Market Intelligence Report 2021

From lockdowns to locking in for recovery

Accelerating trends spur investment and new era for development and infrastructure

Global Development & Infrastructure Consultants

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Message from BTY

FROM OUR TEAM TO YOURS

As you read this, the world will have been navigating uncharted seas – economic, social and political – for most of 2020. It has been a year of seemingly continuous challenges as well as ongoing adaptation and innovation as people come together to create change for the better.

The story is no different at BTY. We are deeply grateful that our people have responded to the pandemic's challenges with resourcefulness and grit. They adapted on the fly as a team, took care of each other, and protected the culture that we are so proud of.

But the team has gone beyond adapting. They have set bold new goals to deepen our awareness and capabilities for fostering diversity and inclusion while pushing the business forward with an exciting roadmap for growth. And they are the best positioned to convey some of the progress and plans BTY has made in this section. We hope you connect with their stories and reach out to learn more.

Toby Mallinder, *Managing Director*

ADAPTING RAPIDLY AND LEARNING CONTINUOUSLY

While quickly adjusting to remote work – across the country and around the globe – we expanded our Claims Due Diligence services to clients in all sectors and markets. Using our One Team approach, which integrates expertise in Cost Management, Project Management and Advisory services, we helped clients manage project disruptions with extra support for Claims Development and Assessment, Dispute Resolution and Expert Witness services. At the same time, BTY advanced the development of our future growth plan, scaled up eLearning, and with the gracious support of our team, we successfully achieved the Great Place to Work certification for the second year in a row.

Gord Smith, *Operations Director*

Kieshea Hepburn,
Senior Project Consultant

Ben Connor,
Associate Director

Sibel Gülen,
Director EHS

KEEPING INFRASTRUCTURE ON TRACK

BTY's Infrastructure Advisory team helped keep projects progressing coast to coast, from LAX Consolidated Rent-a-Car Facility in Los Angeles to Corner Brook Hospital in Newfoundland. After virtual site visits for the first few months it was back to physical site visits with all the proper protocols. There have also been multiple projects procured this year: Highway 104 Twinning in Nova Scotia, the New Adult Mental Health & Addictions Facility in St. John's, Newfoundland, the Denver National Western Center District Energy Project and the University of Idaho Utility System P3.

Sean Corbett,
Senior Project Consultant

John Wang,
Associate Director

Ben Weishaupt,
Senior Project Consultant

Sean Salmela,
Project Manager

DOUBLING DOWN ON PROJECT MONITORING DUE DILIGENCE THROUGH INCREASED COMMUNICATION

Timeliness is critical in Project Monitoring and we found plenty of virtual solutions to keep site and off-site inspections on track during lockdowns. They included virtual visits, organizing speedier sign-in and sign-out by phone and QR codes for in-person visits, managing correspondence regarding works completed and potential hazards, and updating developers and lenders continuously via phone and video meetings. Since physical distancing and health and safety measures reduced manpower on site, many schedule timelines were extended. We accounted for this in reports and ensured that the Interest Reserve Allowances remaining were adequate. Our team also kept a close watch on materials delivery to site and worked with developers to ensure proper contingency measures were in place.

Ping Pang,
Director

Allen Reid,
Senior Cost Consultant

Scott Wilkinson,
Director

COST MANAGEMENT TACKLES IMPACT OF COST INCREASES AND SCHEDULE DELAYS

When COVID-19 related risk drove up costs, the Cost Management team helped clients manage the impact by breaking contracts into smaller packages and suggesting alternative arrangements. One big issue was the change order labour rate doubling due to reduced labour supply resulting from health concerns. Schedule delays caused by elevator restrictions were another major challenge to schedules on applicable projects. We helped clients calculate the COVID premium for productivity losses that resulted from idling time on elevator, screening station delays on site entry, and providing handwash station and PPE, and other impacts.

Hannah Owens,
Project Manager

Renata Mag-atas Blair,
Project Manager

Tom Coyle,
Senior Project Manager

Lida Shahavi,
Project Manager

PROJECT MANAGEMENT FOR ASSET OWNERS IN NAVIGATING DISRUPTIONS AND KEEPING PROJECTS PROGRESSING

For nearly a dozen projects across the country, the Project Management team reviewed contractor claims for COVID-related costs, provided recommendations to owners to finalize claims, and assisted owners with final negotiations. Our team's extensive portfolio of projects in healthcare, education and energy services facilities also enabled us to support asset owners in rapidly adapting sites to include protective measures and keeping projects moving while controlling for infection risk.

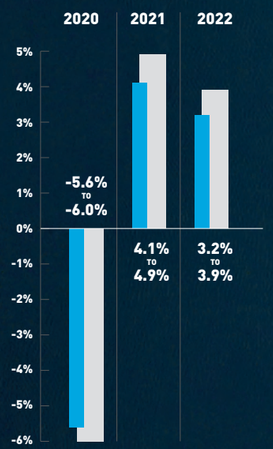
Canada's Construction Outlook 2021

Overview

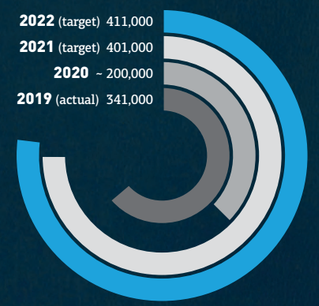
Rebound in 2021 with COVID-19 in check

Given the continued uncertainty in many sectors due to pandemic containment efforts, forecasts are provisional and dependent on overall, ongoing economic performance. Assuming COVID-19 is held largely in check and effective vaccines and therapies are widely distributed, Canada's output is expected to return to Q4 2019 levels by the end of 2021. Some sectors will lag in recovery, especially airports and airlines, hotels and hospitality, and bricks and mortar retail. Those sectors have also been the hardest hit for job losses.

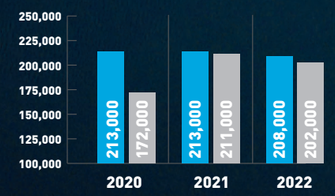
FORECAST GDP GROWTH



IMMIGRATION



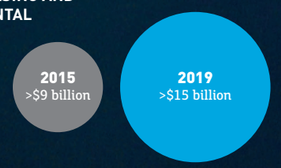
HOUSING STARTS FORECAST



FOREIGN DIRECT INVESTMENT IN CANADA

FDI 2019	$50.6 billion
GLOBAL FDI 2020f	-30% to -40%
CANADA FDI 2020f	-15% to -20%

REAL ESTATE LEASING AND RENTAL



Construction
on the upswing

Construction is set to continue to outperform most sectors as it has done through the pandemic. Even so, a decline of -8.5% in the sector is forecast in 2020. Prospects are much brighter after the first few months of 2021 and for the two years following. The value of overall construction starts is projected to rebound from $60 billion in 2020 to $80 billion in 2021. The outlook is positive for all segments, with industrial, residential, especially multifamily, and engineering and roadwork having the sharpest upticks. Office and retail will have flatter growth trajectories. Skilled trades availability poses a continuing challenge per prior years.[1]

9.4

JOBS ARE GENERATED

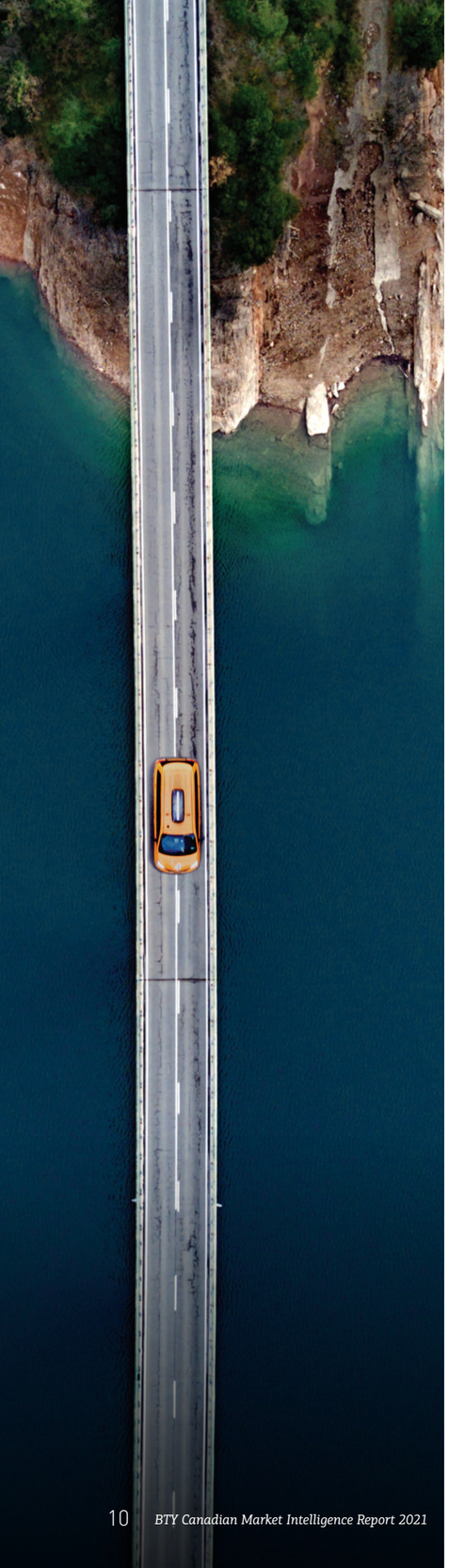
for every million dollars spent on infrastructure

Increased
infrastructure spending

Infrastructure investment can play a key role in supporting overall recovery. It is estimated that 9.4 jobs are generated for every million dollars spent on infrastructure – and the value of GDP generated per dollar of public infrastructure spending lies between $2.46 and $3.83.[2] The federal and most provincial governments are making significant increases in infrastructure spending. The federal government's Growth Plan has committed an extra $10 billion for renewables, broadband, building retrofits, agricultural irrigation, and EV charging stations. Private and pension investment is also increasingly supporting infrastructure development. A prime example is the Caisse de dépôt et placement du Québec (CDPQ), a leading global institutional infrastructure investor. CDPQ intends to double its $27.8 billion portfolio over the next five years.

1 *Carrick, A. (2020, September 29) The Perfect Storm, Forecasts against an unknown COVID-19 backdrop [Webinar]. ConstructConnect. https://canada.constructconnect.com/canadata*

2 *Gillies, P. (2020). Industry Perspectives Op-Ed: Post COVID-19 and the case for infrastructure investment. Daily Commercial News. Retrieved from https://canada.constructconnect.com/dcn/news/government/2020/06/industry-perspectives-op-ed-post-covid-19-and-the-case-for-infrastructure-investment*



Immigration, Foreign Direct Investment,

and oil and gas decline

Canada's immigration target for 2020 was 341,000, but the pandemic has reduced estimates to fewer than 200,000. The sharp drop is expected to have a knock-on effect in reducing housing demand in the short-to-medium term. Due to COVID-19's impact, the rate of population growth is also expected to see a substantial decrease. With global direct foreign investment flows forecast to decrease by between 30% and 40% in 2020, and between 5% to 10% in 2021,

Canada's 2020 inflow had declined by only 15% by mid-year, and that was after achieving record highs between 2017 and 2019. More than $15 billion of a total of $50.6 billion in FDI in 2019 was in real state, leasing and rental. While oil and gas investment has fallen to a 20-year low, ongoing, multi-year LNG projects and growing investment in solar and wind, particularly in Alberta, will help offset the decline.

Canada's immigration target for 2020 was 341,000, but the pandemic has reduced estimates to fewer than 200,000.

Interest rates and cost escalation

expected to remain low

The Bank of Canada overnight interest rate – slashed to 0.25 in response to the pandemic, is forecast to stay at that level until at least 2023. Construction cost escalation is forecast to be moderate for Ontario, BC and Quebec (3% to 5%) and low for the Prairies (1% to 3%) and the Atlantic Provinces (0% to 2%).

UPWARD PRESSURE

- **Higher lumber prices**
- **Oil price rise**
- **Skilled trades shortages**
- **Reduced foreign suppliers**
- **Costs for COVID-19 protection**

DOWNWARD PRESSURE

- **Continued low interest rates**
- **Low inflation rate**
- **Slower economic growth**
- **More competitive bidding**

Sources: StatsCan, RBC, TD, BMO,EDC, Bloomberg, CMHC, ConstructConnect, Deloitte, Conference Board, OECD

2021 Outlook by Province

CANADIAN ESCALATION FORECAST				
ONTARIO	3% to 5%	MANITOBA	1% to 3%
BRITISH COLUMBIA	3% to 5%	QUEBEC	3% to 5%
ALBERTA	1% to 3%	ATLANTIC PROVINCES	0% to 2%
SASKATCHEWAN	0% to 2%		

BRITISH COLUMBIA

Mega energy projects, escaping a major COVID-19 shutdown in construction, a long roster of major infrastructure projects and government stimulus spending will keep BC construction buoyant despite a decline in residential building.

ALBERTA

With the second sharpest contraction in prices, due in large part to continuing weakness in oil and gas, expect a prolonged return of construction to pre-COVID levels. The bright spot is rapidly growing private sector investment in renewables.

SASKATCHEWAN

Continuing weakness in the energy and mineral mining sectors are slowing recovery, but booming agri-food production and exports, plus strong government stimulus spending on infrastructure will help the province weather the storm until a full recovery takes hold.

MANITOBA

Even though it is expected to experience the least economic impact from the pandemic, construction in Manitoba will decline across the board in the near term as major projects wind down. New government infrastructure spending will help boost activity levels.

ONTARIO

Ontario's robust infrastructure program – bolstered government stimulus spending – and a strong jobs recovery will help offset sharp declines in commercial building and a projected dip in housing starts.

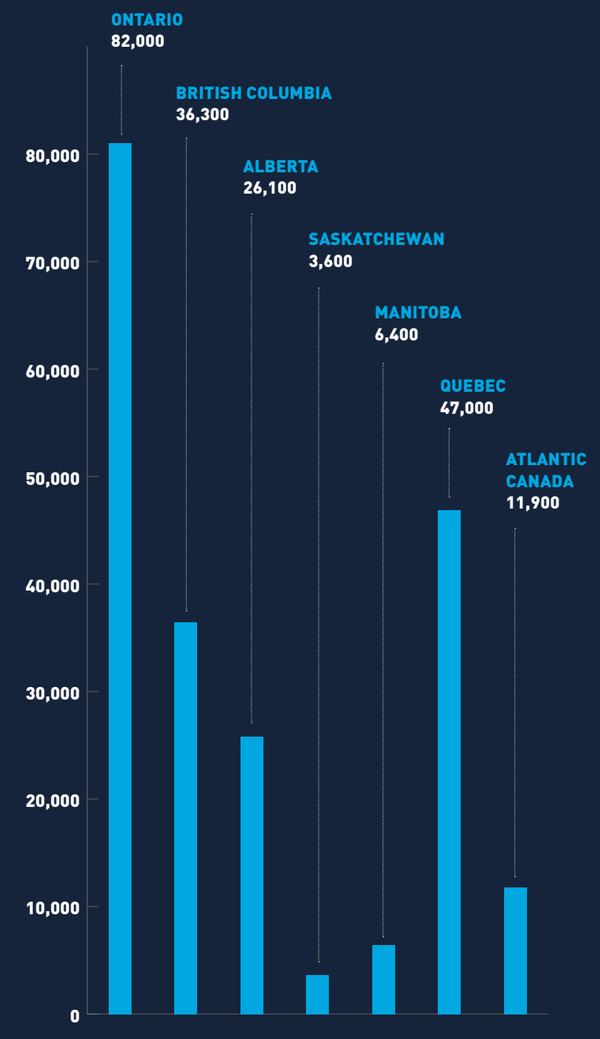
QUEBEC

With multiple major transportation projects underway, supported by added government investment in infrastructure, the non-residential sector, hard-hit by a full pandemic shutdown, should recover quicker; residential recovery may take longer.

ATLANTIC CANADA

Buoyed by major capital spending, Nova Scotia and New Brunswick will bounce back stronger and faster than Prince Edward Island and Newfoundland and Labrador. Slow –and even negative population growth – will be an added drag.

2021 FORECAST HOUSING STARTS



PROVINCIAL SNAPSHOTS

Ontario

Regaining momentum in 2021

The pandemic and ensuing shutdowns hit Ontario hard in the first half of 2020, but the provincial economy regained forward momentum as the year progressed. With strong jobs recovery and government stimulus the province is forecast to post GDP growth of 5.6% in 2021 before slipping to 4.1% in 2022. Success in containing the pandemic, however, will govern the pace of recovery.

Leading the stimulus will be capital spending investment expected to rise by 8% in 2020, with more funds pledged to municipalities. Ongoing and proposed projects drive activity in healthcare, transit, and utilities. Multiple LRT projects (Eglinton, Hurontario, and Finch) lead in the GTA, with the Ottawa LRT and redevelopment of Centre Block the high-profile projects in eastern Ontario. In the southwest the Bruce Power refurbishment, the Gordie Howe Bridge and the Nova Chemical plant will help keep activity levels high.

The residential sector is expected to settle back in 2021 after a surprising surge in the latter half of 2020 due to pent up demand following the spring lockdown. A steep reduction in in-migration is expected to damper overall demand by the end of 2021, while demand for housing in the suburbs will continue as remote working becomes a viable long-term option.

Stronger housing demand is also expected in the potential 18-hour cities – mid-size cities with appealing amenities, a lower cost of living and doing business than larger urban areas and higher-than-average population growth.

Non-residential construction projected to dip by 2.9% in 2020 but forecast to rebound in 2021 as the provincial economy recovers. Warehousing and fulfillment centres are leading industrial development with COVID-19 accelerating the already growing move to eCommerce. Question marks hang over growth in new office and retail sector construction as they grapple with uncertainty over the continuation of remote working and relentless expansion of online shopping.

ONTARIO

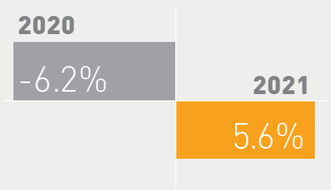
2020 Housing Starts by Urban Centres

CMHC, seasonally adjusted at annual rates – January to November, 2020

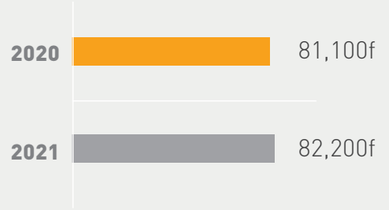
OTTAWA	12,600f	**OSHAWA**	2,700f	**KITCHENER - CAMBRIDGE - WATERLOO**	2,200f	**LONDON**	15,000f
KINGSTON	1,200f	**TORONTO**	34,600f	**BRANTFORD**	1,800f	**WINDSOR**	2,800f
BELLEVILLE	500f	**HAMILTON**	2,500f	**GUELPH**	500f	**BARRIE**	960f
PETERBOROUGH	600f	**ST. CATHARINES - NIAGARA**	2,300f			**SUDBURY**	350f
						THUNDER BAY	200f

Ontario Outlook

PROJECTED GDP GROWTH



FORECAST HOUSING STARTS



2020 POPULATION GROWTH

1.3%

ESCALATION RATE

3% TO 5%

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Marie Foley
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PROVINCIAL SNAPSHOTS

British Columbia

Mega energy and infrastructure projects soften the blow

B.C. was on a roll when the pandemic hit and has maintained much of the momentum by adapting rapidly to avoid significant construction delays to major projects.

Non-residential activity increased 6.9% as work on LNG Kitimat continued though restrictions. The B.C. government's commitment of $6.2 billion in stimulus helped prevent what could have been a sharper drop to GDP growth, which is forecast to fall by -5.3% in 2020 before rebounding by 5.1% in 2021.

Other major projects, such as the TMX and Coastal link, pipelines, Site C, and the upcoming Patullo Bridge Replacement and $2.8 billion SkyTrain extension along Broadway in Vancouver will keep activity levels high and labour availability tight over the next few years.

New highway and multiple hospital construction projects will add a further push to bump up construction levels by 15.4% in 2021 and sustain growth at high levels over the next few years before subsiding.

Housing starts are projected to dip from 45,000 in 2019 to 35,300 in 2020 with a slight increase to 36,300 expected for 2021. Major ongoing developments in Vancouver such as Oakridge, and projects for the longer term, including the former brewery site at the Burrard Bridge and the St. Paul's Hospital Lands will help support healthy activity in the city. Remote working has given a boost to already strong residential building in suburban Metro Vancouver.

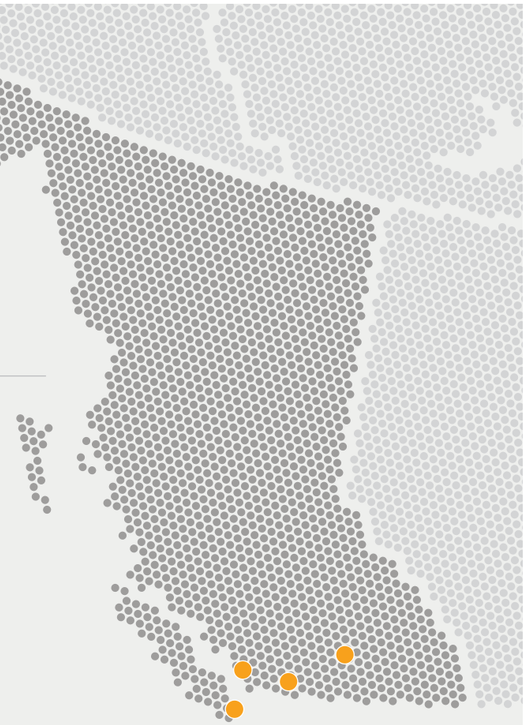
B.C. has been unable to take advantage of export opportunities from soaring lumber prices in 2020 due to severe supply shortages. Home renovation and remodelling projects begun during lockdown coincided with construction projects that typically begin in spring, driving up demand for lumber across North America, including the U.S., where B.C. exports 65 per cent of its lumber. Mill closures, wildfires, pandemic-related curtailment, pine beetle infestation, a lengthy strike and regulatory policies have all worked to drastically reduce supply.

BRITISH COLUMBIA

2020 Housing Starts by Urban Centres

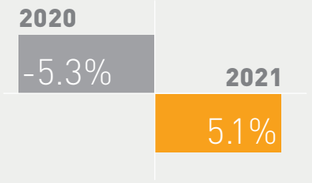
CMHC, seasonally adjusted at annual rates – January to November, 2020

KELOWNA	1,200f
ABBOTSFORD	400f
VANCOUVER	32,900f
VICTORIA	2,700f

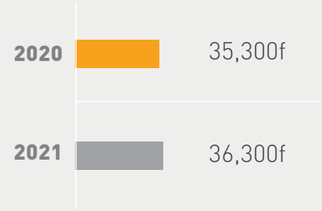


British Columbia Outlook

PROJECTED GDP GROWTH



FORECAST HOUSING STARTS



2020 POPULATION GROWTH

1.1%

ESCALATION RATE

3% TO 5%

To learn more, connect with our team members:

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PROVINCIAL SNAPSHOTS

Alberta

Long recovery ahead and renewable energy a bright spot

Pandemic restrictions and continuing weakness in the energy sector have been a double whammy for Alberta, causing the second sharpest downturn among provinces in 2020. A return to pre-pandemic levels is not projected until 2023. Capital spending is at an 11-year low due primarily to cutbacks in the energy sector exacerbated by the oil price meltdown earlier in 2020.

The bright spot in energy is renewables. There has a been a surge of projects that could have Alberta take over as the Canadian leader in utility-scale wind and solar capacity as early as 2025.[3] One of the biggest is Airport City Solar, a 254-hectare solar farm that has attracted private sector investment of $750 million. In total Alberta has some 75 projects with a combined nominal CAPEX of $8 billion. Another 45 wind projects are also in the works.

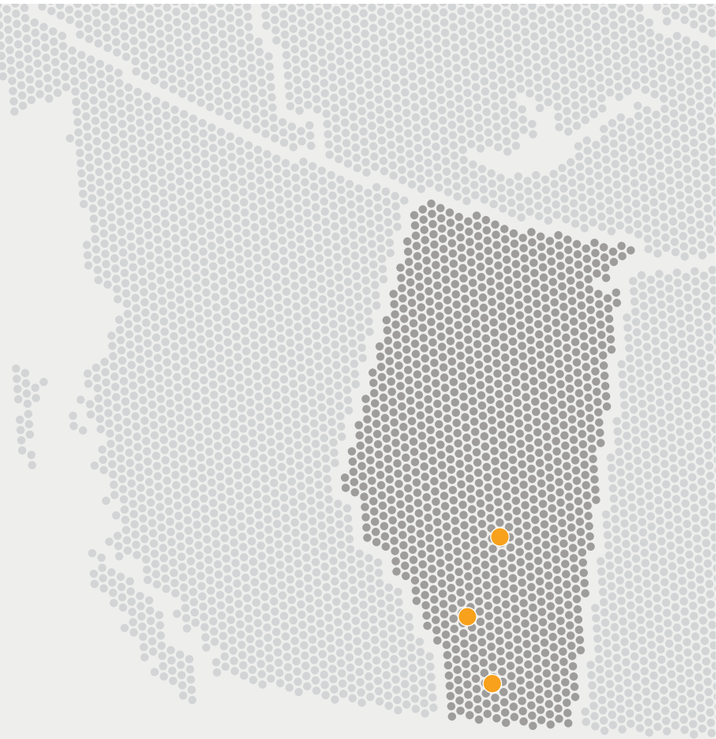
A projected decline of 10% in non-residential construction in 2020 would come on top of an 11% drop in 2019, with the heaviest impact on the industrial and engineering sub-sectors. An 8% increase in government stimulus spending in 2020 will help offset these declines. There will be $10 billion for healthcare, pipelines, schools, with $6.9 billion already earmarked. Residential new housing mix was down sharply in 2020, and with high unemployment and continued low levels of oil production and exploration, it is expected to remain flat into 2021.

[3] *Seskus,T. (2020). Alberta could lead Canada in wind and solar power by 2025, expert says. CBC News. doi: 1.5728757*

ALBERTA

2020 Housing Starts by Urban Centres

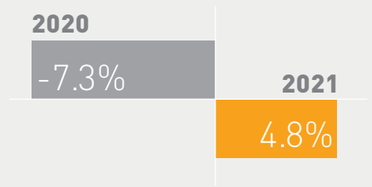
CMHC, seasonally adjusted at annual rates – January to November, 2020



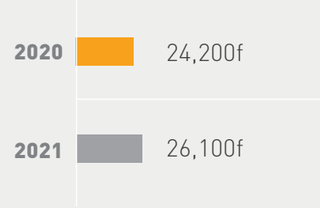
LETHBRIDGE	400f
CALGARY	10,900f
EDMONTON	11,700f

Alberta Outlook

PROJECTED GDP GROWTH



FORECAST HOUSING STARTS



2020 POPULATION GROWTH

1.4%

ESCALATION RATE

1% TO 3%

To learn more, connect with our team members:

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PROVINCIAL SNAPSHOTS

Saskatchewan

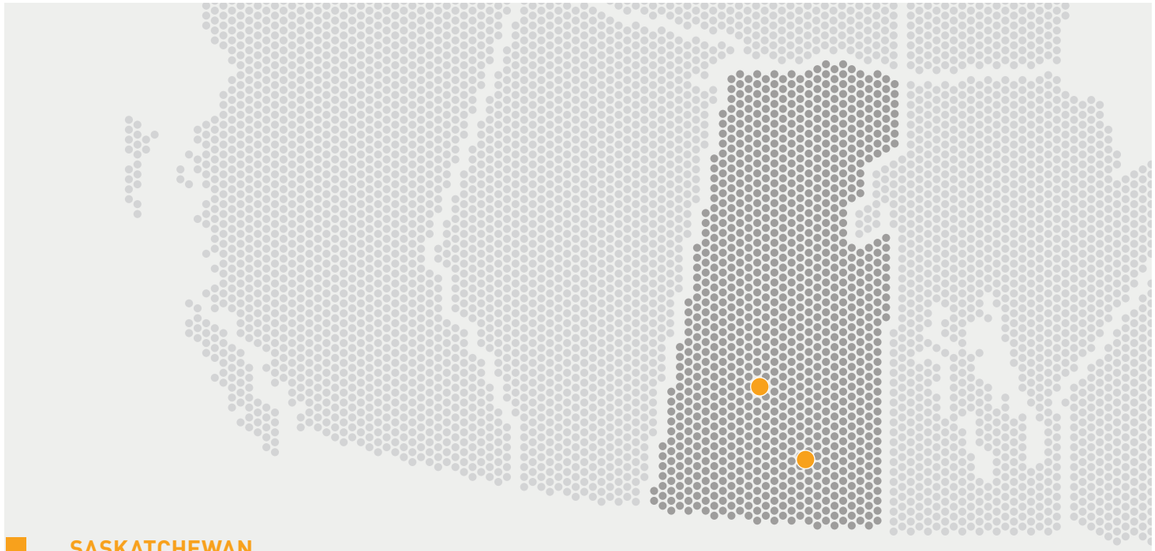
Stimulus infrastructure spending will help bolster construction activity

Despite a projected -5.6 % drop in GDP growth, demand in agri-food is helping to offset declines in demand for oil and potash exports. New markets have been developed for canola exports to counter restriction on exports to China, which simultaneously increased pea imports from the province. Farm and intermediate food products were up 27% by September 2020, with a favourable outlook for continued growth.

Like Alberta, non-residential construction had already declined in 2019 and was forecast to decline further in 2020. Likewise, residential activity is projected to drop 10% in 2020 as demand slows due to lower population growth and job losses. A rebound is anticipated in 2022. Despite setbacks in the energy and mineral sectors, Saskatchewan had one of the lowest unemployment rates in Canada at 8.2%.

A $7.5 billion capital plan for boosting the provincial economy post-COVID should help add jobs. The investment will go toward schools, hospitals, highways and utilities. Some $377 million is allocated for transportation infrastructure, primarily highway expansion and improvement.

There is $181 million for renewal projects, with $100 million earmarked for healthcare facilities, including Weyburn Hospital. Another $130 million will go to 12 school facility projects. The Prince Albert Hospital expansion will receive $300 million in funding. An additional $300 million stimulus package for new highways, and a proposed $4 billion irrigation project at Lake Diefenbaker, with a Phase I investment of $500 million, round out the major stimulus investments. Overall, the province intends to invest $30 billion in infrastructure development over the next decade.



SASKATCHEWAN

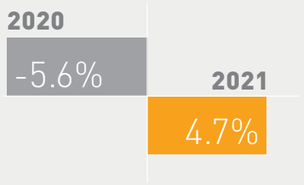
2020 Housing Starts by Urban Centres

CMHC, seasonally adjusted at annual rates – January to November, 2020

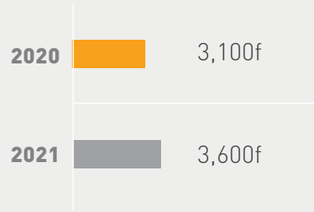
REGINA	1,400f
SASKATOON	1,500f

Saskatchewan Outlook

PROJECTED GDP GROWTH



FORECAST HOUSING STARTS



2020 POPULATION GROWTH

0.5%

ESCALATION RATE

0% TO 2%

To learn more, connect with our team members:

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PROVINCIAL SNAPSHOTS

Manitoba

Steady performance through pandemic puts province in good position

Manitoba is expected to experience the least economic impact from COVID-19. A number of factors have contributed to the relatively low forecast decline in GDP growth of -3.9% and solid projected growth of 3.7% in 2021. These included less stringent containment measures that allowed work to continue on major projects such as the world's largest pea processing plant, and a bumper crop of canola that fed increased exports at good prices.

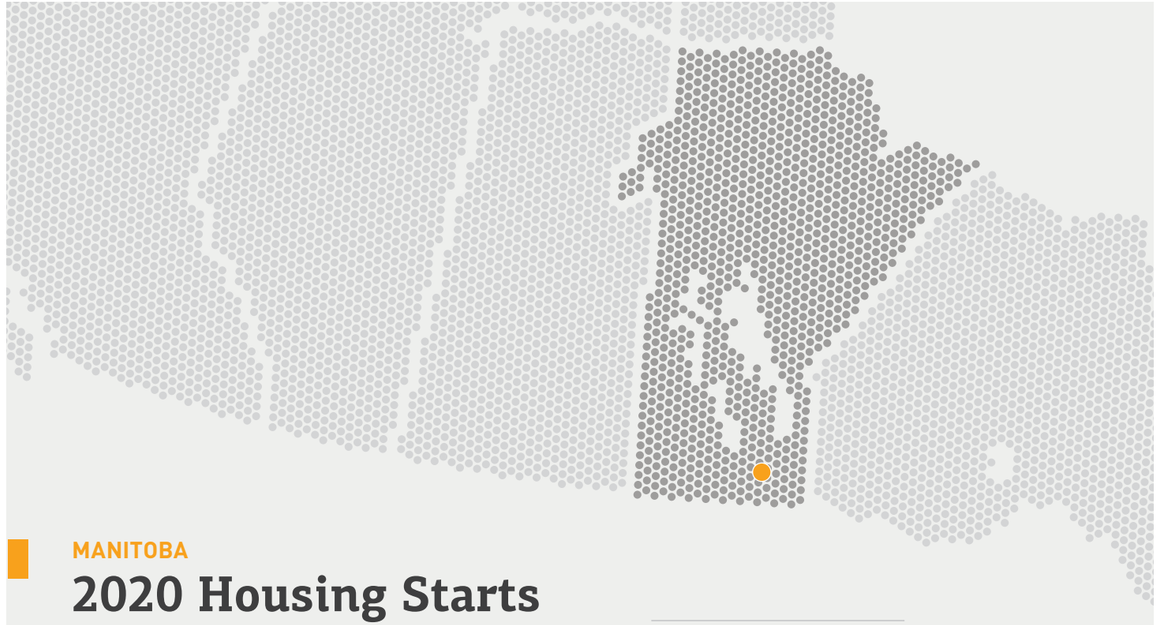
A projected decline in capital spending is counter-balanced by high levels of investment in prior years. In 2019, Manitoba's capital investment increased 3.4% to $9.7 billion, the fourth highest growth nationally. Capital investment in manufacturing was up by 54% in 2019, highest among provinces. Over the past two years, private sector capital investment increased by 27.3%, the second highest rate among provinces.

The forecast decline in 2020 in non-residential construction spending is forecast at 10.5% and another 1.3% in 2021 as construction winds down for the massive Keeyask hydropower project.

Investment in residential building is also projected to decline by an estimated 11.6% in 2020, with a return to growth in 2021. While housing starts were strong in the first quarter, they slowed when demand weakened as the year progressed.

Like most other provinces, Manitoba is ramping up spending to offset these declines through the $500 million Manitoba Restart Program. It will build on already-planned infrastructure investments of $3 billion over the next two years. Projects include water and sewage facilities; road, highway, and bridge resurfacing and repairs; and municipal infrastructure priorities. Another $150 million has been added for highway improvement projects under the Restart Program, with more funding anticipated.[4]

[4] *Construction and Maintenance: Looking beyond COVID-19. (2020). BuildForce Canada. Retrieved from https://www.constructionforecasts.ca/sites/forecast/files/pdf/BuildForce_Looking_beyond_COVID-19_2020-2022_investment_update.pdf*



MANITOBA

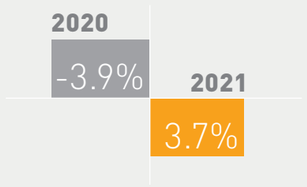
2020 Housing Starts by Urban Centres

CMHC, seasonally adjusted at annual rates – January to November, 2020

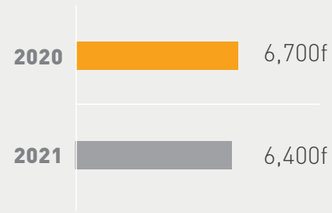
WINNIPEG	8,200f

Manitoba Outlook

PROJECTED GDP GROWTH



FORECAST HOUSING STARTS



2020 POPULATION GROWTH

0.7%

ESCALATION RATE

1% TO 3%

To learn more, connect with our team members:

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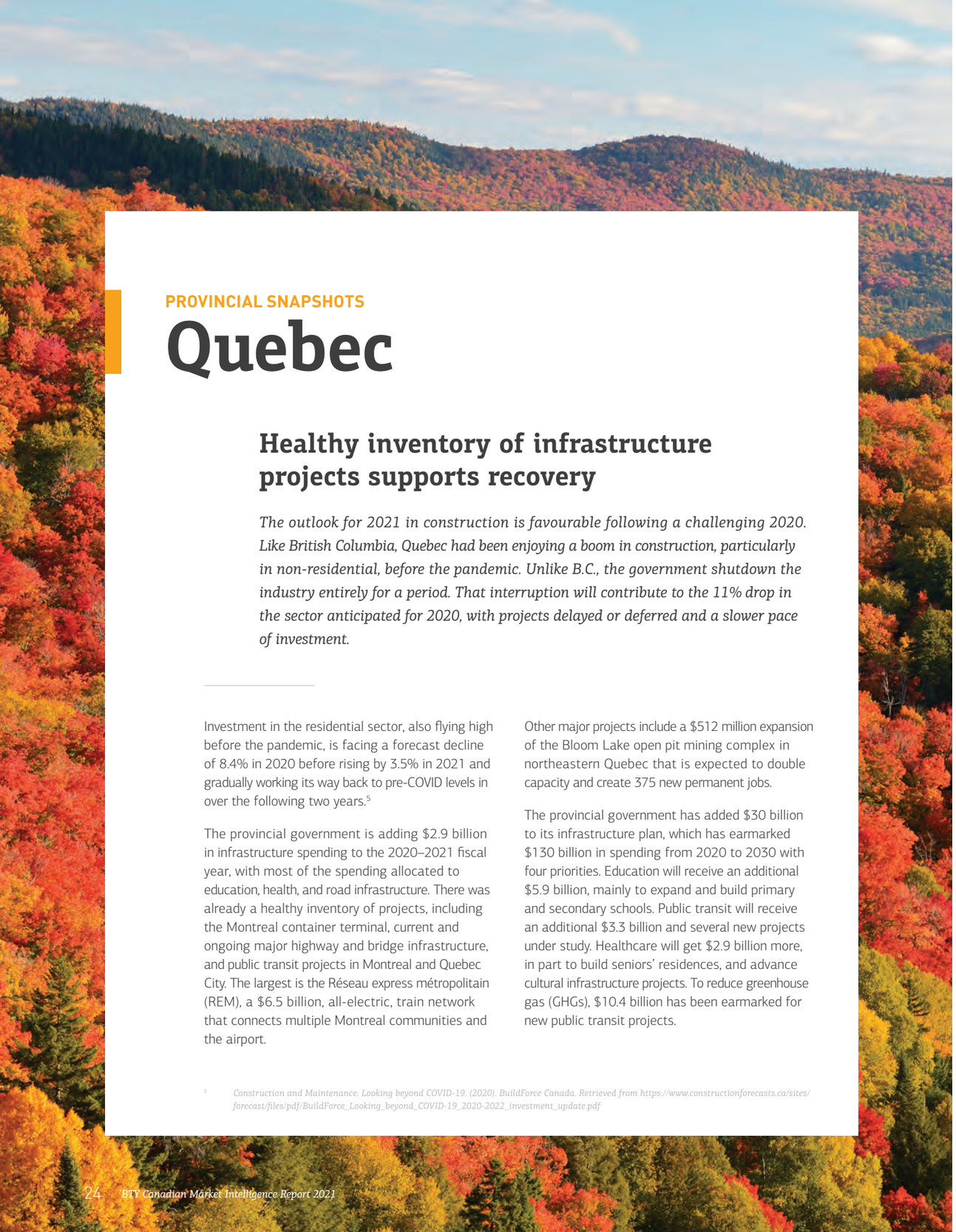


PROVINCIAL SNAPSHOTS

Quebec

Healthy inventory of infrastructure projects supports recovery

The outlook for 2021 in construction is favourable following a challenging 2020. Like British Columbia, Quebec had been enjoying a boom in construction, particularly in non-residential, before the pandemic. Unlike B.C., the government shutdown the industry entirely for a period. That interruption will contribute to the 11% drop in the sector anticipated for 2020, with projects delayed or deferred and a slower pace of investment.

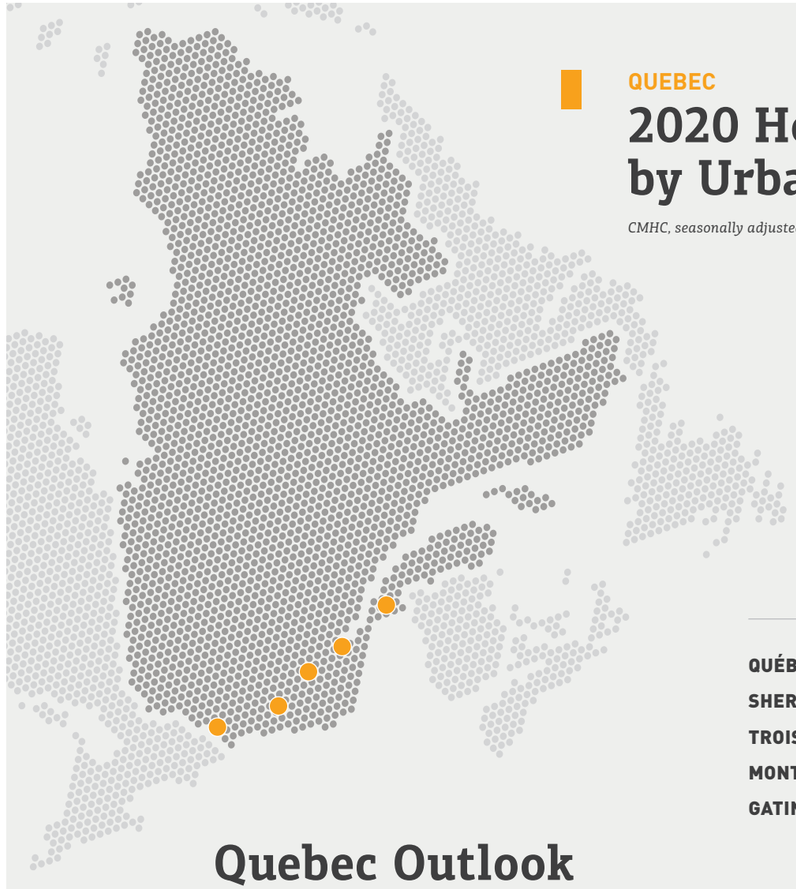
Investment in the residential sector, also flying high before the pandemic, is facing a forecast decline of 8.4% in 2020 before rising by 3.5% in 2021 and gradually working its way back to pre-COVID levels in over the following two years.[5]

The provincial government is adding $2.9 billion in infrastructure spending to the 2020–2021 fiscal year, with most of the spending allocated to education, health, and road infrastructure. There was already a healthy inventory of projects, including the Montreal container terminal, current and ongoing major highway and bridge infrastructure, and public transit projects in Montreal and Quebec City. The largest is the Réseau express métropolitain (REM), a $6.5 billion, all-electric, train network that connects multiple Montreal communities and the airport.

Other major projects include a $512 million expansion of the Bloom Lake open pit mining complex in northeastern Quebec that is expected to double capacity and create 375 new permanent jobs.

The provincial government has added $30 billion to its infrastructure plan, which has earmarked $130 billion in spending from 2020 to 2030 with four priorities. Education will receive an additional $5.9 billion, mainly to expand and build primary and secondary schools. Public transit will receive an additional $3.3 billion and several new projects under study. Healthcare will get $2.9 billion more, in part to build seniors' residences, and advance cultural infrastructure projects. To reduce greenhouse gas (GHGs), $10.4 billion has been earmarked for new public transit projects.

[5] *Construction and Maintenance: Looking beyond COVID-19. (2020). BuildForce Canada. Retrieved from https://www.constructionforecasts.ca/sites/forecast/files/pdf/BuildForce_Looking_beyond_COVID-19_2020-2022_investment_update.pdf*



QUEBEC

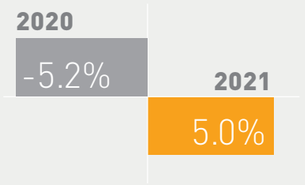
2020 Housing Starts by Urban Centres

CMHC, seasonally adjusted at annual rates – January to November, 2020

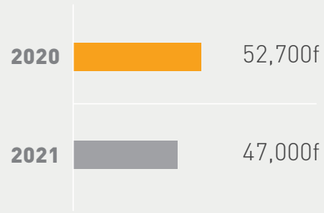
QUÉBEC CITY	5,200f
SHERBROOKE	1,500f
TROIS-RIVIÈRES	900f
MONTRÉAL	36,300f
GATINEAU	5,000f

Quebec Outlook

PROJECTED GDP GROWTH



FORECAST HOUSING STARTS



2020 POPULATION GROWTH

0.9%

ESCALATION RATE

3% TO 5%

To learn more, connect with our team members:

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PROVINCIAL SNAPSHOTS

Atlantic Canada

PEI leads, Newfoundland and Labrador lags

NEWFOUNDLAND AND LABRADOR

The twin blows of the oil price collapse and the pandemic have put the province in last place for economic performance in 2020. After plunging 27% in 2020, non-residential construction is expected to rebound in 2021 as projects get back on track. Residential building is forecast to drop by 15% in 2020 and not regain lost ground until 2022. A provincial government Residential Construction Rebate Program aims to spur homeowners to start new-home construction and renovation projects.

NOVA SCOTIA

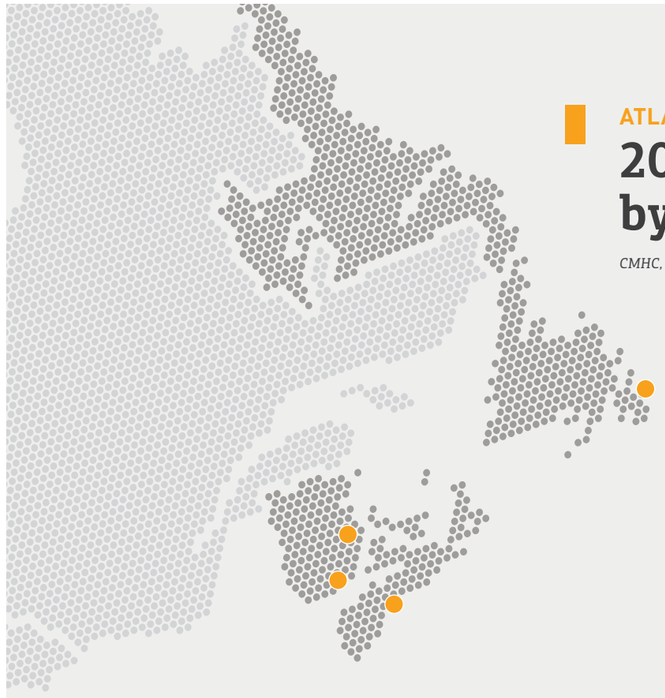
A $230 million capital spending plan that funds a range of shovel-ready projects will complement ongoing highway and hospital projects to help overall investment in non-residential projects increase by 3.8% in 2020. Housing starts in the near-term are not expected to return to the healthy levels of pre-pandemic construction. The forecast is for investment in residential construction to decline by 5.3% in 2020 and remain flat for at least two years.

NEW BRUNSWICK

With only a 3% contraction estimated for 2020, New Brunswick's economy is projected to perform better than those of most provinces next year. Multiple major projects, including the Saint John Regional Hospital expansion, have continued as scheduled despite COVID-19. Even so, overall non-residential construction investment is projected to decrease by 5.1% in 2020. The start of hospital upgrade projects should reduce the rate of decline in 2021. Residential construction investment is forecast to drop by 8.5% in 2020, recover in 2021 and remain positive over the next few years.

PRINCE EDWARD ISLAND

PEI led the provinces in growth in 2019 and was well positioned to weather the pandemic. The forecast is for only a 3.1% drop in GDP in 2020 compared the national average of 5.7%. The pandemic pommeled the tourism and aerospace sectors, but demand for farm output has grown and that sector should continue to thrive. Weaker immigration will dent PEI's position as the fastest-growing provincial population, sapping demand for new housing.



ATLANTIC CANADA

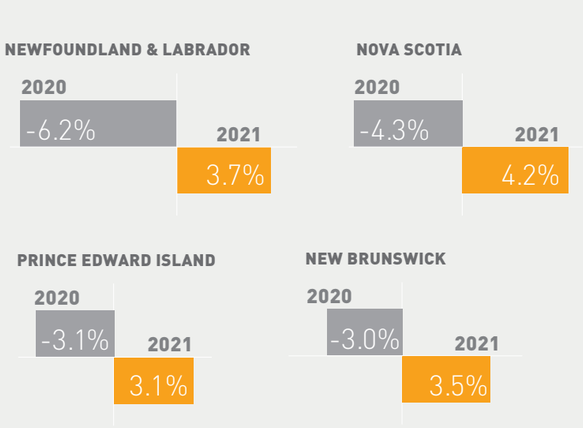
2020 Housing Starts by Urban Centres

CMHC, seasonally adjusted at annual rates – January to November, 2020

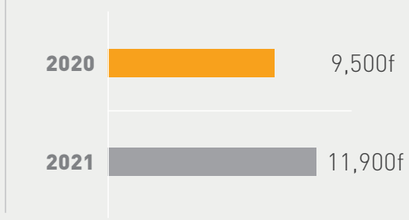
ST JOHN'S, NL	660f
HALIFAX, NS	6,100f
MONCTON, NB	2,300f
SAINT JOHN, NB	1,000f

Atlantic Canada Outlook

PROJECTED GDP GROWTH



FORECAST HOUSING STARTS



2020 POPULATION GROWTH

NFLD -0.3% NB 0.6%
NS 1.0% PE -0.3%

ESCALATION RATE

0% TO 2%

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Canadian Cost Data Parameters

BTY has been publishing the annual Market Intelligence Report and a comparison of Cost Data Parameters since 2003. The Cost Data includes unit rates for selected project categories, based on in-house data surveyed on a provincial level, and tendered data where available. The comparison provides actual data for 2020 and forecast data for 2021, using escalation levels generated by BTY.

PROJECT CATEGORY	BRITISH COLUMBIA				ALBERTA			
	ACTUAL 2020		FORECAST 2021		ACTUAL 2020		FORECAST 2021	
	$/m²	$/ft²	$/m²	$/ft²	$/m²	$/ft²	$/m²	$/ft²
HEALTH CARE								
Residential Care	2,910 - 3,250	270 - 302	3,080 - 3,450	286 - 321	2,710 - 3,260	252 - 303	2,740 - 3,290	255 - 306
Ambulatory Care	5,760 - 5,980	535 - 556	6,110 - 6,340	568 - 589	4,850 - 5,300	451 - 492	4,900 - 5,350	455 - 497
Acute Care	7,130 - 8,060	662 - 749	7,560 - 8,540	702 - 793	6,240 - 7,300	580 - 678	6,300 - 7,370	585 - 685
LABORATORIES								
Research Laboratories	7,260 - 8,060	674 - 749	7,620 - 8,460	708 - 786	6,500 - 7,220	604 - 671	6,570 - 7,290	610 - 677
Teaching Laboratories	5,650 - 6,260	525 - 582	5,930 - 6,570	551 - 610	5,310 - 6,180	493 - 574	5,360 - 6,240	498 - 580
Animal Research	9,020 - 10,030	838 - 932	9,470 - 10,530	880 - 978	7,720 - 8,470	717 - 787	7,800 - 8,550	725 - 794
HIGH-RISE RESIDENTIAL								
Rental Units	2,730 - 3,260	254 - 303	2,840 - 3,390	264 - 315	2,820 - 3,130	262 - 291	2,850 - 3,160	265 - 294
Market Units Mid End Specifications	3,240 - 3,730	301 - 347	3,370 - 3,880	313 - 360	2,560 - 3,220	238 - 299	2,590 - 3,250	241 - 302
Market Units High End Specifications	3,490 - 4,530	324 - 421	3,630 - 4,710	337 - 438	2,930 - 3,810	272 - 354	2,960 - 3,850	275 - 358
LOW- & MID-RISE RESIDENTIAL								
Rental Units	1,960 - 2,290	182 - 213	2,080 - 2,430	193 - 226	1,480 - 1,950	137 - 181	1,490 - 1,970	138 - 183
Market Units Mid End Specifications	2,360 - 3,800	219 - 353	2,500 - 4,030	232 - 374	1,780 - 2,370	165 - 220	1,800 - 2,390	167 - 222
Market Units High End Specifications	3,400 - 4,250	316 - 395	3,600 - 4,510	334 - 419	2,240 - 3,090	208 - 287	2,260 - 3,120	210 - 290
TOWNHOUSES (WOOD FRAME)								
Rental Units	1,580 - 1,990	147 - 185	1,670 - 2,110	155 - 196	1,180 - 1,580	110 - 147	1,190 - 1,600	111 - 149
Market Units Mid End Specifications	1,730 - 2,270	161 - 211	1,830 - 2,410	170 - 224	1,530 - 1,690	142 - 157	1,550 - 1,710	144 - 159
Market Units High End Specifications	2,050 - 2,830	190 - 263	2,170 - 3,000	202 - 279	1,770 - 2,380	164 - 221	1,790 - 2,400	166 - 223
SHOPPING CENTRES								
Strip Plaza	1,190 - 2,890	111 - 268	1,210 - 2,950	112 - 274	1,560 - 2,080	145 - 193	1,580 - 2,100	147 - 195
Enclosed Mall	2,750 - 3,940	255 - 366	2,810 - 4,020	261 - 373	2,530 - 3,230	235 - 300	2,560 - 3,260	238 - 303
Anchor/Department Store	2,410 - 2,920	224 - 271	2,460 - 2,980	229 - 277	2,360 - 2,990	219 - 278	2,380 - 3,020	221 - 281
Supermarket	1,880 - 2,490	175 - 231	1,920 - 2,540	178 - 236	1,920 - 2,260	178 - 210	1,940 - 2,280	180 - 212
Discount Store	1,460 - 2,110	136 - 196	1,490 - 2,150	138 - 200	1,330 - 1,860	124 - 173	1,340 - 1,880	124 - 175
OFFICE								
Under 5 Storeys	2,290 - 2,750	213 - 255	2,360 - 2,830	219 - 263	2,000 - 2,830	186 - 263	2,010 - 2,840	187 - 264
5–10 Storeys	2,480 - 3,210	230 - 298	2,550 - 3,310	237 - 308	2,320 - 2,970	216 - 276	2,330 - 2,980	216 - 277
10–20 Storeys	2,720 - 3,470	253 - 322	2,800 - 3,570	260 - 332	2,400 - 3,100	223 - 288	2,410 - 3,120	224 - 290
20–30 Storeys	3,130 - 4,320	291 - 401	3,220 - 4,450	299 - 413	2,720 - 3,860	253 - 359	2,730 - 3,880	254 - 360
EDUCATION								
Elementary Schools	2,340 - 3,180	217 - 295	2,410 - 3,280	224 - 305	2,250 - 2,960	209 - 275	2,270 - 2,990	211 - 278
Secondary Schools	2,610 - 3,560	242 - 331	2,690 - 3,670	250 - 341	2,380 - 3,080	221 - 286	2,400 - 3,110	223 - 289
Higher Education	3,140 - 4,630	292 - 430	3,230 - 4,770	300 - 443	2,800 - 3,930	260 - 365	2,830 - 3,970	263 - 369
LIGHT INDUSTRIAL								
Warehouse	1,100 - 1,480	102 - 137	1,120 - 1,510	104 - 140	1,110 - 1,560	103 - 145	1,120 - 1,570	104 - 146
HOTELS								
Low Rise	2,190 - 3,100	203 - 288	2,230 - 3,160	207 - 294	2,120 - 2,550	197 - 237	2,130 - 2,560	198 - 238
ROADS - PAVING	$/Lane km		$/Lane km		$/Lane km		$/Lane km	
Paved Highway - Linear Roadworks	1,084,400 - 1,368,200		1,116,900 - 1,409,200		988,300 - 1,234,000		998,200 - 1,246,300	
ROAD OVERPASS BRIDGE STRUCTURE	$/m²		$/m²		$/m²		$/m²	
Highway Overpass Structures	4,500 - 6,000		4,700 - 6,200		4,000 - 6,100		4,100 - 6,200	

SASKATCHEWAN				ONTARIO				QUEBEC			
ACTUAL 2020		FORECAST 2021		ACTUAL 2020		FORECAST 2021		ACTUAL 2020		FORECAST 2021	
$/m²	$/ft²	$/m²	$/ft²	$/m²	$/ft²	$/m²	$/ft²	$/m²	$/ft²	$/m²	$/ft²
2,940 - 3,230	273 - 300	2,970 - 3,260	276 - 303	2,970 - 3,390	276 - 315	3,120 - 3,560	290 - 331	3,050 - 3,480	283 - 323	3,170 - 3,620	295 - 336
5,300 - 6,000	492 - 557	5,350 - 6,060	497 - 563	5,460 - 6,160	507 - 572	5,730 - 6,470	532 - 601	5,620 - 6,250	522 - 581	5,840 - 6,500	543 - 604
6,140 - 7,130	570 - 662	6,200 - 7,200	576 - 669	7,130 - 7,660	662 - 712	7,490 - 8,040	696 - 747	6,120 - 7,820	569 - 727	6,360 - 8,130	591 - 755
7,060 - 8,000	656 - 743	7,130 - 8,080	662 - 751	7,340 - 8,280	682 - 769	7,670 - 8,650	713 - 804	7,440 - 8,540	691 - 793	7,740 - 8,880	719 - 825
5,750 - 6,240	534 - 580	5,810 - 6,300	540 - 585	6,210 - 7,130	577 - 662	6,490 - 7,450	603 - 692	6,180 - 7,350	574 - 683	6,430 - 7,640	597 - 710
9,160 - 9,400	851 - 873	9,250 - 9,490	859 - 882	7,320 - 9,560	680 - 888	7,650 - 9,990	711 - 928	7,570 - 9,900	703 - 920	7,870 - 10,300	731 - 957
2,290 - 2,830	213 - 263	2,310 - 2,860	215 - 266	2,640 - 3,420	245 - 318	2,750 - 3,560	255 - 331	2,170 - 2,790	202 - 259	2,280 - 2,930	212 - 272
2,650 - 3,320	246 - 308	2,680 - 3,350	249 - 311	3,060 - 3,950	284 - 367	3,180 - 4,110	295 - 382	2,670 - 3,390	248 - 315	2,800 - 3,560	260 - 331
3,030 - 3,880	281 - 360	3,060 - 3,920	284 - 364	3,670 - 4,740	341 - 440	3,820 - 4,930	355 - 458	3,270 - 4,840	304 - 450	3,430 - 5,080	319 - 472
1,370 - 1,790	127 - 166	1,380 - 1,810	128 - 168	1,510 - 1,780	140 - 165	1,600 - 1,890	149 - 176	1,450 - 1,710	135 - 159	1,520 - 1,800	141 - 167
1,600 - 2,200	149 - 204	1,620 - 2,220	151 - 206	1,780 - 2,090	165 - 194	1,890 - 2,220	176 - 206	1,580 - 1,990	147 - 185	1,660 - 2,090	154 - 194
2,330 - 2,710	216 - 252	2,350 - 2,740	218 - 255	2,190 - 2,610	203 - 242	2,320 - 2,770	216 - 257	2,070 - 2,540	192 - 236	2,170 - 2,670	202 - 248
1,130 - 1,330	105 - 124	1,140 - 1,340	106 - 124	1,440 - 1,700	134 - 158	1,530 - 1,800	142 - 167	1,200 - 1,640	111 - 152	1,260 - 1,720	117 - 160
1,230 - 1,660	114 - 154	1,240 - 1,680	115 - 156	1,580 - 1,850	147 - 172	1,670 - 1,960	155 - 182	1,580 - 1,940	147 - 180	1,660 - 2,040	154 - 190
1,660 - 2,260	154 - 210	1,680 - 2,280	156 - 212	1,850 - 2,260	172 - 210	1,960 - 2,400	182 - 223	1,830 - 2,540	170 - 236	1,920 - 2,670	178 - 248
1,330 - 2,360	124 - 219	1,340 - 2,380	124 - 221	1,590 - 1,990	148 - 185	1,650 - 2,060	153 - 191	1,100 - 1,830	102 - 170	1,140 - 1,900	106 - 177
2,450 - 3,140	228 - 292	2,470 - 3,170	229 - 295	1,990 - 2,360	185 - 219	2,060 - 2,440	191 - 227	2,550 - 3,530	237 - 328	2,650 - 3,670	246 - 341
2,360 - 2,990	219 - 278	2,380 - 3,020	221 - 281	2,410 - 2,840	224 - 264	2,490 - 2,940	231 - 273	2,180 - 2,910	203 - 270	2,270 - 3,030	211 - 281
1,330 - 2,260	124 - 210	1,340 - 2,280	124 - 212	1,780 - 2,280	165 - 212	1,840 - 2,360	171 - 219	1,450 - 2,000	135 - 186	1,510 - 2,080	140 - 193
1,330 - 1,860	124 - 173	1,340 - 1,880	124 - 175	1,440 - 1,700	134 - 158	1,490 - 1,760	138 - 164	1,390 - 1,830	129 - 170	1,450 - 1,900	135 - 177
2,240 - 3,750	208 - 348	2,260 - 3,790	210 - 352	2,010 - 2,400	187 - 223	2,090 - 2,500	194 - 232	1,750 - 2,120	163 - 197	1,820 - 2,200	169 - 204
2,400 - 3,610	223 - 335	2,420 - 3,650	225 - 339	2,150 - 2,660	200 - 247	2,240 - 2,770	208 - 257	2,120 - 2,670	197 - 248	2,200 - 2,780	204 - 258
2,470 - 3,100	229 - 288	2,490 - 3,130	231 - 291	2,420 - 2,950	225 - 274	2,520 - 3,070	234 - 285	2,180 - 2,940	203 - 273	2,270 - 3,060	211 - 284
2,860 - 3,510	266 - 326	2,890 - 3,550	268 - 330	2,720 - 3,390	253 - 315	2,830 - 3,530	263 - 328	2,770 - 3,560	257 - 331	2,880 - 3,700	268 - 344
2,420 - 3,050	225 - 283	2,460 - 3,100	229 - 288	2,000 - 2,390	186 - 222	2,100 - 2,510	195 - 233	1,950 - 2,330	181 - 216	2,030 - 2,420	189 - 225
2,530 - 3,360	235 - 312	2,570 - 3,410	239 - 317	2,130 - 2,630	198 - 244	2,240 - 2,760	208 - 256	2,080 - 2,630	193 - 244	2,160 - 2,740	201 - 255
2,840 - 3,890	264 - 361	2,880 - 3,950	268 - 367	2,440 - 2,960	227 - 275	2,560 - 3,110	238 - 289	3,050 - 4,880	283 - 453	3,170 - 5,080	295 - 472
1,290 - 2,180	120 - 203	1,300 - 2,190	121 - 203	1,200 - 1,460	111 - 136	1,250 - 1,530	116 - 142	990 - 1,350	92 - 125	1,040 - 1,420	97 - 132
1,850 - 2,530	172 - 235	1,860 - 2,540	173 - 236	2,080 - 2,720	193 - 253	2,150 - 2,820	200 - 262	2,100 - 2,830	195 - 263	2,210 - 2,970	205 - 276
$/Lane km		$/Lane km		$/Lane km		$/Lane km		$/Lane km		$/Lane km	
1,255,500 - 1,419,100		1,274,300 - 1,440,400		1,039,000 - 1,267,600		1,080,000 - 1,318,300		1,405,700 - 1,577,900		1,454,900 - 1,633,100	
$/m²		$/m²		$/m²		$/m²		$/m²		$/m²	
4,900 - 7,000		5,000 - 7,200		4,700 - 7,200		4,900 - 7,500		5,400 - 7,800		5,600 - 8,100	

Note: The unit rates reflect hard construction costs, including general requirements and fees, and exclude site works and tenant improvements. Variances in unit rates and escalation will occur due to the remoteness of some regions and prevailing local market conditions. Construction costs can also be affected by a multitude of factors that may not be limited to market conditions.

BTY strongly recommends that readers seek the advice of a Professional Quantity Surveyor (PQS) prior to establishing a budget for their specific projects.

INTERNATIONAL MARKETS IN FOCUS

United States

Residential leads USA's construction recovery; multiple roadblocks could still slow progress

Construction of single-family homes is forecast to post a 4% increase in 2020 – and 7% growth in 2021, the highest since 2007. After a projected 14% decline in 2020, total U.S. construction starts are projected to increase by 4% in 2021 to $771 billion.[6]

Much depends on the ability of the overall economy, projected to post a decline of 4% in 2020, to bounce back to meet a positive growth forecast of 3.4% in 2021.[7] There are many potential roadblocks along the way. They include the continuing spread of COVID-19 and uncertainty over the timing of vaccine availability and distribution, strained state and municipal finances, and stalled infrastructure investment programs. Any or all could slow the speed and strength of recovery, which is expected to gain momentum by mid-year as the potential roadblocks are removed.

SHIFT FROM MULTI-FAMILY TO SINGLE-FAMILY IN SUBURBS

The swift and widespread move away from cities and the rapid expansion of remote working during the pandemic has driven increased demand in the single-family market – and is expected to drive a corresponding drop of 14% in multifamily in 2020, and a further drop of 1% in 2021.[8] Continued low interest rates are supporting residential growth, as is the fact that the sector is still below production levels needed to meet the demand for housing. The pandemic has also accelerated a pre-existing shift toward the suburbs – and larger homes.[9] Residential starts have been strongest in the Midwest (+12.7%), the West (+6.8%), and the South (+6.1%), with the Northeast in a holding pattern.[10]

COMMERCIAL SECTOR WINNERS AND LOSERS

Warehousing starts are one of the commercial sectors' few growth areas. They rose by 2% in 2020 and are forecast to jump another 8% in 2021. That growth is closely tied to the expansion of E-commerce and logistics – and the distribution and data centres needed to support them.

Their expansion corresponds to retail construction's continuing decline, which, like office and other commercial structures, including hotels – is expected to see spending decreases of nearly 12% in 2020 and a further drop of 8% in 2021. Overall non-residential facilities will decline just over 8% this year, and another 5% next year.[11]

INDUSTRIAL AND INSTITUTIONAL SECTOR CONTRACTION

Manufacturing production and related distribution facilities are expected to see a 5% drop this year and a 3% decline in 2021. Institutional buildings – health care, education, religious, public safety, and amusement and recreation – are the strongest performers on the non-residential side. Spending in these building types is forecast to decrease by an estimated 5% in 2020, and a further 2% in 2021.

The U.S. spends an estimated $450 billion a year on infrastructure, which represents only 2.3% of national GDP.

INFRASTRUCTURE INVESTMENT IN THE WORKS

The U.S. spends an estimated $450 billion a year on infrastructure, which represents only 2.3% of national GDP. That is less than half the 5% that European nations spend on average. The U.S. needs more than $2 trillion of infrastructure investment by 2030 just to keep pace with the country's economic activity.[12]

That figure exactly matches the cost of the incoming Biden administration's proposed clean energy and infrastructure plan. It focuses on speeding up the transition to cleaner energy for transportation and buildings in addition to prioritizing environmental concerns. This plan would be rolled out in his first term, investing in carbon-free power and grid infrastructure, efficient buildings, sustainable housing, mass transit, "climate-smart" agriculture, and more.

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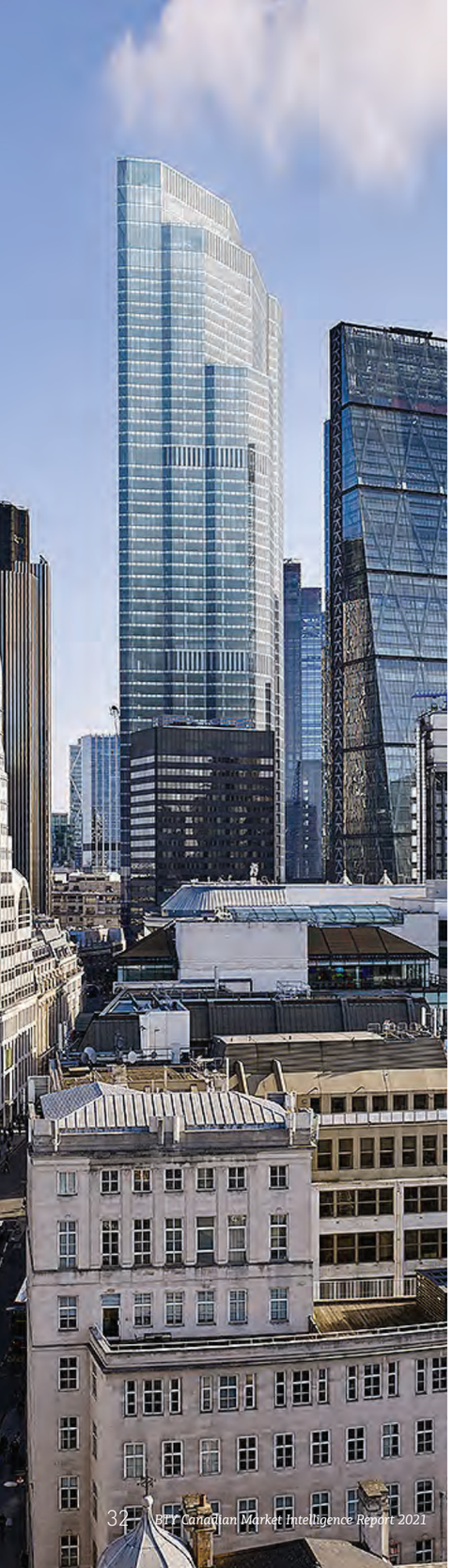
6 *Dodge Data & Analytics Expects Construction Starts to Recover in 2021. (2020) Dodge Data & Analytics. Retrieved from https://www.construction.com/news/dodge-data-analytics-expects-construction-starts-recover-2021*
7 *Preston, L. & Thanabalasingam, S. (2020). US Long-Term Forecast. TD Economics. Retrieved from https://economics.td.com/us-long-term-forecast*
8 *Dodge Data & Analytics Expects Construction Starts to Recover in 2021. (2020) Dodge Data & Analytics.*
9 *Suburban Housing: Increased Trend or Permanent Shift?. (2020). National Association of Home Builders. Retrieved from https://nahbnow.com/2020/11/suburban-housing-increased-trend-or-permanent-shift/*
10 *Carrick, A. (2020). 13 Graphs Show U.S. and Canadian Housing Starts Shrug Off Pandemic. ConstructConnect . Retrieved from https://www.constructconnect.com/blog/13-graphs-show-u.s.-and-canadian-housing-starts-shrug-off-pandemic*

11 *AIA's Consensus Construction Forecast Projects Decline in Nonresidential Project Spending Through 2021. (2020). Architect Magazine. Retrieved from https://www.architectmagazine.com/practice/aias-consensus-construction-forecast-projects-decline-in-nonresidential-project-spending-through-2021_o*
12 *Gasparro, K. (2020). Infrastructure investments will be driven by new technology. Construction Dive. doi: 586892*



INTERNATIONAL MARKETS IN FOCUS

United Kingdom

alinea

A view of the U.K. Market

Feature post from industry partner alinea

COVID-19 has upended economies across the globe, sending governments into a tailspin. It has also accelerated some fundamental trends, not least how real estate responds to climate change and the wider issues of social value.

Like other countries, the U.K. has endured a difficult nine months. Tough times remain, but there is a light at the end of the tunnel as the vaccine begins its roll-out.

The economic scars of COVID-19 (and to a lesser degree, Brexit) will last for a number of years, but the return of confidence will release money that international funders are waiting to invest in London, and other global cities. The U.K. government's strategy to 'level-up' the country will attempt to ensure that a return to prosperity is more evenly distributed across the country.

Following a downward correction in U.K. construction prices, steadier pricing is expected to continue throughout 2021, with pockets of divergence according to project attraction and tiers of the supply chain. We see a distinct chance of a rebound in prices as confidence is re-established and a hardening pipeline puts pressure on labour and other resource constraints. The timing of this rebound will be largely driven by the speed and success of the vaccination programme.

THE GLOBAL PICTURE

Across the globe countries have been grappling with the dichotomy of saving lives and sustaining economies, though responses to the pandemic emergency have varied, with differing levels of success. China has emerged fastest from the crisis, and other countries are beginning to focus on the restoration of their economies – not least the United Kingdom, which is the first country in the world to authorise a vaccine, with the lengthy process of rolling it out now started.

A spectre of economic scars and an ever-increasing debt mountain lurk, but there is at least light at the end of the pandemic tunnel. The tough road ahead is made easier by ultra-low inflation and near-zero interest rates, though some are suggesting that a demographic turning point may cause global labour shortages, pushing up wages, as renewed demand pushes up inflation and interest rates. For the moment, it seems, governments will be content in stimulating economies by building infrastructure and investing in technologies that will create sustainable economies and sustainable environments.

This year U.K. construction output has suffered a sharp fall as lockdown and social-distancing measures have interrupted productivity and COVID-19 has forced investors to sit on their hands, or at least reduce their immediate financial commitments - even if London and the U.K. remain firmly in their long-term plans. There is certainly money waiting for the right time to invest. Diminished supply of key commodities such as iron ore, compounded by an increase in demand from China have helped to inflate material prices in the United Kingdom – as has the impact of disrupted supply chains.

Long-term labour constraints in the U.K. construction market have been compounded by the loss of foreign workers returning home at the start of the pandemic. Since then, travel restrictions, quarantine rules, and an unwillingness to travel have all reduced the country's construction workforce, edging up labour rates for some trades. Brexit initially cast a spotlight on these supply chain issues, and COVID-19 brought an immediacy to them. There are wider benefits to having a better understanding of the layering within supply chains and the provenance of materials, from a more granular knowledge of pricing components to a more accurate assessment of carbon footprints.

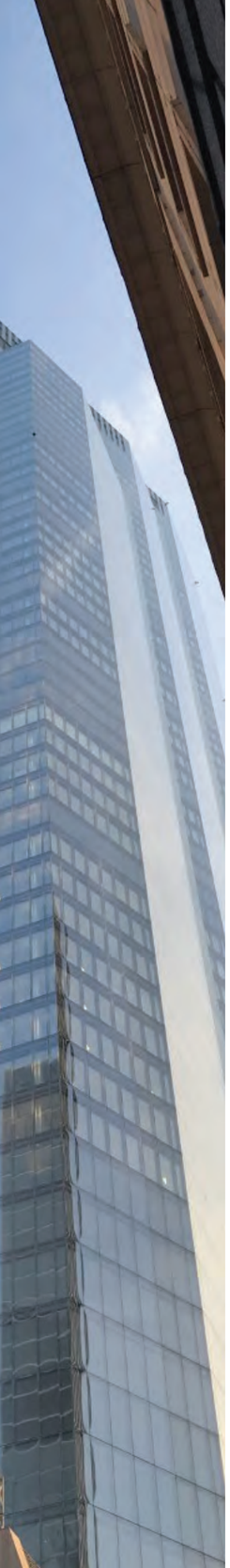
THE U.K. PICTURE

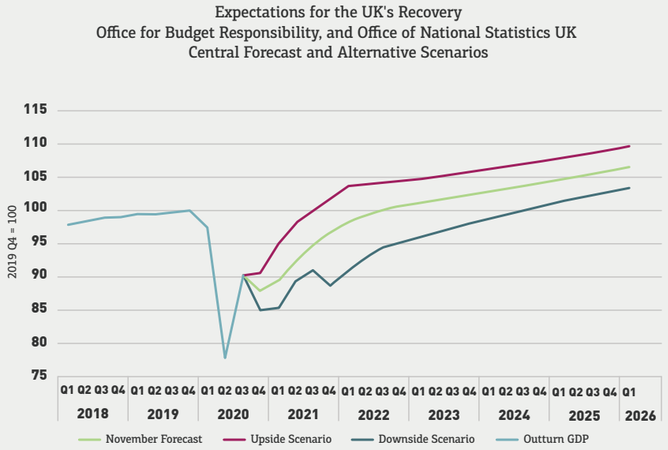
With COVID-19 induced uncertainties, the Chancellor of the Exchequer's Autumn Budget was abandoned in favour of a Spending Review, with a shorter time horizon of one year and the deferment of some major spending decisions until 2021. The Chancellor, Rishi Sunak, revealed that the U.K. economy would shrink by 11.3% in 2020, the biggest contraction in 300 years. In its forecasts accompanying the review, the Office for Budget Responsibility (a fiscal watchdog) set out three scenarios in which the economy would regain its pre-pandemic size: in 2021, 2022 and 2024. Projected budget deficits also show large ranges, and the U.K. has an overall debt that now exceeds 100% of GDP. Whilst comfort can be taken from low costs of servicing this debt, added uncertainty comes from the impact of the post-Brexit free trade deal with the European Union, which comes into effect January 1, 2021.

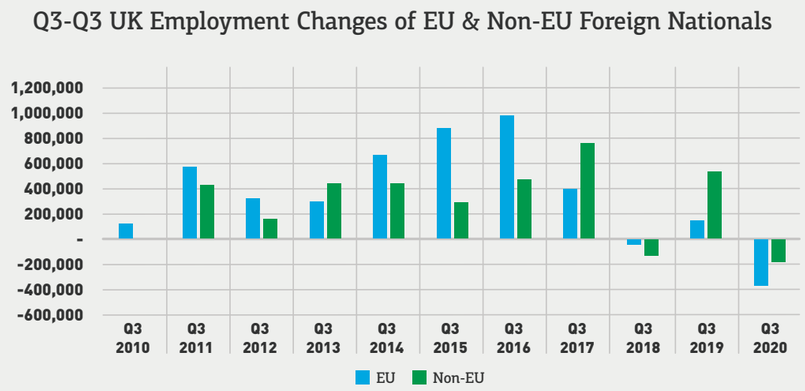
The Spending Review reflected the government's commitments to reduce inequality between London and the rest of the country, to invest in infrastructure, to push a green revolution and to make the U.K. more competitive in a post E.U. world by:

- A £4bn 'Levelling Up' fund to upgrade infrastructure across the country
- The creation of ten freeports as hubs for global trade
- A £7.1bn National Homebuilding Fund
- A new U.K. infrastructure bank based in the north of England, that will focus on projects that will support the government's 2050 net zero carbon target

Under the heading of *fairer, faster, greener* the just-published National Infrastructure Strategy is focusing just as much on research and innovation, creating new wealth-generating clusters (beyond Cambridge), further supporting the 'levelling-up' agenda. Recognising an historic failure to fulfil infrastructure investment promises, the Prime Minister Boris Johnson claims that this will finally change, putting "calcium in our national bone structure".







A VERY BRITISH AFFAIR: BREXIT

Four and a half years on from the referendum that prompted Brexit, negotiations between the U.K. and the European Union have finally led to a last minute trade deal, just in time for the Transition Period's deadline, which formally removes the United Kingdom from the single market and customs union.

Even before the final agreement was announced, our research showed that the extra administrative work to navigate new customs barriers will result in the "no tariffs, no quotas" deal causing considerable disruptions, delays and potential cost increases on imported materials in the United Kingdom.

New immigration rules (and a points-based system) will likely place further pressure on construction skills shortages – particularly when large commercial projects in London rely on foreign labour, who typically represent 50-80% of the workforce.

THE U.K. CONSTRUCTION MARKET

A marked shift in the functions of real estate, and doubts about what this means exactly for the products of property development, has led to a reduction in the pipeline, leaving some significant holes in contractors' order books (especially the earlier trades). To make matters worse, low productivity during the shutdown as sites made concerted efforts to ensure safe working environments has extended programmes and chipped away at profit margins.

The response has been increased competition and a reduction in margins, together with some tactical pricing – but the extent of this has been softened by material price inflation and a more considered approach to tendering compared to earlier recessions: the backdrop of enduring financial fragility on the supply side is discouraging many firms from chasing turnover at the expense of robust accounts. Some, who are able, are also turning their attention to the government's infrastructure proposals.

Our working projection is for tender prices to now remain flat for a period of time: prices will be generally steady, if a little unpredictable given the prevailing uncertainty of economic and political conditions. We do, however, envisage something of a rebound in prices as confidence returns, with a bow-wave of slowed or stalled projects putting pressure on labour constraints. The difficult question is: how long will the benign period last before this rebound occurs? The success of COVID-19 vaccines will play a large part in driving this timeframe.

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A PERFECT STORM FOR THE U.K.?

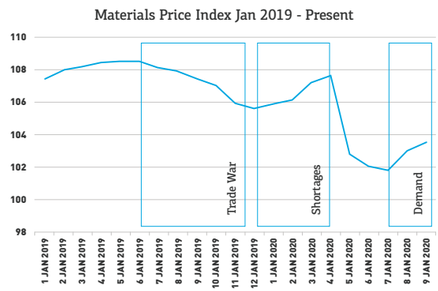
U.K. fatigue with Brexit has for the last 9 months been overtaken by the emergency of COVID-19. The pandemic has accelerated a number of trends that were playing out before the city of Wuhan hit the news, not least the need for real estate to address the threat presented by climate change.

Some may worry that Brexit, COVID-19 and climate change represent a perfect storm for the country, but we see the fault-lines exposed – and the imaginative responses of the U.K. construction industry – as an opportunity to 'burn away the deadwood', rebooting the industry to finally embrace technologies that are already in place, whilst doing the simple things consistently well.

alinea has begun a campaign entitled 'More for Less', which attempts to ease the viability of commercial developments, through the following simple manifesto:

1. Set up projects for success.
2. Make BIM and digital working the default setting.
3. Strive for smart simplicity in design.
4. Focus on the net zero carbon in a way that reduces resources and costs.
5. Challenge the product to reflect a changing world.

To support this endeavour, we are also commencing an initiative to better understand the complexities of construction supply chains.



alinea

alinea is a 100-strong award-winning cost consultancy based in London but with an ability to work across the globe.

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The NIS calls for more than £5 billion in spending on public transport and cycling infrastructure, with £1.3 billion allocated for EV charging.

INTERNATIONAL MARKETS IN FOCUS

U.K. Infrastructure Pipeline

Glenmhor
Technical Commercial Infrastructure

UK infrastructure investment expected to help offset declines in other construction sectors

Feature post from industry partner Glenmhor

STRONG FOCUS ON RENEWABLES ANCHORS UPDATED NATIONAL INFRASTRUCTURE STRATEGY

Overall construction output levels in the U.K. are projected to decline by up to 15% in 2020 before returning to growth in 2021. The expected recovery assumes the successful rollout of effective vaccines and therapies as well as the economy's ability to weather disruptive impacts from the U.K. leaving the European Union. The U.K. economic output in 2020 is projected to contract by 11.2%, with a partial recovery in 2021 of up to 7.2%. Output is not expected to reach pre-COVID levels before the end of 2022.[13]

YEAR ON YEAR INFRASTRUCTURE SPEND TO RISE BY MORE THAN 25%

In late November, the U.K. government launched its National Infrastructure Strategy, which details how £100 billion will be spent on infrastructure in the 2021-2022 financial year. That amount represents a year-on-year increase of £27 billion. The goal is to transform transport, industry, energy and the built environment to reach net-zero emissions. An estimated £12 billion is being allocated to the net-zero transition in 2021-2022. The plan also announced a new national investment bank that will be created and begin operating in Spring 2021. Based in the North of England, the bank will take on the role previously played by the European Investment Bank (EIB) pre-Brexit.[14]

BOOSTING RENEWABLE ENERGY GENERATION

To meet the goal of generating 65% of electricity from renewable sources in the U.K. by 2030, the country has opened a Contracts for Difference (CfD) scheme for a wider range of technologies including floating offshore wind, solar and onshore wind. There is also a focus on hydrogen and carbon capture together with storage solutions to achieve net-zero. The target for the next auction is 12GW of wind and solar, which is more than double the previous round.[15]

SWITCHING OFF NATURAL GAS

The plan also details a £320 million Heat Networks Investment Project to support a massive changeover from gas heating. Some 85% of U.K. homes are connected to the gas grid; to reach net-zero, they will have to stop using natural gas for heat. To do that by 2030, the U.K. will have to install 1.7 million new heating systems a year. Currently there are only 30,000 annual installations.

MORE THAN £5 BILLION PUBLIC TRANSPORT AND CYCLING INFRASTRUCTURE

The NIS also calls for more than £5 billion in spending on public transport and cycling infrastructure, with £1.3 billion allocated for EV charging. The plan will support progress toward the new 2030 phase-out date banning sales of new gasoline and diesel-powered vehicles.

DISTRIBUTED EV CHARGING NETWORK

By 2023, the Government "expects to see a high-powered charging hub at every motorway service area, installed by the private sector". The Government will also invest £950 million to futureproof grid capacity along key roads and motorways to enable EV uptake. A £90 million local EV charging fund will also support on-street charging across England.[16]

ABOUT GLENMHOR

Glenmhor provides technical and commercial advisory services to clients in the global construction and property sectors. The firm has worked on some of the largest and most complex projects in the U.K. as well as internationally. Glenmhor has advised on PPP projects valued at more than £10 billion. In addition to expertise in advisory, cost management and project management services, the firm is experienced in raising investment capital and debt.

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[13] *New Beginnings: UK Economic Outlook. (2020). KPMG. Retrieved from https://assets.kpmg/content/dam/kpmg/uk/pdf/2020/11/uk-economic-outlook-nov2020.pdf*
[14] *Policy Paper: National Infrastructure Strategy. (2020). Government of the United Kingdom. Retrieved from https://www.gov.uk/government/publications/national-infrastructure-strategy*
[15] *Mace, M. & George, S. (2020). National Infrastructure Strategy: Government to deliver 'revolution' tied to net-zero. Edie. Retrieved from https://www.edie.net/news/11/National-Infrastructure-Strategy--Government-to-deliver--revolution--tied-to-net-zero/*
[16] *Ibid*

INTERNATIONAL MARKETS IN FOCUS

Ireland

Construction industry expected to bounce back with shift to housing and logistics over commercial

Ireland was the only European country to close construction sites during the first pandemic lockdown. The closure lasted nearly two months and caused significant delay to projects. Those stoppages, combined with a weak outlook for economic growth, are expected to cause the construction industry to contract by 9.7% in 2020. [17]

While the country entered a second round of increased containment measures in October, construction sites remained open. Continued activity – and effective health and safety measures that have helped support higher than expected productivity – enabled the industry to continue its recovery, building on the strong momentum it had in 2019, when total investment in building and construction grew by an estimated 11% to €27 billion.[18] A sustained decline in such investment, however, could see a reduction of up to 35% in 2020 to €17.9 billion.

HOUSING DEMAND WILL HELP DRIVE INCREASED ACTIVITY

The impact of the pandemic is projected to reduce new housing completions for 2020 to 16,500, down from 21,000 in 2019. That reduced number is still less than half of the estimated 34,000 units a year for the next decade required to meet the nation's housing needs. Current expectations are for approximately 22,000 and 27,400 units in 2021 and 2022, respectively.[19]

[17] *Construction in Ireland - Key Trends and Opportunities to 2024 Post Covid-19. (2020). Research and Markets. Retrieved from https://ca.finance.yahoo.com/news/construction-ireland-key-trends-opportunities-135700410.html*
[18] *Build 2020: Construction Sector Performance and Capacity. (2020). Government of Ireland, Department of Public Expenditure and Reform. Retrieved from https://assets.gov.ie/82173/9c45df7f-5500-41a7-bc27-915bfc539878.pdf*
[19] *Quarterly Bulletin QB4 – October 2020. (2020). Central Bank of Ireland. Retrieved from https://www.centralbank.ie/docs/default-source/publications/quarterly-bulletins/qb-archive/2020/quarterly-bulletin---q4-2020.pdf?sfvrsn=7*

GOVERNMENT SUPPORT TO SPUR GROWTH

Government investment in social and affordable housing, transportation and combatting climate change are expected to help boost construction sector output by an average growth of 5.5% between 2021-2024. The focus on reducing greenhouse gas emissions is expected to also attract public and private sector investment on renewable energy infrastructure projects.[20]

COVID'S UNEVEN IMPACT ON SECTORS

As in many other countries, Ireland's retail and hospitality sectors specifically and the commercial sector in general have borne the brunt of the pandemic related economic disruptions. One of the strongest performing sectors in construction has been data centres. Ireland had 53 operational data centres, eight more under construction and 26 with planning approval at the start of 2020. Annual investment in data centres has reached €1.3 billion and cumulative investment in the data centre sector up to 2023 is projected to top €11 billion.[21]

Data centre expansion is being further accelerated as lockdowns have driven greater growth of E-commerce. With increased online shopping – coupled with uncertainty over the impact of Brexit on import and exports – there is also growing demand for warehousing and distribution centres.[22] Other sectors of the Irish economy that bucked the downward trend are the export of computer services, medicinal and pharmaceutical goods and private sector rentals.[23]

Total infrastructure investment by the state will exceed €10 billion for the first time

INFRASTRUCTURE INVESTMENT

In its autumn 2020 budget, the Irish government released plans to increase housing department funding by €773 million, with €500 million to be directed towards capital expenditure and the construction of 9,500 new social housing units in 2021. Total infrastructure investment by the state will exceed €10 billion for the first time, with investment focused on climate, healthcare, public housing, transport and education. Major projects include:

- *€10 million for Cork and Shannon airports*
- *An additional €44 million for Irish Water for infrastructure*
- *Construction on N56 in Donegal, N4 in Sligo, N5 in Mayo, N22 and Dunkettle interchange in Cork*
- *Purchase 41 additional InterCity railcar carriages and sign contract with potential for up to 600 electric carriages as part of DART+*[24]

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[20] *Construction in Ireland - Key Trends and Opportunities to 2024 Post Covid-19. (2020). Research and Markets.*
[21] *Short, E. (2019). €4.5bn of new data centres will be built in Ireland by 2025. Silicone Republic. Retrieved from https://www.siliconrepublic.com/enterprise/irish-data-centres-investment-report-2019*
[22] *Kenny, A. (2019). Businesses say Ireland is running out of warehousing space amid Brexit fears. RTE. Retrieved form https://www.rte.ie/news/2019/0816/1069149-ireland-running-out-of-warehousing-space-amid-fears-of-brexit/*
[23] *O'Toole, E. (2020). The lockdown tale of two economies in Ireland: How big tech and pharma bucked the trend. Economic & Social Research Institute. Retrieved from https://www.esri.ie/system/files/publications/RN2020301.pdf*
[24] *Irish Government Unveils High-Spending 2021 Budget. (2020). Business World. Retrieved from https://www.businessworld.ie/economy/irish-Government-unveils-high-spending-2021-budget-574632.html*

INTERNATIONAL MARKETS IN FOCUS

Turkey

Renewable energy and transportation bright spots as construction contends with weak currency and COVID-19

Turkey's construction industry is an economic mainstay for the country, and like the overall economy it has struggled with twin issues in 2020: COVID-19 and depreciation of the nation's currency, with rising interest rates further weakening economic performance. The value of the Turkish lira dropped by almost 14% against the euro between January and June 2020.

The industry has been contracting for two years running, shrinking by an estimated 17.2% in 2019. It is now forecast to see a further decline of 9.7% in 2020 before posting projected positive growth of 5.5% in 2021.[25] The economy – and construction industry – had shown signs of recovery in early 2020. The Construction Confidence Index, an economic indicator of upcoming activity in residential and commercial construction sector rose 31.5% in May 2020 over April.[26]

As in other jurisdictions, residential building, in this case primed by government stimulus, led a comeback at the start of the second half of the year before subsiding as a second wave slowed progress. Demand for housing has remained strong as Turkey's population, 84 million in 2019, has continued to grow, increasing by 4% since 2016.

In 2018, the residential building sector accounted for 56% of the industry. Large backlogs remain in almost every sector.[27]

[25] *Gaspar, J. (2020). Q3 2020 Permit-completion results of EECFA countries. EECFA – BUILDECON. Retrieved from https://buildecon.wordpress.com/category/construction-data/*
[26] *Turkey Construction Market – Growth, Trends, and Forecasts (2020 – 2025). (2020). Mador Intelligence. Retrieved from https://www.mordorintelligence.com/industry-reports/turkey-construction-market*
[27] *Falucskai, E. (2020). Turkey: Despite Covid-19 housing transactions historically peaking. EECFA – BUILECON. Retrieved from https://buildecon.wordpress.com/2020/08/21/turkey-despite-covid-19-housing-transactions-historically-peaking/*

WEAK ECONOMY RESTRAINS INFRASTRUCTURE SPENDING

Government spending on the pandemic has reduced available funds for Turkey's ambitious infrastructure development program. Turkey's 5-Year Development Plan launched in 2019 includes some 13,500 km of new roads, 5,750 km of new highways, and 10,000 km of high-speed rail network lines. Approximately US$80 billion is allocated for road infrastructure with US$36 billion for renewable energy.

EXPANDING SOLAR AND WIND CAPACITY OUTPERFORM

Turkey is forecast to rank fifth in Europe this year for increasing its renewable power capacity, which is forecast to add 22.2 gigawatts (GW) by 2025 to reach 66.8 GW, according to data from the International Energy Agency's (IEA) Renewables 2020 report.[28] Solar energy will see the fastest growth in Turkey, with planned projects that will increase capacity by 280% to 16.6 GW by 2025. The government of Turkey is extending policies and offering incentives for investors to complete ongoing projects during the pandemic and undertake new developments.[29]

Turkey is forecast to rank fifth in Europe this year for increasing its renewable power capacity, which is forecast to add 22.2 gigawatts (GW) by 2025 to reach 66.8 GW

BTY PARTICIPATION IN TURKISH INFRASTRUCTURE DEVELOPMENT

Over the past 5 years BTY has worked on more than a dozen infrastructure projects across Turkey collectively valued at €8.5 billion. The firm has undertaken a wide range of roles in supporting the development of the country's infrastructure in healthcare, transportation and renewable energy sectors, as well as in secondary market transactions and refinancing. As the country continues to build through the pandemic, BTY is currently delivering Lenders' Technical Advisory services as well as Environmental, Social, and Health and Safety services on projects in each of these sectors.

To learn more, connect with our team member:

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[28] *Turkey to rank 5th in Europe for renewable energy growth in 2020. (2020). Daily Sabah. Retrieved from https://www.dailysabah.com/business/energy/turkey-to-rank-5th-in-europe-for-renewable-energy-growth-in-2020*
[29] *Ibid*

INTERNATIONAL MARKETS IN FOCUS

Eastern Europe

INFRASTRUCTURE INVESTMENT KEY TO RECOVERY IN EASTERN EUROPE

Eastern European nations had been projected to enjoy healthy growth in construction over the next two years before lockdown measures caused a sharp economic downturn in 2020 that is forecast to continue well into 2021. GDP growth in Eastern Europe, which averaged 2.5% a year between 2010 and 2019, is projected to be -4% in 2020 before rebounding to 2.9% in 2021 and maintaining that level for much of the decade.[30] Additional investment in infrastructure could play a key role in the region's economic recovery. A fall 2020 report from the International Monetary Fund estimates that for every €1 spent on infrastructure in Eastern European countries there would be a short-term return of €0.5 to €0.8, with long-term returns between €1.7 and €2.5.[31]

CLOSING THE INFRASTRUCTURE GAP

Over the past decade nations in the region have been investing steadily to close the infrastructure gap with other European countries, but there is a considerable way to go. Road infrastructure quality in Eastern Europe is estimated to be 60% lower than in other parts of Europe, and that of rail transport 40% lower. The total required to close the gap is estimated at $1.2 trillion. Nearly half that amount, $530 billion would be needed to modernize roads, railways, ports, airports, energy plants and telecommunications lines.

An estimated €212 billion is expected to come from the €750 billion Next Generation EU fund. In March 2020, the European Commission approved an investment package worth more than €1.4 billion for 14 large infrastructure projects in Croatia, the Czech Republic, Hungary, Romania and Poland as well as Portugal and Spain.

BTY ENGAGED ON PPPs FOR TRANSPORT AS WELL AS SOCIAL INFRASTRUCTURE

Poland and Slovenia took an early lead in upgrading their road and rail networks, with the Czech Republic rapidly gaining ground in roadways. One major project – being developed using the PPP model – in the Czech Republic is the D4 Expressway, for which BTY is provide Life-Cycle Advisory services. The D4 project involves the completion and operation of 32 km of motorway and has an estimated total cost of around US$300 million.[32]

The Czech Republic is using investment in large-scale infrastructure projects as a strategy to fuel economic growth. Improving infrastructure will sustain growth in manufacturing and expanding municipal utilities will contribute to the growth in construction spending. Romania is also using PPPs to upgrade infrastructure. Last year the country launched a €450 million facility management PPP scheme for tender, which BTY is providing Technical, Environmental and Social Advisory services on. The project comprises the construction and operation of a Regional Emergency Hospital in the city of Brasov.

30 *Power up: investing in infrastructure to drive sustainable growth in emerging markets. (2020). Sigma Re Institute. Retrieved from https://www.swissre.com/dam/jcr:95d52b90-8c7c-413e-9c48-7395f260e65f/sigma-3-2020-en.pdf*

31 *Eastern Europe must choose infrastructure investment to fight the crisis. (2020). We Build Value Digital Magazine. Retrieved from https://www.webuildvalue.com/en/infrastructure/infastructure-easten-europe-covid.html*

32 *Four shortlisted for US$300 million motorway PPP in the Czech Republic. (2018). InfraPPP. Retrieved from https://www.infrapppworld.com/news/megaproject-1364-four-shortlisted-for-us-300-million-motorway-ppp-in-the-czech-republic*

INTERNATIONAL MARKETS IN FOCUS

Central Asia

There are currently some 70 active PPP projects in Central Asia valued at $10 billion.

PPP infrastructure projects gain ground across Central Asia

As Central Asia works to recover from the pandemic's economic impacts, countries in the region are continuing a trend toward greater use of PPPs, established well before the spread of COVID-19. Investment in PPPs projects grew to $2.6 billion in 2019.[33]

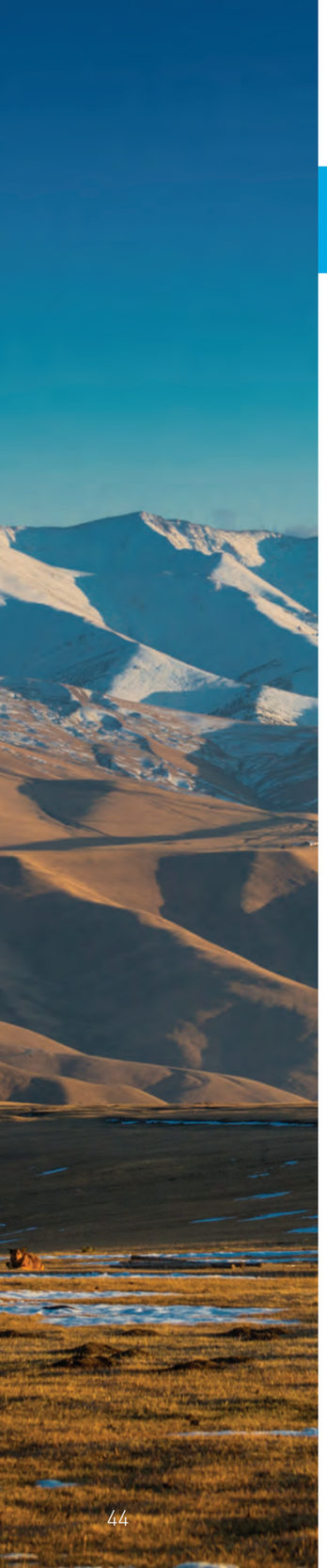
Over the past decade multiple Central Asian nations, including Kazakhstan, Kyrgyz Republic and Tajikistan, have passed legislation that guides PPP planning and implementation processes. Others, such as Georgia and Pakistan, are also creating PPP friendly environments and regulatory frameworks.[34] Transport, social and energy infrastructure have emerged as the leading sectors for PPP procurement.

There are currently some 70 active PPP projects in Central Asia valued at $10 billion. Transportation projects dominate in both the number of projects (30) and collective value, $7.2 billion. Projects in social and health (26 projects at $500 million), energy (8 projects at $1.6 billion), water and waste (4 at $100 million) and telecom (2 at $100 million) round out the list.

Pakistan has 5 projects valued at $3.5 billion; the top two are in transport and energy transmission. Kazakhstan has 6 PPP projects valued at $1.5 billion that are part of its ambitious infrastructure goals. They include highway, railway and airport expansion as well as an upgrade program for the Big Almaty Ring Road project, a six-lane ring road that includes 21 bridges and 19 viaducts. The Ring Road was the first PPP project in the country, and BTY is providing Environmental and Safety Advisory services on the project.

33 *Central Asia PPP Market 2020. (2020). InfraPPP. Retrieved from https://www.infrapppworld.com/country-reports/central-asia-ppp-market-2020*

34 *Davidze, N. (2020). Public-Private Partnerships in Georgia and Impact Assessment of Infrastructure. ADBI Institute, Working Paper Series. Retrieved from https://www.adb.org/sites/default/files/publication/623256/adbi-wp1162.pdf*



INTERNATIONAL MARKETS IN FOCUS

Central Asia

continued

Until the pandemic, there had been a steady increase in investment by International Financing Institutions in both transportation and energy projects in resource-rich Commonwealth of Independent States (CIS) across Central Asia. The Republic of Georgia, in particular, is gearing up for private sector investment.

The Georgian government has been exploring infrastructure projects that will transform the country into a logistical hub for the Chinese-led New Silk Road program. The Chinese Government expects traffic of $24 trillion worth of commodities by 2030 and has committed more than $1 billion to develop the necessary infrastructure. The One Belt and Road Forum that took place in Tbilisi in 2017 discussed the expansion plan for such a logistics network. Kazakhstan's first PPP, the BAKAD Big Almaty Ring Road is also part of the One Belt network. BTY provided Environmental and Social Project Management services on the deal, which reached financial close in 2020. The landmark project won the Project Finance Institute's "Deal of the Year 2020" in the transport category.

In 2016, the Georgian government launched a plan that called for investment of $3.5 billion dollars to develop transit connections through Georgia. The plan also calls for building two logistics centres near its two largest cities, Tbilisi and Kutaisi, upgrading 550 km of motorways, and establishing a railway network that will connect the center of the country with the Black Sea coast, where the government will develop the new deep-sea port of Anaklia.[35]

Along with the success of BAKAD Ring Road, Kazakhstan also launched the transaction of the first healthcare PPP project in Central Asia in early December 2020. The Almaty Hospital Concession comprises construction and operation of a multidisciplinary 300-bed hospital with an 18-year handover term. BTY provided Technical, Environmental and Social Deal Advisory services on the concession development.

OPPORTUNITY TO DEVELOP CLIMATE-SMART INFRASTRUCTURE

In both Eastern Europe and Central Asia, the potential upgrades to infrastructure represent an unprecedented opportunity to build smart infrastructure. Since an estimated two-thirds of global greenhouse gas (GHG) emissions are attributable to infrastructure, developing climate-smart infrastructure projects could also help countries transition toward a low-carbon, more environmentally sustainable economic model.[36]

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[35] *Ibid*
[36] *Infrastructure in Central, Eastern, and Southeastern Europe : Benchmarking, Macroeconomic Impact, and Policy Issues. (2020). International Monetary Fund, Departmental Papers. Retrieved from https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2020/09/25/Infrastructure-in-Central-Eastern-and-Southeastern-Europe-Benchmarking-Macroeconomic-Impact-49580*

Major Trends Shaping Construction

MAJOR TRENDS SHAPING CONSTRUCTION

Growing Need for Strategic Partnerships

Strategic partnerships across government, construction, and technology needed for more sustainable and equitable future

The scale and complexity of the challenges involved in developing infrastructure that will best serve us in the future calls for new ways of working together. Infrastructure for a more sustainable and equitable future has to meet a much higher bar than in the past. It has to:

- *Factor in the demands of combatting climate change.*
- *Be resilient in the face of natural disasters, which are increasing in severity and frequency.*
- *Be developed quickly – and more cost effectively – to shrink the still widening infrastructure financing gap, now estimated at $15 trillion globally.*
- *Accommodate increasing urbanization.*
- *Address the global divide and increased social inequality.*

Creating a collective response to these challenges will require both governments and private firms to develop business models rooted in longer-term partnerships instead of doing business transaction by transaction. Without such cooperation, there is little chance that the industry could achieve the fundamental change required to respond to any of the challenges noted, or to accelerate the introduction of technology that will play a major role in meeting them.[37]

PANDEMIC ACCELERATES NEED FOR COLLABORATIVE EFFORT

COVID-19 further accentuated the need for more sustainable, resilient infrastructure that can effectively operate during acute and widespread disruption. It also brought into sharp focus the need for inclusive development that supports social equity while safeguarding the environment. The pandemic has also accelerated the need for collaborative partnerships to leverage technology and data to support infrastructure delivery and operations.

[37] *Infrastructure Futures: The impact of megatrends on the infrastructure industry. (2020). Global Infrastructure Hub. Retrieved from https://cdn.gihub.org/umbraco/media/2980/infrastucture-futures-report_final-v4a_updated-exhibit-5.pdf*

IMPROVING PRODUCTIVITY WITH TECHNOLOGY AND DATA

One long-standing drag on delivering the types of infrastructure needed for a more sustainable, more equitable future is the construction industry's low productivity. Overall labour productivity worldwide has risen by an average of 2.8% a year over the past two decades, and by 3.6% in manufacturing. The rate of improvement in construction – the world's largest industry accounting for 13% of global GDP – has lagged behind at just 1%. That lag is rooted in historically low and sporadic adoption of technology and data collection and analysis that can reduce risk and cost while improving productivity and predictability.[38] Adopting new technologies and leveraging data and Artificial Intelligence will play a key role both in closing the financing gap and in advancing bankable infrastructure projects.[39] They will reshape asset management, commercial revenue strategies, demand forecasting, public procurement and network planning.[40]

RECORD INVESTMENT IN CONSTRUCTION TECHNOLOGY

That shift is well under way. Funding for U.S.-based construction technology start-ups surged by 324% to nearly $3.1 billion in 2018 compared with $731 million in 2017. Most of this went to modular housing companies or software for optimizing current processes for project management and communication.[41] Modular construction in European and U.S. markets has the potential to deliver annual savings of up to $22 billion.[42] R&D spending among the top 2,500 construction companies globally has risen by approximately 77 per cent since 2013.[43]

IMPROVING DECISION MAKING AND OUTCOMES, AND REDUCING RISK

A steady stream of technologies and applications are supporting the shift. These include 3-D printing, virtual learning, design simulation, machine learning, and deep learning solutions are all being adapted for construction and applied across different stages of the life cycle. Aerial drones and ground-based robots can survey a worksite and gather multiple types of data, depending on the sensors used. Augmented reality and virtual reality can enable operators to get a realistic and real-time feel for what the drones are seeing. Along with AI, they can help predict what tasks are required.[44] Internet of Things (IoT) can enable construction machinery, equipment, materials, structures, and even formwork to "talk" to a central data platform to capture critical performance parameters. Collectively, these technologies and data analytics promise to improve capital project outcomes and reduce risk. Leveraging the mass of data already collected, analytics can yield insights that can accelerate and improve private sector decision making in infrastructure development.

GOVERNMENTS CRITICAL TO ENABLING PARTNERSHIPS

Governments can support the shift to collaborative effort by reviewing and rethinking existing legislation to facilitate the adoption of technology – and establishing ESG policies and requirements that ensure more sustainable – and more socially equitable – infrastructure development. They will also need to consider how to design flexibility into regulations and contractual models, emphasizing outcomes, not just inputs, in the infrastructure sector. As major buyers of infrastructure, they can mandate the use of technologies during contracting to drive adoption by infrastructure developers – and support a wider shift across the industry.[45]

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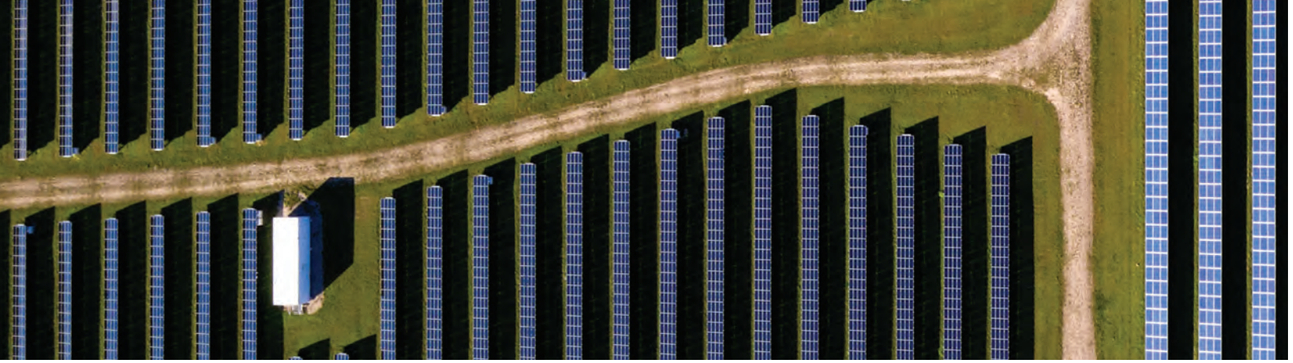


MAJOR TRENDS SHAPING CONSTRUCTION

Betting big on Renewables, now more than ever

Investment in renewables forecast to top that of upstream oil and gas for the first time ever in 2021, while solar and wind expected to eclipse coal as the largest producer of global electricity by 2025

Spending for renewable power projects is forecast to become the largest sector of energy investment in 2021, surpassing that of upstream oil and gas for the first time in history.[46] This increase in renewable energy investment – and continuing decline in project costs – are projected to result in electricity generated from solar and wind power eclipsing that of coal within the next five years.[47]

DECADE-LONG DROP IN PROJECT COST

The sharp drop in capital costs of projects for power from renewable sources between 2010 and 2019 is expected to continue as the world's largest countries make bigger commitments to move to reduce carbon emissions. In that decade, the global weighted-average levelized cost of electricity (LCOE) of utility-scale solar photovoltaics (PV) fell 82%; concentrated solar power (CSP) by 47%; onshore wind by 39%; and offshore wind by more than 29%.[48] At the same time the cost of capital for fossil fuel projects is rising due to higher risk profiles of 10% to 20% compared to those of renewables, which range from 3% to 5% in both the E.U. and the United States.[49]

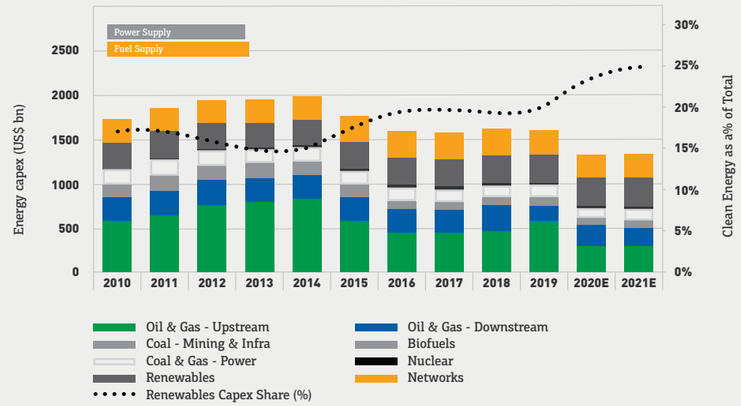
UNITED STATES AND EUROPEAN UNION COMMITMENTS TO RENEWABLES SUPPORT SHIFT

The incoming U.S. administration's ambitious plan for decarbonizing the economy includes a carbon-free power sector by 2035 and net-zero carbon emissions for the country by 2050. Reaching these goals will require enormous investment in multiple green energy technologies, from solar, wind and storage to hydrogen fuel cells and small module nuclear reactors. Such massive spending could see the clean energy sector attract $16 trillion worth of investment through 2030, eclipsing that of fossil fuels.[50]

In September 2020, the E.U. increased its 2030 emission reduction target to at least 55% up from 40%.[51] It is estimated that meeting the target could cost €1 trillion, with some €500 billion projected to come from the E.U. budget and Green Deal, more than €100 billion from national governments, almost $300 billion from private companies receiving loan guarantees from the European Investment Bank (EIB) to invest in green technologies. The EIB has committed to phase out loans to fossil fuel projects.[52]

ENERGY SUPPLY CAPEX (US$BN), AND CLEAN ENERGY AS A % OF TOTAL (%)

Source: EA WEI, Goldman Sachs Global Investment Research



PRIVATE SECTOR EFFORTS TO DRIVE RENEWABLES INVESTMENT

More than 260 of the world's most influential companies have joined RE100, a global initiative for shifting to 100% renewable energy systems. An investor initiative, Climate Action 100+, seeks to ensure that the world's largest corporate greenhouse gas emitters take the critical actions needed to combat climate change. More than 500 investors with more than US $47 trillion in assets collectively under management are engaging companies to curb emissions and strengthen climate-related financial disclosures.[53]

RENEWABLE INVESTMENT BEYOND PRODUCTION

Investment funds that target renewables increasingly include more than just production, including energy storage, energy enabling and/or energy efficiency. They are also looking beyond renewables just producing electricity to the electrification of transport, heating, industrials and hydrogen – all sectors earmarked for advancement and targets for funds in the next decade.[54]

TECHNOLOGY INNOVATION IN RENEWABLES

Innovation in proven renewables technologies is bringing down the cost of construction and improving efficiency. In offshore wind, where substructure and installation expenses drive up capital costs, researchers are modeling anchors on those found in nature to lower costs through efficiency.

A team at Purdue University is developing 3D print anchors with concrete – instead of the usual steel – in multiple thin stacked layers, similar to those found in shrimp cells. The biomimicry inspired structure and material will make the anchors more resilient to cracking as they move with the tides. Another biomimicry approach in solar is placing floating solar panels on reservoirs behind dams and in slow moving rivers, lakes, coastal seawater using technology based on the structure of water lilies. A solution developed by Ocean Sun of Norway uses units made of a polymer membrane that are thin, lightweight, and buoyant enough to stay atop water surfaces rather than the solar PV panels made of polyethylene plastic typically used in conventional solar systems. In the hydrogen sector, government and private sector financing are also enabling innovation. GHD, a leading global professional services company, is developing a household hydrogen energy storage system that collects and purifies rainwater and uses energy from household solar panels to produce a 60kWh battery, enabling self-sustaining household energy that is independent from the grid. In other cases, firms are incorporating hydrogen into construction infrastructure, long-haul trucks, vans and cars as well as in the latest Microsoft data centres. [55]

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MAJOR TRENDS SHAPING CONSTRUCTION

The Rise of District Energy Systems

PPPs becoming popular procurement method for systems that can reduce primary energy consumption for heating and cooling by up to 50%

Heating, cooling and hot water represent 60% of energy demand in buildings. Most of it is now supplied by fossil fuels. Most buildings are in cities, which have more than half the world's population, consume more than two-thirds of the world's energy and account for more than 70% of CO_2 emissions.[56]

District energy systems are becoming an increasingly popular solution for cities as well as large institutions that are trying to cut energy consumption and costs while reducing GHG emissions and reaching carbon neutrality targets – or shifting to using 100% on renewable energy. The PPP procurement model is emerging as a popular route for developing or upgrading district energy systems at U.S. universities.

UP TO 50% LESS PRIMARY ENERGY CONSUMPTION IN HEATING AND COOLING

A district energy system is a network of pipes that heat and cool buildings across a neighbourhood or an entire city. Modern district energy systems connect renewables, waste heat, thermal storage, power grids, thermal grids and heat pumps – and can deliver up to 50% less primary energy consumption for heating and cooling.

District Energy works best in high load-density facilities, in which short distances of distribution piping can interconnect several buildings of reasonable size. These include airports, college and university campuses, large hospital complexes, large office and industrial complexes/campuses, casinos, sports stadiums and arenas and downtown central business districts of larger urban centres.

The PPP model is being used to develop some of North America's most ambitious district energy projects in busy downtown cores and on college campuses. Utility PPPs "will proliferate" during the next few years as colleges work swiftly to replace utility infrastructure, according to a report from Moody's Investors Service, with risk transfer being a key reason that colleges are opting for energy PPPs.

[56] *District energy: a secret weapon for climate action and human health. (2019). United Nations Environment Programme. Retrieved from https://www.unep.org/news-and-stories/story/district-energy-secret-weapon-climate-action-and-human-health*

URBAN CORE PROJECTS IN CANADA

One of the largest district energy systems upgrade projects using PPP procurement is the CDN$1.1-billion overhaul of five heating and cooling plants in Canada's National Capital Region. The plants heat 80 buildings in central Ottawa with steam and cools 67 of them with chilled water through more than 14 kilometres of underground pipes. The 30-year contract to design, retrofit, maintain and operate the plants was awarded to the Innovate Energy Consortium, to which BTY is providing Lenders' Technical Advisory services for the project.[57]

Another trail-blazing Canadian project is Enwave Energy Corporation's CDN$100 million expansion of its Deep Lake Water Cooling (DLWC) system. A sustainable energy project, DLWC draws cold water from Lake Ontario to cool hospitals, educational campuses, government buildings, commercial and residential buildings in Toronto's downtown core. BTY is providing Project Management services on that project.

BTY is serving as the LTA for EAS Energy Partners on what will become North America's largest sewer heat recovery system. EAS, a consortium led by Enwave Energy Corporation, is working in partnership with the National Western Center to use Enwave's innovative technology and a district energy approach to heat and cool buildings – with recycled thermal energy from nearby sewer lines – in the Center's 250-acre campus in Denver, CO.

U.S. UNIVERSITIES LEAD A NEW WAVE OF DISTRICT ENERGY PROJECTS

Two university PPP district energy projects – Ohio State and University of Iowa (UI) – have achieved financial close in the past three years – and there are five more in the pipeline: Iowa State, Dartmouth College, California State University at Fresno, and the universities of Washington, Maryland and Idaho. BTY is providing LTA services for four of the seven: UI, Fresno State, Dartmouth, and the University of Idaho.

BTY is serving as the LTA for EAS Energy Partners on what will become North America's largest sewer heat recovery system.

UI's $1.3 billion PPP utility system project will see the university pay the concessionaire (Engie) a fee of $35 million from years 1-5, increasing the fee by 1.5% each year after that in a 50-year contract. Engie will be re-developing, operating, and maintaining the asset once complete.

Fresno State's US$130-million proposed PPP project is a design, build, finance and maintain project for its Central Utility Plant and ancillary infrastructure, as well as the implementation of various energy efficiency upgrades across the campus. Dartmouth's PPP project is to design, finance, build, operate, and maintain its Green Energy Project, a $200 million initiative to build a biomass heating facility and hot water transmission system that would replace the existing central heating system and mark a major step toward achieving the institution's sustainability goals.[58]

UNITED NATIONS DISTRICT ENERGY INITIATIVE

The UN has launched a global program to support the development of district energy in cities. To date more than 35 cities in 14 countries in the Asia Pacific, Europe, Africa and South America have joined in the initiative, part of the United Nations Environment Programme. A Private Sector Unit was established in UNEP in 2018 to coordinate efforts to develop district energy involving the private sector in projects.[59]

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MAJOR TRENDS SHAPING CONSTRUCTION

Welcome to the 15-minute City

Pandemic response provides lessons for creating distributed accessibility in cities

Healthcare delivery during the pandemic starkly revealed the need for improving distributed accessibility in cities – not only for healthcare, but also for work, recreation, and shopping. The pandemic is now accelerating the wider trend toward what is being called the 15-minute city, where urban residents can meet their daily needs, such as a trip to the grocery store or school or to get basic medical services, within 15 minutes of their home either by walking or cycling.

THE DOWNSIDE OF CENTRALIZATION

Hospital hubs offering centralized service delivery quickly became overwhelmed during the pandemic's first phase. The crisis led to rethinking healthcare delivery to move ancillary functions such as laboratories, testing and imaging away from the main hospital operations and deliver them through specialized facilities in convenient locations such as pharmacies, imaging centres and labs and clinics. This shift complements the tremendous expansion of telemedicine, which provides online consultation remotely. Distributing service delivery makes healthcare more accessible – and makes a visit to a hospital the last resort – not the first step.

WELCOME TO THE 15-MINUTE CITY

The pandemic has also accelerated an existing trend for working from home, and shopping and playing locally. Office towers in downtown cores have significantly decreased usage. To stay safe, avoiding crowds and public transport has resulted in people shopping and spending leisure time close to home, which may have benefits to unlock for the local economy. This may prove to be a temporary phenomenon, driven by short term COVID-19-related restrictions. However, there are reasons to think it might signal something more significant.[60]

[60] *Love thy neighbourhood. (2020). Avison Young, Trends for 2021. Retrieved from https://avison-young.foleon.com/2021-forecast/real-estate-trends/infrastructure/*

RESEARCH POINTING TO A PERMANENT SHIFT

Surveys consistently indicate that after the pandemic ends, nearly 40% of people would prefer to work at home 40% of the time. If these findings hold true, it could result in a widespread redistribution of work that would bring with it more local activity – more jobs, more services, more stores in the places where people live. Many large employers – especially tech companies – have already announced that a significant portion of their workforces will continue working remotely.[61]

The emergence of the 15-minute model complements the ongoing approach of transit-oriented development (TOD). TOD promotes denser, mixed-used developments around public transport services, enabling a large-scale shift away from reliance on private vehicles.

European cities such as Paris, London, Milan and Barcelona are moving to incorporate many of the principles of the 15-minute city into their planning. The basics include:

- Residents of every neighbourhood have easy access to goods and services, particularly groceries, fresh food and healthcare.
- Every neighbourhood has a variety of housing types, of different sizes and levels of affordability, to accommodate many types of households and enable more people to live closer to where they work.
- Residents of every neighbourhood are able to breathe clean air, free of harmful air pollutants, and there are green spaces for everyone to enjoy.
- More people can work close to home or remotely, thanks to the presence of smaller-scale offices, retail and hospitality, and co-working spaces.[62]

Surveys consistently indicate that after the pandemic ends, nearly 40% of people would prefer to work at home 40% of the time.

NORTH AMERICA PLANS TO EXPAND DISTRIBUTED ACCESSIBILITY

North American metropolises which are newer, less compact, and less connected to transit, have farther to go to become 15-minute cities. In addition to TOD, another avenue to the 15-minute city is through gentle intensification of traditional single-family neighborhoods while encouraging more diverse land uses.

Ottawa has adopted the idea of 15-minute neighborhoods into its official plan, while Toronto and Vancouver are exploring ways to increase density in traditional single-family areas to create more housing options. In the U.S., civic leaders in Detroit and Portland are working toward similar visions.[63]

More cities are now embracing this model to support a deeper, stronger recovery from COVID-19 and to help foster the more local, healthy and sustainable way of life that many of their citizens are calling for. Mayors from around the world are touting the model in a report from the C40 cities Climate Leadership Group as central to their post-pandemic recovery road maps.[64]

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