, complex biological drug categories. In addition to lower average sales prices (15-37%) at launch, the prices of both biosimilars and branded reference products tend to follow a further downward trend in the years following launch due to the introduction of additional competition, according to Amgen. Cumulative savings in drug spend for classes with biosimilar competition is estimated to have been $18 bn over the past 6 years, with $3 bn in savings alone in 1Q2022 (Amgen). We highlight biosimilars names such as **Amgen**, **Hikma** and **Novartis**.

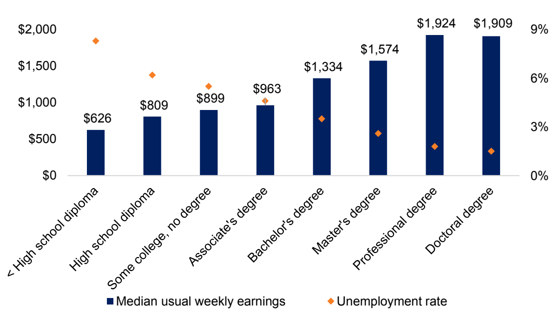
We also highlight companies with business models that help to enable reduced prices for prescription drugs, such as **GoodRx** and the **Cost Plus Drug Company** (private). Because prescription drug prices are not regulated, the price of the same prescription may greatly vary by pharmacy. To make the prescription prices easier to compare, GoodRx compiles current prices as well as discounts which users can search for on its home page. No registration is required and the GoodRx coupons are available for use at most US pharmacies. Once the pharmacist enters the coupon numbers, the prescription can be bought at a discount. The company claims to have saved its users an average of 81% off retail prescription drug prices.

Cost Plus Drug Co. negotiates prices directly with manufacturers and partners with Truepill, a digital health platform for diagnostics, pharmacy infrastructure and telehealth. Through Truepill's national pharmacy infrastructure, Cost Plus Drug is able to deliver medication to the patient's door in a few days. Cost Plus Drug charges the customer its costs to obtain the prescription plus a flat 15% markup. A study by the Harvard Medical School Brigham and Women's Hospital found that Medicare would have conserved $3.6 bn across 77 generic drugs if Medicare had purchased the drugs at the same prices as Cost Plus. Access to lower prices should help to reduce the 23% of US adults or household family members who cut pills in half, skipped medicine, or did not fill prescriptions in the last year (Kaiser Family Foundation).

SDG 4: Education — Focus on enablers of tech-driven learning

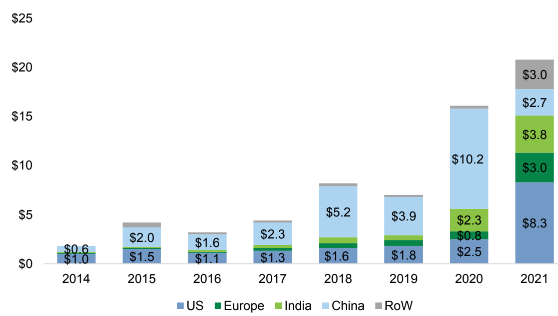
In addition to being a top category of rising cost in recent decades, disruptions associated with COVID-19 compounded educational challenges. According to a 2022 joint publication about global learning poverty of the World Bank, UNICEF, FCDO, USAID and the Bill & Melinda Gates Foundation, the proportion of 10-year-olds in low- and middle-income countries unable to read or understand basic text rose to an estimated 70% in 2022 from 53% pre-pandemic. At higher levels of education, costs can represent a significant hurdle. As of April 2022, US student loan borrowers collectively owed nearly $1.75 tn according to the Federal Reserve Bank of St. Louis. Technology offers promise in meeting persistent challenges of both cost and physical proximity in education, with global EdTech expenditure forecast to grow strong double-digits through 2025 (Exhibit 20).

Exhibit 18: Higher education attainment is tied to better earnings and employment outcomes
Median weekly earnings (LHS, US$) and unemployment rate (RHS) by education attainment in US, 2021



Source: US Bureau of Labor Statistics, Goldman Sachs Global Investment Research

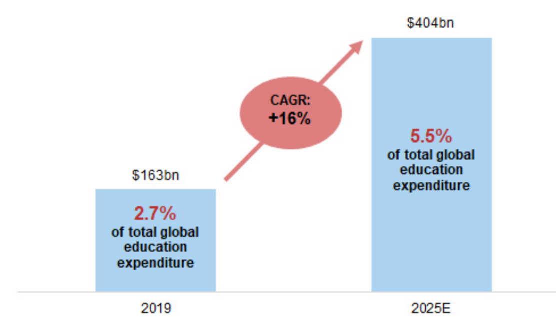
Exhibit 19: Global EdTech funding rose to $20.8bn in 2021 led by surges in the US and EU despite a pullback in China
Global VC funding for education, 2010-2021 in $bn



All numbers are rounded and may not sum exactly as a result

Source: HolonIQ, Goldman Sachs Global Investment Research

Exhibit 20: Global EdTech is expected to grow at a double-digit pace
Global EdTech expenditure, US $bn



Source: HolonIQ, Goldman Sachs Global Investment Research

The outbreak of COVID-19 has accelerated shifts in technology that not only expand access but improve outcomes in the form of greater engagement and personalization, while a tight labor market has increased the need for upskilling and reskilling. We highlight education enablers that offer flexible learning tools for broad audiences such as **2U, Pearson, Prosus**, **Vitru** and **Learning Technologies Group (LTG).** According to 2021 US Bureau of Labor Statistics data, those with a Bachelor's degree earned an additional $525 in median weekly earnings compared to high school only diploma holders. 80% of 2U's 2020 degree programs were priced similarly as or cheaper than their in-class counterparts. During 2021, edX (acquired by 2U) listed 3,500+ free or for-pay courses as well as for-pay degree programs. With 160 university partners across the world such as MIT and Seoul National University to choose from, its 152 mn online learners can access first-rate courses wherever they are.

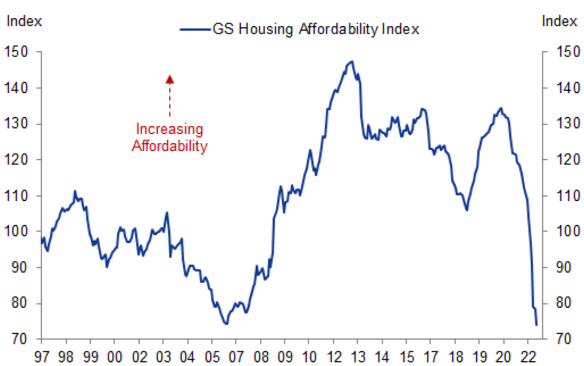
Pearson has a range of business segments including virtual learning, higher education, English language learning, workforce skills, and assessment & qualification. In 2022, Prosus' EdTech portfolio reached over 500 mn users spanning from K-12 to higher education to enterprise learning. The company's investments in the EdTech sector include Stackoverflow, Udemy, Eruditus, BYJU'S and more. Vitru is a distance and on-site learning operator for undergraduate, graduate, technical and professional courses in Brazil. The company enabled over 360,000 students, 80% from low-income groups, to have access to education in 2021. The growth in online learning can also have an impact in the corporate world, where upskilling enables efficient, on-the-job learning for employees. LTG has one of the broadest suites of services in the industry.

SDG 11: Sustainable Cities & Communities — Focus on access to housing and transportation

Among other affordability areas of focus, **SDG 11 emphasizes both access to affordable housing (11.1) and affordable transportation (11.2).** In 2022, the GS Housing Affordability Index deteriorated to its lowest level on record since 1996 with affordability falling by 37% since mid-2021, driven by higher mortgage rates. (Exhibit 21). Broad-based inflation is accentuating the need for affordable housing, with households falling behind on rent or mortgage payments (Exhibit 23).

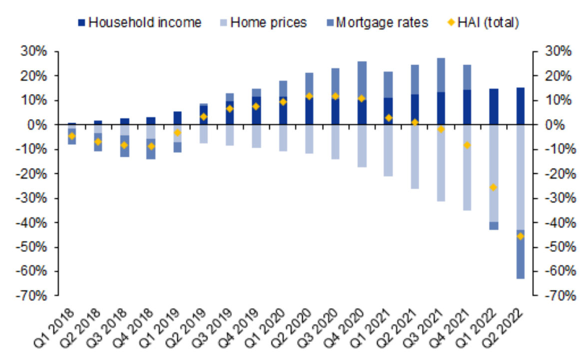
We highlight homebuilders such as **KB Home** and **Lennar Corp** as suppliers of quality housing designed predominantly for entry-level home buyers at economical rates. 40% of Lennar customers are entry-level home buyers and 54% are move-ups. Lennar Corp attempts to simplify the home buying process through its competitively-priced "Everything's Included" option, which includes energy conscious features, smart technology and interior and exterior design. Builders can also help to drive ancillary benefits for the environment. Through 160,000 affordable Energy Star certified homes constructed since 2000, KB Home estimates that it has driven not only $856 mn in utility bill reductions, but a cumulative 6.3 bn pounds reduction in CO_2 emissions.

Exhibit 21: US housing affordability is at historically low levels
GS Housing Affordability Index (HAI), US only



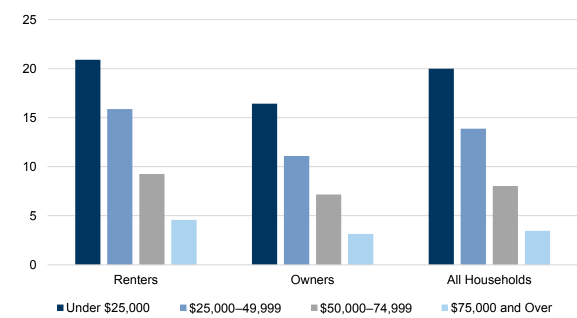
Source: Goldman Sachs Global Investment Research

Exhibit 22: Interest payments have been the sharpest driver of the year-to-date drop in affordability
Decomposition of the cumulative change in the GS HAI



Source: Goldman Sachs Global Investment Research

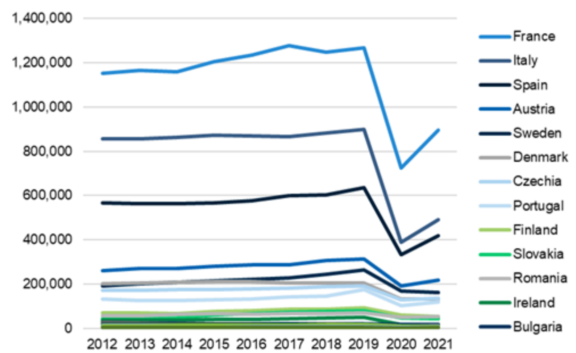
Exhibit 23: 17% more households with income under $25,000 fell behind on rent or mortgage than households with income of $75,000 or higher
% share of households behind on rent or mortgage from Dec 29, 2021 to April 11, 2022



Source: Harvard Joint Center for Housing Studies, US Census Bureau, Goldman Sachs Global Investment Research

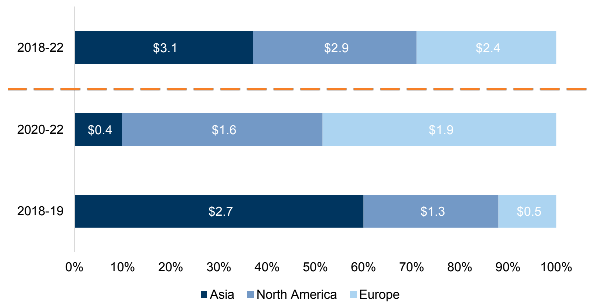
On the transportation front, with the price of fuel elevated, we see rising demand for affordable, low-emitting transportation. In both the US and Europe, public transportation is on a recovery path but remains below pre-pandemic levels (Exhibit 24). We believe the pandemic has also served as a catalyst of micromobility, including bicycles, e-kickscooters and mopeds. According to a mobility survey by McKinsey & Company in July 2021, 70% of respondents were willing to take their daily commute via micromobility. In 2021, approximately $2.9 bn in new investments flowed into micromobility worldwide.

Exhibit 24: 13 out of 19 reported EU nations have seen an uptick in rail passengers since 2020
Rail passengers in thousands



Source: Eurostat, Goldman Sachs Global Investment Research

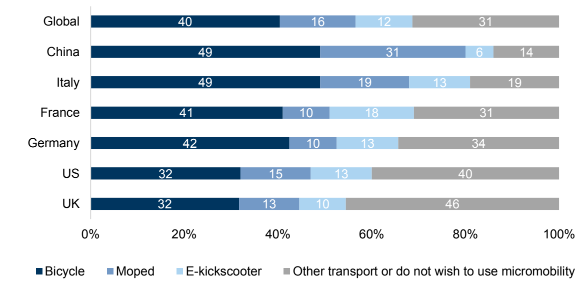
Exhibit 25: $8.4 bn has been invested in micromobility companies in three core markets since 2018
Public investments into micromobility companies by region, %



Numbers are rounded

Source: McKinsey & Company, Goldman Sachs Global Investment Research

Exhibit 26: 70% of respondents are open to taking their daily commute via micromobility
Preferred micromobility vehicle for commuting by country, %



Source: McKinsey & Company, Goldman Sachs Global Investment Research

BYD is a Chinese automobile manufacturer that operates in four industries: Autos, Electronics, New Energy and Rail Transit. Since its origins in 1995, **BYD** has established rechargeable battery expertise, resulting in a YoY EV/PHEV volume growth of 214% and 10,038 units of commercial New Energy Vehicles in 2021. On the EV bus front, BYD is entering Mauritius and Indonesia while 1,000+ of its pure electric buses are already on the road in Columbia and the UK. The company has been awarded a Metro contract to build its 4th SkyRail in Los Angeles, CA. In Sept 2022, the company launched a partnership with the Los Olivos Elementary School District to create the first US school district's zero-emission school bus fleet. We also highlight **Shimano** as a global provider of bicycle parts as inflation and oil prices continue to disproportionately impact low-income consumers. In 2021, Shimano's bicycle sales grew 49% yoy.

SDG Tool Updates

Why the SDGs? In our previous work, we introduced the Sustainable Development Goals' applicability to public market investing. As corporates and investors are increasingly expected to articulate the impact that a company or portfolio has on society and the environment, the SDGs are emerging as a de facto framework for evaluation. Though not purpose-built as an investment taxonomy nor fully comprehensive in scope, the SDGs cover foundational sustainability challenges and can help various stakeholders begin to conceptualize, organize and taxonomize the impact of business activities.

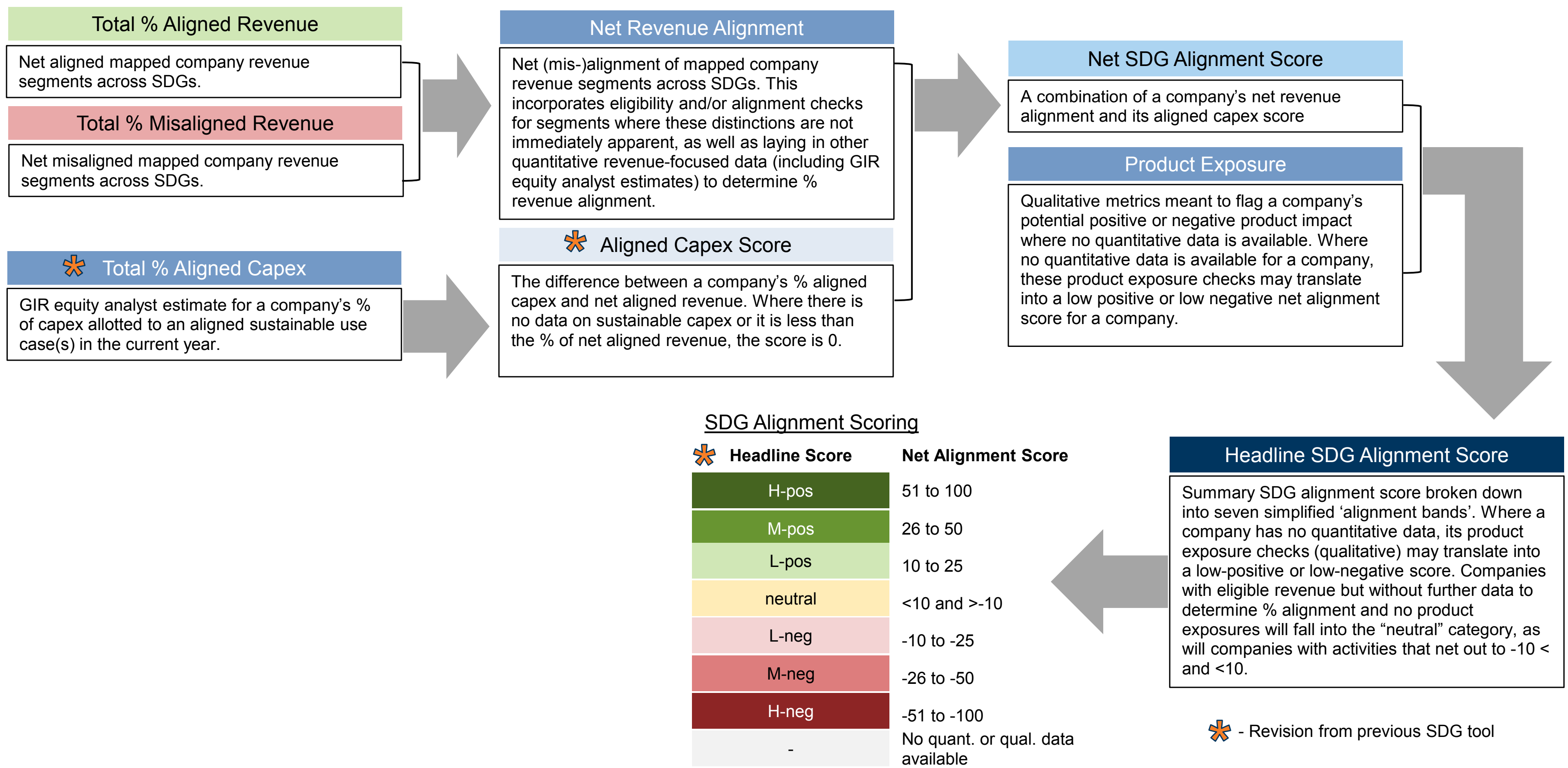
We focus principally on product impact linked to revenues. Our SDG screening tool is primarily designed to help investors identify SDG alignment with a focus on revenue ties to product impact. In other words, we focus here on SDGs that are relevant to what a company offers, rather than how it operates, and themes that are most investable in the public markets.

We highlight several new upgrades to our SDG Mapping tool. Notable adjustments include a simplification of summary alignment scoring, the incorporation of SDG-mapped 'sustainable use case' capex estimates from GS analysts and a new underlying revenue mapping dataset. Taken together, these adjustments further enhance our tools ability to map eligibility and alignment across a broader range of companies with more detail. We have also streamlined our summary SDG Alignment scoring categories to seven bands from ten, to match our Product Alignment Tool.

Forward-looking 'sustainable use case' capex estimates are also now incorporated to give credit to companies investing ahead of their green revenues. Capex estimates are provided by GS analysts and mapped, where applicable, to relevant SDGs. These estimates cover over 1,000 companies and are mapped to SDGs 2, 6, 7, 9, 11 & 12. Capex data is only factored in where current FY estimates are greater than FY-1 SDG-aligned revenues, i.e., where aligned capex exceeds aligned revenues. In such instances, the amount of aligned capex in excess to net revenue alignment is added to determine a company's Net SDG Alignment Score (Exhibit 27).

We employ a new more granular revenue mapping dataset. With more than 1,700 unique business activities this framework allows for an elevated starting place in mapping aligned revenues for a great number of companies. Taken together with the aforementioned adjustments, we (Exhibit 10) are able to map SDG alignment and/or eligibility across 37% more of the original coverage of our tool.

Exhibit 27: High-level changes to the SDG tool

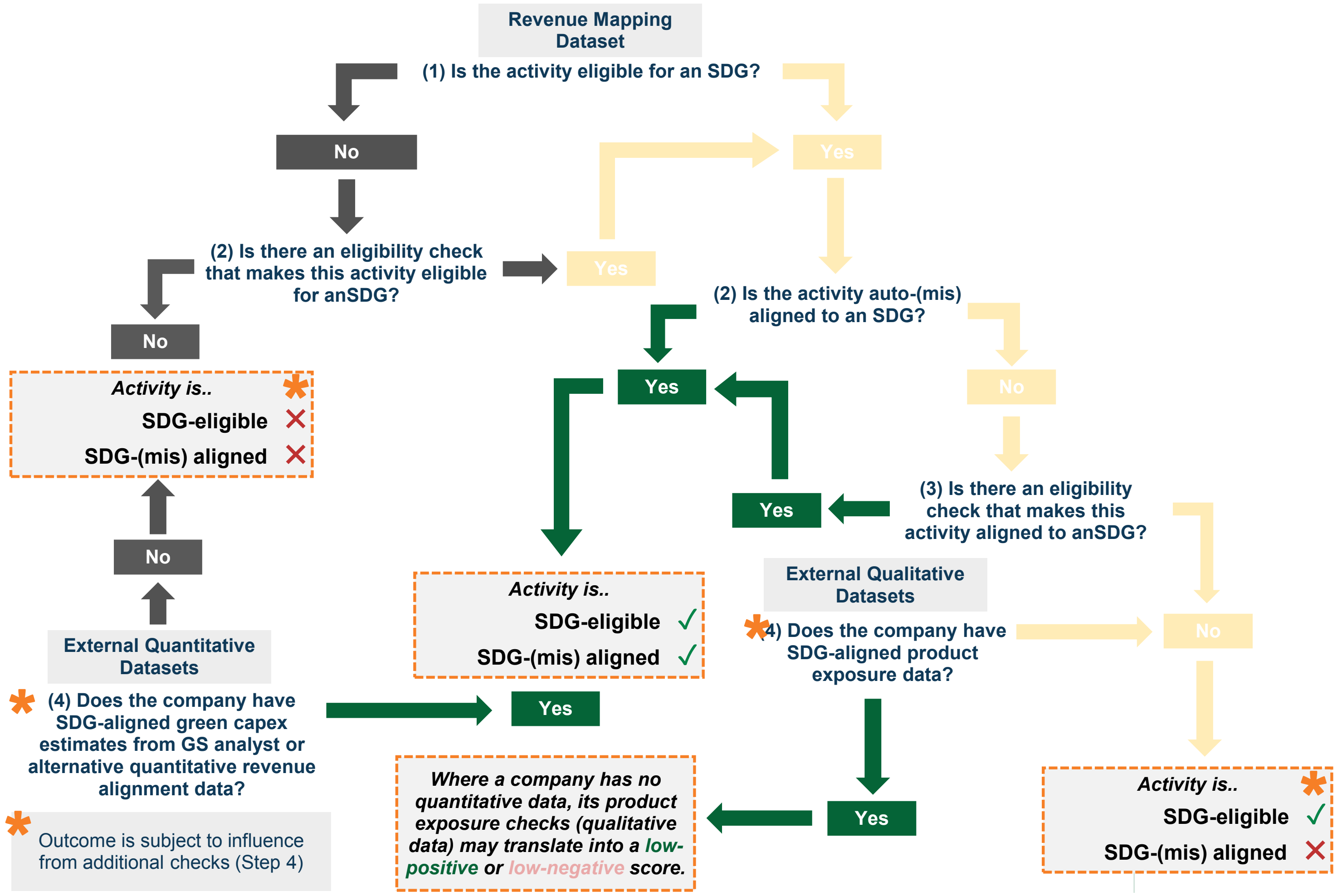


Source: Goldman Sachs Global Investment Research

A word on our SDG mapping methodology. Acknowledging that revenue mapping alone does not provide the full context necessary for mapping business activities as eligible and/or (mis-)aligned to specific SDGs, our tool considers a variety of data sources. Should a company's business activity data alone not prove sufficient to determine eligibility or alignment, qualitative checks (including third-party thematic exposure metrics and business description keyword checks) are employed to refine mapping (Exhibit 28). These checks are sector-specific. Additional quantitative datasets (including GS analyst 'sustainable use case' capex estimates and third-party thematic revenue exposure metrics) are also employed to further hone mapping for specific SDGs. Where a company has no quantitative data, product exposure checks (including third-party thematic exposure metrics and business description keyword checks) may still enable a company to receive a low-positive or low-negative SDG alignment score.

Exhibit 28: Our SDG tool considers a variety of factors in determining eligibility and/or (mis)-alignment

Process for determining eligibility and (mis)-alignment of a company's various business activities in our SDG tool



Source: Goldman Sachs Global Investment Research

Interpreting the tool. Given the detail of both the underlying revenue-mapping dataset and the additional metrics layered in to hone our mapping, there are a wide variety of permutations for arriving at each scoring outcome.

A starting point, not the final answer. We note that our SDG tool is intended to be used for idea generation and is not meant to be the final answer on alignment or eligibility. There are similar limitations to capturing product impact as there are in the broader ESG landscape, including gaps in the data, both in company reported revenue and available product impact metrics, and segments that are hard to measure or capture on the surface, such as emerging business activities that are not yet reflected in reportable business segments.

Exhibit 29: How we've mapped investable themes to the SDGs

Our view of investable business activities tied to key impact themes within the SDG taxonomy (SDGs 2, 3, 4, 6 & 7)

2. Zero Hunger	3. Good Health and Well-Being	4. Quality Education	6. Clean Water & Sanitation	7. Clean Energy
Safe, healthy, affordable food (2.1, 2.2)	**Healthcare Innovation (3.4, 3.8, 3.b)**	**Education technology & content developers (4.1-4.4)**	**Water quality & recycling (6.3, 6.5)**	**Clean / modern energy systems, EVs & PHEVs (7.1, 7.2, 7.3)**
• Packaged foods • Supermarkets / other food retailers • Wholesalers / distributors • Food producers & processors • Restaurants • Food service providers	• Med tech • Healthcare software • Drug discovery/ development	• Educational software • Book / periodical publishers • Education info web • Educational services	• Water purification / treatment • Life science equip • Measuring & control devices • Washers & dyers, plumbing fixtures	• Utilities & power gen • Energy infrastructure construction • Energy infrastructure (elec trans & distr, storage)
Precision / sustainable ag inputs (2.3, 2.4)	**Auto safety (3.6) and Addiction prevention & treatment (3.5)**	**Educational Services (4.3, 4.4)**	**Water/ wastewater networks & services (6.4)**	**Clean power tech & services (7.2, 7.3, 7.b)**
• Crop support svcs • Ag machinery / equip. • Ag chemicals • Ag tech (GPS, drones)	• Auto safety equipment • E-cigarettes • Non-narcotics pain management • Toxicology biopharma	• Educational support services • Primary, secondary and post-secondary education	• Environ engineering services & consulting • Water utilities	• Clean power/ energy efficient industrial equipment • Clean power infrastructure inputs (copper, semis, etc.) • Carbon management tech & services • Low carbon fuel producers
Low impact ag producers (2.4)	**Quality, affordable HC products & svcs (3.8)**	**Edu financing & student housing (4.3, 4.a)**		
• Ag producers	• Healthcare software • Life science & diagnostics • Biotech & pharma (generic pharma) • Healthcare facilities, services & supplies • Medical equip & devices	• Educational finance		
	Hazardous waste & pollution mgmt (3.9)			
	• Pollution control equipment • Hazardous waste collection & treatment • Remediation services			

Source: FactSet, Goldman Sachs Global Investment Research

Exhibit 30: How we've mapped investable themes to the SDGs (SDGs 8, 9, 11, 12 & 16)

Our view of investable business activities tied to key impact themes within the SDG taxonomy

8. Decent Work & Economic Growth	9. Industry, Innovation and Infrastructure	11. Sustainable Cities and Communities	12. Responsible Consump & Production	16. Peace, Justice, Strong Institutions
Small business enablement (8.2, 8.10)	**Sustainable industry & infrastructure (9.1, 9.4)**	**Access to safe, affordable transport systems (11.2)**	**Sustainable materials / resource use (12.2, 12.3)**	**Combat terrorism / organized crime (16.1, 16.5, 16.a)**
• Financial information svcs • IT, patent & copyright services • Online marketplace • Software	• Infrastructure construction, materials, and services • Engineering software • Diversified industrials • Specialty chemicals	• Transit services (railway, bus) • Railroad rolling stock • Autonomous and electric vehicles and infrastructure	• Forest management, paper & wood products • Food & functional additives	• Aircraft & parts • IT security services • Security software • Electronic security equip. • Defense service providers
Access to financial services (8.3, 8.10)	**Upgrade industrial tech capabilities (9.5, 9.b)**	**Environ impact of cities, municipal waste mgmt (11.6)**	**Chemical & waste mgmt (12.4)**	
• Data & transaction processors • Financial information svcs • Banks • Software • Transaction mgmt services	• Automation equip & svcs • Data & analytics • Software • Data centers • Semiconductors • Telecom svcs & equip.	• Environ engineering & consulting • Engineering software • Building and home construction, materials and products • Real estate developers and owners	• Pollution control equipment • Waste mgmt • Environ engineering & consulting • Rental, maintenance and repair services	
Recruiting & training (8.5, 8.6)			**Prevention, reduction, recycling, reuse (12.5)**	
• Employment agencies • Enterprise software • Non-financial data processors • Recruitment services (web)			• Waste mgmt • Production & construction machinery • Off-price/second-hand retail • Containers & packaging	

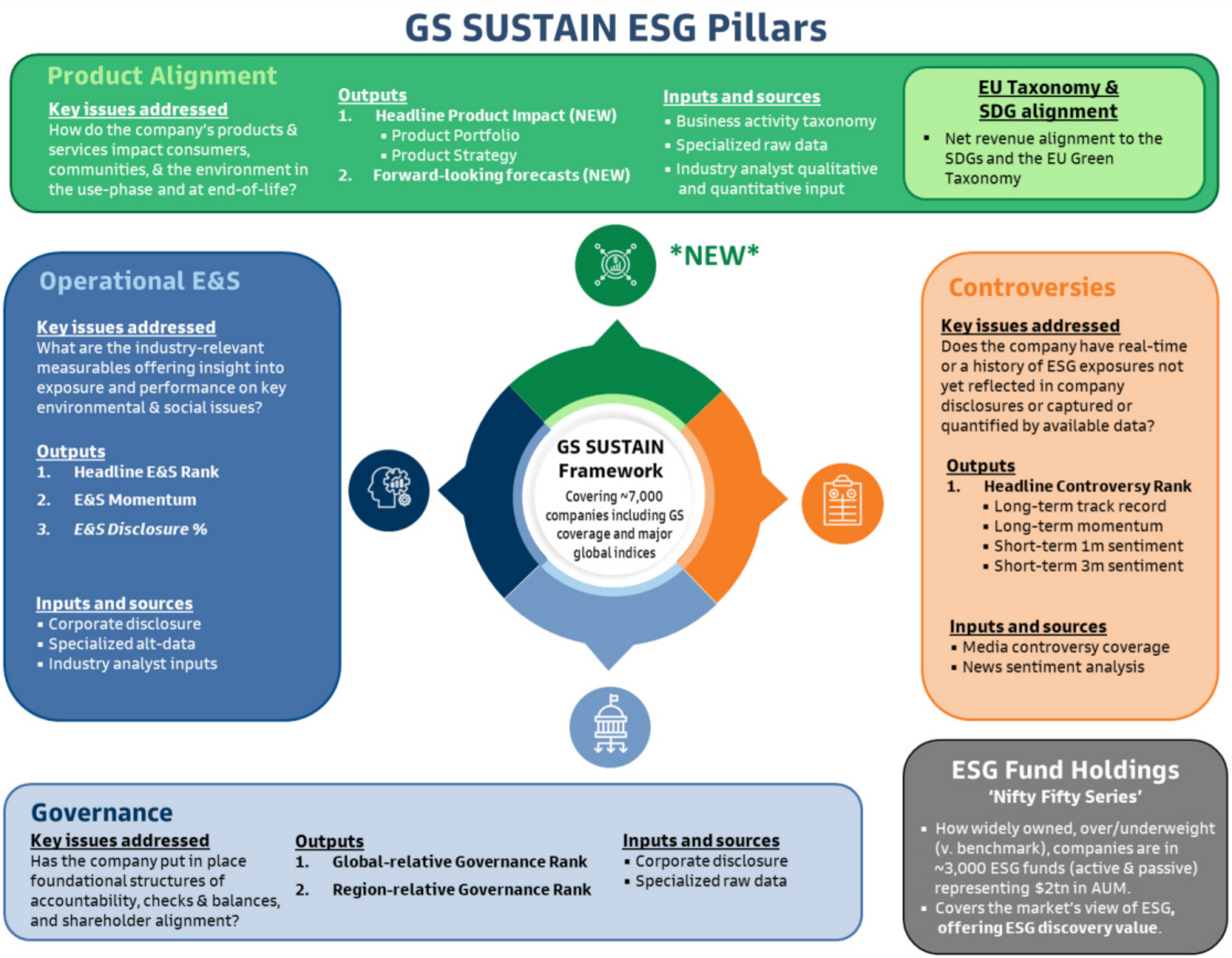
Source: FactSet, Goldman Sachs Global Investment Research

More from the GS SUSTAIN Toolkit

Our offering of SUSTAIN tools can help investors to answer a myriad of ESG questions at the portfolio and security levels, enabling more systematized and quantitative reporting while providing detailed and transparent data sets for idea generation, security selection and corporate engagement.

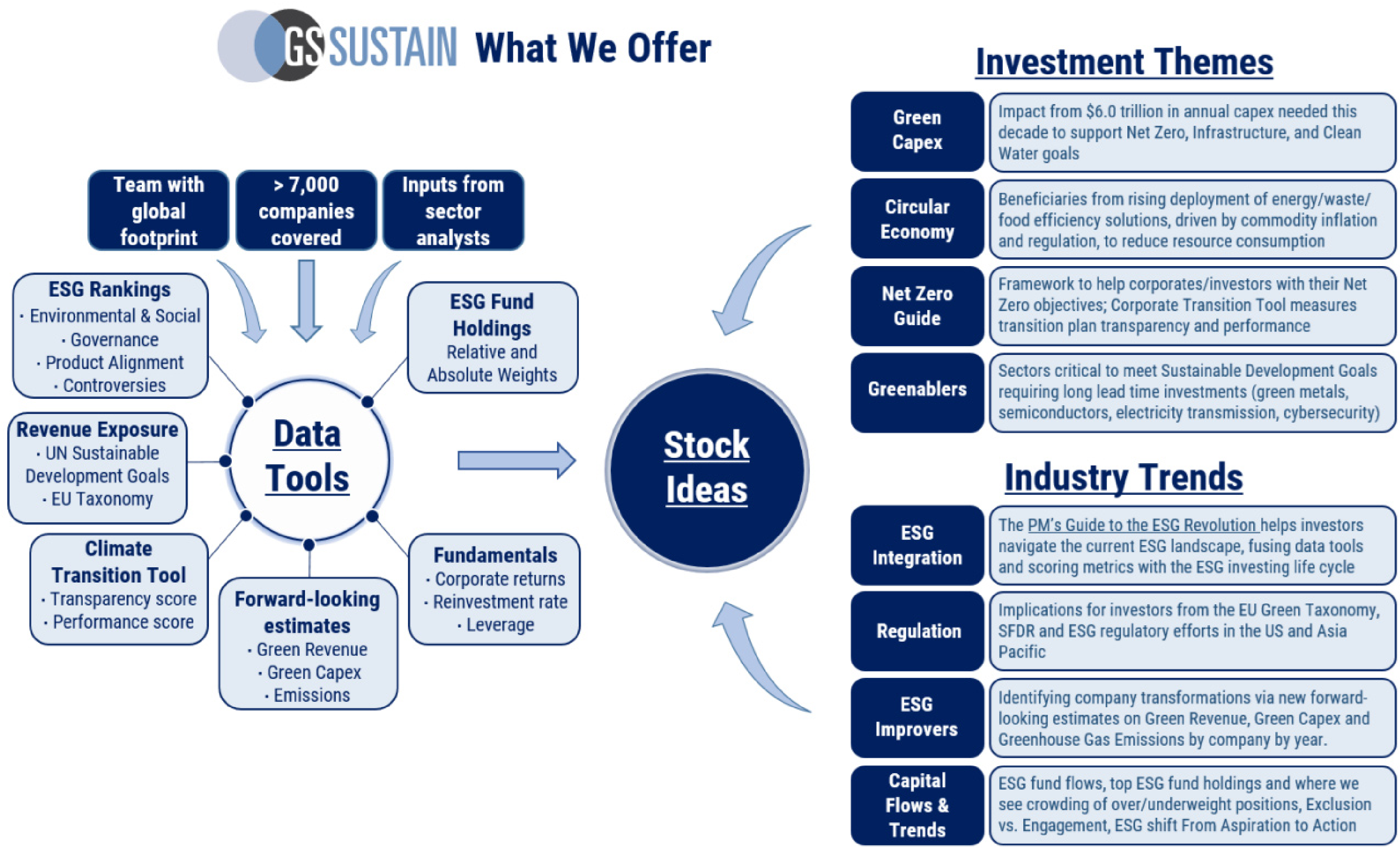
- **Our multi-pronged SUSTAIN scoring framework** can help provide greater granularity and objectivity for asset managers in both security selection and reporting. The framework across >7,000 companies includes our recently introduced Product Alignment framework, based on the SDGs, EU Taxonomy and GS analyst views, and can help investors cast a wider net in the search for impact winners aligned to less obvious sustainability themes. Existing pillars detail performance around sector-specific environmental and social operational metrics, governance, and controversies.
- **Forward-looking estimates**. Looking ahead, we believe investment performance will be more driven by future change and have taken our first steps toward incorporating forward-looking estimates in our proprietary industry analyst inputs which now include sustainable product revenue and capex in select industries. Of more than 3,000 companies under GS coverage, 53% saw a change in net E&S scores as a result of our analyst survey inputs. Furthermore, we have taken first steps to offering quantitative forecasts of sustainable product revenue/capex for ~650 companies in 19 industries, and Scope 1 and 2 greenhouse gas emissions for a smaller group of companies in 7 industries.
- **EU Taxonomy revenue alignment.** We see the EU Taxonomy as one of the most seminal regulatory developments driving standardization in reporting for both corporates and asset managers. Our EU Taxonomy alignment tool maps companies' revenues to Taxonomy-defined activities to determine potential Taxonomy-eligible and aligned revenue based on technical screening checks where data exist, and "Do No Significant Harm" (DNSH) and "Minimum Social Safeguards" (MSS) criteria.
- **SDG revenue alignment.** The UN Sustainable Development Goals (SDGs) have emerged as one of the most commonly used frameworks for taxonomizing impact across a broad set of sustainability challenges. Our SDG alignment tool employs granular revenue data, GS analyst inputs and other company metadata to map alignment, exposure and misalignment to ten of the SDGs we deem to be most investable.
- **ESG fund ownership.** Aggregating fund holdings across a universe of ~4,000 ESG funds we analyze this pool of ESG assets to better understand trends in ESG ownership at both the sector and company level. The full dataset provides absolute and momentum ESG ownership detail for well over 17,000 securities.
- **ESG fund flows, valuations and performance.** Our ESG Tracker series analyzes the aforementioned ESG fund universe to gauge ESG fund flow momentum and sizing relative to the broader market, breaking out differences by strategy, fund type and fund style. The tracker also examines valuation and performance across categories.

Exhibit 31: GS SUSTAIN ESG Pillars



Source: Goldman Sachs Global Investment Research

Exhibit 32: GS SUSTAIN Overview



Source: Goldman Sachs Global Investment Research

The authors would like to thank Su Lee for her contributions to this report.

Disclosure Appendix

Reg AC

We, Derek R. Bingham, Brendan Corbett, Varsha Venugopal, Brian Singer, CFA, Evan Tylenda, CFA, Emma Jones and Keebum Kim, hereby certify that all of the views expressed in this report accurately reflect our personal views about the subject company or companies and its or their securities. We also certify that no part of our compensation was, is or will be, directly or indirectly, related to the specific recommendations or views expressed in this report.

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Growth is based on a stock's forward-looking sales growth, EBITDA growth and EPS growth (for financial stocks, only EPS and sales growth), with a higher percentile indicating a higher growth company. **Financial Returns** is based on a stock's forward-looking ROE, ROCE and CROCI (for financial stocks, only ROE), with a higher percentile indicating a company with higher financial returns. **Multiple** is based on a stock's forward-looking P/E, P/B, price/dividend (P/D), EV/EBITDA, EV/FCF and EV/Debt Adjusted Cash Flow (DACF) (for financial stocks, only P/E, P/B and P/D), with a higher percentile indicating a stock trading at a higher multiple. The **Integrated** percentile is calculated as the average of the Growth percentile, Financial Returns percentile and (100% - Multiple percentile).

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For a more detailed description of how we calculate the GS Factor Profile, please contact your GS representative.

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	Rating Distribution			Investment Banking Relationships		
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