CIO Special

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LTIT: Sustainable Food Systems – favourable entry points ahead?

Key messages

- Sustainable food systems (SFS) deliver food security and nutrition in ways that are sustainable in economic, social and environmental terms. Transitioning towards sustainable food systems could open up business opportunities worth USD4.5 trillion per year by 2030.
- An investment in equity indices that pursue the strategy of benefiting from the transition from the current food system (FS) to an SFS typically has the largest exposure to the Materials, Industrials and Consumer Staples sectors.
- Given the positive earnings expectations for the coming years, the long-term growth potential and the fact that SFS companies tend to outperform in a low interest rate environment, long-term investors may use potential setbacks in the course of the year – which we believe are possible – as an opportunity to enter this promising Long Term Investment Theme.

01 Introduction

Food systems (FS) include the full range of activities involved in the **production, aggregation, processing, distribution, consumption and disposal of food products** that originate from agriculture, forestry or fisheries. FS have multiple sub-systems (e.g. input supply, waste management) which are in turn linked to key non-food areas (e.g. energy, trade, health, etc.). Actions in other areas (e.g. promotion of more biofuel in the energy system) can have a significant impact on FS.

Sustainable food systems (SFS) can be defined as FS that deliver food security and nutrition in ways that are sustainable in economic, social and environmental terms – for example, is profitable, has broad-based benefits for society and a positive or neutral impact on the natural environment.[1]

This **Long Term Investment Theme (LTIT)** resulted from the **split of the previous LTIT Land resources**, which we communicated at the beginning of 2024 as part of our annual outlook. From last year's report on land resources, we concluded that **SFS is a LTIT in its own right.**

Sustainable Food Systems looks at the challenges of moving our existing FS to sustainable systems and the possible associated opportunities for companies and therefore investors. One estimate is that our current FS cost us more than **USD10 trillion annually** due to adverse impacts, for reasons we explain below.[2] The transition to SFS could not only help to mitigate these costs, but also deliver **net economic benefits of around USD10 trillion** per year by 2050 (according to one estimate) or **business opportunities worth USD4.5 trillion** per year by 2030 (according to another estimate).[3,4]

02 Why? Recent drivers

According to the OECD, **four main factors** influence the demand for food and non-food products and agricultural commodities: (1) **population dynamics, (2) disposable income, (3) prices, and (4) consumer preferences and policy.**[5]

In our report last year, we explained in detail how human demand has created the [current market demand structure.]

Between 1960 and 2021, GDP per capita tripled and population increased by around 2.5 times: global calorie supply per person per day has also increased by around 30%.[6]

Growth in calorie supply has however been accompanied by **significant market failures** and **inefficiencies**, with adverse environmental, economic, and social impacts.

Environmental impacts are multiple. Our current FS are considered the largest driver of biodiversity loss.[7,8] They also account for an estimated **34% of global greenhouse gas (GHG) emissions.**[9]

Social impacts are not limited to intermittent failure of food supplies and hunger. Malnutrition can also refer to provision of inappropriate food.[10] The near-tripling in global obesity rates since 1975 can be linked to the consumption of less healthy food as well as increasingly sedentary lifestyles.[11]

Overall, the **economic** damage caused by existing FS is estimated at well over USD10 trillion per year.[12] One particular inefficiency is that that roughly one-third of all food produced is being lost or wasted.[13]

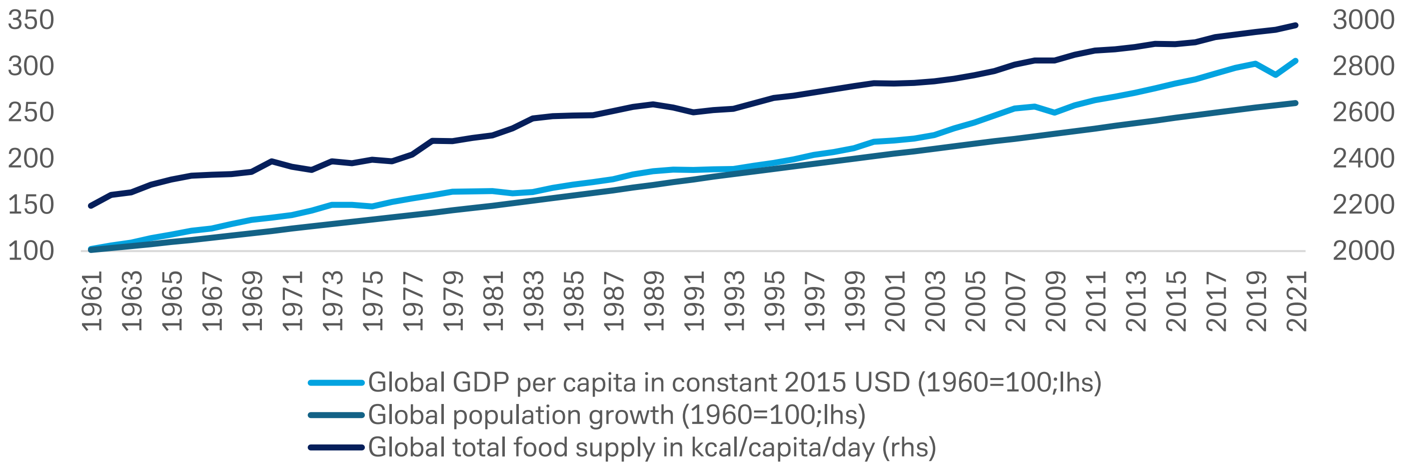
03 Route ahead

Looking into the future, the impact of environmental change is a major concern. One forecast is that **crop yield losses** could range between **7% and 23%** under the **most severe climate change scenario** and **without adaptation**.[15] According to the latest Synthesis Report of the **Intergovernmental Panel on Climate Change** (IPCC; AR6), the global mean surface air temperature (GSAT) in the period 2081-2100 is very likely to be **0.2°C-1.0°C** higher than in the recent past (1995-2014) under the low emissions scenario (SSP1-1.9) and **2.4°C-4.8°C higher under the high emissions scenario** (SSP5-8.5).[16] However, we may be underestimating the actual threat to food supply, e.g. from simultaneous crop failures in the world's major growing regions caused by climate breakdown – as a recent study published in nature communications showed.[17]

Losses in crop yields are likely to be accompanied by **rising food prices**. The ECB forecasts that, without adaptation measures, future warming might lead to a global increase in annual food inflation of 0.9-3.2 percentage points (ppt) per year. This is not just a problem for the future: the ECB estimates that a hot European summer in 2022 increased food inflation in Europe by almost 0.7 ppt and that the impact of such extremes could increase by 50% by 2035, given projected warming.[18]

Against this background, our current FS are however likely to remain dependent on the factors mentioned above (population, disposable income, prices, and consumer preferences and policy). The OECD has a working assumption that **global food consumption** in calories will increase by 1.3% annually over 2023-2032.

Figure 1: GDP, population size and global calorie supply, 1960-2021[14]



Source: Worldbank GDP data, Worldbank population data, FAO data starting 2010, FAO historical data, Deutsche Bank AG. March 2024.

Expected global agricultural production growth of 1.1% annually will lag consumption. **Increased input costs** are anticipated mainly as a result of the increasing energy and fertiliser prices as well as the tightening of environmental regulations.

The OECD also estimates that **global direct GHG emissions** from agriculture may increase by **7.5% from 2023-2032** (on the basis of current technology and policy trends). Some **80%** of this emissions growth will come from **livestock production**, with fast growth expected in middle and low-income regions.[19]

04 Development areas

One estimate by the **Food and Land Use Coalition** (FOLU), a coalition of 9 different organisations, including the **World Resources Institute** and the **United Nations' Sustainable Development Solutions Network**, is that transitioning towards sustainable food systems could open up **business opportunities worth USD4.5 trillion per year by 2030.**[20,21] A previous study by the Business and Sustainable Development Commission (BSDC), a two-year initiative, estimated sustainability-related business opportunities in the food and agriculture area could be worth **USD2.3 trillion annually by 2030.**[22] The latest research conducted by **Food System Economics Commission** (FSEC), a joint initiative under the research leadership of the **Potsdam Institute for Climate Impact Research** and the **Food and Land Use Coalition**, estimates the **net benefits of transforming the food system to be between USD5 trillion and USD10 trillion per year.**[23,24]

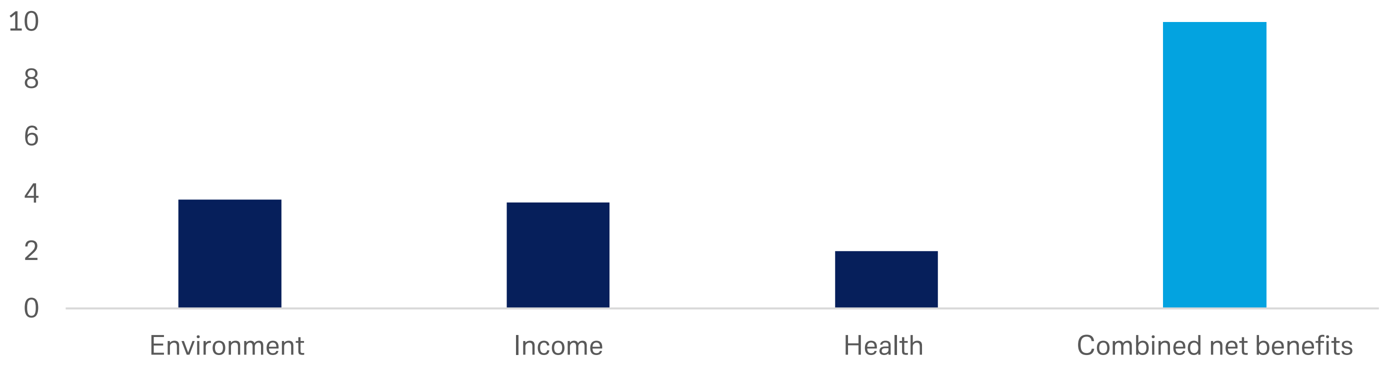
These estimates are by their nature very approximate, and methodologies vary. The FSEC uses a **top-down methodology** to evaluate the overall economic benefits of transforming food systems through an applied social welfare function **on a global scale**. It looks at the effects on well-being resulting from **health and environmental improvements in the food system**, as well as from **actual income increases across all income levels.**

Figure 2 illustrates the breakdown of the net economic benefits of implementing SFS worldwide, according to the FSEC. It estimates improvements in two of the three social welfare outcomes, environmental quality, and income, at around **USD4 trillion per year each**. Improvements in health, the third goal of the SFS, might contribute up to **USD2 trillion per year** to increasing social welfare. In sum, the environmental and health benefits of the transformation are in the range of **USD5 trillion and USD10 trillion a year**.

Alternatively, one can focus directly on the business opportunities that are likely to arise from the **creation of new markets** and the **more efficient allocation of resources**. On the basis of the separate FOLU predictions, the largest share of business opportunities will be in **healthy diets**, but opportunities lie **along the entire value chain**. In addition, **cross-value chain** business opportunities will occur e.g., due to more efficient processes that reduce food loss and waste. Figure 3 illustrates.

In the production part of the value chain, business opportunities will exist in **combining traditional agricultural techniques** (e.g., through crop rotation, controlled grazing systems and agroforestry) with **advanced precision farming technologies** to create agricultural systems that are both productive and regenerative. The protection and restoration of natural habitats will be key to ensuring the sustainable health of ecosystems. **Sustainable fisheries** (through protecting and restoring essential habitats such as estuaries, wetlands, mangrove forests and coral reefs) **and aquaculture** and the **development of diversified protein sources** (e.g. from aquatic, plant, insect and lab-grown proteins) will be a key component in the global transition

Figure 2: Net benefits of the SFS in USD trillion (2020 USD purchase price parity)[25]



Source: Food System Economics Commission: The Economics of the Food System Transformation (ISN 10), Deutsche Bank AG. March 2024.

Figure 3: Mapping of business opportunities to the value chain and relevant companies

	Business areas	Relevant companies
Production	Combining traditional agricultural techniques (crop rotation, controlled livestock grazing systems, agroforestry) with advanced precision farming technologies; conversion and restoration of natural habitat; sustainable fishing and aquaculture; aquatic, plant-based, insect-based and laboratory-cultured protein; stakeholder engagement	Companies that shift procurement from buying commodities to investing in sustainable supply chains; deploy innovative finance to reach currently underfinanced parts of supply chains; establish transparent and deforestation-free supply chains (incl. suppliers); reduce exposure to regulatory risks; invest in R&D for new plant-based products; actively engage with rural communities and implement sustainability at the beginning of their value chain
Consumption	Localisation of diets; plant-based food; protective food (fruits and vegetables); diverse protein supply, reduction in high sugar and salt consumption; reduced demand for processed food	Companies redesigning their product portfolios based on a healthy diet for people and the planet
Cross-value chain	Combating food losses and waste, addressing increasing urbanisation, using digitalisation throughout the value chain, process optimisation	Companies that actively optimise their value chain to prevent food loss and waste; in terms of where food is consumed; optimise their digital capabilities to make their entire value chain more efficient

Source: Food and Land Use Coalition (FOLU), Deutsche Bank AG. March 2024.

to a healthy diet. **Stakeholder engagement** will be a key factor in building sustainable value chains, with companies actively collaborating with rural communities at the start of these chains.

In the production part of the value chain, business opportunities will exist in **combining traditional agricultural techniques** (e.g., through crop rotation, controlled grazing systems and agroforestry) with **advanced precision farming technologies** to create agricultural systems that are both productive and regenerative. The protection and restoration of natural habitats will be key to ensuring the sustainable health of ecosystems. **Sustainable fisheries** (through protecting and restoring essential habitats such as estuaries, wetlands, mangrove forests and coral reefs) **and aquaculture** and the **development of diversified protein sources** (e.g. from aquatic, plant, insect and lab-grown proteins) will be a key component in the global transition to a healthy diet. **Stakeholder engagement** will be a key factor in building sustainable value chains, with companies actively collaborating with rural communities at the start of these chains.

Inter alia, this will create opportunities for companies that are shifting their emphasis from buying commodities to investing in **sustainable supply chains**, using innovative financing to reach currently underfunded parts of supply chains, and building transparent and deforestation-free supply chains (thus reducing regulatory risk). **Digitisation** will help ensure value chain efficiency, and will be one way to reduce loss and waste.

Changing eating patterns will create opportunities for companies investing in **research and development** and diversifying their product portfolio, allowing them to position themselves as providers and suppliers of a wide range of high quality, nutritious and affordable foods, to increasingly urbanized global populations.

05 Implications for investors

The question arises as to how investors can participate in the developments described above. From an investor's point of view, an investment in SFS is probably best achieved through a **diversified equity investment.** This is mainly due to the fact that **direct investments** (e.g., at a project level) face various **challenges around country- and sector-specific risks, insufficient primary data** and **information asymmetries**, **discrepancies** between **investment requirements** at project level and the **availability of capital** as well as **high transaction costs** and lastly **small ticket sizes.**[26]

An investment in equity indices that pursue the strategy of **benefiting from the transition from an FS to an SFS** typically has the largest exposure to the **Materials, Industrials** and **Consumer Staples** sectors. At the sub-industry level, more than **77%** of the indices are **concentrated in six sub-industries** – the following figure shows this in detail.

From a regional perspective, these indices are **largely focused on the U.S.** (more than 50% of the above mentioned indices on average) – with constituents ranging from **manufacturers of agricultural machinery** to companies operating **online food ordering and delivery platforms.**

On the other hand, various **European countries** (UK 8%, Germany 6%, Switzerland 5% and France 5%) and **Japan** (5%) are relevant from a regional perspective - including **multinational food, pharmaceutical, biotechnology and consumer goods companies.**[i]

These indices include both **established food companies** (incumbents) and **new companies with disruptive products** (challengers). This is important to mention as the **risk/return profiles** of these two types of companies can **be very different**, as we will show in more detail below.

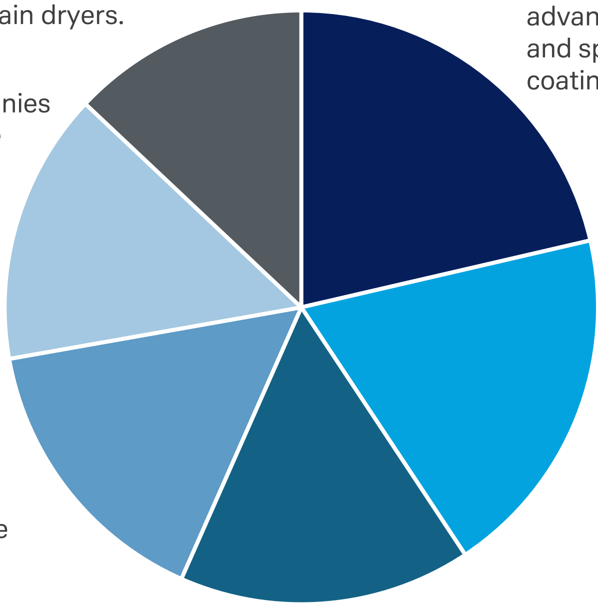
Looking at the performance, two benchmarks appear relevant. The first is **global equities**[ii] and the second is **traditional FS.**[iii]

Figure 4: Sub-industry allocation of SFS indices

Agricultural & Farm Machinery (~10%): Companies manufacturing agricultural machinery, farm machinery, and their related parts. Includes machinery used for the production of crops and agricultural livestock, agricultural tractors, planting and fertilizing machinery, fertilizer and chemical application equipment, and grain dryers.

Specialty Chemicals (~17%): Companies that primarily produce high value-added chemicals used in the manufacture of a wide variety of products, including but not limited to fine chemicals, additives, advanced polymers, adhesives, sealants and specialty paints, pigments and coatings.

Water Utilities (~11%): Companies that purchase and redistribute water to the end- consumer. Includes large-scale water treatment systems.



Packaged Foods & Meats (~15%): Producers of packaged foods including dairy products, fruit juices, meats, poultry, fish and pet foods.

Industrial Machinery & Supplies & Components (~12%): Manufacturers of industrial machinery and industrial components. Includes companies that manufacture presses, machine tools, compressors, pollution control equipment, elevators, escalators, insulators, pumps, roller bearings and other metal fabrications.

Fertilizers & Agricultural Chemicals (~12%): Producers of fertilizers, pesticides, potash or other agriculture-related chemicals not classified elsewhere.

Based on MSCI ACWI Food Revolution Index and Solactive Sustainable Food System Index; equally weighted. Source: Bloomberg L.P., MSCI, Deutsche Bank AG. Data as of March 6, 2024.

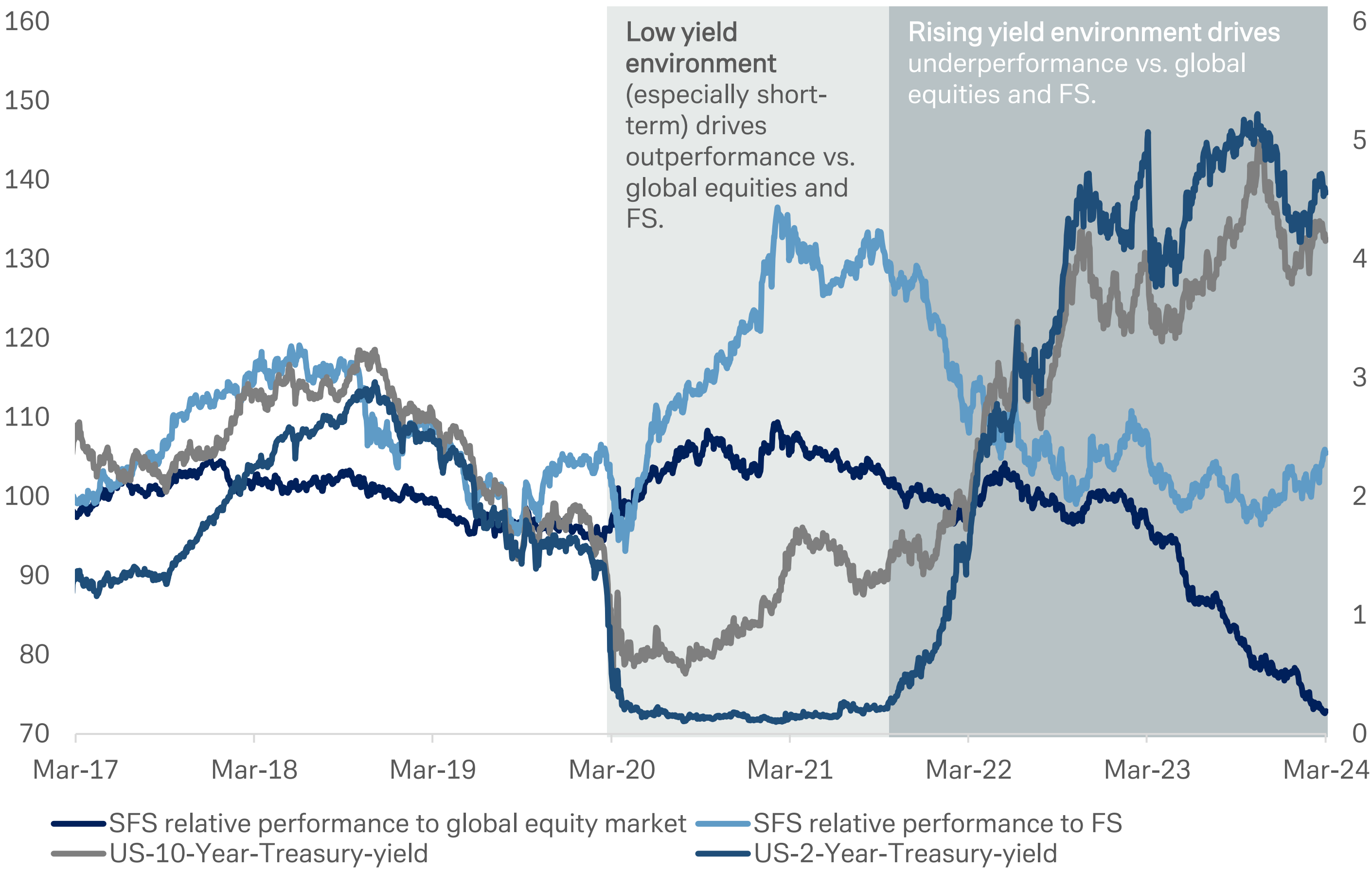
The figure below shows the performance of SFS (computed as the equally weighted average total return of MSCI ACWI IMI Food Revolution Index and Solactive Sustainable Food Index in USD) relative to these benchmarks (also computed as total return in USD). **An upward movement of the lines means that SFS has outperformed the respective benchmark and vice versa.**

Additionally, it shows the ongoing yield of **10-year and 2-year US government bonds.**

The figure shows the dependence of SFS performance relative to the benchmarks on ongoing U.S. yields. In the **low yield environment,** SFS has **outperformed both global equities and FS** - but the outperformance to FS is much stronger.

Subsequently, in the **rising yield environment**, SFS was **consistently outperformed by both benchmarks**. The figure below shows the strong negative correlation between ongoing yields (10-year and 2-year U.S. Treasuries) and relative performance during the rising yield environment.[IV]

Figure 5: Relative performance of SFS to benchmarks and ongoing U.S. yields



Source: Bloomberg L.P., data as of March 6th of 2024.

Figure 6: Correlation between current yields and relative performance (rising yield environment)*

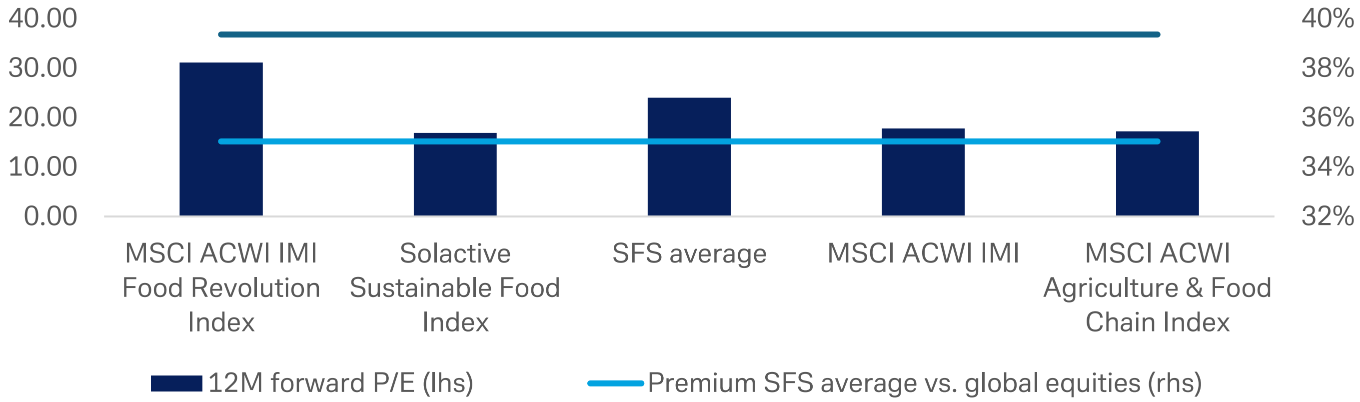
	SFS relative performance to global equity market	SFS relative performance to FS
US-10-Year-Treasury-Yield	-0.68	-0.90
US-2-Year-Treasury-Yield	-0.61	-0.92

ii Here represented by MSCI ACWI IMI Index.
iii Here represented by MSCI ACWI Agriculture & Food Chain Index.
iv Rising yield environment: September 16th of 2021 until March 6th of 2024.

This high dependence on interest rates seems plausible due to the **long-term growth character of the companies** (as explained in the previous sections). Taking a look at the 12M forward P/E, we see that **SFS is currently trading at a 35% premium to global equities on average and a 39% premium to FS.**[v]

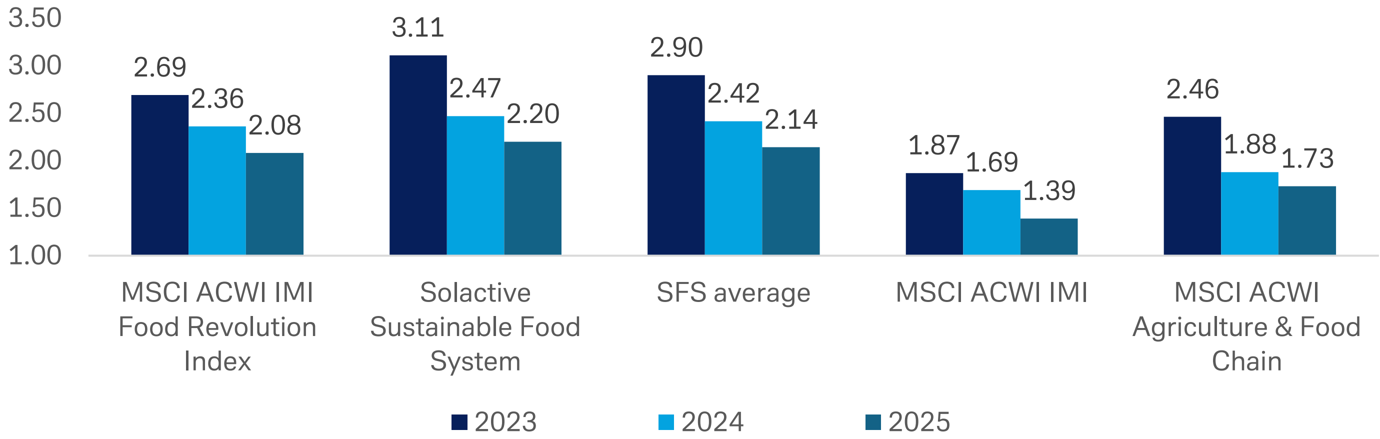
Another factor contributing to the **high interest rate dependency** is the level of **debt ratios.** On average, SFS companies have **higher net debt in relation to their EBITDA**, and the markets currently assume that this will remain the case for the foreseeable future, as figure 8 shows.

Figure 7: 12-month forward P/E of selected indices and SFS average



Source: Bloomberg L.P., Data as of March 6, 2024.

Figure 8: Net Debt to EBITDA of selected indices and SFS average

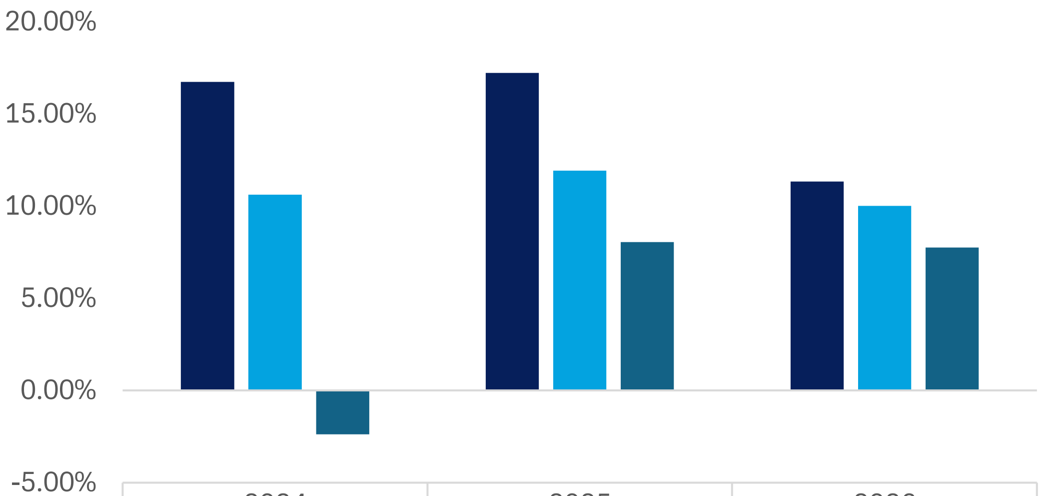


Source: Bloomberg L.P., Data as of March 6th of 2024.

*Shown is the correlation between the relative performance of SFS to the global equity market and FS and the ongoing yields of 10-year and 2-year US Treasuries. The negative correlation indicates that SFS tends to be outperformed by both benchmarks when ongoing yields rise and vice versa. SFS is represented here by the equally weighted average of the MSCI ACWI IMI Food Revolution Index and the Solactive Sustainable Food Index, the global equity market by the MSCI ACWI IMI and FS by the MSCI ACWI Agriculture & Food Chain Index. Source: Bloomberg L.P., Data as of March 6th of 2024.

[V] A historical analysis of P/E ratios is not appropriate here due to significant changes in the indices over time. Source: Bloomberg L.P., Data as of March 6th of 2024.

Figure 9: Earnings growth expectations of selected indices and SFS average*



	2024	2025	2026
SFS average	16.74%	17.24%	11.34%
MSCI ACWI IMI	10.62%	11.93%	10.01%
MSCI ACWI Agriculture & Food Chain	-2.38%	8.05%	7.76%

SFS average   MSCI ACWI IMI   MSCI ACWI Agriculture & Food Chain

*Year-over-year. Source: Bloomberg L.P., Data as of March 6th of 2024. Based on Bloomberg estimated EPS.

All in all, the earnings **outlook for SFS companies seems constructive –** a sign that markets have begun to understand the fundamental change in our food system and the associated growth opportunities.

Current **earnings growth expectations** show that markets expect more dynamic growth from SFS companies than from their FS counterparts. The same is true for global equities (albeit with a slightly smaller difference).

As noted above, there is a **distinction** to be made between corporate **incumbents and challengers. This distinction has portfolio implications:** What the incumbents may **lack in innovative strength** compared to their challengers in terms of **products and processes**, they make up for with **access to/ownership of established structures** such as an existing client base and connections to other market players as well as **solid finances.**

Incumbents can let their challengers **jump into untapped markets –** effectively avoiding the risk of being a first mover – and then use their **economies of scale** to compete against these challengers while diversifying their product portfolio.

We have observed this with **producers of alternative meat and dairy products.** The table on the next page shows the **total return of challengers and incumbents** (companies with sales of over/under 20% in the alternative meat and dairy products area) as well as past years' **EPS and forecasts.**

The clear outperformance of the incumbents is not least due to the fact that **most of the challengers are either loss-making or just breaking even** (EPS on the right).

Looking ahead, market expectations suggest that **sustained profitability may be a long way off for challengers.** The investment landscape is markedly different for the incumbents; while not all are thriving/are expected to thrive, **investors do have access to a greater variety of firms considered to have favourable growth prospects.**

Figure 10: Total return and EPS of incumbents and challengers

	TR in the past 5 years (USD)	EPS for the corresponding year and expectations									
		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Challengers (rev. > 20%)	-29.22	-7.13	-0.29	-0.85	-2.88	-5.75	-3.73	-2.94	-2.34	-1.70	-1.00
		-0.07	-0.01	-0.15	-0.17	-0.22	-0.10	-	-	-	-
		0.05	-0.42	-0.43	-0.14	-0.42	-0.11	0.01	0.04	0.05	0.06
		0.01	-0.05	0.07	0.16	0.12	0.13	0.11	0.15	0.16	-
		-	0.02	0.02	0.00	-0.01	0.01	0.01	0.01	0.01	0.01
		0.00	0.00	0.00	0.01	0.01	-	-	-	-	-
		-	-	-	-	-	-7.65	-6.36	-2.71	-	-
		-	-0.02	-0.02	-0.11	-0.37	-0.17	-	-	-	-
		-	-	-	-	-0.11	-	-	-	-	-
Incumbents (rev. < 20%)	20.83	0.87	0.70	5.39	3.31	2.51	2.87	2.95	3.21	3.39	3.82
		2.00	1.53	1.72	2.67	1.85	1.43	2.53	2.69	2.75	2.84
		3.69	2.92	3.59	3.81	4.46	4.36	4.33	4.68	5.01	5.41
		1.91	1.83	1.69	1.68	1.84	1.45	1.55	1.66	1.84	2.08
		3.85	2.81	3.65	4.36	2.81	2.78	3.61	3.92	4.34	4.61
		8.84	5.23	5.14	5.51	6.45	6.59	8.08	8.73	9.37	9.97
		4.12	2.41	2.43	2.76	3.16	2.79	2.85	3.07	3.23	3.35
		10.25	6.90	5.68	8.39	8.92	-1.87	2.15	3.52	4.83	6.18
		3.44	4.33	4.59	6.63	3.58	5.10	5.46	5.91	6.49	7.00
		0.09	-1.76	-0.77	0.77	0.84	-1.30	0.32	0.45	0.62	0.79
		0.02	0.03	0.04	0.05	0.04	0.03	0.04	0.04	0.02	0.02
		0.63	0.45	0.69	0.66	-1.94	-0.62	1.00	1.38	1.31	1.57
		0.37	0.34	0.34	0.39	0.46	0.56	0.65	-	-	-
		-1.51	0.09	0.33	0.10	-0.58	-0.38	0.09	0.16	-	-
		0.00	0.58	0.34	1.53	1.34	0.02	0.60	0.84	-	-
		0.62	0.09	0.90	1.16	1.24	-0.05	-0.07	-0.06	-	-
		1.15	0.90	1.32	1.21	1.51	1.47	1.83	2.04	2.25	2.45
		0.06	0.10	0.06	0.08	0.11	0.07	0.09	0.10	-	-
		0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.04	0.04	0.04

Source: Bloomberg L.P., Data as of March 6th of 2024. Based on Bloomberg estimated EPS.

This suggests that **incumbents and challengers** will fulfill different **roles in the sustainable transition as well as in investor portfolios.** While challengers may **contribute due to their disruptive nature**, it is ultimately the incumbents that are **ingrained in the structure that requires transformation.**

Overall, further price setbacks in the **next 12 months cannot be ruled out** – they are likely to depend on the **extent** and **timing** of the **second interest rate turnaround** in the U.S.

Markets currently expect **interest rates to be lower** at the end of the year than the **members of the FOMC**: as of today (6th of March 2024), the median of FOMC dots projection for 2024 target rate is currently at **4.625**. In contrast, Fed fund futures imply that markets expect interest rates at the end of 2024 of **4.45.**[vi]

Investors looking for **favourable entry opportunities** should be aware of the fact that interest rate expectations are currently very **volatile.** The probability priced in by the market for an interest rate cut of 25 basis points by the Fed in March 2024 was **81.5%** at the beginning of the year (1 January 2024) – but currently (6th of March 2024) this expectation stands at **2.3%.** Similarly, the implied probability of an interest rate cut of 25 basis points in June was just under **40%** at the beginning of the year, and currently stands at **62%.**[vii]

As we expect **three interest rate cuts of 25 basis points** each in the **U.S.** from June this year and because of the fact that the markets are expecting more rate cuts, we believe it is possible that we will see **further price setbacks in SFS companies** in the coming months once markets realise that rates will stay **"higher for longer".**

Given the **positive earnings expectations** for the next few years, the **long-term growth potential** and the fact that SFS companies tend to o**utperform in a low interest rate environment**, long-term investors may however use these setbacks as an opportunity to enter this promising LTIT.

Risks include **macroeconomic factors** that can affect the profitability of the respective companies through various channels such as **rising commodity prices**, **supply chain bottlenecks** or **demographic factors.** There are also risks that the respective companies are likely to have to respond to as the sector is **disrupted by innovative technologies/products.** The degradation of natural capital due to **climate change**, **loss of biodiversity** and **pollution** as well as **geopolitical tensions** must continue to be monitored as risks in the **long term.**

06 Conclusions

Sustainable food systems (SFS) deliver food security and nutrition in ways that are sustainable in economic, social and environmental terms. The move to SFS will create opportunities across the entire food production value chain, and also in other sectors.

Investing in equity indices that pursue the strategy of transition to an SFS involves large exposure to the Materials, Industrials and Consumer Staples sectors. Investments can include established food companies (incumbents) and new companies with disruptive products (challengers). The risk/return profiles of these two types of companies can be very different.

The relative performance of SFS investments has in the recent past been greatly impacted by interest rates, and their valuation premium as well as high net debt/EBITDA ratios means this this is likely to continue. Another observable trend is for outperformance of incumbent firms over challengers: these two types of firms will play different roles in the sustainable transition as well as investor portfolios.

Price setbacks for SFS investments in the next 12 months cannot be ruled out, particularly as market rate cut expectations realign to reality. Even so, positive earnings expectations for many SFS companies, and their tendency to outperform in a low interest-rate environment may create interesting entry points for investing in this LTIT.

Historical performance

Start	End	MSCI World ACWI IMI	MSCI ACWI Agriculture & Food Chain Price Return USD	Solactive Sustainable Food Index NTR	MSCI ACWI IMI Food Revolution Index
03/08/2019	03/08/2020	5.71%	9.43%	-1.15%	7.02%
03/08/2020	03/08/2021	41.42%	17.66%	54.49%	53.24%
03/08/2021	03/08/2022	1.18%	10.64%	3.30%	-16.20%
03/08/2022	03/08/2023	-1.19%	-0.30%	0.61%	-4.86%
03/08/2023	03/08/2024	23.62%	-5.49%	-5.33%	-7.25%

Source: Bloomberg L.P., Deutsche Bank AG. Data as of March 8th of 2024.

Glossary

12-month-forward P/E: A variation of the P/E ratio that uses estimated earnings for the next twelve months instead of past earnings.

EBITDA: Earnings before interest, taxes, depreciation, and amortization

EPS: A financial metric that represents the portion of a company's profit allocated to each outstanding share of common stock.

Fed fund futures: Derivatives based on the federal funds rate, the U.S. overnight interbank lending rate on reserves deposited with the Fed.

FOMC dots projection: A visual representation of individual Federal Open Market Committee (FOMC) members' projections for the federal funds rate over a future timeframe.

MSCI ACWI Agriculture & Food Chain Index: The MSCI ACWI Agriculture & Food Chain Index captures the global opportunity set of listed companies engaged in the production of agricultural products. Constituents are selected from the equity universe of MSCI ACWI, the parent index, which covers mid and large cap securities across 23 Developed Markets (DM) and 24 Emerging Markets (EM) countries*. All index constituents are categorized in one of four sub-industries according to the Global Industry Classification Standard (GICS®): agricultural products, fertilizers & agricultural chemicals, packaged foods & meats, and food distributors.

MSCI ACWI IMI Food Revolution Index: The MSCI ACWI IMI Food Revolution Index is based on is based on the MSCI ACWI IMI Index, its parent index, and includes large, mid and small-cap securities across 23 Developed Markets (DM) and 24 Emerging Markets (EM) countries*. The index aims to represent the performance of a set of companies associated with the development of new products and services focused on improving the way food is produced and consumed.

MSCI ACWI IMI: The MSCI ACWI Investable Market Index (IMI) captures large, mid and small cap representation across 23 Developed Markets (DM) and 24 Emerging Markets (EM) countries*. With 9,084 constituents, the index is comprehensive, covering approximately 99% of the global equity investment opportunity set.

Net debt to EBITDA: Net debt in relation to EBITDA

P/E Ratio: A financial metric that compares a company's share price to its earnings per share (EPS).

SFS average: Equal weighted average between MSCI ACWI IMI Food Revolution Index and Solactive Sustainable Food Index

Solactive Sustainable Food Index: The Solactive Sustainable Food Index NTR is designed to measure the equity performance of those companies related to the food industry that utilise technology, efficient production and supply practices, and/or demonstrate innovation with the aim of creating a sustainable food ecosystem.

The **Business and Sustainable Development Commission** (BSDC) brings together leaders from business, finance and civil society and labour to assess possible business opportunities from implementation of the UN Sustainable Development Goals (SDG).

The **Food and Land Use Coalition** (FOLU) brings together global and national stakeholders to develop new strategies for sustainable food and land use strategies, with individual country platforms.

The **Food System Economics Commission** (FSEC) is an independent economic commission with representatives from academic institutions and international bodies.

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