

strategy&

Part of the PwC network

Sustainable buildings

Investment opportunities

Insights brief
2024



The importance of real estate in the global economy is increasing, creating challenges from an environmental perspective

Real estate at a glance



Buildings are at the center of all our lives...

90%

of people's lives are spent indoors



... and the stock is highly valuable and growing...

40.3 SEKtn¹⁾

Swedish real estate value 2023, ~3.5x total market capitalization of all listed companies in Sweden²⁾

400 SEKbn

Value of Swedish build investments excl. infra in 2022

2x sqm

Additional buildings to be built next 40 years³⁾ globally (230bn sqm), adding the equivalent of Paris every week



... creating considerable environmental challenges

40%⁴⁾

Real estate sector share of global CO₂ emissions

36%

Reduction in global real estate CO₂ emissions needed pre-2030 to prevent >2°C increase in global warming⁵⁾

31%

Buildings' share of global energy use, which is larger than the share of Transportation

Notes: 1) USD to SEK 10,612800, 2) Sweden Market Capitalization accounted for 1,046 USDbn in Dec 2023, 3) From 2016 to ~2056, globally, 4) Of these – approximately 1/3rd is from construction, and 2/3rd from operations, 5) Paris Agreement goal to limit global warming to well below 2, preferably to 1.5°C, compared to pre-industrial levels
Sources: US EPA, Savills, Worldbank, Schroders, Global Alliance for Buildings and Construction, Statista, CEIC data, Prognoscentret, Strategy& analysis

The shift to sustainable buildings is vital for ensuring the fulfillment of several Sustainable Development Goals set by the United Nations

Sustainable buildings and the UN's Sustainable Development Goals (SDG)

UN's SDGs and origin



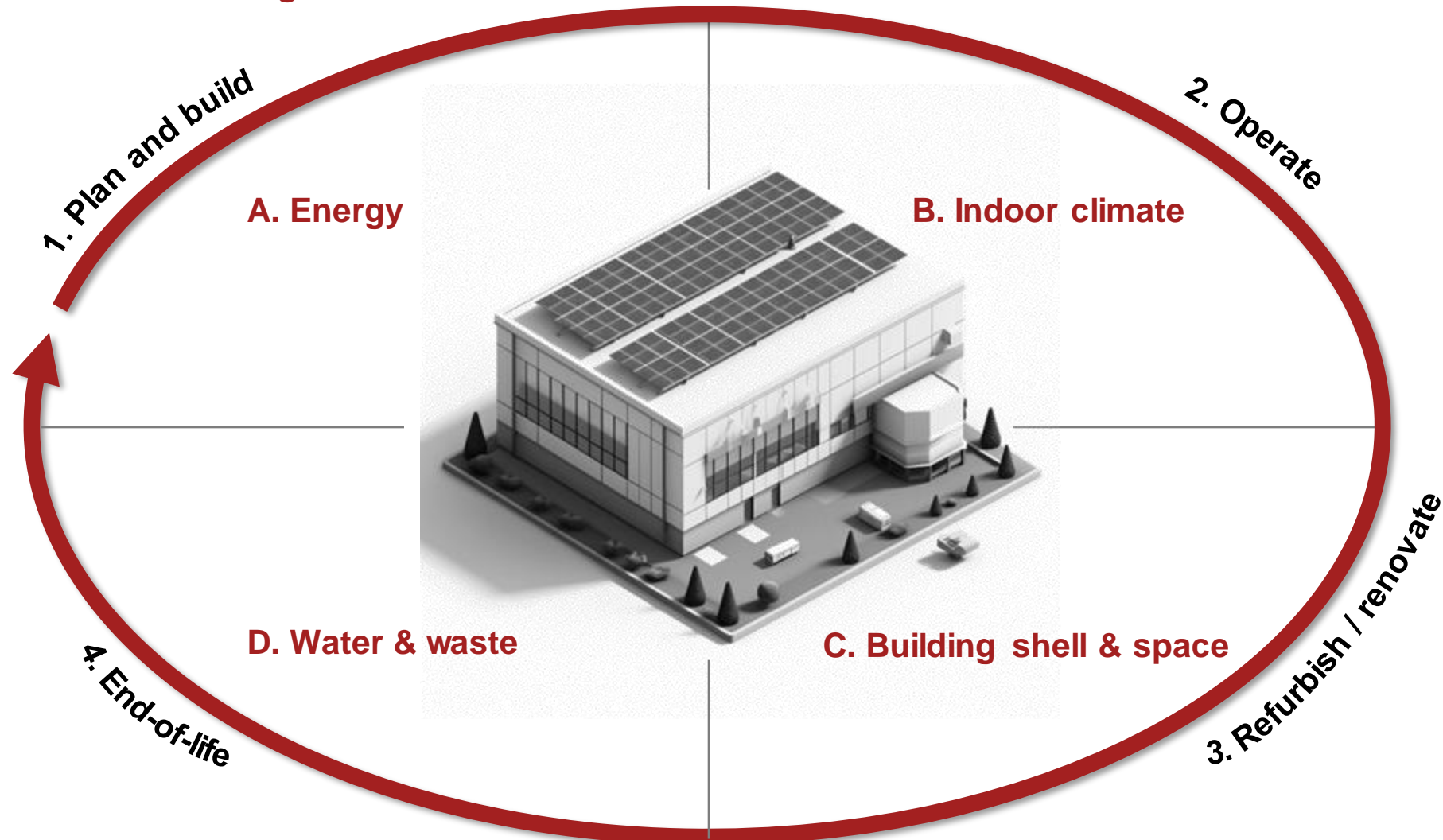
Key SDGs for sustainable buildings

 <p>6 CLEAN WATER AND SANITATION</p>	<p>Sustainable building projects protect scarce water resources, improving water efficiency and enhances water quality and sanitation.</p>	 <p>12 RESPONSIBLE CONSUMPTION AND PRODUCTION</p>	<p>Sustainable buildings facilitate the shift toward a circular economy by maximizing resource efficiency, minimizing waste, and regenerating natural systems.</p>
 <p>7 AFFORDABLE AND CLEAN ENERGY</p>	<p>Sustainable buildings enhance access to affordable, reliable and clean energy sources. Renewable energy sources (e.g. solar PV) are also vital for fulfilling the 7th target.</p>	 <p>13 CLIMATE ACTION</p>	<p>Buildings and urban areas that prioritize sustainability contribute to the efficient utilization of clean energy, enhancing resilience and adaptability to climate impacts.</p>
 <p>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</p>	<p>Sustainable buildings and cities offer inclusive and high-quality infrastructure, fostering both economic development and social value.</p>	 <p>15 LIFE ON LAND</p>	<p>Sustainable buildings and cities safeguard and offer access to the environment using nature-based solutions that strengthen resilience and promote biodiversity.</p>
 <p>11 SUSTAINABLE CITIES AND COMMUNITIES</p>	<p>Sustainable buildings ensure that citizens have access to quality housing and infrastructure, fostering social, environmental, and economic development.</p>	 <p>17 PARTNERSHIPS FOR THE GOALS</p>	<p>Sustainable buildings and cities result from global partnerships fostering knowledge exchange, ambition, and collaborative action.</p>

Global initiative adopted by all UN Member States in 2015 as part of the 2030 Agenda for Sustainable Development. The SDGs consist of a set of 17 interconnected and interdependent goals with 169 targets aimed at addressing a wide range of global challenges and creating a more sustainable and equitable world by 2030.

Sustainable buildings encompass measures implemented throughout the building lifecycle and span four primary dimensions

Overview of sustainable building dimensions



There are several ways to optimize energy generation and use of a building, with potential for positive impact across the triple bottom line

Overview – A. Energy

Solar Photovoltaic (Generation)

Multiple interconnected solar panels which convert sunlight to generate electricity for consumption with excess electricity sold back to the grid

Solar Thermal (Generation)

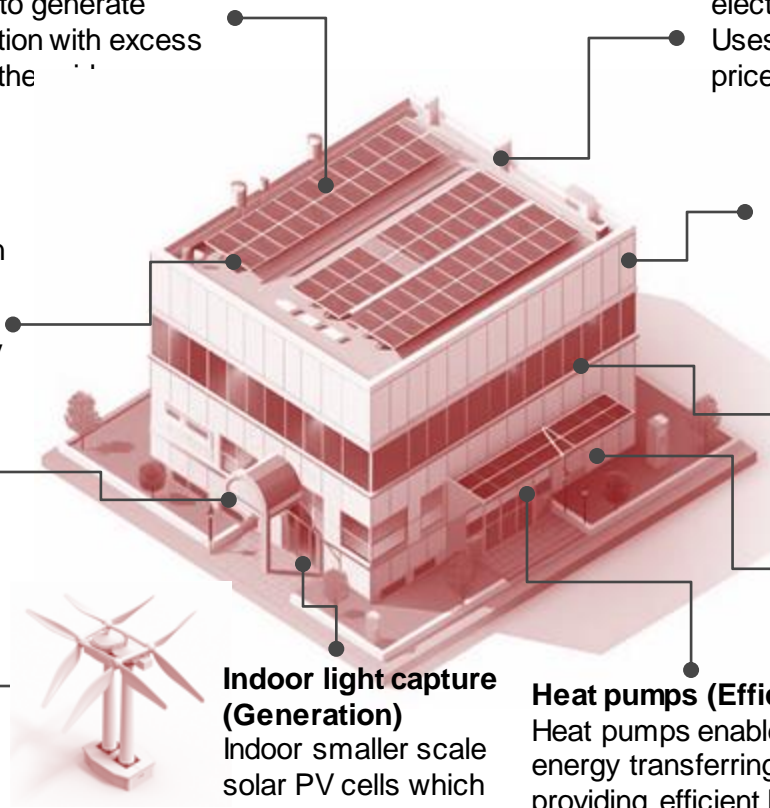
Utilizes solar panels on the roof to heat liquid, in some cases more space efficient than PV

Geothermal (Generation)

Utilizes heat from the Earth's interior to heat buildings or generate energy

Wind turbines (Generation)

Produces electricity for on-site consumption



Indoor light capture (Generation)

Indoor smaller scale solar PV cells which capture sunlight and generate energy

Heat pumps (Efficiency)

Heat pumps enable energy transferring, providing efficient heating and cooling

Energy Storage (Efficiency)

Provides security when and if electricity is most needed. Uses stored electricity when prices are high or as back-up

Smart and efficient appliances (Efficiency)

Enhances energy mgmt. (e.g. smart thermostats and solar water heaters)

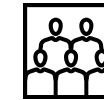
Optimization software (Efficiency)

System performance in real time, possibilities for energy mgmt. and monitoring at a distance

MVHR¹⁾ (Generation)

Heat recovery ventilation system which extracts otherwise lost heat from extracted air

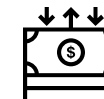
Sustainability Impact



People: Increased energy affordability and public access



Planet: Reduction of GHG emissions and improved biodiversity



Profit: Lower electricity costs, eligibility for green financing, potential for value appreciation

Indoor climate is vital for end-user wellbeing and has positive impact on planet and profit through resource conservation and reduced OPEX

Overview – B. Indoor climate

Air filtration and purification

Ensuring high air quality and reduction of VOCs¹⁾

Smart ventilation

Sensor-based adjustment of ventilation rates

Efficient air conditioning

Energy efficient systems to circulate air

Moisture control

Preventing water infiltration and controlling humidity

Cleaning services

Maintaining clean environment, incl. maintaining plants etc.

Acoustic materials

Building materials that lower overall sound levels

Low-energy lighting

Lighting with lower electricity usage, e.g. LED or compact fluorescent lamps

Smart lighting

Connected lighting that offers remote control and adaptability

Water and steam radiators

Lower energy usage vs electricity radiators

Floor heating

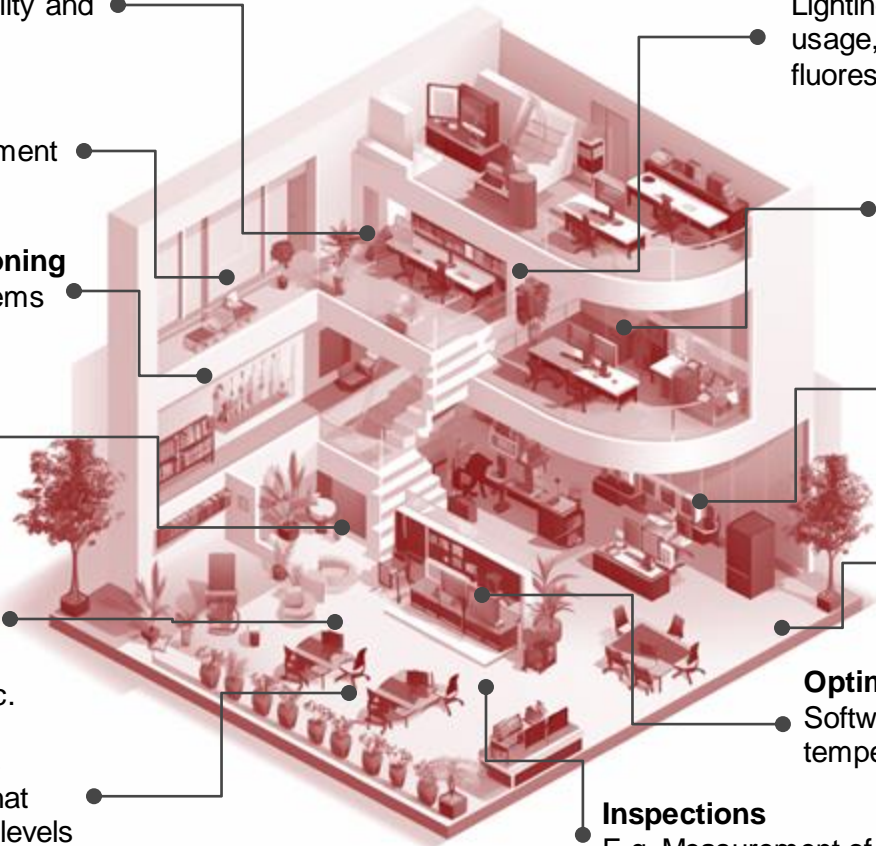
More even heat distribution reducing need for radiators

Optimization software

Software for optimizing e.g. temperature and ventilation

Inspections

E.g. Measurement of radon levels



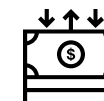
Sustainability Impact



People: Improved mental health and physical well-being through high thermal comfort



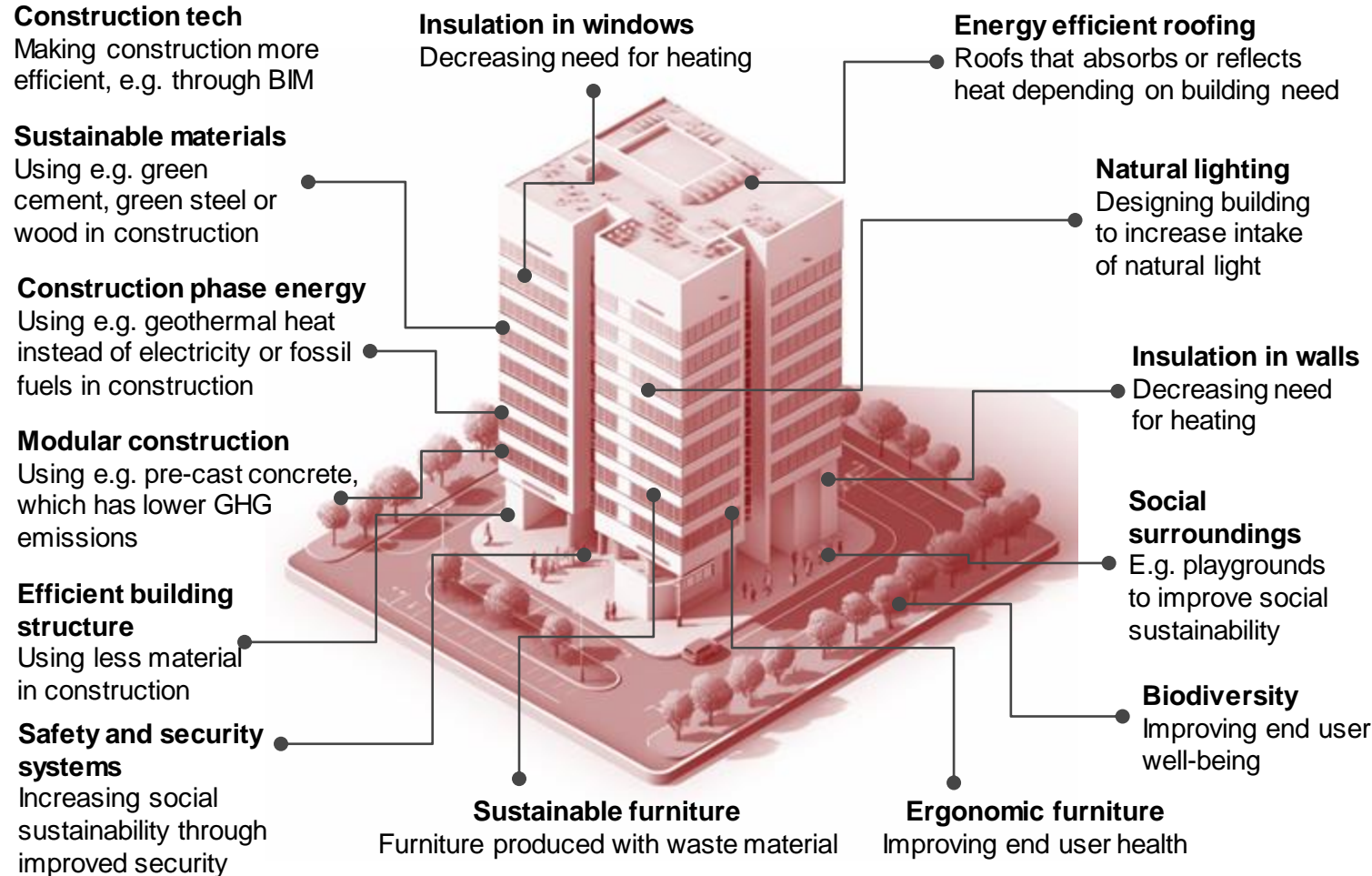
Planet: Increased energy efficiency and resource conservation



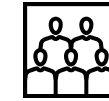
Profit: Increased employee retention and satisfaction, reduction in OPEX

Improving building shell and indoor space impacts the triple bottom line through reduced emissions and waste and access to green loans

Overview – C. Building shell & space



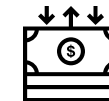
Sustainability Impact



People: Improved health through e.g. less draft and less hazardous materials



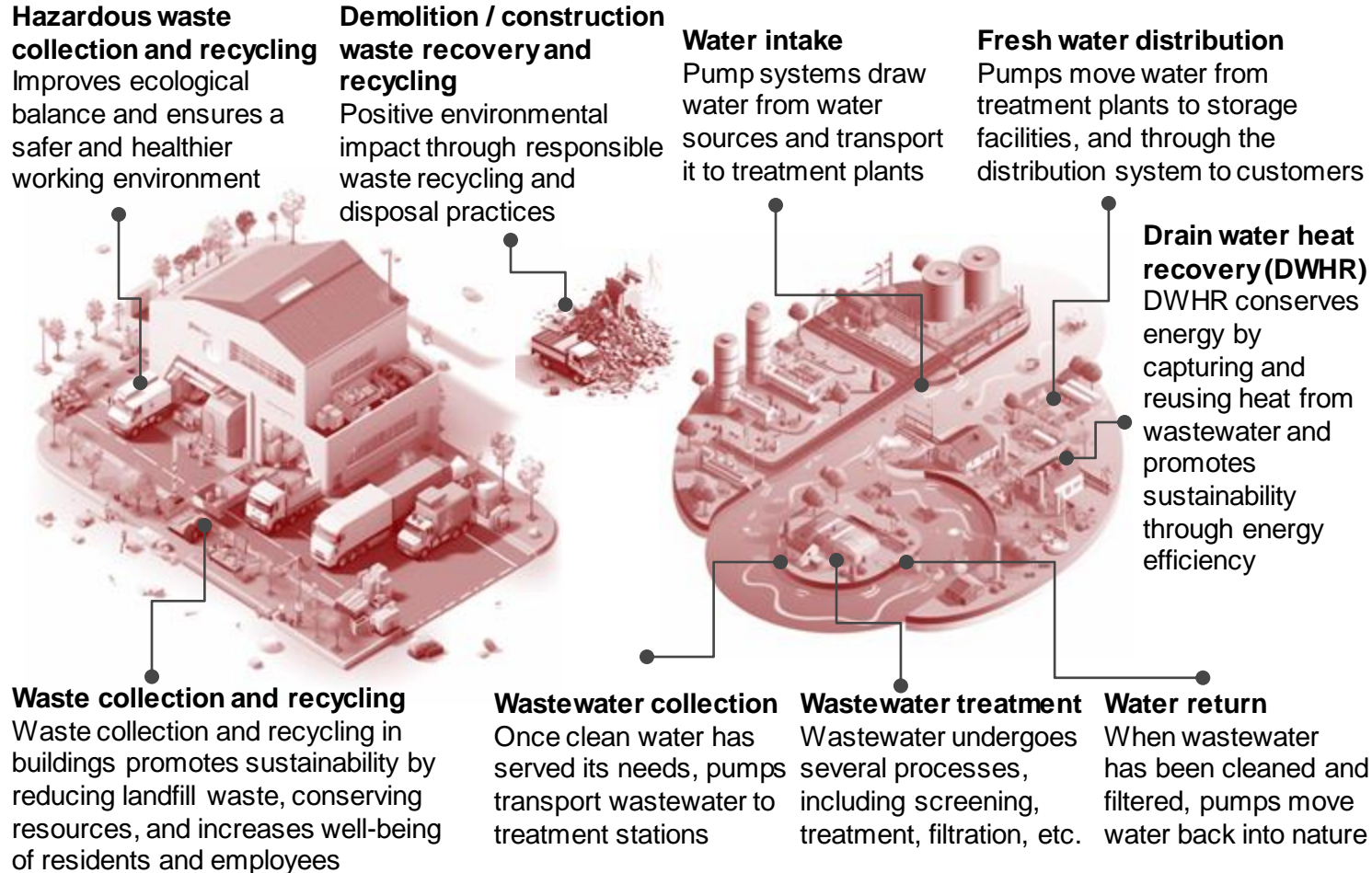
Planet: Increased energy efficiency resulting in lower GHG emissions



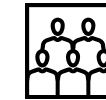
Profit: Eligibility for green financing, potential for value appreciation for RE owner

Water conservation as well as waste reduction and treatment have significant potential to improve quality of life and ecological balance

Overview – D. Water & waste



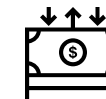
Sustainability Impact



People: Improved quality of life and reduced exposure to harmful substances



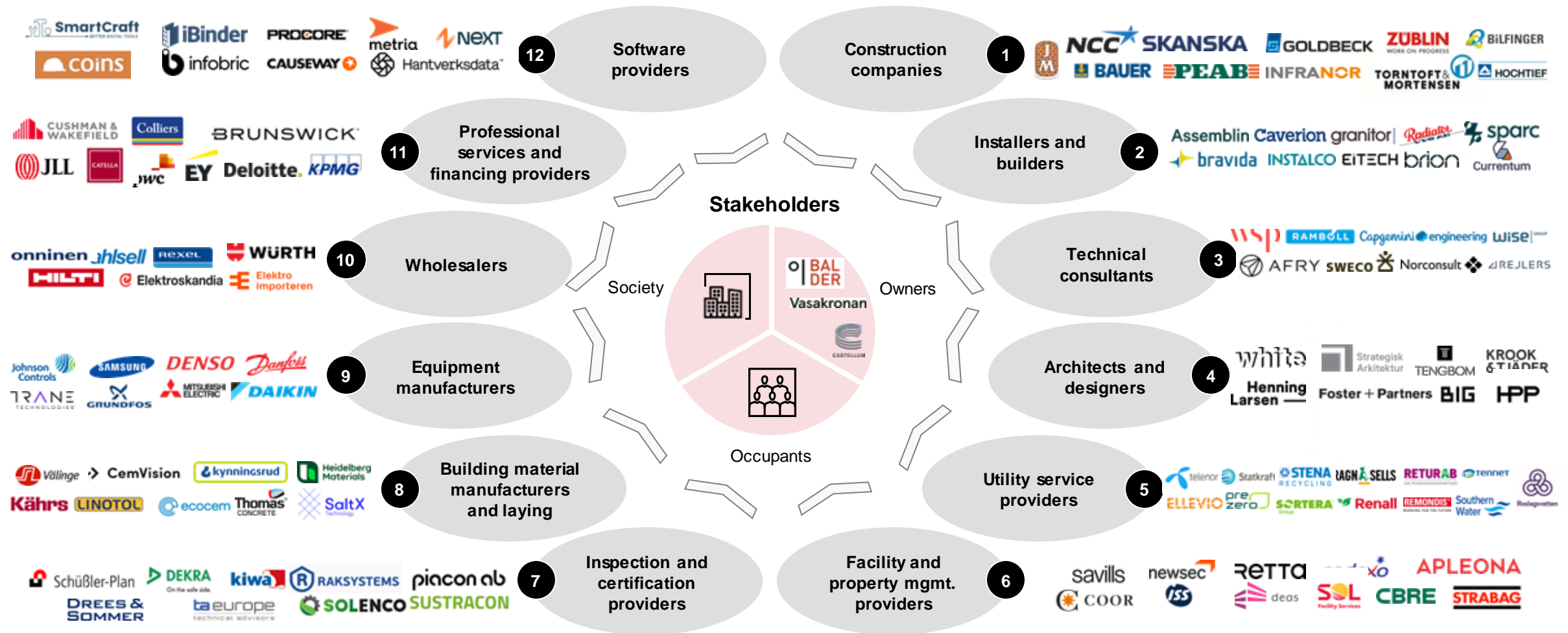
Planet: Lessened impact on landfills and improved ecological balance



Profit: Potential for lowered OPEX and disposal fees

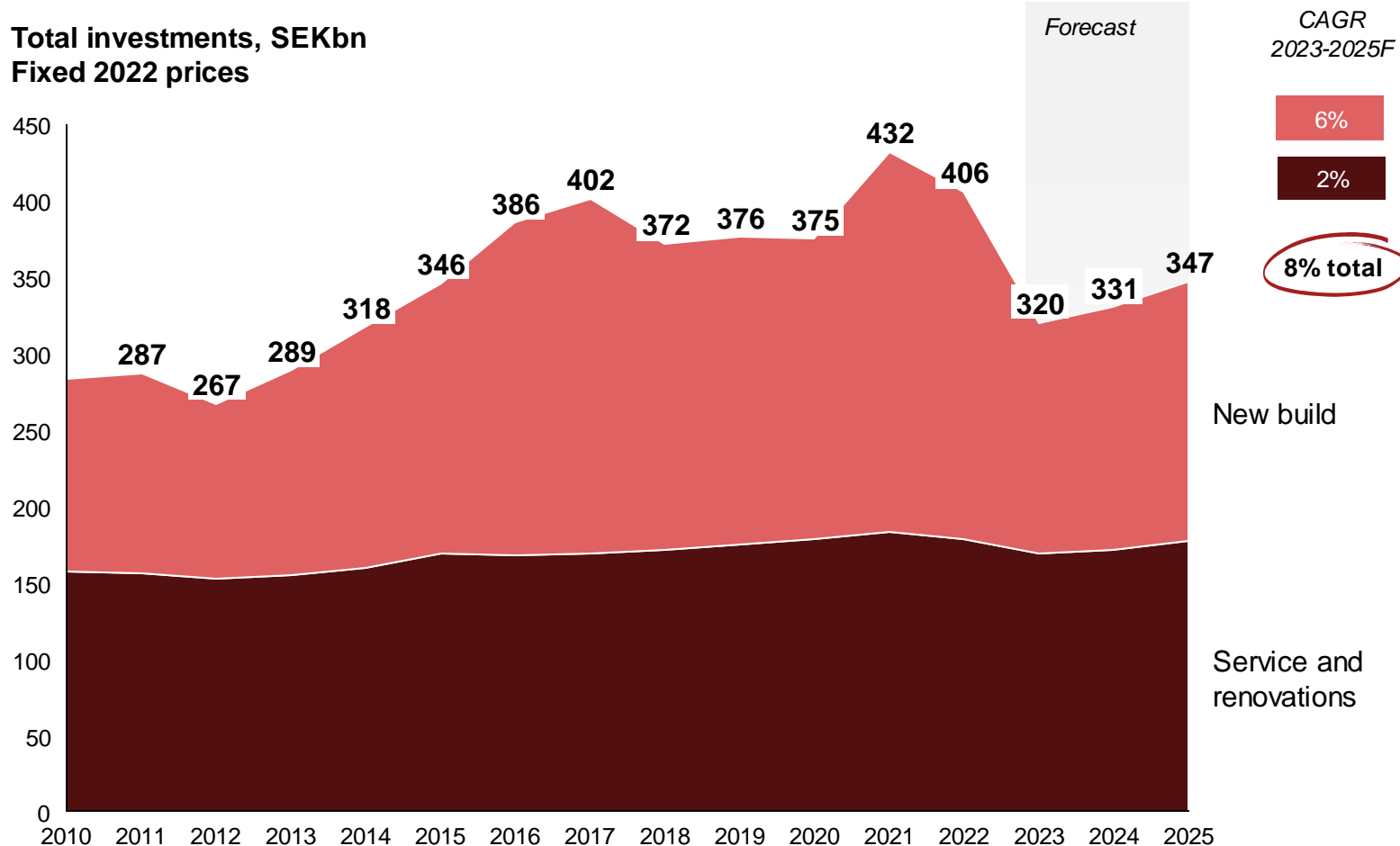
Sustainable buildings impact a broad set of stakeholders, including 12 company archetypes providing related services

Stakeholders and archetypes



The underlying construction market is sizeable and growing – with added stability from resilient service and renovation subsectors

Total build investments excl. infra
Sweden, 2010-2025F, SEKbn, fixed 2022 prices



Comments

- Underlying construction market is sizeable, with ~400 SEKbn build investments in 2022, and growing ~8% p.a. 2023-2025F
- New build is the most cyclical segment, but with strong underlying growth over time driven by inherent need of new buildings in Sweden
- Renovations & Upgrades saw modest development between 2010-2020, but growth has accelerated as green energy transition has driven refurbishment and upgrade of energy systems in both commercial and residential buildings
- Service & maintenance is the most stable as it is driven by underlying building stock – however slight decline in '23-'24, driven by larger competition for service contracts leading to price pressure

“Service jobs are always stable, as things are going to break regardless of the economic climate – new build is always going to be volatile, with renovation / upgrades offering more stability”

- Market expert

Strategy& will in upcoming posts deep-dive into four especially attractive investment opportunities within sustainable buildings

Sub-sectors in sustainable buildings

	A. Energy	B. Indoor climate	C. Building shell & space	D. Water & waste
1 Construction companies	Construction of energy efficient buildings	Construction of HVAC systems	Construction with sustainable materials	Construction of water systems in buildings
2 Installers and builders	Solar PV and BESS installation	Heat pump installation Other HVAC installation	Alarm system installation Other new build installations	Plumbing installation Water pump installation
3 Technical consultants	Energy optimization ESG consulting	Architecture and design	Project management services	Wastewater treatment consulting Water treatment consulting
4 Architects and designers	Design of energy efficient buildings	Design of HVAC systems	Green landscaping	Design of water systems in buildings
5 Utility service providers	Electricity grid services	Energy supply	Telecom infrastructure	Waste management Water management
6 FM and PM providers	Energy monitoring Equipment service & maintenance	Cleaning services HVAC service & maintenance	Cleaning services	Water system service & maintenance
7 Inspection and certifications	Inspections Green building certifications	Climate inspections	New build inspections	Water system inspections
8 Raw material manufacturers	N/A	N/A	Future concrete Other sustainable material	N/A
9 Equipment manufacturers	Solar PV manufacturing BESS manufacturing	Heat pump manufacturing Radiator manufacturing	Furniture manufacturing Window manufacturing	Water pump manufacturing
10 Wholesalers	Solar PV and BESS wholesale	HVAC wholesale	Furniture wholesale Building material wholesale	Water system equipment wholesale
11 Prof. services and financing	PPA agreements Green loans	Social / Green loans	Green construction loans	N/A
12 Software providers	Energy optimization software	Smart lighting Ventilation optimization	Construction tech	Water flow optimization

Strategy& can offer highly experienced teams in several of the most attractive sub-sectors within sustainable buildings

Sustainable buildings sub-sector investment attractiveness summary

Sub-sector	Attractiveness			S& Sweden experience
	Size	Growth	Cyclicality	
A Solar PV and BESS installation	~25 SEKbn SE market following energy price hikes	Solar large source of total future energy production	Cyclicity of consumer demand mitigated by strong need for new installations	SVEA SOLAR, EnergiEngagemang, SOLKOMPA NIET, OTOVO, SESOL
B Heat pump installation	Recent growth following energy price hikes	Strong growth as heating with fossil fuel is phased out	Cyclicity of consumer demand mitigated by large need for new installations	Assemblin, HJOINSTALLATION, Caverion, Elektroskandia, bravida, ELEDA, QMC, INSTALCO, brion
C Energy optimization	~30% of SE RE owners have invested last 5 years	Energy optimization spend to increase ~10% next 5 years	Underlying demand for cost-savings persistent through downturns	ENSTAR, AFRY, BENGT DAHLGREN, Granlund
D Waste management	Critical service driven by regulations	Driven by underinvested waste systems	High resilience as demand for waste management remains in downturns	Delete, STENA RECYCLING, SCRTERA Group, VEOLIA, fortum
E Water management	Critical service driven by regulations	Water scarcity is becoming more prevalent (globally)	High resilience as demand for water management remains in downturns	LAKERS, NORVA ²⁴ , VEOLIA
F FM and PM providers	~20 SEKbn SE market with ~35% outsourcing degree	Lower growth as market is more mature	Highly resilient as volumes are driven by underlying building stock which is stable	newsec, HESTIA, VEOLIA ¹⁾ , OVENIA, REALIA GROUP
G Future concrete	Large market as majority of new build uses concrete	Multiple emerging technologies	Cyclical as market is driven by new build – emerging technologies see lower cyclicality	CemVision, LINOTOL, kynningsrud, C.HOLMQUIST ENTREPRENAD
H Construction tech	Sizeable market with multiple use cases across value chain	~5-10% growth from penetration and shift to cloud	Resilient as volumes are mainly driven by underlying building stock which is stable	iBinder, infobric, Geomatikk, NORKART, metria, Hantverksdata, NEXT

Notes: 1) Market study in relation to divestment of Veolia's facility management business
Sources: Desktop research, Interviews, Strategy& analysis

Legend – Market size and cyclicality: Less attractive (red minus), (yellow minus), (grey equals), (green plus), (green plus) Attractive

Legend – Market growth: Very negative (red down arrow), Negative (pink down arrow), Neutral (grey arrow), Positive (green up arrow), Very positive (green up arrow)

We look forward to working together

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4 global platform offerings



Capabilities-Driven Strategy

Strategy development combining market-back and capabilities-forward



Fit-For-Growth

Cost transformation; shifting cost from lights-on to differentiating capabilities



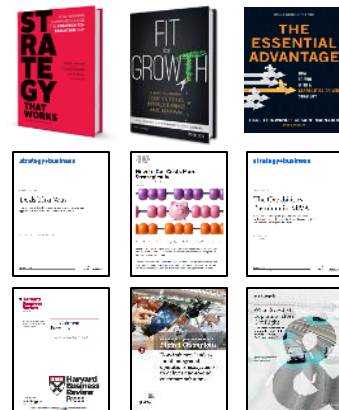
Digital

Strategy development and business positioning in the digital space

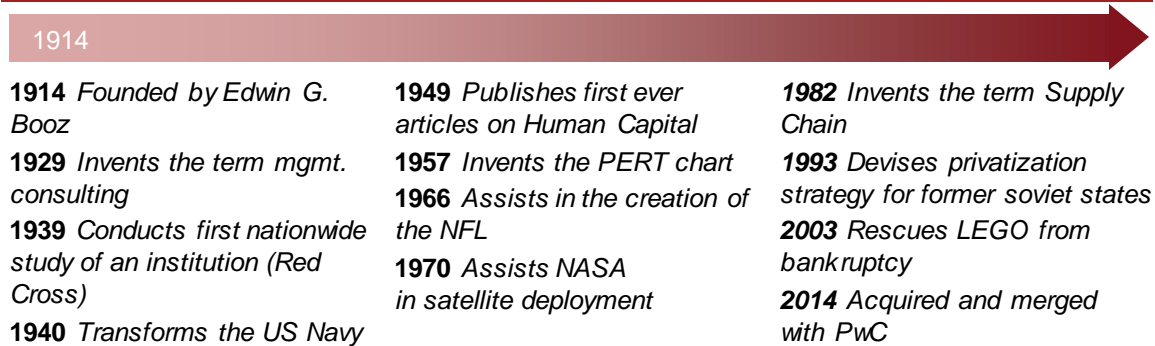


Deals

End-to-end deal support, from deal origination via DD to value capture



Defining moments for more than a century



Delivering strategy through execution as part of PwC

Global strategy model, leading foresight, capabilities positioning

Scale, quality prominence, and deep relationships, skills and insight



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Pre-eminent **strategy through execution** firm that delivers superior value, offers premium talent and is differentiated by its ability to help clients build own capabilities on global scale