

University of Wales Trinity Saint David DBA Programme

Module: Visions for the Future – Theoretical Perspectives on Management

Module Code: HKMB7006

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Submission deadline: 15 August 2022

Word count: 7,222 (excl. references)

Essay

Is MTRC of Hong Kong on the right track to the future – How has it been doing so far and what lessons can be learnt from the leading business counterparts in other parts of the world?

Abstract

The purpose of this paper is two-fold: firstly to revisit the business and financial performance of MTR to see if it remains operational sustainable and financially viable; secondly to benchmark on other major railway counterparts for formulation of appropriate strategies for meeting the future challenges.

1. Introduction

1.1 Significance of the issues:

Transportation is essential for moving people and goods from one place to another, promoting business and trades to bring benefits to business communities and households. Among various means, railways have been essential components in the global market for decades. This paper focuses on the key issues relating to the adoption of the business, technology and related process for providing railway services to passengers, instead of freight carriers.

1.2 Everyday about five million commuters use the Mass Transit Railways (“MTR”) system in Hong Kong. With a total route length of 240 kilometres, the railway system is well regarded by many local as well as foreign people. Sigalos (2015) opined that “MTRC was an impressive subway system, with more than 5 million daily commuters, 99.9% on-time arrival rate, incredibly cheap fares (USD0.5 to USD3), which was able to cover roughly 175% of the system’s operating costs”.

1.3 The purpose of this paper is to have an update evaluation of MTR’s corporate performance through a comparative analysis of leading railways companies in the world and to understand their corporate business models, international best practices

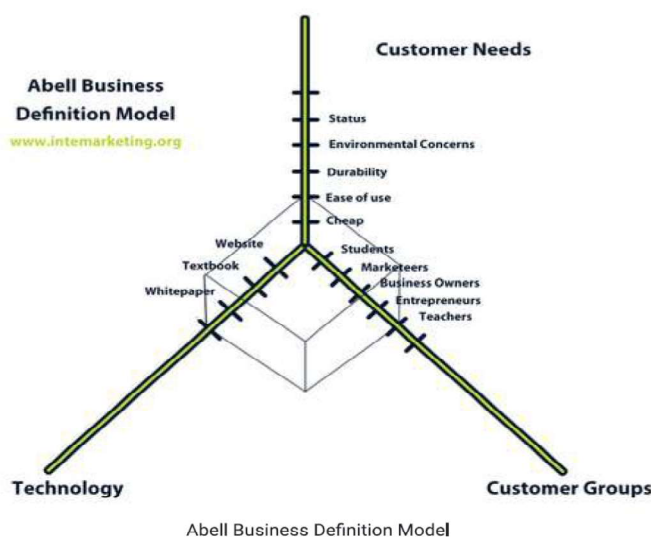
and standards contributing to their success in achieving organizational as well as social objectives.

1.4 To what extent do Sigalos's comment in 2015 and Leung's comment in 2016 still hold, given the COVID-19 pandemic and geopolitical events such as the tensions in East Europe and Asia in recent years?

2. Research Method and Approach

2.1 To facilitate a cross-sectional comparative analysis across border, firstly a leading and representative railways group is selected from Asia, Europe and Americas respectively, for conducting a detailed analysis of the selected companies on the following key performance indicators:

- (a) Financial performance and viability of the selected companies -- By examining the financial statements, the capability for those selected companies to cover their recurring operating cost by the recurrent business revenue can be revealed.
- (b) Other key performance indicators -- By adopting the Abell Three Dimensional Business Definition Model (Abell, 1980), it provides a clear market delineation of the current activities of an organisation, including who the target customer group is, what customer needs are and what technology (tools and procedures) can be applied to produce the necessary product or to provide the services for meeting the customer needs. Moreover, it can be used to tune a business's future strategic policy to changes in the market.



Hence, the customer needs are identified and the key performance indicators for measuring

the success can be determined, as follows:

Customer group(s)	Customer needs	Key performance indicators
Commuters	Safe	Incident reports/ deaths & injuries reports
	Reliable	Passenger service on-time performance
	Affordable	Level of fares & charges
	Accessible/easy to use	Barrier-free accessibility; customer information & communication
	Comfortable	Location temperature, air quality
	Efficient	Speedy delivery of service
	Value-added services	Quality of additional services

2.2 Information, facts and data collection for testing the assumptions/hypotheses:
Mainly from publicly available data and information from the companies selected and macroeconomic data from the government / industry sources:-

- (a) Corporate annual reports & financial statements
- (b) Environmental, Social and Governance (“ESG”) Reports/Sustainability Reports
- (c) News articles, reports and journals

Initial Assumptions or hypotheses: A successful railway company should understand its target customer group well and provide its services/products that meet the customers’ need and expectations.

2.3 A longitudinal analysis of the key strategies of the selected companies adopted for meeting the future challenges – A review of current business model and strategy of the selected companies and a projection of the future strategy were conducted so as to cope with the future challenges

2.4 For further explanation of the need and strategy for further growth and development of MTR, the Ansoff Product-Market Growth Matrix will be used for determining its appropriate growth strategies.

3. Background Review

From the league tables of top railway companies in terms of market capitalisation and revenue published by the sales and marketing platform BizVibe, the following companies with mostly passenger business in each of the continents are shortlisted for further study:

Deutsche Bahn AG (“DB”), East Japan Railways Company (“JR East”), MTR Corporation of Hong Kong (“MTR”). As most of the North American companies listed on the above league tables are mostly of freight business, the National Railroad Passenger Corporation of the USA (“Amtrak”) is being selected. With Britain’s status of being the first country in the world having the railway, the Network Rail Limited (“Network Rail”) is also chosen. Let us take a look into each company one by one.

Top 10 Largest Railroad Companies in the World by Market Cap 2022

Rank	Company	Market Cap (USD billions)	Revenue (USD billions)	Headquarters
1	Union Pacific Railroad	123.56	22.83	Nebraska, USA
2	Canadian National Railway	94.85	11.14	Quebec, Canada
3	Central Japan Railway Company	38.7	16.9	Nagoya, Japan
4	East Japan Railway Company	36.2	27.1	Tokyo, Japan
5	MTR	31.14	7.14	New Kowloon, Hong Kong
6	Norfolk Southern Railway	27.1	11.24	Georgia, USA
7	CSX Transportation	26.3	11.9	Florida, USA
8	Canadian Pacific Railway	22.8	7.31	Calgary, Canada
9	Deutsche Bahn	18.85	50.31	Berlin, Germany
10	Indian Railways	NA	28.8	New Delhi, India

Source: BizVibe blog (2022)

Rank	Company	Revenue (USD billions)
1	Deutsche Bahn	50.31
2	Indian Railways	28.8
3	East Japan Railway Company	27.1
4	Union Pacific Railroad	22.83
5	Central Japan Railway Company	16.9
6	CSX Transportation	11.9
7	Norfolk Southern Railway	11.24
8	Canadian National Railway	11.14
9	Canadian Pacific Railway	7.31
10	MTR	7.14

Source: BizVibe blog (2022)

4. Corporate Profile and Key Business Lines of Selected Railways Companies

4.1 Amtrak

Blending of the shorthand of the words “America” and “track” into its name, Amtrak provides medium and long-distance inter-city rail service in the contiguous United States and to nine cities in Canada. Founded in 1971 as a quasi-public for-profit corporation, Amtrak receives a combination of state and federal subsidies. The US federal government through the Secretary of Transportation owns all the company’s issued and outstanding preferred stock.

Headquartered in Washington, D.C., Amtrak serves more than 500 destinations in 46 states and three Canadian provinces, operating more than 300 trains daily over 34,000 km of track. Some train session allow trains to run as fast as 150 mph (240 km/h).

In fiscal year 2021, Amtrak served 12.2 mn passengers and had USD2.08 bn in revenue, with more than 17,500 employees as of fiscal year 2020. Nearly 87,000 passengers ride more than 300 Amtrak trains daily. Nearly two-thirds of passengers come from the 10 largest metropolitan areas; 83 of passenger travel on routes shorter than 400 miles (645 km).

4.2 DB

Headquartered in Berlin, DB is the national railway company of Germany in the form of a private joint-stock company. Based on 2020 revenues, DB is No.1 in European regional rail passenger transport and No. 2 in European long-distance rail passenger transport. (Deutsche Bahn Universe 2021, page 3, Market Positions). Prior to the COVID-19 pandemic, DB Group in 2019 carried around 4.8 billion passengers and 232 million tons of goods in rail transport. DB generates about half of its total revenue from operating rail transport, the rest comprising further transport and logistics businesses and various service providers. The company generates part of its revenue through public transport contracts, and support services for infrastructure maintenance and expansion.

4.3 JR East

Headquartered in Shibuya, Tokyo, JR East is the largest of the seven Japan Railway Group companies, and is listed on the Tokyo Stock Exchange. It is a constituent of the TOPIX Large 70 Index and the Nikkei 225 Index. Following the privatization of the Japanese National Railways, JR East was formed in April 1987. It was initially wholly-owned by the government and was completely sold to the public in 2002.

4.4 Network Rail

Network Rail owns, operates, develops the railway infrastructure in Great Britain, covering 20,000 miles of track, 30,000 bridges, tunnels and viaducts and thousands of signals, level crossings and stations. Network Rail manages 20 of the UK's largest stations, while all the rest, over 2,500, are run by the train operating companies. Network Rail targets to achieve net zero carbon emissions by 2045 in Scotland and 2050 in England and Wales, in line with the government policy.

5. Findings and Analysis

5.1 Financial performance and viability of the railways companies selected

As revealed from the financial reports of the selected companies, the two companies in Asia, i.e. JR East and MTR, have been consistently covering its operating costs by the operating revenue (earnings before interest and tax, EBIT) from railway services and even earning profits after providing for the depreciation and amortisation and the related capital expenditures (CAPEX). [MTR Ten-Year Statistics (2012-2021) & JR East 11-Year Financial and Non-Financial Summary]

On the other hand, those railways companies from Europe and the USA, i.e. DB,

Network Rail and Amtrak, have been heavily relying on the government grants and other funding for meeting their CAPEX, depreciation expenditures, even for covering operating costs in case of economic stress such as under the COVID-19 pandemic.

Government funding to DB

The most important funding sources for capital expenditures on infrastructure for DB are investment grants from the German Federal Government, states and local authorities as follows. They are recognized as “income” on the financial statements.

- (i) Grants related to the Federal Rail Infrastructure Extension Act (Bundesschie-nenwegeausbaugesetz; BSWAG) (DB AR2021, page 237)
- (ii) Investment grants related to the Municipal Transport Financing Act (Gemeinde-verkehrsfinanzierungsgesetz; GVFG)
- (iii) Federal Government’s noise remediation program; and
- (iv) Grants related to equipping the infrastructure with the European Rail Traffic Management System (ERTMS).
- (v) Funds from the 2021 Reconstruction Fund for remedying flood-related infrastructure damage.
- (vi) Grants from the European Union related to the Connecting Europe Facility (CEF) for infrastructure capital expenditures on Trans-European Networks.

In addition, DB also receives certain infrastructure-related grants which are recognized as income. From DB’s Integrated Report 2021 (page 198), Income from Government Grants were EUR1,418 mn in 2020 and EUR3,585 mn in 2021, helping to improve the picture of Operating income (EBIT) to -EUR4,757 mn in 2020 and –EUR298 mn in 2021 respectively. There were also ‘Train-path price subsidy to tackle the Covid-19 pandemic’ of EUR2,098 mn for each of the year 2020 and 2021 (DB AR2021, p.196). In 2021, “revenues increased by EUR7,174 mn (+18.0%) to EUR47,075 mn, largely benefiting from strong revenue in the DB Schenker segment, due to the significant increases in ocean and air freight rates and volume increase”. (DB AR2021, p.197)

Relations with the Federal Government

	Federal Government	
AS OF DEC 31 / € million	2021	2020
SERVICES RECEIVED BY DB GROUP		
Purchase of goods and services	1,079	1,230
Rents and leases	0	1
Other services	1	0
Investment grants ¹⁾	8,055	7,282
Other income grants	2,777	422
	11,912	8,935
SERVICES RENDERED BY DB GROUP		
Sale of goods and services	362	318
Rents and leases	16	14
Other services	47	53
Repayment of loans	157	163
Repayment of investment grants	22	18
	604	566
OTHER DISCLOSURES		
Unsecured receivables ²⁾	310	305
Unsecured liabilities ²⁾	589	816
Current total of guarantees received ²⁾	2,024	1,179

¹⁾ Including € 52 million EU subsidies paid out via the Federal Government (previous year: € 136 million).
²⁾ As of the balance sheet date.

Source: DB 2021 Integrated Report, page 237

(3) OTHER OPERATING INCOME

€ million	2021	2020
SERVICES FOR THIRD PARTIES AND SALE OF MATERIALS		
Income from maintenance and repair	1	3
Sale of materials and energy	158	98
Other services for third parties	520	527
	679	628
Leasing and rental income	169	176
Income from compensations for damages and refund of expenses	211	174
INCOME FROM GOVERNMENT GRANTS		
Federal Government compensation payments	99	94
Other investment grants	0	0
Income from reversal of deferred items	72	143
Other Government grants	3,412	1,181
	3,583	1,418
Income from the disposal of property, plant and equipment and intangible assets	147	121
Income from the disposal of non-current financial instruments	7	4
Income from the reversal of provisions	252	130
OTHER INCOME		
Income from third-party fees	19	21
Income from remediation of ecological burdens	48	51
Utilization of provisions for impending losses	197	152
Miscellaneous other income	589	564
	853	788
Total	5,901	3,439
± Special items	2,179	- 48
± Effects from changes in scope of consolidation	- 1	- 5
± Exchange rate effects	- 9	-
Total - comparable	3,712	3,386

Source: DB 2021 Integrated Report, page 198

5.2 Government funding to Amtrak

The passenger railways in the USA have been losing money since the Great Depression. Total federal grant appropriations per year (billions) from USD1.488bn in FY2009 to USD6.731 bn in FY 2022 (Amtrak General & Legislative Annual Report & FY 2023 Grant Request, page 8). Some critics have been referring Amtrak to as a “mobile money burning machine” while other fiscal conservatives have argued that subsidies should be ended, national rail service terminated, and the NEC turned over to private interests. O’Toole (2021) of Cato Institute recommends that “user-fee-funded systems work far better and better maintained than projects funded by subsidies or deficit spending, thinking that “subsidies take away the incentive for transportation managers to innovate or improve productivity”. O’Toole (2021) observes that the efforts to save energy, reduce pollution and improve highway safety by building more energy efficient, cleaner, low emissions and safer automobiles and safer roads indeed result in the failure in encouraging people to drive less”.

O’Toole points out that JR Central, JR East, JR West of Japan, several private railroads in Switzerland, and Hong Kong MTR are all profitable.

Comparative Statement of New Budget Authority

	FY 20 Enacted	FY 21 Enacted	FY 22 Enacted	FY 23 Amtrak Request
Amtrak Grants	\$2,000,000,000	\$2,000,000,000	\$2,331,371,000	\$3,300,000,000
<i>Northeast Corridor</i>	<i>\$700,000,000</i>	<i>\$700,000,000</i>	<i>\$874,501,000</i>	<i>\$1,100,000,000</i>
<i>National Network</i>	<i>\$1,300,000,000</i>	<i>\$1,300,000,000</i>	<i>\$1,456,870,000</i>	<i>\$2,200,000,000</i>
COVID-19 Emergency Funding*	\$1,018,000,000	\$2,700,000,000	—	—
<i>Northeast Corridor</i>	<i>\$492,000,000</i>	<i>\$1,625,000,000</i>	—	—
<i>National Network</i>	<i>\$526,000,000</i>	<i>\$1,075,000,000</i>	—	—
Subtotal, Annual Appropriations	\$3,018,000,000	\$4,700,000,000		\$3,300,000,000
Additional Infrastructure Investment via IIJA	—	—	\$4,400,000,000	\$4,400,000,000[†]
<i>Northeast Corridor</i>	—	—	<i>\$1,200,000,000</i>	<i>\$1,200,000,000[†]</i>
<i>National Network</i>	—	—	<i>\$3,200,000,000</i>	<i>\$3,200,000,000[†]</i>
TOTAL	\$3,018,000,000	\$4,700,000,000	\$6,731,371,000	\$7,700,000,000

* If Congress chooses to enact an additional COVID-19 relief bill, Amtrak will work with Congress to assess how that bill should address the company’s and its partners’ needs. † “Requested” IIJA funds have already been appropriated.

Source: Amtrak General & Legislative Annual Report & FY 2023 Grant Request

Although Amtrak made some financial improvements in the past decade or two, it has not achieved self-sufficiency from its business operations. Amtrak’s farebox recovery (percentage of operating costs covered by revenues generated by passenger fares) has shown signs of improvement, with 99% in FY2019, the highest reported for any U.S. passenger railroad. However, the COVID-19 pandemic since 2020 hit the business operations substantially.

Metric	FY 19 Actual	FY 20 Actual	FY 21 Actual	FY 22 Plan	FY 23 Projected
Ridership (<i>millions</i>)	32.5	16.8	12.2	23.2	28.8
Gross Ticket Revenue (<i>millions</i>)	\$2,354	\$1,246	\$883	\$1,628	\$1,983
Total Operating Revenue (<i>millions</i>)	\$3,323	\$2,265	\$1,917	\$2,675	\$3,113
Adjusted Operating Earnings (<i>millions</i>)	(\$29)	(\$789)	(\$1,081)	(\$1,030)	(\$1,099)
Cost Recovery Ratio	99%	74%	64%	72%	74%

Source: Amtrak General & Legislative Annual Report & FY 2023 Grant Request

Amtrak’s Company Profile FY2021 (page 3) shows that “In FY 2021, Amtrak earned approximately USD2.1 billion in GAAP revenue and incurred approximately USD5.2 billion in capital and operating expenses. No country in the world operates a passenger rail system without some form of public support for capital costs and/or operating expenses.” Separately, Amtrak also receives funding from 17 states through 20 agencies for financial support of 28 short-distance routes (less than 750 miles), for 5.5 million trips in FY2021 (Amtrak FY2021 Company Profile, page 6).

As remarked in the Management Discussion and Analysis of Financial Condition and Results of Operations and Consolidated Financial Statements for Amtrak in Fiscal Year 2021 (Under Risk Factors, page 2), “We have a history of recurring operating losses and are dependent on grants from the Federal Government to operate the national passenger rail system and maintain the underlying infrastructure..... If we do not receive sufficient Federal Government funding, our ability to operate in our current form may be adversely affected.”

- COVID emergency funding: USD3.7 bn (FY 2021)
- Infrastructure Investment and Jobs Act (Nov 2021) related funding:
 - (a) USD 22 bn over next 5 years for CAPEX & USD 44 bn advance appropriations for rail programs over next 5 years.
 - (b) USD19.2 bn Reauthorization of rail funding for next 5 years (USD3.8 bn annually on average) and FRA competitive grants of USD 15.3 bn (USD3.1 bn annually)

In FY2020 and FY2021, Amtrak suffered loss from operations of USD1.72 bn and USD1.98 bn respectively (page 31 of 78), with accumulated deficit of USD40.14 bn as of 30 September 2021 in the Consolidated Statements of Changes in Capitalization (page 33 of 78)

Notes to the financial statements continued

3. Revenue

	2020 Group £m	2019 Group £m
Grant income	5,259	4,125
Franchised network access	2,507	2,143
Freight revenue	43	58
Property rental income	254	317
Other income	36	33
Revenue	8,099	6,676

The effect of the performance regimes was a net loss of £30m (2019: net loss of £439m) which led to a reduction in revenue of the respective amount.

4. Net operating costs

	2020 Group £m	2019 Group £m
Employee costs (see Note 6)	2,715	2,561
Own costs capitalised	(1,091)	(1,055)
Other external charges (including infrastructure maintenance costs)	2,613	2,435
Other operating income and recoveries	(313)	(364)
Net operating costs before depreciation and amortisation	3,924	3,577
Depreciation (see Notes 12 and 24)	2,022	1,810
Amortisation of grants	(169)	(144)
Net operating costs	5,777	5,243

6. Key factor(s) for a railway company to be consistently profitable and efficient

One important reason the MTR System has been able to perform so well is that the government of Hong Kong has enabled MTR to make money from property development and management that typically follows the construction of rail lines. This business model is called “Rail plus Property” (“R+P”). For new rail lines, the government provides MTR with land “development rights” at stations or depots along the route. Cervallo & Marukami (2009) postulated that the granting of exclusive development rights is what fuels MTRC’s R+P programme. To generate income, MTRC capitalises on the real estate development potential of its stations. To convert these development rights to land, MTR pays the government a land premium based on the land’s market value without the railway.” (Leong, 2016)

When constructing a new rail line, MTR would often partner with private-sector developers, selected through a competitive tender, to build properties above and around the stations. MTR receives a share of the profits that developers make from these properties; in the form of a fixed lump sum, a percentage of total development profits, or a portion of commercial properties built on the site. By capturing part of the value of the land and property around railway lines, quite often by way of pre-sale arrangements, MTR generates funds for new projects as well as for operations and maintenance. Through such practice, it does not need

government grant or funding. For instance, revenues from R+P developments above stations along MTR's Tseung Kwan O line, financed the extension of that line to serve a new town with a targeted population of 380,000. (Leong, 2016)

MTR has been adopting this R+P model extensively, with buildings sitting over about half of the system's 97 stations, totalling to more than 13 million square meters of floor area. A large proportion of MTR's current investment-properties portfolio of more than 267,000 square meters came from the sharing of assets.

Similar to the case of JR East which also has real estate and hotel businesses, the R+P model has a number of advantages that have been proven over decades:-

- (a) No need for the government to shoulder construction costs/capital expenditures or to take on the risks of building a world-class railway.
- (b) The government can collect proceeds from the land premium and the share of profits from its 77 percent stake in the company (FY2021, MTR paid about US\$770 million in dividends to the government).
- (c) The real estate development and leasing businesses help cushion the cyclicity of the transport business.
- (d) It allows MTR to implement railway projects relatively quickly because it does not have to compete for public funds.
- (e) Also an important part of urban-development approach for Hong Kong (and also for Japan).
- (f) Promoting sustainable urban growth and making the city better place to live and work.
- (g) The communities built along railways also provide a stable source of commuters for using MTR's transport services!

According to MTR Business Overview 2021 (page 8): "The Rail plus Property integrated development model will continue to be used to finance future railway projects in Hong Kong and to bring ever more efficient rail services as well as quality living to Hong Kong's growing population." The latest instance is that MTR has been invited by the Government to proceed with the technical studies on the Siu Ho Wan Depot site topside development, which is expected to provide about 20,000 residential units in the medium to long term, about half of which will be Subsidised Sale Flats. This may hopefully ease the perennial housing shortage in Hong Kong.

7. Other Key Performance Indicators for Railway Companies & Discussion

In addition to the financial performance and viability, there are other performance indicators being monitoring for desired outcome. The below MTR 2022 Customer Service Performance shows a very high level of achievement at 99.9% vs. target of 99% on train service delivery, passenger journey on-time, add-value machine reliability and ticketing machine reliability and reliability of other facilities. Hence, passengers are counting on the MTR to provide fast and convenient connections to most locations in Hong Kong and beyond.

2022年顧客服務表現(1月至3月)
2022 Customer Service Performance (January - March)

目標

Target

表現優於目標 (1月至3月)

Performance better than target (January - March)

服務表現項目 Service Performance Item		目標及表現 Target and performance								
		觀塘線、荃灣線、港島線、 將軍澳線、南港島線 Kowloon Tong Line, Tsuen Wan Line, Island Line, Tseung Kwan O Line & South Island Line		東涌線及迪士尼線 Tung Chung Line & Disneyland Resort Line		機場快線 Airport Express	東鐵線 East Rail Line		屯馬線 Tuen Ma Line	輕鐵 Light Rail
	列車按照編定班次行走 (列車服務供應) Train Service Delivery	99.5%	99.8%	99.5%	99.9%	99.5%	99.9%	— ^A	99.5%	99.9%
	乘客車程準時程度 Passenger Journeys on Time	99.5%	99.9%	99%	99.9%	99%	99.9%	— ^A	—	—
	列車服務準時程度 Train Punctuality	99%	99.9%	99%	99.9%	99%	99.9%	— ^A	99%	99.9%
	列車服務可靠程度 (列車行走多少車卡公里才遇到一次五分鐘或以上的延誤) Train Reliability (Train Car-km per train failure causing delays ≥ 5 mins)	850,000公里 (km) 3,895,915公里 (km)				850,000公里 (km) 7,457,727公里 (km)			—	—
	車票可靠程度 (乘客使用智能車票多少次才遇到一次車票失誤) Ticket Reliability (Smart ticket transactions per ticket failure)	11,500次 (transactions) 34,515次 (transactions)				—				
	增值機可靠程度 (僅限於適用車站) Add Value Machine Reliability (At applicable stations)	99%	99.9%	99%	99.9%	99%	99.9%	99%	99.9%	—
	自動售票機可靠程度 Ticket Machine Reliability	99%	99.8%	99%	99.8%	99%	99.8%	99%	99.8%	99%
	出入閘機可靠程度 Ticket Gate Reliability	99%	99.9%	99%	99.9%	99%	99.9%	99%	99.9%	—
	輕鐵月台八達通收費器可靠程度 Light Rail Platform Octopus Processor Reliability	—	—	—	—	—	—	—	—	99%
	扶手電梯可靠程度 Escalator Reliability	99%	99.9%	99%	99.9%	99%	99.9%	99%	99.9%	—
	乘客升降機可靠程度 Passenger Lift Reliability	99.5%	99.8%	99.5%	99.8%	99.5%	99.8%	99.5%	99.9%	—

As for internationally-accepted performance indicators, the COMET Benchmarking Results are also closely watched. In the COMET Results 2020 incorporated in the MTR Sustainability Report 2021 (pages 33 – 36), MTR's performance is among the top in the Community of Metros (COMET) programme. After the merger in 2020 of the metro benchmarking groups, CoMET and Nova, the COMET programme collects data from 42 large and medium-sized metro rail system operators from 39 cities around the world in order to compare performance and improve standards across the industry.¹ Performance is measured across six categories, including

- (a) growth and learning,
- (b) customer,
- (c) internal processes,

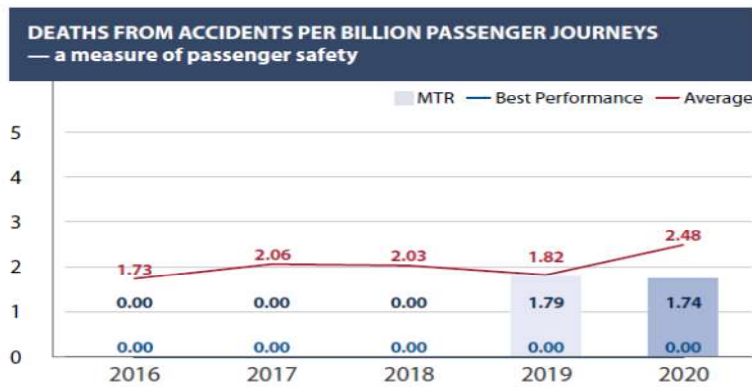
¹ The benchmarking exercise assessed data for 2020 of 42 large and medium-sized metro systems from 39 cities, including Buenos Aires, Washington, Montreal, Ottawa, Rio de Janeiro, San Francisco, Toronto, Vancouver, Barcelona, Brussels, Istanbul, Lisbon, Newcastle, Oslo, Bangkok, Bangalore, Dubai, Kuala Lumpur, Nanjing, Sydney, Beijing, Berlin, Delhi, Guangzhou, Hong Kong, London, Mexico City, Madrid, Moscow, New York, Paris, Santiago, Seoul, Singapore, Shanghai, Sao Paulo, Shenzhen and Taipei.

- (d) safety and security,
- (e) financial performance and
- (f) environmental performance.

The COMET group is jointly owned and steered by their members and are facilitated by the Transport Strategy Centre (TSC) at Imperial College London.

For the pictorial presentation of MTR's achievement of each of the six performance indicators, please refer to the charts on following pages on the COMET Benchmarking result. Many indicators show that MTR has achieved better than average in most aspects, and some of them being the leader.

Safety



Safe to ride MTR trains!

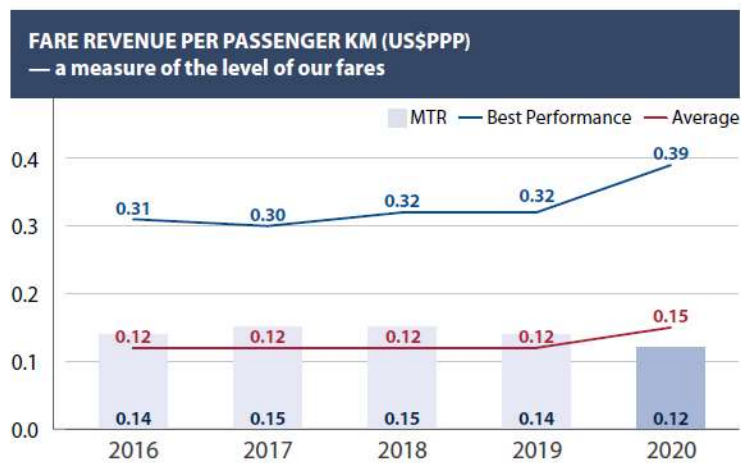
Staff



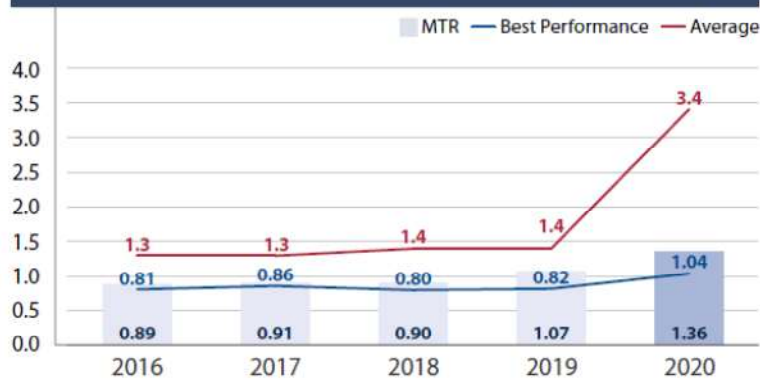
Financial performance



Note: Both the fare and non-fare revenue dropped significantly due to the impact of COVID-19 pandemic in 2020, yet we maintained services to keep our city moving.



OPERATING COSTS PER PASSENGER JOURNEYS (US\$PPP)



Note: Due to the impact of COVID-19 pandemic in 2020, patronage in our railway networks has greatly reduced yet we maintained services to keep our city moving.

Customer service

% PASSENGER JOURNEYS ON TIME — a measure of service performance



Reliable service!

CAPACITY KM PER ROUTE KM — a measure of asset utilisation



Note: Due to the impact of COVID-19 pandemic in 2020, patronage in our railway networks has greatly reduced.

Environment

TOTAL ENERGY CONSUMED PER PASSENGER KM — a measure of energy efficiency



% TRAIN TRIPS ON TIME — a measure of service performance



CO₂ PER PASSENGER KM — a measure of contribution to climate change



Ansoff Product-Market Growth Matrix

The Ansoff Growth Matrix is a strategic aid in formulating growth strategies. By correlating two important strategies (product-portfolio and competition-market), consideration over the strategic development of a company in a market can be done in a logical way. In this way, an entrepreneur can optimally consider over the opportunities for his enterprise and determine the growth model on this basis. Ansoff's Product-Market Matrix is also often applied in, for instance, a marketing plan.

Ansoff distinguishes four directions of growth, divided along the dimensions of product and market

Ansoff's Growth Matrix		
	Existing products	New Products
Existing markets	Market penetration: Hong Kong: nearing 50%	Product development
New markets: (outside Hong Kong)	Market development: Mainland China, Macao (Light Rail System) Australia: Melbourne & Sydney Sweden: U.K.:	Diversification

Based on the Ansoff Product-Market Growth Matrix analysis, it is natural development for MTR to go international (diversification strategy) after attaining nearly 50% of the Hong Kong combined transportation service market. The market penetration growth strategy for the sales of existing products in existing market would be rather limited. The purpose is to enlarge the present market share.

Yu's Heart, Head, Hand (3H) Holistic Management Framework (2022)



The success of MTR and JR East in their businesses can be explained by Yu's 3H Holistic Management Framework. Using metaphoric expressions of Heart ("H1"), Head ("H2"), and Hand ("H3") to represent the vital dimensions of people, organization and competence, respectively. This framework provides a holistic solution to manage people and organisation issues such that all 3H dimensions have to be effectively and efficiently well-integrated and coordinated so as to create best organisational performance. For the case of MTR, on top of the good planning (use of Head) on the delivery of its transportation services and the adoption of the appropriate technology/methods (use of Hand), the management and the employees have to use their Hearts for understanding the genuine needs of the customers and for serving them. In the case of the transport business, the customers need safe, punctual, efficient, comfortable and green services/products. The following are some incidents MTR delivers its services with Heart:

- (a) Since the outbreak of COVID-19 pandemic in early 2020, MTR has adopted the use of touchless control panel for customer lifts, say in Tsimshatsui station and the Airport Express Terminal in Central. This is to ensure safety of the customers when using its service.
- (b) Provision of facility to ensure easy access by people who are physically-challenged.
- (c) Provision of Internet Access hub and WiFi service free of charge in most train stations. This is in particular providing convenience to tourists.

With the increasing customer-friendly environment with comforts enjoyed by commuters, there is no surprise that over 5 million passengers use MTR's service daily!

Through its 1,530 station retail outlets, MTR provides convenient places for passengers to enjoy a wide variety of goods and services, ranging from food to fashion, health and beauty, books, banking, dry cleaning, shoe repairs and travel services.

Hence, MTR is regarded as a critically essential part of the communities it serves, bringing people together and keeping cities on the move. MTR operates on the basis that it must meet the present, as well as future, needs of its stakeholders. "The MTR embeds ESG principles into its business and operations, guided by the social objectives to align its efforts with three priority areas, namely Social Inclusion, Greenhouse Gas Emissions and Advancement & Opportunities, to create long-term shared value for stakeholders.

Through the day-to-day management of over 111,000 residential units, 14 malls and five office buildings (with over 772,000 square metres of office and commercial space), MTR is

one of the largest property managers in Hong Kong. To actively promote environmental protection and waste reduction, waste recycling schemes have been introduced at all managed properties and extended in recent years to cover glass bottles and food waste.

At luxury residential and commercial properties, Premier Plus management delivers the highest quality of services along with hospitality standards matching those of international five-star hotels.

The Rail plus Property integrated development model will continue to be used to finance future railway projects in Hong Kong and to bring ever more efficient rail services as well as quality living to Hong Kong's growing population. For instance, MTR has been invited by the Government to proceed with the technical studies on the Siu Ho Wan Depot site topside development on Lantau Island, which will provide about 20,000 residential units in the medium to long term. This would help alleviate the housing shortage in Hong Kong.

Property in Mainland China

MTR's first property development in Mainland China is Tiara, which is conveniently located above the depot of the Shenzhen Metro Line 4. The site has a developable gross floor area of over 206,000 sq. m.. MTR won the bid for the site in August 2011, and handed over the sold residential units to the owners starting from December 2016.

In March 2021, MTR jointly secured the land use right for a transit-oriented development (TOD) site in the south of Hangzhou West Station in Mainland China together with its partners. This project is a mixed-use property development comprising serviced apartment, office, retail and hotel components and has a total developable GFA of ~688,210 sq.m.

Consultancy and Contracting Services

MTR offers worldwide consultancy and contracting services on railway planning, design management, system integration and assurance, project management, construction management, railway operations and maintenance, and non-fare revenue business. The Corporation has provided services to a number of railway and metro companies, government authorities and rail system suppliers in Australia, Mainland of China, Macao, India, Middle East, Latin America and Southeast Asia. Locally in Hong Kong, MTR has been providing operation and maintenance services for the Automated People Mover (APM) at Hong Kong International Airport. The APM is currently being expanded to match the projected long-term growth in air travel.

8. Outlook, challenges and recommended strategies

Trend #1: Climate Protection

8.1 Subsequent to the Paris Agreement on Global Climate Change in 2015, long-term carbon reduction targets are calculated for keeping global temperature increase well-below 2°C above pre-industrial temperatures.

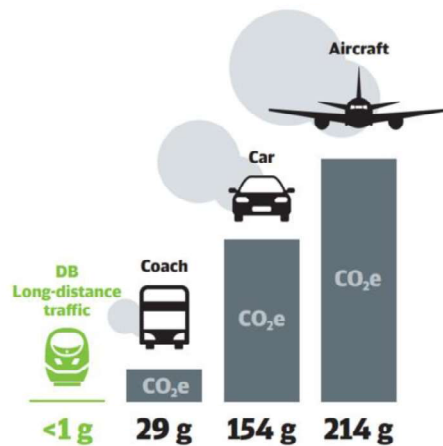
8.2 Echoing the 1.5°C warming limit set by IPCC in October 2018, increasing number of governments, including Germany, Japan, the UK and the USA, declared a climate emergency and committed to a target of achieving net zero carbon emissions by 2050. With their huge population of more than 1 billion, China and India committed achieving net zero emissions by 2060 and 2070 respectively. Most of the business entities are now subject to government policy and regulations on the decarbonisation programmes.

8.3 By 2025 at least 75% of its suppliers, by emissions, will have set their own science based targets. Infrastructure enhancement schemes that will enable traction diesel to be reduced by at least 27.5% by 2030. Currently, the best decarbonisation options include extending the electrified network, investing in battery-powered trains, or hydrogen trains.

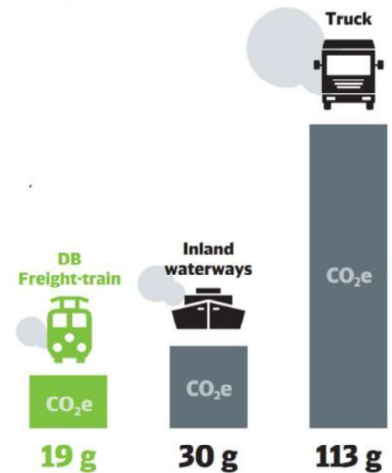
8.4 Energy efficiency, environmental friendliness of railways

Railways are widely and consistently recognized by various countries as one of the more energy efficient, safe and environmental friendly modes of transportation. The countries include Japan, Germany, the UK and the USA. The following chart illustrates how green is the rail transport compared with other modes of transport.

Passenger transport (g CO₂e/pkm)



Freight transport (g CO₂e/tkm)



Sources: Plane, car, bus, truck: UBA (TREMOT 6.16 V2 (06/21), reference year 2019); Rail: DB AG (reference year 2019).

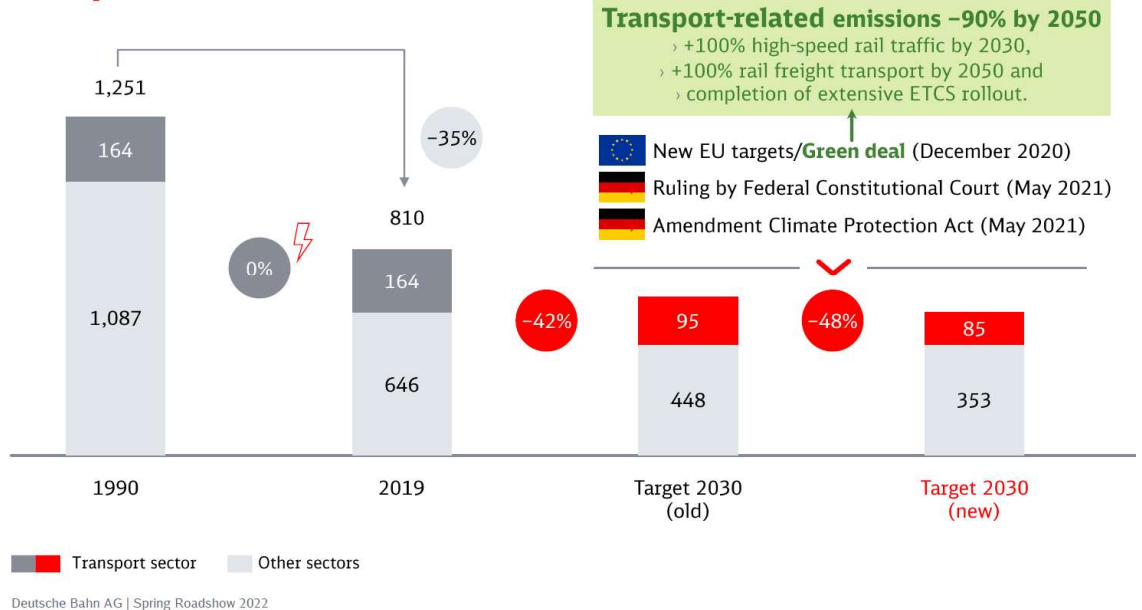
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Based on a Transport Emission Model (“TREMOT”) study by the Federal Environment Agency of Germany (“UBA”), the above chart shows that passenger transport using DB Long-distance train generates fewer than 1g of carbon dioxide equivalent per passenger km journey, which is much less than 29g emission for using coach, 154g emission for car and 214g emission for aircraft! (DB Spring Roadshow 2022, slide #11). Similarly, The US Department of Energy Data Book 2021 also shows the similar conclusion that on per passenger mile basis, Amtrak is 46% more energy efficient than travelling by car and 34% more energy efficient than domestic commercial air travel. (Amtrak Company Profile FY2021, page 4)

The German Government’s policy target is to have a significant traffic shift to railways from other modes of transport for climate protection purposes.

CO₂e emissions in Germany (mn t CO₂e)



8.5 According to DB (Annual Report 2021, page 42), in the development of DB Group, the following five key success factors are central to its business model:

- Corporate social responsibility:** As the backbone of the green and networked mobility of the future, rail plays a key role for Germany to achieve climate protection targets, promote integration and quality of life, and to make areas more attractive for business, as well as empowering Europe's people and economy.
- Entrepreneurial approach to business:** For the German rail reform, DB Group has established itself as a commercial enterprise which targets to set up a modern and efficient organization and a value-based corporate management approach.
- Integrated Group:** As a system integrator in Germany, DB Group is optimizing the Integrated Rail System as a whole to fulfil as a technology pioneer, to achieve positive synergies and align its infrastructure to support efficiency, market orientation and profitability.
- Europe as the field of action:** Germany has a special responsibility for the future of the European continent and the access to the global networks for freight and logistics activities.
- Digitalization:** to offer customers an attractive range of products. e.g. on-demand mobility, new platforms for its customer interfaces, artificial intelligence.

8.6 DB Group's Strategic Targets (AR2021, page 284)

Germany needs a strong rail system and DB is committed to achieving that goal. The Strong Rail strategy will help Germany to overcome existential challenges:

- (a) achieving its climate protection targets only if it succeeds in shifting large amounts of its traffic from other modes of transport to rail in the next decade;
- (b) continuing to be economically successful if people and goods remain mobile, without being stuck in traffic jams.

Hence, the action plan for DB Group is, together with the Federal Government, to invest record levels (EUR170 bn) this decade so as to make the rail network fit for growth (slide #). DB will

- (i) continue on its growth course after the COVID-19 pandemic;
- (ii) go along the trend towards climate-friendly mobility and logistics by strengthening its rail operations which is widely regarded as the greenest mode of transport; (Slide #10)
- (iii) implement its ambitious plans for green transformation, targeting to be climate neutral by 2040.

Supported by ongoing very strong Government funding for capex to make significant traffic shift happen

Between 2020 and 2030 about € 170 bn are available for the modernization and capacity expansion of the rail infrastructure

01	Strengthening the existing network (Service and Financing Agreement (LuFV))	€ 92 bn
02	Expansion of infrastructure capacity (among others requirement plan, Germany in sync, digital rail)	€ 61 bn
03	Increasing attractiveness of rail (among others attractive stations, electrification and noise remediation)	€ 10 bn
04	Capex supporting infrastructure in former coal mining regions and other topics	€ 8 bn

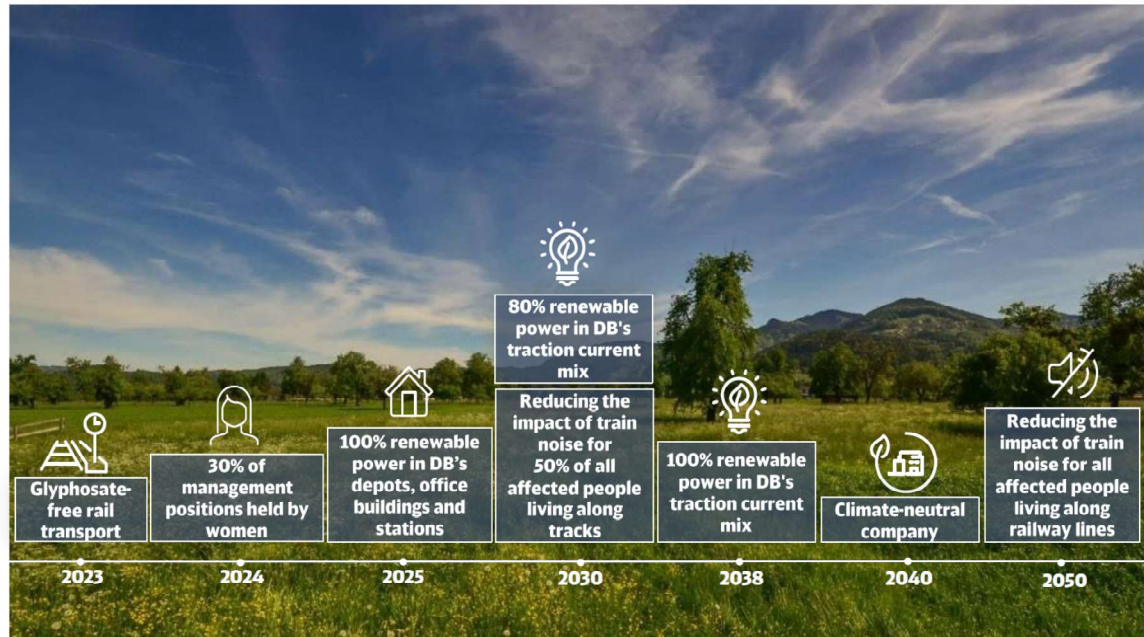
Significantly higher funds for rail transport in the Federal budget 2022

- › **Investments in the transport sector** will increase to about **€ 20.5 bn** until 2026.
- › This means **significantly higher funds for the rail** mode of transport compared to the road.
- › All parts relevant to **rail transport total € 25.3 bn**.

DB's Roadmap to 2050 (slide #13)

Highlights of the roadmap include the 100% use of renewable energy by 2025, becoming climate neutral company by 2040.

With H2goesRail we have started a project with Siemens for clean mobility through alternative drives for DB Regional Rail



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Germany's Strong Rail Strategy and DB's Targets

Full support for the Strong Rail strategy to strengthen the rail system from the German Government



Our mission



It is our mission to enable a strong rail system for Germany.

This is, what we are working for and what is worth our full engagement.

It is, what DB Group is heading for and standing for, it is the focal point of our attention and for what we pool all our strengths.

3 overall sector targets

Passengers in rail transport

x2

Market share rail freight transport

25%

Share of renewable energies

100%

Our 10 DB targets

Traffic shift

- > **260 million** passengers in long-distance
- > **+1 billion** passengers in regional
- > **+70%** volume sold in freight transport
- > **+>30%** capacity in infrastructure

Customers

- > Customer satisfaction: **SI >80/>75/>70¹⁾**
- > Punctuality: **>85%/>95%/>77%¹⁾**

Employees

- > Employee satisfaction **3.8**

Climate

- > **100%** share of renewable energies

Financials

- > ROCE of **≥6.5%**
- > Debt coverage of **≥20%**

¹⁾ DB Long-Distance / DB Regional (rail) / DB Cargo (Germany).
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The infographic is set against a background image of a landscape with wind turbines. It is divided into three main sections: 'Ambition and targets', 'Actions', and 'Project Climate neutral DB'.

- Ambition and targets** (indicated by a target icon):
 - 100% renewable energy in our depots, office buildings and stations by 2025.
 - DB's traction current mix composed of 80% renewable power by 2030.
 - DB's traction current mix composed of 100% renewable power by 2038.
 - DB Group is fully climate neutral by 2040.
- Actions** (indicated by a list icon):
 - Shift to 100% renewable energies:** Continuous portfolio development with an open technology approach, and further electrification.
 - The end of diesel:** End of fossil fuel usage and introduction of intermodal mobility offerings.
 - Start of the heat transition:** Ensuring climate-friendly heat supply in all our buildings.
- Project Climate neutral DB** (indicated by a green box):
 - Developing and introducing innovative, environmentally friendly solutions, such as alternative drive systems (e.g. battery, hydrogen) and biofuels (including HVO).
 - Implementing the starter packages for diesel phase-out and heat transition.

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Trend #2: Railway Development Integrated with Community Building in Lifestyle

8.7 JR East's "Beyond Stations" concept – Transitioning from stations towards platforms for connected lifestyles (JR East Intergrated Report 2022, page 6). Under this concept, JR East Group aims to connect all of its real-world advantages with the digital technology space to transform railway stations from transportation hubs into platforms for "connected lifestyles" in which people, products, and services are interconnected. To this end, JR East will roll out new services based on tie-ins with e-commerce and the sharing of its 5G antenna infrastructure. Further, the mitigation of peak travel periods will allow the group to use the freed-up space in railway stations for the development of a variety of businesses.

The platforms for connected lifestyles include (a) 'station work' which are indeed private booths/office sharing with a focus on hotels (503 units); (b) 'JRE Mall', which is indeed online shopping mall with 160,000 items and (c) Hako-byun, logistical services using Shinkansen and limited express trains on conventional lines (starting from March 2022).

In addition to featuring new functions, such as unstaffed convenience stores, cafes that accept orders made via smartphones, and shared offices, the railway station has served as a testing ground for leading-edge technologies, including cleaning and security robots as well as avatars that offer a range of travel-related information. Also the new station is the centrepiece of JR East's initiative to realize town development that "anticipates the coming century" by integrating railway stations and towns. In fiscal 2025, the opening of the town adjacent to the railway station will reveal this integration in its completed form.

8.8 Workstyle Reform and the Provision of Value for New Lifestyles

JR East will cater to new workstyles by providing value in the form of satellite office, shared offices, and "workstations". Also, with an eye on regional revitalization, JR East will take measures to enable the purchase of regional specialities and fresh foods through JRE Mall. Major structural reform will be required to realise a ratio of 5:5 between the operating revenues of the Transportation segment and those of non-transportation segments. JR East will work with the municipal authorities of Akita and Aomori and other core regional cities to develop towns that are focused on railway stations. With the increase in digital transformation and telecommuting, relocation to rural areas has become a new option for those who want to change their workstyles. To meet these needs, JR East will advance a workation-focused business and develop attractive towns.

As a new form of tourism, JR East will create services that combine tourism and support for agriculture, a major regional industry. In March 2021, JR East opened the experiential tourism farm JR Fruits Park Sendai Arahama. Through agritourism, JR East will create new exchanges and revitalize regions.

A "rotational business model" for real estate business of JR East (JR East 2022 Factsheets, page 6)

- Sell developed and owned properties to funds, etc, and reinvest acquired funds in growth areas
- Sold "JR Minami-Shinjuku Building" to a fund that JR East Real Estate Asset Management Co., Ltd. has formed (FY2022.3).

Accordingly to the development plan, JR East is developing a number of real estate projects, namely:

- (a) Takanawa Gateway City: With a target opening between the period 2024-2026, this project includes residential, international schools, cultural creativity, commercial

complex buildings, offices, convention halls and hotels with a total floor areas of 845,000 sq.m.

- (b) Hiromachi Area Development Plan (Oimachi Station): With a total floor area of about 250,000 sq.m., this project involves constructing offices, hotels, housing and commercial facilities. It is scheduled to complete by March 2026.
- (c) Shinjuku Station Southwest Gate Area: With a total floor area of about 291,500 sq.m., this project involves constructing stores, offices, and accommodation facilities. The development project is expected to commence construction by phases starting from 2023 through 2040s.

8.9 Japanese Vision for “Society 5.0”

Adopting the framework of ‘points’ (station), ‘line’ (railway), and ‘surface’ (area and city), Hayashi (2020) advises that by expanding “surfaces” in collaboration with local government, industries and commercial sectors, in addition to improving “points” and “lines”, a railway system would be contributing much more social value to the highly convenient, comfortable, and carbon-free super-smart city (“Society 5.0”).

In Japan, all industries need to create effects never seen before by mutual coordination in addition to making their own ceaseless efforts in order to achieve the CO2 reduction targets of 900 million tons/year in 2030 (26% reduction over 2013) and 200 million tons/year in 2050 (80% reduction) promoted in the “Plan on Global Warming Countermeasures” (approved by the cabinet of Japan in May 2016) as an implementation plan for the COP21 Paris Agreement. In the super-smart Society 5.0 advocated by the Cabinet Office, cities that are comfortable to live in and are highly efficient with low environmental burden are aimed for by optimizing the value chain of social infrastructure.

With their overwhelmingly small environmental burden, Railways have already made a large social contribution to the environment. A recent trend -- users are evolving from consumers of electricity to “prosumers” by themselves owning electric facilities such as solar power panel and electricity storage batteries.

In Japanese vision for modernization, public and commercial facilities, intermodal passenger transport, housing and the like were built with railways as starting points for urban development. However, in light of a population decline in Japan going forward, urban redevelopment and reduction of governmental costs and social costs are major issues, especially in provincial areas.

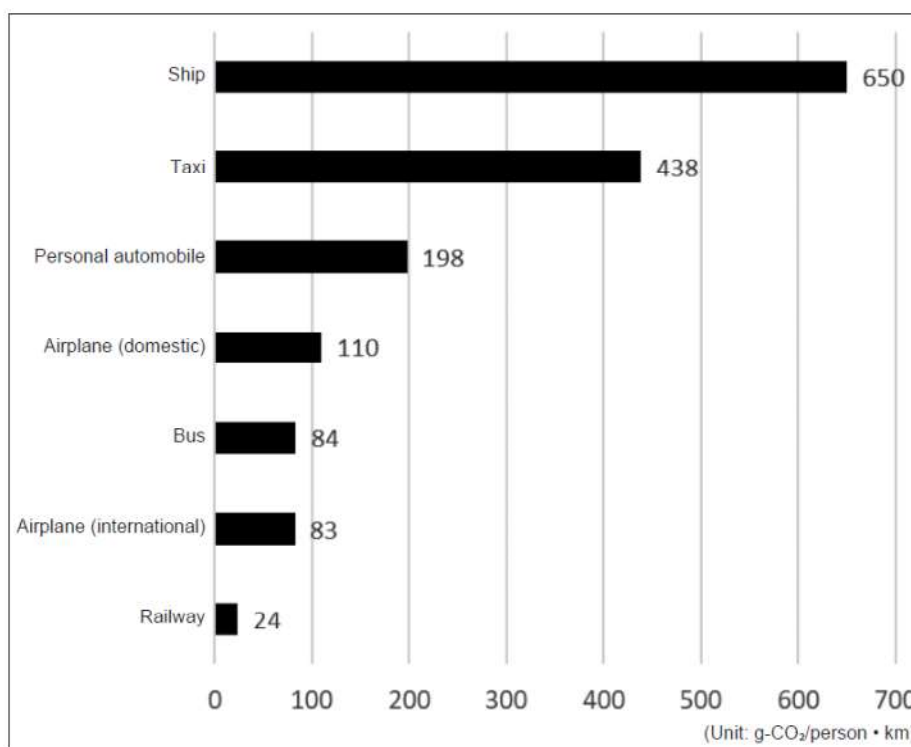


Fig. 1 Comparison of CO₂ Emissions of Various Modes of Transport when Carrying One Person for 1 km (calculated based on reference 4)

Railways of the future in Japan are expected to promote electrification of intermodal passenger transports and of even future end-user-operated modes of transport such as compact mobility vehicles. The mobile value chain, Internet of Things (IoT) and “Mobility as a Service” (MaaS) technology are also expected to contribute. To decarbonise logistics and passenger transport, it is desirable to promote a modal shift by replacing trucks with freight trains.

8.10 Amtrak -- Energy Efficiency Drive

According to the 2021 U.S. Department of Energy Data Book, per passenger mile, Amtrak is 46% more energy efficient than travelling by car and 34% more energy efficient than domestic commercial air travel. (Amtrak Company Profile FY2021, page 4), though the exact figures for particular routes depend on load factor along with other variables (refer also to Davis and Boundy (2022), Transportation Energy Data Book, Table 2.13 “Passenger Travel and Energy Use, 2019” on page 68 of 444). The electrified trains in the Northeast Corridor are considerably more efficient than Amtrak’s diesels and can feed energy captured from regenerative braking back to the electrical grid. Passenger rail is also very competitive with other modes in terms of safety per mile.

8.11 “Amtrak Connects US” – Amtrak’s 15 year Vision (2021)

Amtrak is investing in new high-speed trainsets along the Northeast Corridor for the next generation of Acela, for providing its customers a smoother, speedier and more comfortable ride. The company is also upgrading and modernising its infrastructure with significant station expansion in New York and Washington, D.C., and improved track capacity and ride quality along the Northeast Corridor.

8.12 Network Rail

The UK Government published the Williams-Shapps Plan for Rail white paper in May 2021, which focuses on the establishment of a ‘guiding mind’ for the sector: Great British Railway (“GBR”). GBR will take over the Network Rail in running and planning the rail network, owning the infrastructure, and receiving the fare revenue. Bringing the whole system under single, national leadership, GBR will procure passenger services and set most fares and timetables. The Secretary for Transport asked Andrew Haines, to develop interim arrangements to start delivery of the benefits of the Plan for Rail, including developing plans for the creation of GBR and the GBR Transition Team (GBRTT), alongside his current role as the chief executive of Network Rail. GBRTT’s purpose is to “create a simpler, better railway for everyone in Britain”. (Network Rail AR2022, page 11 and 112) This new organization with revised purpose and focus would obviously bring a new, exciting atmosphere for the British railway industry.

The original intent of privatising and breaking British Rail into dozens of pieces was to encourage competition and promote greater efficiency and innovation. However, little of this has happened. Instead, “fragmentation of the network has made it more confusing for passengers, and more difficult and expensive to perform the essentially collaborative task of running trains on time”. (Great British Railways: The Williams-Shapps Plan for Rail, page 12)

It was found that “For every mile a person travels, passenger trains produce a third of the emissions of the average petrol car”. (Williams-Shapps Plan for Rail, page 16) Hence, in order to achieve a cleaner, greener public transport network, meet passenger demands for better connectivity and serves the needs of business customers more effectively and affordably, Britain’s railway need to be modernised. (Plan for Rail, page 86). This modernisation will accelerate the application of the existing Project SPEED (Swift, Pragmatic, Efficient Enhancement Delivery), a rail-specific initiative, for identifying opportunities to reduce the timescales and cost of delivering rail infrastructure, in collaboration with the wider rail industry. (Plan for Rail, page 94)

In 2022, the UK Government announced the GBP96 bn Integrated Rail Plan for the Midlands and North, the biggest ever for the UK rail network, to build back better and greener and to make train journeys faster, more frequent, and more reliable for passengers. (Network Rail AR2022, page 11)

8.13 Corporate Strategy for MTR

MTR is pursuing a new Corporate Strategy, “Transforming the Future”, by more deeply embedding sustainability and Environmental, Social and Governance principles into its businesses and operations with the aim of creating more value for all the stakeholders. The strategic pillars of the new Corporate Strategy consist of :

- (a) Hong Kong Core – Attain the full potential of Hong Kong Core Business and advance its social objectives.
- (b) Mainland China and International Business – Expand into new hubs and new products across its Mainland China and International Business, maintaining a steady growth.
- (c) New Growth Engine – Invest in new technologies and mobility services to reinforce its core for long-term growth.

The R+P model serves well the conventional Chinese thinking of the “Four Basic Needs for Living”, i.e. apparels, food, shelter and transportation.

9. Conclusions and Practical Implications

A financially viable and sustainable business model for railway business

9.1 Railway transportation is a capital-intensive business. Given its energy efficiency, safety, and eco-friendliness, in light of increasing concerns by the public in the environmental, social and governance, many governments have been turning to railway as the one of the preferred modes of transportation. These include Germany, Japan, the UK and the US.

9.2 From this study, it was revealed that MTR and JR East, both from Asia, have their business models involving real estate development and leasing businesses, these provide not just diversification benefit for their sources of revenue, but also the capability to create customer demand for its network of transportation by building local communities that would be connected by the train network in a very convenient manner. The train services are efficient for commuters to travel around, for going to

workplace, to local tourist points for sightseeing, leisure, shopping. The Japanese model even has a significant proportion of hotel business, which is essential for metropolitan cities!

9.3 Furthermore, MTR's increasing business exposure to places outside Hong Kong, including consultancy, railway operations management, property development and management have provided for further diversification from the home base, providing a bigger scope of operations and also higher level of business resilience. The statements by Sigalos in 2015 and by Leung in 2016 remain valid.

9.4 Perhaps, the above benefits of Rail + Property Model (self-sustaining financially) and international diversification drive may provide food for thoughts for other railway companies that may be perennially requiring substantial government grants and funding.

Right Track for Future Development

9.5 As revealed from the study, there are increasing trends for the countries under study to take this opportune time for further adoption of technology, digitalisation, and modernisation of organization and the facilities for achieving environmental, social and governance goals, such as de-carbonisation drive for climate protection.

9.6 Through DB's Strong Rail Strategy, the German Government plans to achieve climate protection. By adopting the "Beyond Stations" and the "Society 5.0" concepts from JR East, the Japanese Government wishes to transform railway stations (and extension of new station or rail line) from transportation hubs into platforms for "connected lifestyles" and regional revitalization, in addition to the net-zero emission climate protection goal.

9.7 By and large, Hong Kong MTR has been on the right track and is heading on the appropriate direction. Having said that, MTR may consider assimilating some of the excellent ideas from its business counterparts on their long-term strategies for the future, such as incorporating the concept of Smart City 5.0, regional revitalisation, and certain good measures of the green strategies, for contributing to the implementation of the Northern Metropolis Development Strategy in Hong Kong.

Strategic trends identified by:	Amtrak	DB	JR	MTR	NR
System resilience for climate change: de-carbonization, greener	Y	Y	Y	Y	Y
Aging population			Y	Y	
Digital transformation	Y	Y	Y	Y	Y
Restructuring of railway industry					Y
Modernization of facilities	Y				Y
Faster passenger transport service	Y				Y
Regional revitalization			Y		
Platforms for connected lifestyles			Y		

Sources: Extracts from Annual Reports of the above companies, 2021

Appendix

Deutsche Bahn AG Financial Summary

10-YEAR SUMMARY

To the interactive
key figure comparison



€ million	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
STATEMENT OF INCOME										
Revenues	47,075	39,901	44,430	44,065	42,693	40,557	40,403	39,728	39,107	39,296
Overall performance	50,959	43,465	47,596	47,156	45,593	43,298	43,102	42,422	41,756	41,910
Other operating income	5,901	3,439	3,030	2,998	2,954	2,834	2,772	2,824	2,853	3,443
Cost of materials	-28,419	-22,757	-22,262	-22,258	-21,457	-20,101	-20,208	-20,250	-20,414	-20,960
Personnel expenses	-19,219	-18,297	-18,152	-17,301	-16,665	-15,876	-15,599	-14,919	-14,383	-13,817
Depreciation ¹⁾	-3,804	-5,372	-3,671	-2,688	-2,847	-3,017	-4,471	-3,190	-3,228	-3,328
Other operating expenses ¹⁾	-5,716	-5,235	-5,157	-6,088	-5,890	-5,677	-5,750	-5,057	-4,817	-4,719
Operating profit/loss (EBIT)	-298	-4,757	1,384	1,819	1,688	1,461	-154	1,830	1,767	2,529
Result from investments accounted for using the equity method	-10	-21	-12	12	14	33	22	8	3	14
Other financial result	48	-91	-36	-14	-30	-16	0	-3	-15	-13
Net interest income ¹⁾	-528	-615	-655	-645	-704	-772	-800	-898	-879	-1,005
Profit/loss before taxes on income	-788	-5,484	681	1,172	968	706	-932	937	876	1,525
Net profit/loss for the year	-911	-5,707	680	542	765	716	-1,311	988	649	1,459
Dividend payment (for previous year)	-	650	650	450	600	850	700	200	525	525
VALUE MANAGEMENT										
EBITDA adjusted ¹⁾	2,287	1,002	5,436	4,739	4,930	4,797	4,778	5,110	5,139	5,601
EBIT adjusted	-1,552	-2,903	1,837	2,111	2,152	1,946	1,759	2,109	2,236	2,708
Capital employed as of Dec 31 ¹⁾	43,020	41,764	42,999	36,657	35,093	33,066	33,459	33,683	33,086	32,642
Return on capital employed (ROCE) ¹⁾ (%)	-3.6	-7.0	4.3	5.8	6.1	5.9	5.3	6.3	6.8	8.3
Debt coverage (%)	4.3	0.8	15.3	17.6	18.7	18.1	19.0	20.3	20.8	22.2
CASH FLOW/CAPITAL EXPENDITURES										
Cash flow from operating activities ¹⁾	3,900	1,420	3,278	3,371	2,329	3,648	3,489	3,896	3,730	4,094
Gross capital expenditures ¹⁾	15,387	14,402	13,093	11,205	10,464	9,510	9,344	9,129	8,224	8,053
Net capital expenditures ¹⁾	6,342	5,886	5,646	3,996	3,740	3,320	3,866	4,442	3,412	3,487
BALANCE SHEET AS OF DEC 31										
Non-current assets ¹⁾	56,149	52,964	53,213	46,646	45,625	45,290	45,199	45,530	43,949	44,241
thereof property, plant and equipment and intangible assets ¹⁾	52,487	49,994	50,485	44,487	43,207	42,575	42,821	43,217	41,811	41,816
Current assets	15,694	12,471	12,615	11,881	10,811	11,034	10,860	10,353	8,945	8,284
thereof cash and cash equivalents	4,591	3,411	3,993	3,544	3,397	4,450	4,549	4,031	2,861	2,175
Equity	10,621	7,270	14,927	13,592	14,238	12,657	13,445	14,525	14,912	14,978
Equity ratio ¹⁾ (%)	14.8	11.1	22.7	23.2	25.2	22.5	24.0	26.0	28.2	28.5
Non-current liabilities ¹⁾	39,631	37,686	32,820	29,104	27,510	28,525	28,091	28,527	26,284	25,599
thereof financial debt ¹⁾	30,322	27,070	23,977	20,626	19,716	20,042	19,753	19,173	18,066	17,110
thereof pension obligations	5,031	6,517	5,354	4,823	3,940	4,522	3,688	4,357	3,164	3,074
Current liabilities	21,591	20,479	18,081	15,831	14,688	15,142	14,523	12,831	11,698	11,948
thereof financial debt ¹⁾	4,164	6,254	4,716	2,618	2,360	2,439	2,675	1,161	1,247	1,503
Net financial debt ¹⁾	29,107	29,345	24,175	19,549	18,623	17,624	17,491	16,212	16,362	16,366
Total assets ¹⁾	71,843	65,435	65,828	58,527	56,436	56,324	56,059	55,883	52,894	52,525
RAIL TRANSPORT PERFORMANCE FIGURES										
PASSENGER TRANSPORT										
Passengers (million)	1,413	1,499	2,603	2,581	2,564	2,365	2,251	2,254	2,235	2,152
Long-distance transport	82	81	151	148	142	139	132	129	131	131
Regional transport	1,331	1,418	2,452	2,433	2,422	2,226	2,119	2,125	2,104	2,021
Volume sold (million pkm)	50,831	51,933	98,402	97,707	95,854	91,651	88,636	88,407	88,746	88,433
Long-distance transport	24,762	23,542	44,151	42,827	40,548	39,516	36,975	36,102	36,777	37,357
Regional transport	26,069	28,391	54,251	54,880	55,306	52,135	51,661	52,305	51,969	51,076
FREIGHT TRANSPORT										
Freight carried (million t)	226.5	213.1	232.0	255.5	271.0	277.4	300.2	329.1	390.1	398.7
Volume sold (million tkm)	84,850	78,670	85,005	88,237	92,651	94,698	98,445	102,871	104,259	105,894
INFRASTRUCTURE										
Train kilometers on track infrastructure (million train-path km)	1,109	1,066	1,090	1,086	1,073	1,068	1,054	1,044	1,035	1,039
thereof non-Group railways	414	386	368	349	331	322	290	261	247	231
SOCIAL										
Employees as of Dec 31 (FTE)	323,716	322,768	323,994	318,528	310,935	306,368	297,202	295,763	295,653	287,508
Employee satisfaction (SI)	-	3.9	-	3.7	-	3.7	-	3.7	-	3.6
ENVIRONMENTAL										
Specific greenhouse gas emissions in comparison to 2006 (%)	-36.1	-34.4	-34.8	-33.2	-29.5	-27.3	-24.5	-22.8	-18.5	-11.9

¹⁾ Since 2019, limited comparability with the previous years' figures due to the IFRS 16 effect (2019 Integrated Report 101).

Development since 2006



(€ mn)	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006
Rail passenger volume sold (mn pkm)	50,831	51,933	98,402	97,707	95,854	91,651	88,636	88,407	88,746	88,433	79,228	78,582	76,772	77,812	74,792	74,788
Rail freight volume sold (mn tkm)	84,850	78,670	85,005	88,237	92,651	94,698	98,445	102,871	104,259	105,894	111,980	105,794	93,948	113,634	98,794	96,388
Revenues	47,250	39,902	44,431	44,024	42,704	40,576	40,403	39,728	39,107	39,296	37,979	34,410	29,335	33,452	31,309	30,053
Profit before taxes	-788	-5,484	681	1,172	968	706	-932	937	876	1,525	1,359	900	1,387	1,807	2,016	1,555
EBIT adjusted	-1,552	-2,903	1,837	2,111	2,152	1,946	1,759	2,109	2,236	2,708	2,309	1,866	1,685	2,483	2,370	2,143
EBITDA adjusted	2,287	1,002	5,436	4,739	4,930	4,797	4,778	5,110	5,139	5,601	5,141	4,651	4,402	5,206	5,113	-
Cash flow from operating activities	3,900	1,420	3,278	3,371	2,329	3,648	3,489	3,896	3,730	4,094	3,390	3,409	3,133	3,539	3,364	3,678
Total assets	71,843	65,435	65,828	58,527	56,436	56,324	56,059	55,883	52,894	52,525	51,791	52,003	47,303	48,193	48,529	48,440
Gross capex	15,387	14,402	13,093	11,205	10,464	9,510	9,344	9,129	8,224	8,053	7,501	6,891	6,462	6,765	6,320	6,584
Net capex	6,342	5,886	5,646	3,996	3,740	3,320	3,866	4,442	3,412	3,487	2,569	2,072	1,813	2,599	2,060	2,836
Ratings (Moody's/S&P)	Aa1/AA-	Aa1/AA-	Aa1/AA	Aa1/AA	Aa1/AA	Aa1/AA-	Aa1/AA	Aa1/AA	Aa1/AA	Aa1/AA	Aa1/AA	Aa1/AA	Aa1/AA	Aa1/AA	Aa1/AA	Aa1/AA
Employees (as of Dec 31)	323,716	322,768	323,994	318,528	310,935	306,368	297,202	295,763	295,653	287,508	284,319	276,310	239,382	240,242	237,078	229,200

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JR East Consolidated 11-Year Financial and Non-Financial Summary

Consolidated 11-Year Financial and Non-Financial Summary

	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021
Operations Results											
Operating Revenues	¥2,537,353	¥2,532,174	¥2,671,823	¥2,702,917	¥2,756,165	¥2,867,200	¥2,880,802	¥2,950,157	¥3,002,043	¥2,946,639	¥1,764,585
Operating Expenses	2,192,266	2,172,149	2,274,260	2,296,123	2,328,643	2,370,379	2,414,492	2,468,961	2,517,182	2,565,708	2,284,943
Operating Income (Loss)	345,087	360,025	397,563	406,794	427,522	496,821	466,310	481,296	484,861	380,941	(520,358)
Profit (Loss) Attributable to Owners of Parent	76,224	108,738	175,385	190,940	180,398	245,310	277,925	288,967	296,216	198,429	(577,900)
Comprehensive Income	73,644	109,304	197,740	214,632	229,293	217,419	293,471	300,647	296,028	173,329	(566,771)
Operating Revenues by Segment⁽¹⁾											
Transportation	¥1,721,922	¥1,705,794	¥1,800,554	¥1,827,467	¥1,862,040	¥1,964,588	¥1,980,839	¥2,017,877	¥2,038,195	¥1,946,523	¥1,095,730
Retail & Services	385,891	396,168	404,207	400,948	396,368	399,060	502,414	514,963	521,878	502,075	318,076
Rail Estate & Hotels	223,293	229,637	238,945	251,070	254,997	255,079	326,312	340,144	349,014	348,521	271,248
Others	206,247	200,575	219,117	223,432	252,760	266,673	62,237	77,173	92,966	101,520	79,531
Total	2,537,353	2,532,174	2,671,823	2,702,917	2,756,165	2,867,200	2,880,802	2,950,157	3,002,043	2,946,639	1,764,585
Financial Position											
Total Assets	¥7,042,900	¥7,060,409	¥7,223,205	¥7,428,304	¥7,805,690	¥7,789,762	¥7,911,115	¥8,147,676	¥8,359,676	¥8,537,060	¥8,916,420
Consolidated Interest-bearing Debt	3,433,010	3,340,233	3,307,453	3,286,401	3,275,523	3,241,979	3,211,074	3,179,690	3,163,731	3,312,344	4,260,250
Shareholders' Equity	1,809,365	1,874,404	2,030,666	2,180,633	2,286,658	2,442,129	2,653,419	2,859,330	3,067,174	3,146,196	2,535,027
Cash Flows											
Cash Flow from Operating Activities	¥ 508,946	¥ 558,650	¥ 589,529	¥ 562,764	¥ 622,782	¥ 673,110	¥ 652,907	¥ 704,194	¥ 693,801	¥ 548,692	¥ (189,968)
Cash Flow from Investing Activities	(432,178)	(270,685)	(465,952)	(474,658)	(476,844)	(499,575)	(557,539)	(541,857)	(594,429)	(701,821)	(749,397)
Cash Flow from Financing Activities	(27,512)	(152,428)	(101,151)	(91,367)	(86,628)	(110,266)	(116,293)	(135,100)	(120,653)	43,410	883,286
Stock Information											
Earnings per Share	¥ 193	¥ 275	¥ 444	¥ 507	¥ 459	¥ 626	¥ 714	¥ 749	¥ 773	¥ 525	¥ (1,632)
Shareholders' Equity per Share	4,574	4,739	5,196	5,529	5,818	6,232	6,826	7,427	8,047	8,340	6,720
Cash Dividends per Share ⁽²⁾	110	110	120	120	120	130	130	140	150	165	100
Financial Indicators											
Profit / Operating Revenues (%)	3.0	4.3	6.6	7.4	6.5	8.6	9.6	9.8	9.8	6.7	(32.7)
Return on Average Equity (ROE) (%)	4.2	5.9	9.0	9.5	8.1	10.4	10.9	10.5	10.0	6.4	(20.3)
Ratio of Operating Income to Average Assets (ROA) (%)	4.9	5.1	5.6	5.6	5.7	6.3	5.9	6.0	5.9	4.5	(6.0)
Equity Ratio (%)	25.7	26.5	28.1	29.4	30.1	31.4	33.5	35.1	36.7	36.9	28.4
Interest-bearing Debt to Shareholders' Equity (times)	1.9	1.8	1.6	1.5	1.4	1.3	1.2	1.1	1.0	1.1	1.7
Interest Coverage Ratio (times)	4.8	5.5	6.2	6.3	7.6	8.8	9.2	10.9	10.5	9.0	—
Interest-bearing Debt / Net Cash Provided by Operating Activities (times)	6.7	6.0	5.6	5.8	5.3	4.8	4.9	4.5	4.8	5.8	—
Total Return Ratio (%)	—	—	31.8	29.3	32.3	33.0	32.6	32.9	32.9	31.4	—
Others											
Depreciation	¥ 366,415	¥ 358,704	¥ 346,808	¥ 348,042	¥ 353,251	¥ 359,515	¥ 364,129	¥ 367,098	¥ 368,723	¥ 374,743	¥ 368,628
Capital Expenditures ⁽³⁾	425,835	370,199	480,717	525,708	522,127	541,949	506,727	550,478	629,925	740,648	692,250
Interest Expenses	106,915	101,073	96,312	89,279	81,982	76,332	70,258	64,733	62,545	60,796	60,663
Non-Financial Data											
Number of Consolidated Subsidiaries (As of March 31)	75	72	72	73	72	67	67	69	70	71	71
Number of Employees	71,749	71,729	73,017	73,551	73,229	73,053	73,063	73,192	72,402	71,812	71,873
Personnel Expenses	¥ 707,951	¥ 692,663	¥ 716,700	¥ 728,000	¥ 721,676	¥ 728,296	¥ 722,279	¥ 725,320	¥ 727,627	¥ 729,231	¥ 690,424
Operating Revenues from Non-Transportation Operations (%)	32.1	32.6	32.3	32.4	32.8	31.8	32.0	31.6	32.1	32.3	37.9

⁽¹⁾ Due to a change in the reporting segment classification from fiscal 2016, figures for fiscal 2017 onward have been reclassified to reflect the new segment classification.
⁽²⁾ The total amount of dividends for each fiscal year consists of interim dividends and year-end dividends.
⁽³⁾ Total capital expenditures do not include expenditures funded by the government or other third parties.

MTR Ten-Year Statistics (2012-2021)

TEN-YEAR STATISTICS

	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Financial Consolidated Profit and Loss (in HK\$ million)										
Total revenue										
– Hong Kong transport services	13,177	11,896	19,938	19,490	18,201	17,655	16,916	16,223	15,166	14,523
– Hong Kong transport operations	3,208	3,269	6,799	6,458	5,975	5,544	5,380	4,963	4,588	3,680
– Hong Kong station commercial businesses										
– Hong Kong property rental and management businesses	5,036	5,054	5,137	5,055	4,900	4,741	4,533	4,190	3,778	3,401
– Mainland China and international railway property rental and management subsidiaries	25,045	21,428	21,085	20,877	17,194	13,562	12,582	12,627	13,246	12,786
– Other businesses	383	894	1,545	1,990	2,174	2,339	2,290	2,153	1,929	1,349
– Recurrent businesses	46,849	42,541	54,504	53,870	48,444	43,841	41,701	40,156	38,707	35,739
– Mainland China property development	353	–	–	60	6,996	1,348	–	–	–	–
– Total	47,202	42,541	54,504	53,930	55,440	45,189	41,701	40,156	38,707	35,739
Total EBITDA										
– Recurrent businesses	8,019	5,194	15,351	18,843	17,677	16,947	16,260	15,478	14,399	12,895
– Hong Kong property development	11,097	6,491	4,496	2,574	1,097	228	2,891	4,216	1,352	3,238
– Mainland China property development	129	(13)	(25)	25	2,314	366	(140)	(55)	–	–
– Total	19,245	11,672	19,822	21,442	21,088	17,541	19,011	19,639	15,751	16,133
Depreciation and amortisation	(5,430)	(5,365)	(5,237)	(4,985)	(4,855)	(4,127)	(3,849)	(3,485)	(3,372)	(3,208)
Variable annual payment	(260)	(238)	(2,583)	(2,305)	(1,933)	(1,787)	(1,649)	(1,472)	(1,247)	(883)
Total EBIT										
– Recurrent business EBIT										
EBIT										
Hong Kong transport services	(4,262)	(5,408)	(591)	1,985	1,656	2,572	2,493	2,710	2,716	2,881
– Hong Kong transport operations	2,488	2,502	5,122	5,025	4,722	4,362	4,230	3,927	3,668	2,969
– Hong Kong station commercial businesses										
– Hong Kong property rental and management businesses	4,048	4,185	4,264	4,225	4,082	3,912	3,650	3,427	3,092	2,764
– Mainland China and international railway, property rental and management subsidiaries	622	261	1,089	722	814	490	640	782	704	520
– Other businesses	(255)	(1,670)	(2,077)	(81)	(53)	58	53	129	86	(7)
– Project studies and business development expenses	(312)	(279)	(276)	(323)	(332)	(361)	(304)	(454)	(486)	(323)
– Share of profit of associates and joint ventures	968	605	288	658	494	537	361	121	158	456
– Sub-total	3,297	196	7,819	12,211	11,383	11,570	11,123	10,642	9,938	9,260
– Property development business EBIT	11,226	6,478	4,471	2,599	3,411	592	2,751	4,161	1,352	3,238
– Total	14,523	6,674	12,290	14,810	14,794	12,162	13,874	14,803	11,290	12,498
(Loss)/gain from fair value measurement of investment properties	(1,616)	(9,190)	2,583	4,745	6,314	891	2,100	4,035	4,469	3,757
Profit/(loss) attributable to shareholders of the Company arising from:										
– Recurrent businesses	1,808	(1,126)	4,980	9,020	8,580	8,916	8,565	8,024	7,437	6,914
– Property development businesses	9,343	5,507	4,369	2,243	1,935	447	2,329	3,547	1,119	2,704
– Underlying businesses	11,151	4,381	9,340	11,263	10,515	9,363	10,894	11,571	8,556	9,618
– Fair value measurement of investment properties	(1,599)	(9,190)	2,583	4,745	6,314	891	2,100	4,035	4,469	3,757
– Total	9,552	(4,809)	11,932	16,008	16,829	10,254	12,994	15,606	13,025	13,375
Profit/(loss) for the year	9,679	(4,821)	12,092	16,156	16,885	10,348	13,138	15,797	13,208	13,514
Share Information										
Basic earnings/(loss) per share (in HK\$)	1.55	(0.78)	1.94	2.64	2.83	1.74	2.22	2.69	2.25	2.31
Basic earnings per share arising from underlying businesses (in HK\$)	1.80	0.71	1.52	1.86	1.77	1.59	1.87	1.99	1.48	1.66
Ordinary dividend per share (in HK\$)	1.27	1.23	1.23	1.20	1.12	1.07	1.06	1.05	0.92	0.79
Dividend payout ratio (based on underlying business profit) (in %)	71	173	81	65	63	67	57	53	62	48
Ordinary dividend proposed and declared (in HK\$ million)	7,865	7,602	7,574	7,359	6,728	6,317	6,207	6,116	5,335	4,575
Share price at 31 December (in HK\$)	41.85	43.35	46.05	41.20	45.80	37.70	38.40	31.80	29.35	30.50
Market capitalisation at 31 December (in HK\$ million)	259,196	267,943	283,574	252,947	275,156	222,629	224,956	185,284	170,187	176,692
Consolidated Financial Position (in HK\$ million)										
Total assets	292,082	290,574	289,214	274,687	263,768	257,340	241,103	227,152	215,823	206,687
Loans, other obligations and bank overdrafts	43,752	50,340	39,456	40,205	42,043	39,939	20,811	20,507	24,511	23,577
Obligations under service concession	10,231	10,295	10,350	10,409	10,470	10,507	10,564	10,614	10,658	10,690
Total equity attributable to shareholders of the Company	179,714	176,788	186,606	180,447	166,304	149,461	170,055	163,325	152,557	142,904
Financial Ratios										
EBITDA margin ⁰ (in %)	17.3	12.2	28.1	35.0	36.1	38.3	38.7	38.4	37.2	36.1
EBITDA margin ⁰ (excluding Mainland China and international subsidiaries) (in %)	32.7	22.1	42.0	54.5	53.5	54.0	53.3	53.1	53.4	53.6
EBIT margin ⁰ (in %)	5.2	(1.0)	13.8	21.5	23.8	25.2	25.5	26.1	25.3	24.6
EBIT margin ⁰ (excluding Mainland China and international subsidiaries) (in %)	7.8	(3.2)	19.3	32.8	32.2	34.8	34.8	35.4	35.6	36.1
Net debt-to-equity ratio (in %)	18.1	22.5	15.4	18.1	20.6	20.2	11.3	7.6	11.8	11.0
Return on average equity attributable to shareholders of the Company arising from underlying businesses (in %)	6.3	2.4	5.1	6.5	6.7	5.9	6.5	7.3	5.8	7.0
Interest cover (times) **	14.4	8.2	14.4	13.6	15.0	12.6	14.4	15.2	11.5	13.0

⁰ Excluding Hong Kong property development profit from share of surplus and interest in unsold properties.

⁰ Excluding Hong Kong property development profit from share of surplus and interest in unsold properties, and share of profit of associates and joint ventures.

** Excluding fair value measurement of investment properties

Certain comparative figures have been reclassified to conform to current year's presentation.

	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Hong Kong Transport Operations										
Revenue car-km operated (thousand)										
Domestic and Cross-boundary services	268,050	268,492	301,552	308,742	301,541	287,828	284,487	273,771	269,141	260,890
Airport Express	10,165	12,631	22,971	23,190	23,202	23,276	23,242	23,232	23,216	23,134
Light Rail	10,245	10,385	10,592	11,139	11,145	11,152	11,034	10,728	10,554	10,453
Total number of passengers (thousand)										
Domestic Service	1,421,737	1,145,035	1,568,196	1,669,973	1,637,898	1,586,522	1,577,457	1,547,757	1,474,659	1,431,040
Cross-boundary Service	486	7,647	104,183	117,448	112,549	113,274	114,241	113,049	111,362	109,707
High Speed Rail	–	1,033	16,923	5,302 [®]	–	–	–	–	–	–
Airport Express	2,150	3,070	15,764	17,710	16,621	16,133	15,725	14,881	13,665	12,695
Light Rail	141,581	111,865	155,885	179,411	178,502	178,709	176,149	174,199	171,652	167,210
Bus	50,380	42,077	51,484	51,025	50,744	50,413	50,537	50,404	47,738	45,962
Intercity	–	103	1,880	3,630	3,698	3,739	4,080	4,348	4,324	4,028
Average number of passengers (thousand)										
Domestic Service – weekday average	4,189	3,406	4,658	4,862	4,772	4,608	4,577	4,490	4,297	4,148
Cross-boundary Service – daily average	1	21	285	322	308	309	313	310	305	300
High Speed Rail – daily average	–	36 [#]	46	53 [#]	–	–	–	–	–	–
Airport Express – daily average	6	8	43	49	46	44	43	41	37	35
Light Rail – weekday average	403	317	448	506	503	500	493	487	482	466
Bus – weekday average	145	121	151	147	146	144	145	144	137	131
Intercity – daily average	–	4 ^{##}	5	10	10	10	11	12	12	11
Average passenger km travelled										
Domestic and Cross-boundary services	10.5	10.5	10.6	10.8	10.8	10.9	11.0	11.0	11.0	10.9
Airport Express	23.7	25.8	28.2	28.3	28.5	28.4	28.4	28.6	29.0	29.0
Light Rail	2.7	2.8	2.7	2.7	2.7	2.7	2.7	2.7	2.8	2.8
Bus	4.5	4.1	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Average car occupancy (number of passengers)										
Domestic and Cross-boundary services	56	45	59	62	63	64	65	67	65	65
Airport Express	5	6	19	22	20	20	19	18	17	16
Light Rail	37	30	40	44	44	44	44	45	45	45
Proportion of franchised public transport boardings (%)	47.3	45.3	47.4	49.0 ^{&}	49.1	48.4	48.5	48.1	46.9	46.4
HK\$ per car-km operated (Hong Kong Transport Operations[®])										
Total revenue	40.0	35.6	51.7	53.4	52.5	53.0	51.3	51.0	48.4	47.6
Operating costs	34.4	33.3	33.0	28.2	28.5	27.7	27.2	26.8	24.9	24.2
Operating profit	5.6	2.3	18.7	25.2	24.0	25.3	24.1	24.2	23.5	23.4
HK\$ per passenger carried (Hong Kong Transport Operations[®])										
Total revenue	7.31	8.11	9.40	9.26	9.10	9.06	8.73	8.52	8.31	8.20
Operating costs	6.28	7.60	5.99	4.89	4.93	4.73	4.63	4.47	4.27	4.18
Operating profit	1.03	0.51	3.41	4.37	4.17	4.33	4.10	4.05	4.04	4.02
Safety Performance										
Domestic Service, Cross-boundary Service and Airport Express										
Number of reportable events [^]	759	656	1,164	1,056	1,148	1,134	1,246	1,327	1,408	1,761
Reportable events per million passengers carried [^]	0.53	0.57	0.69	0.58	0.65	0.66	0.73	0.79	0.88	1.13
Number of staff and contractors' staff accidents [^]	56	51	81	50	46	61	64	57	67	58
Light Rail										
Number of reportable events [^]	62	80	163	87	104	191	157	122	118	151
Reportable events per million passengers carried [^]	0.44	0.72	1.05	0.48	0.58	1.07	0.89	0.70	0.69	0.90
Number of staff and contractors' staff accidents [^]	5	10	8	2	5	8	6	4	4	2
Employees										
Hong Kong										
Corporate management and support departments	1,923	1,852	1,899	1,932	1,882	1,837	1,792	1,756	1,676	1,600
Station commercial businesses	188	224	234	204	191	192	182	170	158	148
Operations	11,688	11,983	12,211	11,948	11,591	11,349	10,891	10,404	10,033	9,460
Projects	1,335	1,426	1,531	1,711	2,144	2,615	2,684	2,764	2,804	2,495
Property and other businesses	1,528	1,548	1,549	1,500	1,440	1,416	1,384	1,350	1,305	1,273
Mainland China and international businesses	201	255	318	331	276	230	194	180	182	224
Outside of Hong Kong										
Employees outside of Hong Kong	15,105	16,921	16,521	14,270	10,781	9,866	8,157	7,530	7,078	6,955
Total	31,968	34,209	34,263	31,896	28,305	27,505	25,284	24,154	23,236	22,155

[®] High Speed Rail service commenced on 23 September 2018.

[#] Average of 23 September 2018 to 31 December 2018.

^{##} Average of 1 to 29 January 2020.

[&] Market share for 2018 was rebased to reflect the impact on the opening of Hong Kong – Zhuhai – Macao Bridge.

^{*} Does not include the High Speed Rail service.

[^] Reportable events are occurrences affecting railway premises, plant and equipment, or directly affecting persons (with or without injuries), that are reportable to the Secretary for Transport and Housing and the Director of the Electrical and Mechanical Services Department, Government of the Hong Kong SAR under the Mass Transit Railway Regulations, ranging from suicides/attempted suicides, trespassing onto tracks, to accidents on escalators, lifts and moving paths.

^Δ Any accident connected with the operation of the railway or with the maintenance thereof, which is notifiable to Railway Branch, Electrical & Mechanical Services Department according to Mass Transit Railway Regulations, as a result of which an employee of the Corporation or of a contractor with the Corporation is suffering 'fatal injury', 'serious injury', or unable to fully carry out his/her normal duties for a period exceeding 3 days immediately after the accident.

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