

### Infrastructure & Construction At a glance

### This presentation aims to:

- Give an overview of the **New Business Landscape** of Infrastructure & Construction
- Provide insights, implications and recommendations for Swedish businesses aiming to grow globally during the next decade

### Large recovery investments as well as sustainability and digital transformation will mark the next decade within the sector

Industry overview

40%

Share of total global GHG emissions generated from buildings annually **13**%

Size of the Construction sector as share of global GDP, making it the largest industry globally

### **End of construction** as usual

pre-2020

The construction sector has historically been more conservative than other sectors in adapting to a changing society, and Chinese firms have been rising on the global stage

The transformative decade

post-2020

Sustainability and digital transformation inevitable for the construction sector, with infrastructure investments becoming a geopolitical tool



Digitalisation expected to increase within the construction ecosystem as new technologies are incorporated



Policies and customer demand construction and infrastructure industry to be more sustainable



transformations

Innovation will be reshaped with new collaboration models in the construction industry



### Customer

Increased demands on sustainability, agile processes and human rights



### **Policies**

Changes in ownership structures and increased incentives for businesses



**Ecosystem** 

#### Digitalisation supports new partnership models and a

competitive

ecosystem

push industry to look for smarter and integrated supply chains



advantages and

**Invest in digital** technologies to secure a competitive advantage

Partner-up for

future

competitive

synergies

Develop your sustainability program and implement control mechanisms

**Understand** what your full accountability means

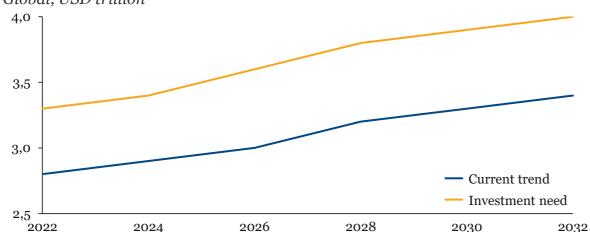
Have a holistic view of the value chain you are a part of

**Explore** unconventional business models

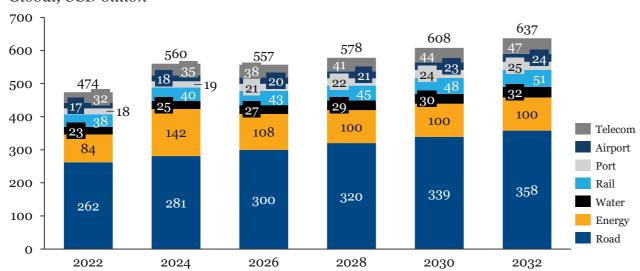
### Supply chain Global events

# Significant investment gaps will be found within infrastructure during the coming decade, with road development and energy constituting the major gaps

### Infrastructure investment at current trends and forecasted need Global. USD trillion



### Infrastructure investment gaps per sector Global, USD billion



### Future milestone developments

### **Green Recovery Funds**

EU recovery funds as part of stimulus plan to member countries. Heavy investments are expected into infrastructure.

### New U.S. administration

Large investments into sustainable infrastructure being discussed in the new Bidenadministration.

### Reduced Emission targets compared Paris 2030

Stricter emission reduction targets for EU, to at least 55% compared to 1990 levels from 40% earlier.

China to achieve peak emission levels by 2030

#### UN SDG 9

Upgrade infrastructure with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies, by 2030.

2040 -

#### Construction 2050: Building tomorrow's Europe today

Sectoral initiative launched in 2019. Main objective is to harmonise policy frameworks across member states, in order to address evolving ecosystem and the transformation that the construction industry is going through.

2020 2030

- The current pace in which investments are taking place do not keep up with the actual projected need, with an **annual gap of around 500-700 bn USD**
- Considering additional investments needed for countries not meeting their SDGs, annual gap is **additionally around 200 bn USD annually** until 2031
- The largest investment gaps within in future infrastructure will be found in **road development**, constituting **above 65% of the total investment** needed globally
- Estimates show that developing countries will need to invest at least **4.5% of GDP** during the coming decade to address the challenges caused by poor infrastructure. These countries' governments will need to increase the PPP's.

Source: Global Infrastructure Hub, Business Sweden Data and Analysis

# Heavy investments into infrastructure have been announced by governments around the world, with China taking the lead during the coming decade

### Overview of new business landscape per region



- President Biden's Build Back Better plan has outlined the infrastructure sector as a major part, with focus on modernizing up to 2 trillion USD
- Political uncertainties in Mexico and Argentina combined with geopolitical tensions between the US and China will pose limitation to Latin America



### Europe, Middle East & Africa

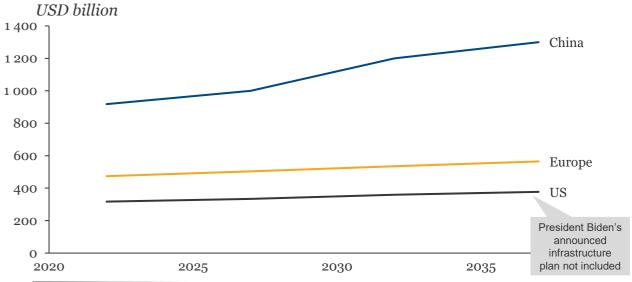
- Next Generation EU recovery funding will enable large infrastructure spending by member states. Green investment into infrastructure is expected to increase albeit the set sustainability conditions by the EU
- The recently launched National Infrastructure Strategy in the UK will provide clarity on infrastructure opportunities for investors
- Mega city projects are under development e.g. Egypt and Saudi Arabia
- Increased growth in population will constitute a challenge for the African continent and new business models will be required for future projects



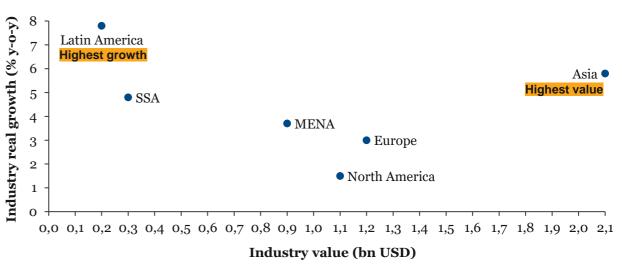
### Asia Pacific

- Belt and Road Initiative (BRI) by **China** will further strengthen its position in the region as the primary infrastructure developer, although the pandemic and its aftermath is expected to slow down the intensity of BRI
- **India** is set on transforming its major cities due to a rapid urbanisation. An increase in PPPs for major projects within transportation is expected

### Forecasted infrastructure investment 2022-2037

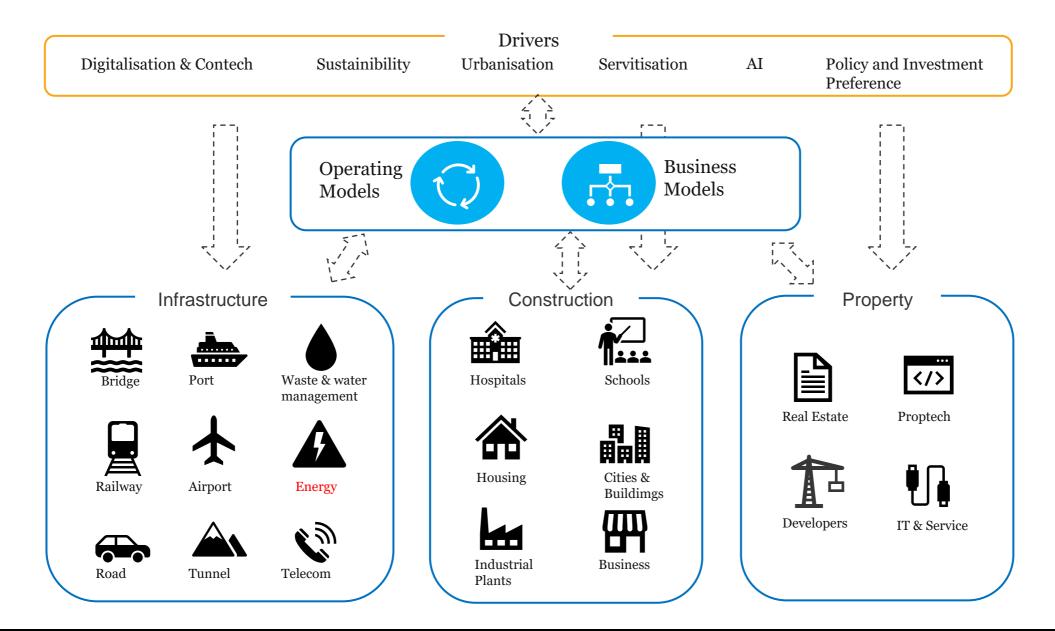


### Global industry value & growth 2021



**Source**: Fitch Solutions, Global Infrastructure Hub, Business Sweden Data and Analysis

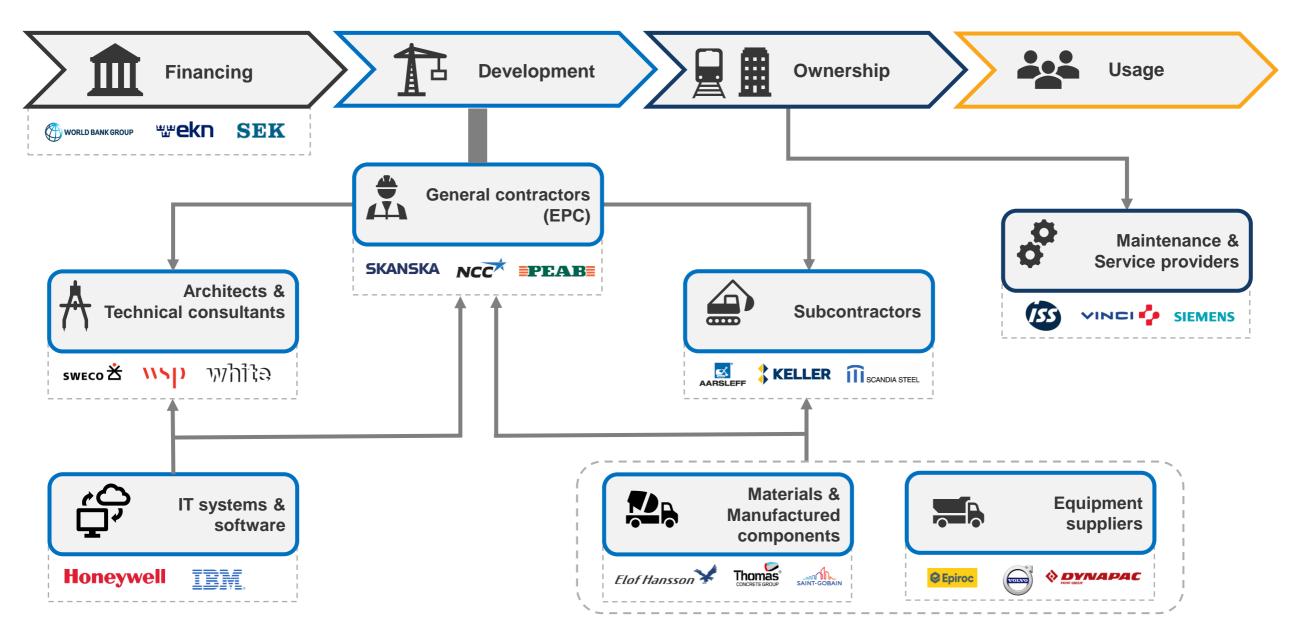
# Construction industry could become more efficient and competitive by the development of more integrated new business models



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# The value chain of the construction sector today could be altered as new technologies and business models are being introduced



## Key transformations and trends will shape the new construction landscape during the next decade, which will have a fundamental impact on business

### **OVERARCHING TRANSFORMATIONS**



Policies and customer demand force construction and infrastructure industry to be more sustainable



Innovation will be reshaped with new collaboration models in the construction industry



Digitalization can take construction industry to a new level affecting design, engineering, production and construction processes.

#### **TRENDS**



Investments into infrastructure will be a top geopolitical factor



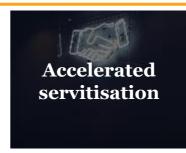
Standardisation, localisation & sustainability policies will have a strong impact on the industry



Digitalisation supports new partnership models and a more competitive ecosystem



Integrated supply and value chains



Clear benefits awaits in the light of increased servitisation of the industry



Increased demand for sustainability and human rights

# Decade of sustainable action

Increased urgency as CO2 budget and Agenda 2030 closes in. Sustainability more and more a competitive advantage & integrated into business model

### SDG's having direct impact on construction



# Sustainibility is shifting from being a choice to a requirement in the construction industry

Pressure for sustainability from customers and society

#### Customer Demand

- TOC (Total cost of ownership) have an increasing affect on the customer choice. Smart buildings, energy and operational efficiency, and flexibility and adaptability of structures are becoming higher priorities.
- As more companies focus on sustainability, they seek to ensure that their facilities, meet prevailing sustainable design standards. Increasing demand on green buildings

### Forced sustainability across the industry

- Climate change goals set by governments puts increasing pressure on the industry to **reduce carbon emissions**.
- **Standardisation** becoming a trend in the industry; standardised building codes or type certificates and approvals for factory-built products rather than reviews of each site.
- Requirements on work site safety is increasing. In relation to Covid-19 new health and safety procedures will be required
- **Digital solutions** have an important role to play in enabling this cross value-chain efficiency, which will be important in the transition to a low-carbon, circular economy, for sustainable use and reuse of materials.

38%

Total emissions from construction industry - % of total global energy-related CO2 emissions.

**50**%

Decrease in direct building CO2 emissions needed in order to reach net-zero 2030.

#### **Business implications**

- Companies will need to consider the environmental impact when sourcing materials
- Supply chains will be optimised for sustainability as well as resilience.
- The working environments will need to radically change, making construction safer.

Source:ç On the role of Construction in Achieving SGD"s by Sherif Goubran McKinsey: The next normal in construction

# reinvention of innovation

Sectors will accelerate co-innovation. Firms will change outdated structures to holistic and de-centralised innovation outside the product portfolio



Construction related spending

accounts for 13% of the world's GDP but the sector's annual productivity growth has only

increased 1% over the past 20 years which is lower than growth rate of world economy; 2,8% and manufacturing industry; 3,6%

### Innovation through collaboration is seen as the path for addressing key industry challenges

Innovation processes will be more collaborative and integrated

Key drivers for re-invention of innovation

Increased complexity

Higher supply chain cost for materials

Workforce scarcity

### **Key shifts**

**Modularisation** •

Modularisation, off-site production automation, and on-site assembly automation will enable industrialisation and an offsite, product-based approach



To produce efficiently, developers, manufacturers and contractors will need to specialise in end user segments



• Innovations in traditional basic materials like cement enable a **New Materials** reduction of carbon footprints. Emerging lighter-weight materials, such as light-gauge steel frames and crosslaminated timber, can enable simpler factory production of modules. It also change the logistics equation and allow longer-haul transport of materials and greater centralisation.

### Co-innovation •



- Digital technologies can enable better collaboration, greater control of the value chain, and a shift toward more data-driven decision making. These innovations will change the way companies approach operations, design, and construction as well as engage with partners.
- Innovative contracting models with balanced risk sharing will become common

### **Implications**

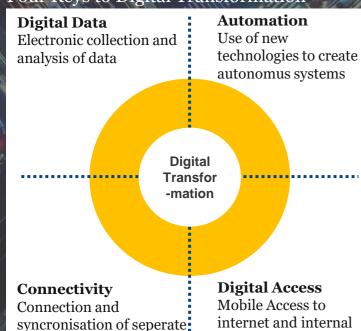
- Co-innovate with actors in the ecosystem in an early phase of the project
- Control and integrate value chain to make innovation more agile
- Invest in technology, many with focus on digitalisation and datadriven products and services.
- Align innovation agenda with customers' business needs

"The Engineering and Construction (E&C) sector has been slower to adopt and adapt to new technologies than other global sectors. While innovation has occurred to some extent on the enterprise or company level' World Economic Forum

Source: McKinsey

# A digital decade

Four Keys to Digital Transformation



Acceleration of digitalization across markets and sectors. New digital sectors emerge at increasing speed fueled by tech developments & a growing datasphere

networks

Source: Digitisation in the construction industry, Roland Berger

activities

# Digitalisation take lean construction to a new level in all parts of a construction project

New technologies will create value-chain disruptions



• **Digital solutions** will increase the efficiency during the construction, by optimizing the material flow and building process. Digitalization will help instrumentally in tracing materials throughout the life cycle of a building. and enables predictive maintenance.



 Platform technologies require intensified collaboration along the value chain, as well as the allocation of resources beyond the scope of a single project, platform technologies challenge current industry practices



 Digitalisation and data-driven business processes require new and often differing approaches from business as usual. In addition to recruiting staff with the right skill sets, organisations will have to invest in creating awareness and capacity building to the existing workforce.

### **Examples of future technologies**

5D-BIM

5-D functionality can integrate design, cost, and schedule in a 3-D output

loT

Intelligent asset management and decision making

and decision me

Highdefinition surveying

Rapid digital mapping and estimatina

Smart Sensors Provide efficiencies in exploration & assessment of infrastructure through input of physical, chemical or biological data

### *Implications*

The transition towards a digitally enabled sustainable and circular built environment requires a fundamentally different approach to design, engineering, production and construction processes.

# **Accelerated** servitisation



CAGR for the global construction equipment rental market between 2019 - 2024

Service economy to accelerate across sectors driven by limited liquidity, digitalisation and need for flexibility. May entail new opportunities in price sensitive markets

## Clear benefits awaits in the horizon for those taking advantage of technological opportunities

Overview of client trends in sector

### **Suppliers**



- Optimisation of the life cycle of heavy equipment
- ☐ Improved and proactive **maintenance**
- ☐ Product as a service models

#### **Contractors**



- ☐ Digitized material management, thus decrease standing time
- ☐ Higher demand on Health and safety and sustainability
- ☐ Continued pressure on the staff cost
- ☐ Increased **customer satisfaction**

#### **Customers**



- ☐ **Streamlined** supply chain
- Long term productivity
- ☐ Prediction of construction periods
- ☐ Changed **business models**

### Examples

- Meters drilled vs. drill rig and consumables sales
- Uptime vs. machine sales and associated service support
- ☐ **Tonnage hauled** vs. truck sales

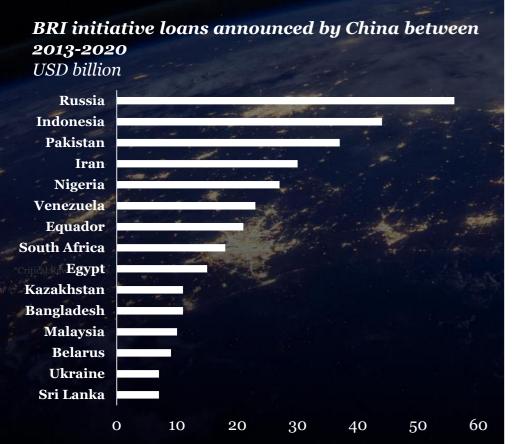
"Construction is increasingly an exact science and servitisation can more accurately marry investment to outcome

JAMIE BENNETT, VICE PRESIDENT, CANONICAL

### Checklist

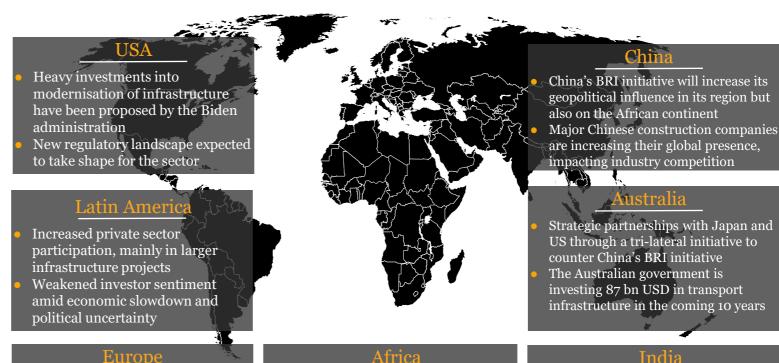
- Speed up servitisation
- Secure the right competence and profile of employees
- Explore new business opportunities and offerings

# Shifting points of gravity



### China is reinforcing its influence on governments globally through large infrastructure spending

EU & US relationship with China is proving to be very complex



- EU recovery funds amid the pandemic likely to boost modernisation of infrastructure
- Digitalization and sustainability will impact the sector as the EU seek a green transformation

- Population growth will constitute a challenge for the African continent
- Private investments and PPA's will be key in order to balance the governments debt, mainly within road and energy development

- Increased urbanization will require heavy investments into urban infrastructure
- Further liberalisation of FDI regulation will help drive investments into infrastructure

# A conscious and connected consumer

18%

of global modern slavery victims are found in the construction sector

Fundamental shift of customer behaviors and preferences. A wider segment online with higher demands on experience, seamlessness & sustainability

# The conscious public will increase demands on sustainability and especially climate change

Overview of client trends in sector

### Changes in consumer demand



Higher demand for simplified and digital interactions as well as increased demand for added services



Changing customer needs and increased focus on total cost of ownership or rent



Increased need for adaptable structures and agile work processes



Increase in sustainability requirements and circular economy aspects as well as the climate impact



Increased demand on respect for human rights and safety measures



Brand awareness within the sector will increase in importance

### Stakeholders/Customers

Governments/ Taxpayers

Financing institutions

Contractors

Users: corporates & individuals

### Checklist

- Review your company's CSR policy
- Secure the right competence and profile of employees
- Explore new business opportunities and offerings

# A more policy-driven economy

**Key lesson from policies and initiatives applied for BIM implementation in EU countries** 

**Policy Design** 

Policies must be comphrehensive, fostering the demand and target specific issues and actions

Gov.-Industry Collaboration

Involving the industry in the design and implementation of BIM policies is key to foster BIM implementation

Stakeholder Engagement Government face challenges engaging SMEs and or business at the operation and maintenance stage of the value chain

Invest gov. BIM practices

More efforts should be dedicated to building capacities at public sector level to maximise BIM benefits

Long-term changes in ownership structures and increased regulations, policies & incentives for businesses

Source: EU Commission, European Construction Sector Observatory

### Construction and infrastructure industry will be coshaped by public and private actors

A more policy-driven economy will bring important industry shifts

Key drivers for a more policy-driven economy

Urbanisation

Need for standardisation

New Construction Technologies **14%** 

### **Key shifts**

#### Sustainability



- Strategies to make buildings net-zero energy and zerocarbon are a key part of the global decarbonisation strategy and expected to become the primary form of building construction across all economies to achieve net zero emissions by 2050.
- Building energy codes are typically implemented by governments to regulate the construction and operation of buildings, 79 countries have mandatory or voluntary energy codes so far.

### Digitalisation



- There are strong preferences from customers and producers for **clear standards and regulations regarding IoT devices** and their data. Industrial companies need to comply with directives and data collection laws during digitalisation of production when connectivity increase, and AI usage is applied
- 42 OECD countries have come together to support a governance framework for AI, which will include guidance on how AI should comply with human rights and democratic values<sup>2</sup>

#### Localisation



- Protectionist geo-political agendas and trade wars will increasingly disturb global trade, while new trade agreements emerge to counteract
- Economic government interventions and increasing share of stateowned enterprises' (SOE) among customer segments imply a forecasted growth in **public tenders**
- Stimulus packages to boost construction sector may favor usage of local products and services

### of EU total GDP is spent by public authorities<sup>1</sup>

### Checklist

- Build up Public tendering capacity and adjust to public purchasing conditions
- Shift from policy embracer to policy influencer by engaging with key public stakeholders
- Adjust internationalisation agenda to local policy pressures

BUSINESS SWEDEN Sources: ¹EC Europa, ²OECD

# New competitive ecosystems

Competitors and partners reshuffled into new business ecosystems and new playing fields

#### **ECOSYSTEM PLAYERS**<sup>1</sup>

Entities that adopt the platform and derive the value Set of partners that collaboratively develop, sell and deliver the offerings. Partners develop customised offerings to the offering Partners that build the core platform (material and equipment **Ecosystem** platform suppliers, architects, proptech etc) around the main market Main entity in charge of leading, managing, mobilizing and Ecosystem coordinating the other partners, from idea to value model, producer and offering. Contractors may take the role in construction Key component on which the ecosystem is based: a new "Market play" value proposition and/or customer experience. Such as modular construction

# The future construction ecosystem will be different in terms of value chains and partnerships

Ecosystems will define how companies collaborate and innovate

Key drivers for new competitive ecosystems

Increased complexity

Technological breakthroughs

**Changing Demand** 

~40%

of value generating actors in the

construction industry are expected to shift and impact all

players along the value chain

### **Key shifts**

New partnerships

 Construction industry will become more efficient and competitive by closer buyer-vendor collaboration. When a supplier can engage directly in parent company's processes and share process information transparently, both parties win; automotive industry is a good example



- Strategic partnership can create a remarkable **competitive edge through innovations** in products or the business model.
- **Industry & client partnerships** will have key role in transformation of the construction industry.

New types of competition

• Companies will start to **specialise** in target niches and segments in which they can build competitive advantages; by specialising in using different materials, subsegments, or methods of construction.



- Today's project-based construction process looks set to shift radically to a product-based approach. Value shifts to those handling the change best expected
- Competitive landscape **will change** while construction industry responds evolving customer needs such as **total cost of ownership**

Altered value chains

 Traditional value chains will be remade as B2B markets are increasingly digitalised and servitised



Product-based approaches, with higher standardisation and repeatability, further increase the importance of gaining scale, hence consolidations across the value chain and specific parts of the value chain is expected

### *Implications*

- Partner up with techand software providers to acquire competence and provide new customer solutions
- Consider a value chain repositioning to respond to new competitors, customer expectations and changing game rules
- Evaluate value of investment for innovation and agile processes

BUSINESS SWEDEN Source: <sup>1</sup> Accenture, Mckinsey



# New international scenarios has pushed industries to look for smarter and better integrated supply chains

### Overview of supply chain trends

#### The next normal in construction

- Value-chain control emerges. Companies will move to own or control important activities along the value chain
- Digital technology BIM models will lead to more decision making early on in the process, distribution will move toward online platforms and advanced logistics management, and end-to-end software platforms will allow companies to better control and integrate supply chains.
- Supply-chain agility. Transporting heavy materials and equipment has massive implications on supply-chain costs and time, especially because many new projects are located in remote or dense areas.

### **Drivers for regional supply chain**

- Lower prices and shorter times to deliver, reduces risk of delivering out of time
- Using local and regional suppliers improves coordination of production
- Less environmental impact due to closer distances to deliver
- Trade tension has pushed developed countries to look for a more diversified supply chain
- Security of supply in case of challenges affecting transportation routes and manufacturing
- Industry wide collaboration initiatives such as; Supply chain sustainability school in UK.

### **Implications**

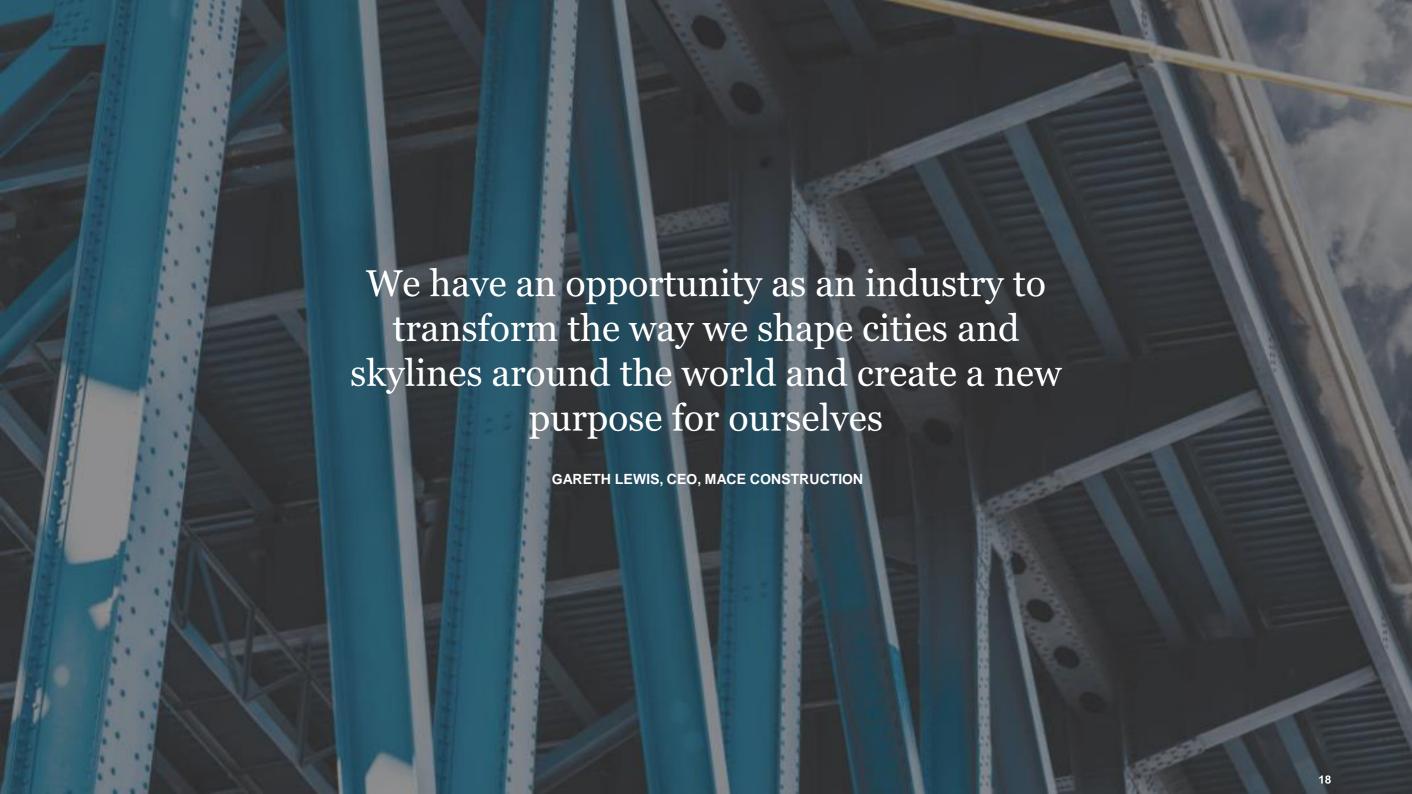
- Supply chains will be optimisation for sustainability as well as resilience
- Better value-chain control and integration with industrial-grade supply chains
- ☐ Focus on collaboration with supply chain partners for efficiency and innovation

Building materials represent a

### 1 tn USD

global industry; materials usually account for more than half the total cost of projects

Source: Mckinsey: Imagining constructions digital future, https://www.supplychainschool.co.uk



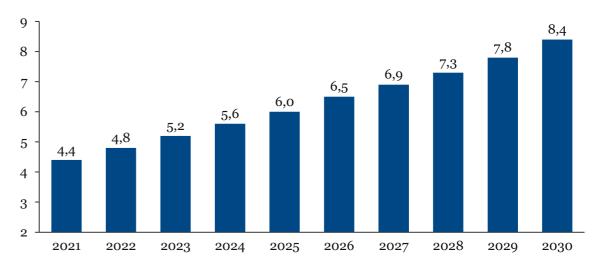
### Significant opportunities lays ahead in the coming decade within infrastructure and construction in Sweden

Projected residential need in Sweden, 2021 - 2029

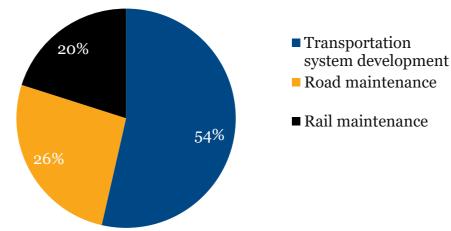
Time period	Amount of residences	Annual pace
2021 - 2025	278,000	51,200
2020 - 2029	664,000	66,000

- Sweden has had a **housing deficit** for a longer time period, but has in recent years reached an all-time high
- During 2012–2019, only 0.40 complete residences per new resident were constructed in Sweden, resulting in a continuously increasing need
- A total of **52 500** new residences are projected to be initiated during 2021, which is lower than the annual need to cover the housing deficit
- The transportation network is the focus of infrastructure investments where the government has allocated 74 bn USD to expand and refurbish existing transportation network (rail and road) between 2018-2029

Infrastructure industry value in Sweden USD billion



National infrastructure plan, 2018-2029, distribution of funds



# Team Sweden EPC Alliance currently has 32 EPC led opportunities to a total value of 9.3 BUSD in project pipeline – Target to close 5 deals 2021

### Global opportunities



**Transport projects**Rail, Airport, BRT



Energy Projects
Transmission, wind,
solar, Gas turbines,
Hydro



**Special constructions**Road, bridges, Hospitals,
Water, Tunneling

### **Engineering Procurement and Construction opportunities**

"To increase the number of foreign turnkey contractors (EPC) for major infrastructure projects that choose Swedish subcontractors. Sweden has many leading companies that sell solutions that contribute to e.g. smart cities, which offers great potential for sustainable solutions in the rapid urbanization in emerging markets. There are a few Swedish turnkey contractors that offer complete package solutions, but more are needed. Therefore, an initiative is initiated towards international turnkey contractors in order to position competitive Swedish offers" – The Swedish Export and Investment Strategy

### Examples in current pipeline



### Railway

**5.2 mn USD** in EPC railway opportunities in Turkey, Uganda, Tanzania, Nigeria, Ghana, and Benin



### Hospital

**1.4 mn USD** in EPC hospital opportunities in Surinam, Mozambique, Kenya, and Ghana



### Road

**800 mn USD** in EPC road opportunities in Uganda, Ghana, and Benin



### Other opportunities

Team Sweden is currently evaluating several other EPC led opportunities within the following sectors: energy, water, special construction, transport, infrastructure to a total value of **1.9 mn USD** 



### Team Sweden EPC Alliance

The purpose of the EPC Program is to identify and win EPC led projects with Swedish supply supported by Swedish financing

Please contact Madelen Strömberg for more information: madelen.stromberg@business-Sweden.se

Source: Business Sweden analysis

# Significant business opportunities are present across the globe for Swedish companies – example of closed deals with Swedish financing

### Ghana: Streets of Tamale and Streets of Accra (Jan 2021)

### Description of project

- Surfacing of local roads and construction of drainage systems, with QGMI Group as chief EPC contractor
- The two projects are budgeted at a total of 122 million usd, 85 percent of which is financed by EKN and SEK over 10 years
- 120 kilometres of what was sandy and potholed roads suffering from lack of upkeep and frequent rainstorms will be transformed into asphalt arteries that bring increased road safety and improved public health
- Construction equipment will be delivered by Swedish suppliers like Volvo Construction Equipment, Atlas Copco, Dynapac, Husqvarna, and others



### Tanzania : Train Tanzania (Sep 2020)

### Description of project

- Large-scale standard-gauge railway (SGR) that will connect Uganda, Rwanda, Burundi and the DRC to Tanzania, providing access with highspeed electric trains to the Indian Ocean for landlocked neighbours, stimulating regional trade and passenger travel and strengthening the economy
- Turkey's Yapı Merkezi as EPC contractor and Standard Chartered Bank as global co-ordinator and lead arranger of a USD 1.46 billion term debt financing
- Sweden-based Bombardier as supplier of signalling equipment



Source: EKN homepage

## Sustainability and digitalisation is driving the transformation within the construction industry into the new decade

### 6 questions: Infrastructure & Construction landscape

For Swedish companies ready to grow globally during the next decade

### How Business Sweden can help

40+ offices, 400+ consultants



### **Transforming market**

How prepared is your business to capture the post Corona infrastructure investments? (Have a look at Business Sweden Corona recovery reports)

### Sustainibility

How to leverage and profit from updated sustainability requirements in your business area?

### **Partnership**

Who to partner with and how to capitalize on the shift in value chain and new capabilities needed for the coming decadee?

#### **Innovation**

How to leverage your innovation to strengthen your position?

#### **Digitalisation**

How does connectivity, automation, and AI impact your business model and your competitiveness?

Read

### Be part of Team Sweden

Ready to partner up with our experts and business alliance to participate and win infrastructure deals globally?



- Analyse fast transforming market and set long term strategy for infrastructure & construction landscape
- Define optimal partnership and M&A strategy as base for innovation leadership and global sales



- Create point-of-view of implications based on policy landscape
- Map out new and sustainable business pratices



- Advice and connect when investing in Sweden
- Build the Swedish business case including optimal site selection
- Secure supply chain for operations in Sweden



Incubation services including local address (e.g. at Sweden's energy and innovation hubs globally), recruitment, employment, incorporation and book-keeping



- Team Sweden promotional programs for Infrastructure and Construction industry
- Capture infrastructure and construction mega deals Target to close 5 deals 2021

Source: Business Sweden Data and Analysis

### Reach out to our Industry Practice Group Infrastructure & Construction to know more about how Business Sweden can support you



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