

Postal economic outlook 2021

**The difficult road towards
profitable growth**

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About this report

Every year, the UPU's Postal Economic Outlook provides a snapshot of the state of the postal sector in juxtaposition with the evolution of the global economy. This year's edition takes stock of accelerated economic transformations more than one year into the COVID-19 pandemic. Following the grim economic performance of 2020, most economic projections indicated a partial recovery in 2021, especially in countries that succeeded in adapting their economic activities to the sanitary constraints in place. As the inoculation campaign progresses in most countries, governments face a dilemma between completely reopening their economies and keeping the number of infections and the new variants at bay. In this context, postal operators have suffered from an increase in costs and have had to adjust to a new normality. However, increased demand for postal and courier services resulted in a surprising increase in revenue (6.8%) in 2020, in nominal terms, as parcels and logistics began to overtake letter post as the main source of revenue for designated operators, especially in high-income economies. Despite this evolution, operating expenditure grew even faster (7.9%) and many (large) postal operators posted negative net results. This raises the question of whether the trend of parcel-driven growth in the sector will be marked by relatively lower profitability in future, or whether postal operators will be able to benefit from this new segment without further endangering their financial sustainability.

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Glossary

5NN	5-fold nearest neighbour imputation algorithm
ARIMA	Auto-regressive integrated moving average
B2C	Business-to-consumer
CAGR	Compound annual growth rate
CIS	Commonwealth of Independent States
DO	Designated operator
EDI	Electronic data interchange
EmIS	Emergency Information System
GDP	Gross domestic product
ICs	Industrialized countries
PPP	Purchasing power parity
SDR	Special drawing rights
UPU	Universal Postal Union
USD	United States dollar
WDI	World Development Indicators
WTO	World Trade Organization
YoY	Year-on-year

Introduction

The battle against COVID-19 has redefined the world economy. At the time of writing, the overall pandemic situation remains delicate,ⁱ with new waves of infections and variants emerging in many geographic regions.

While poor economic performance was recorded in 2020, the expectation for 2021 and 2022 is that both GDP and trade will rebound strongly. Nevertheless, this will be contingent on keeping the epidemiological situation under control.

This report reviews the latest developments in the postal sector and provides a retrospective overview of how the sector has been affected by COVID-19.

The COVID-19 crisis has accelerated long-term trends. 2020 saw both a record drop in domestic letter-post items (-13.6%) and an increase in demand for domestic parcel-post items (17.7%). The sudden grounding of international air traffic in the first half of 2020 substantially depressed international mail exchange. However, postal services were deemed essential by the governments of many countries, thus enabling postal services to continue to operate during lockdowns. As a result, there was record growth in operating revenue in nominal terms (6.5%).

However, adapting to the new normal proved challenging for postal operators. The increased costs of running a business that was more reliant on parcels and bulky items, coupled with increased labour and equipment costs, resulted in a record increase in operating expenditure (7.9%).

The evolution of the postal business beyond letter-post delivery raises doubts as to the strength of economies of scope between letters and parcels. It appears that the success of the transformation will be dependent on additional investment and a major focus on delivery staff and optimization. It remains to be seen whether the increase in operating expenditure, which threatens the viability of certain postal operations, will be contained in the coming years.

In terms of socio-economic development, the provision of affordable, reliable and accessible postal services remains an important duty of Union member countries. In this context, postal infrastructure constitutes a key instrument in policymakers' toolbox to combat the COVID-19 pandemic.

This report is divided into six sections. Section 1 discusses the latest macroeconomic developments and their implications for the sector. Section 2 addresses postal traffic. Section 3 looks at the evolution of postal operators' revenue and business models. Section 4 presents the latest statistics on the sector's infrastructure. Section 5 looks at the situation with regard to competition in postal markets, and section 6 sets out a number of conclusions.

1. Global economic trends and overall consequences on the sector

The pandemic rages on

At the time of writing, the COVID-19 pandemic is ongoing. As the number of infections rises in certain geographic regions, governments around the world have mobilized substantial resources to combat the virus and enable the population to adapt to a new reality.

The world economy has rebounded in 2021, following the economic downturn observed in 2020. Most regions are expected to see their GDP bounce back and, although a return to pre-pandemic levels will still take some time, economic agents have adapted to the new ways of doing business.

According to the World Bank, global output will have expanded by 5.6% in 2021, well above the contraction of -3.5% observed in the previous year. The economic panorama has evolved, as businesses, consumers and governments have changed their behaviour in the face of the pandemic.

From a regional perspective, the economies of industrialized countries (ICs) are expected to rapidly get back on track, with forecast expansion of 5.4% in 2021 and 4% in 2022 (see Table 11).ⁱⁱ This evolution is based on the rapid pace of inoculation campaigns and the assumption that further major outbreaks will be successfully contained.

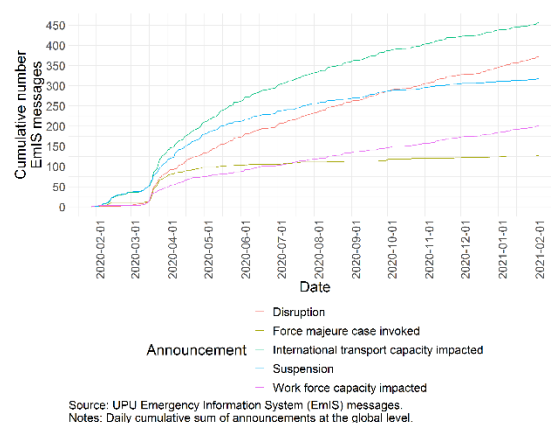
The East Asia and Pacific region is also expected to make a strong recovery (7.7% in 2021), thanks to the resumption of many economic activities in China (People's Rep.). Concerns remain in South Asia, in view of the latest COVID outbreaks, but a sharp rebound in growth (6.8%) is nevertheless expected in that region. Following particularly long lockdowns, the recovery of the Latin America and the Caribbean region will be gradual, climbing back by 5.2% in 2021. While the situation in Sub-Saharan Africa remains delicate, it is expected to experience 2.8% GDP growth in 2021 and 3.3% in 2022.

Trade costs increased sharply in 2020

The global supply chain is currently operating under considerable constraints, owing to labour shortages, lockdowns, travel restrictions and strengthened border controls, which have all resulted in longer delivery times. This is true not only for intermediate and final goods transported by vessel, but also for international postal flows.

Since the beginning of the crisis, the UPU has monitored Emergency Information System (EmIS) messages issued by postal operators to inform other member countries of disruption to their delivery networks. As shown in Figure 1, the number of messages has intensified, with the main topic being international transport capacity.

Figure 1 Emergency Information System messages



The International Civil Aviation Organization (ICAO) estimates that airlines offered 50% fewer seats (-66% internationally, -38% domestically) in 2020, with a record loss of 371 billion USD for the industry as a whole. The monthly drops are depicted in Figure 32. In 2021, seat capacity remains below that of 2019.ⁱⁱⁱ

The drop in air traffic has caused increasing volumes of mail to be stranded, resulting in major disruption in the delivery of goods in 2020.

Figure 2 Drop in international mail

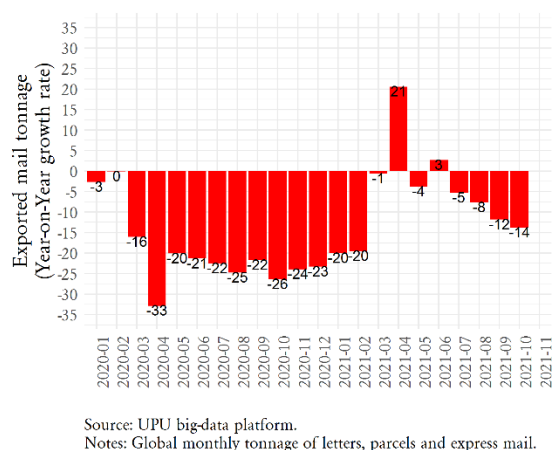


Figure 3 Drop in air transport

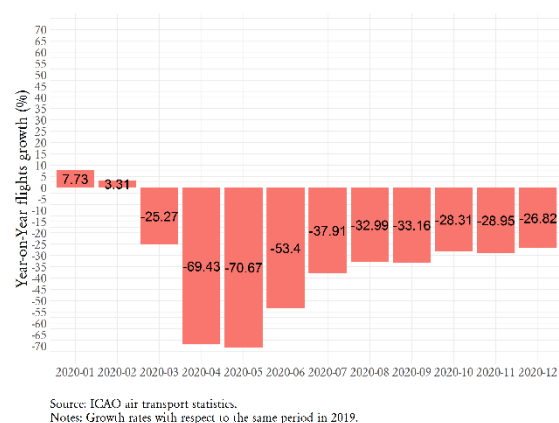
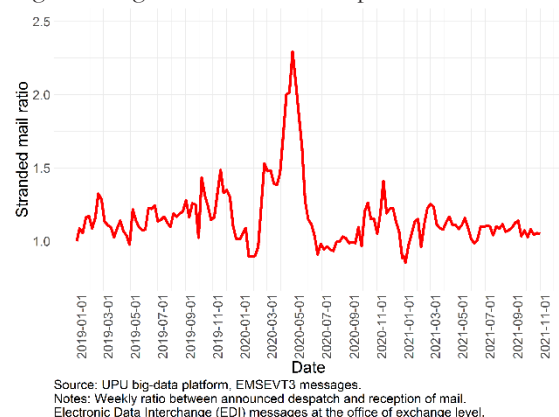


Figure 4 Logistical hurdles in the postal network



Increased trade costs, coupled with uncertainty in the delivery of international mail, have resulted in a significant reduction of both postal tonnage and the number of mail items at international level. This can be seen in Figure 23. The sector is still waiting for international mail to make a full recovery, but concerns remain as the pace of development has been faster for domestic mail. Indeed, so far in 2021, the year-on-year growth rate for international mail has been positive, with respect to 2020, only in April and June. On average, tonnage in 2021 is 6.7% lower than in 2020.

Although a recovery is in sight, considerable risks will continue to weigh on the world economy and the postal sector

Despite many signs of recovery, there remain numerous risks to future growth. Governments have injected stimuli into the economy, which is slowly enabling investments to recover. However, together with tensions in global supply chains and rising commodity prices, these variables are pushing global inflation towards historic heights, causing further uncertainty.^{iv}

These trends will not necessarily limit the growth of e-commerce, but they will change consumer behaviour, at least in the short term. At the broad sectoral level, retail e-commerce sales were valued at 4,206 billion USD, with an expected compound annual growth rate for 2021–2023 of 9% (Statista, 2021 figures). This implies that market players, including in the postal sector, can expect to see an increase in services that are complementary to retail e-commerce, from payments to parcels and logistics.

The remittances market has also exhibited significant changes in recent years. After a slight downturn from 2014 to 2016, inflows of personal remittances picked up during the 2017–2019 period, totalling more than 717 billion USD in 2019. Owing to the COVID-19 crisis, remittances declined in 2020 with respect to 2019 (-7.0%). This trend is expected to continue in 2021, falling to 619 billion USD, which would be a greater drop than that seen during the 2009 global recession.^v

Despite the crisis, Internet connectivity is expanding and therefore further compounding the transformational impact of digitalization in all sectors. According to the latest estimates by the International Telecommunication Union (ITU), global Internet penetration stood at 51% in 2019. As Internet connectivity remains essential in the provision of alternative working conditions during the pandemic, ITU expects that demand will continue its upward trend in the coming years.^{vi}

Furthermore, climate change is a growing factor for the world economy and the postal sector. Nevertheless, there is still much uncertainty as to how it will be addressed in the medium-to-long term, and how it will affect existing infrastructure and operations.

Table 1 GDP projections

Real GDP growth (%)	2018	2019	2020	2021	2022
World	3.2%	2.5%	-3.5%	5.6%	4.3%
Industrialized economies	2.3%	1.6%	-4.7%	5.4%	4.0%
East Asia and Pacific region	6.5%	5.8%	1.2%	7.7%	5.3%
Europe and Central Asia	3.5%	2.7%	-2.1%	3.9%	3.9%
Latin America and the Caribbean	1.8%	0.9%	-6.5%	5.2%	2.9%
Arab region	0.6%	0.6%	-3.9%	2.4%	3.5%
South Asia	6.4%	4.4%	-5.4%	6.8%	6.8%
Sub-Saharan Africa	2.7%	2.5%	-2.4%	2.8%	3.3%

Source: World Bank estimates and projections, Global Economic Prospects, June 2021.

Notes: Regional aggregates based on World Bank regions. The World Bank refers to industrialized economies as “advanced economies”.

Table 2 Key macroeconomic indicators

Key indicators	2020	2021
World trade (annual growth)	-8.3%	8.3%
Retail B2C e-commerce sales (in billion USD)	4206	4927
Retail B2C e-commerce sales (annual growth)	19%	17%
E-commerce share of total retail	16%	18%
Remittance inflows (in billion USD)	666	619
Remittance growth (annual)	-7%	-7.1%
International postal tonnage (annual growth)	-20%	-6.7%
Percentage of people using the Internet	NA	NA

Source: International Monetary Fund, World Bank, Statista, Universal Postal Union.^{vii}

2. Postal traffic

Global international traffic was severely affected by the disruption to global connectivity caused by countries closing their borders and air freight capacity being reduced (Figure 4). Supply-side constraints also weighed on the performance of domestic traffic. Overall, in many cases, this has accelerated the decline of letter post, but has not halted the expansion of parcels and logistics.

Accelerated decline of traditional letter post

The pandemic has intensified the long-term trend of fewer and fewer letters being sent. In 2020, domestic letter-post volumes fell by 13.6%. This rate of decline is more than three times faster than the pre-pandemic annual trend.

International letter post has been hit even harder: in 2020, volumes in this segment amounted to only 72% of the 2019 figure.

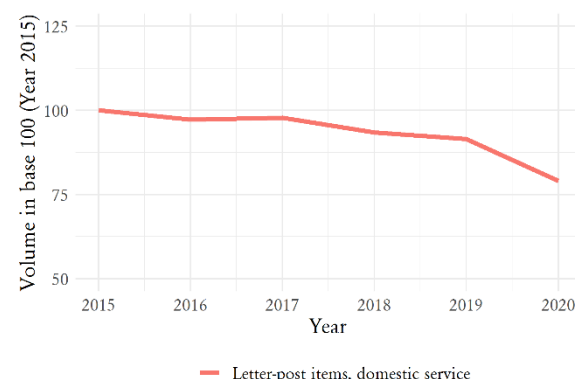
These considerable decreases have occurred faster than the existing long-term rate of decline. It is thought that the above-mentioned disruption to international supply chains is primarily to blame for this acceleration.

Table 3 Global postal traffic

	Items (2020)	Annual growth (2020, %)	5-year compound annual growth (%, 2015–2020)
Letter-post items, domestic	259.99 billion	-13.6%	-4.6%
Letter-post items, international	3.03 billion	-27.6%	-4.3%
Parcel-post items, domestic	24.8 billion	17.7%	15.2%
Parcel-post items, international	0.188 billion	-1.5%	10.4%

Source: Global estimates based on UPU official statistics. (2021) and UPU big data platform.

Figure 5 Evolution of letter-post volumes



Source: Global estimates based on UPU official statistics.

Notes: Items normalized to 100 in 2015 to allow for trend comparison.

The global rate of decline in letter post has been driven to a large extent by the decline in volumes observed in the United States of America (USA). However, the USA was by no means an exception, as other large countries (in terms of mail volumes) have also experienced annual contractions ranging from -0.5% to -30%. Volumes decreased throughout the world in 2020, compared with 2019, with the exception of operators that have merged with or acquired other delivery companies.^{viii}

In some countries (e.g. Switzerland, the USA and countries in Eastern Europe), letters are still an important part of the postal business and this remains a service upon which customers rely. Nonetheless, even in these countries, the recovery of letter-post volumes in the future is unlikely.

Marketing mail has dropped even faster than ordinary mail

The impact of the pandemic on marketing mail has been greater than on ordinary mail, as companies have postponed or cancelled several advertising campaigns (see Table 44). Historically, marketing mail has been known to be more resilient to digital substitution, suggesting that it might recover faster from the pandemic than ordinary mail. Time will soon tell whether this will indeed be the case.

Table 4 Marketing mail

	Marketing mail (2019–2020)	All letter post (2019–2020)
Czech Republic	-37.3%	-30.7%
Canada	-28.2%	-20.7%
France	-23.3%	-18.9%
Slovenia	-21.7%	-18.0%
Italy	-34.2%	-17.9%
Portugal	-20.6%	-16.6%
United States of America	-15.2%	-13.5%
Hungary	-24.5%	-10.6%
Germany	-8.9%	-9.7%
Switzerland	-11.5%	-5.6%
China (People's Rep.)	-36.6%	-4.6%
Russian Federation	6.0%	-0.1%

Source: UPU official statistics (2021).

Mail traffic has contracted the most in Africa and the least in the Asia-Pacific region, and has remained largely concentrated in the ICs

Aside from differences between countries, there are also discrepancies in the contraction of mail traffic between UPU regions. As shown in Table 55, the greatest reductions in mail traffic occurred in Africa, with a 33.2% decrease in domestic letter-post items. The volume for this segment dropped less sharply in the Asia-Pacific region, declining by only 5.7%. In all other regions, traffic in this segment plunged by more than 10%.

However, these various rates of decline tell only part of the story, as each region's share in the global letter-post aggregate differs greatly. Africa and the Arab region together account for less than 0.5% of letter-post items. Latin America and the Caribbean account for 1.8%, whereas Eastern Europe and the CIS and the Asia-Pacific region represent 3.5% and 11.5% respectively.^{ix} At the other end of the spectrum, the ICs represent more than 83% of global volumes.

Domestic parcel post is booming despite lockdowns

As in previous years, the unprecedented shrinkage of letter-post volumes is counterbalanced by an opposite evolution in the parcels segment. In 2020, domestic parcel post registered the highest annual growth in history: 17.7%.

However, this growth is not homogenous across all regions, probably because many operators have not kept up with the growing demand for delivery services from online shoppers.

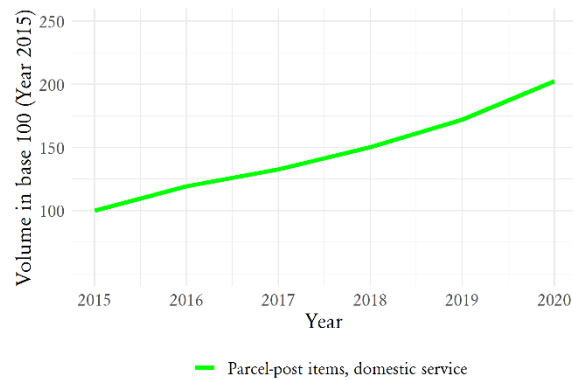
One of the most significant barriers to greater expansion in parcel post is without doubt the existing postal infrastructure (i.e. sorting centres, delivery offices, car fleet, mail carriers), which is tailored for letter post and must be rapidly adapted to the changing market without compromising the letter-post segment. If this process remains slow, as it has been so far, DOs risk losing further market share (see also section 5).

In Africa and the Arab region, domestic parcel volumes remain very modest, which suggests that the growth registered in 2020 (6.1% and 144% respectively) should be considered with caution.

By contrast, the 33% growth of domestic parcel post in the Asia-Pacific region, which accounts for an estimated 29.4% of global volumes, definitely signals a trend. The same can be said for the ICs, which recorded an increase of 11.6% in the same segment, with an estimated contribution to global volumes of 68.4%.

Although international parcel post has suffered from the same disruption as international letter post, volumes decreased by only 1.5% relative to 2019.^x

Figure 6 Evolution of parcel-post volumes



Source: Global estimates based on UPU official statistics.

Notes: Items normalized to 100 in 2015 to allow for trend comparison.

Table 5 Postal traffic by region

Region	Measure	Millions of items (2020)	Annual growth rate (2019–2020)	5-year CAGR (2015–2020)
Africa	Letter-post items, domestic	503.1	-33.2%	-16.3%
Africa	Letter-post items, international	26.1	-66.2%	-11.8%
Africa	Parcel-post items, domestic	4.8	6.1%	5.7%
Africa	Parcel-post items, international	0.2	-24.8%	-6.1%
Arab region	Letter-post items, domestic	583.1	-10.7%	-8.1%
Arab region	Letter-post items, international	12.0	-25.9%	-25.2%
Arab region	Parcel-post items, domestic	8.7	144.0%	49.6%
Arab region	Parcel-post items, international	0.3	-50.1%	-13.1%
Asia-Pacific region	Letter-post items, domestic	29,879.3	-5.7%	-5.2%
Asia-Pacific region	Letter-post items, international	1,453.2	-35.5%	7.2%
Asia-Pacific region	Parcel-post items, domestic	7,296.0	33.3%	38.3%
Asia-Pacific region	Parcel-post items, international	4.3	-23.3%	-4.8%
Europe and CIS	Letter-post items, domestic	8,868.6	-14.8%	-6.0%
Europe and CIS	Letter-post items, international	121.2	-5.4%	-5.6%
Europe and CIS	Parcel-post items, domestic	307.3	22.3%	17.6%
Europe and CIS	Parcel-post items, international	7.1	30.3%	13.2%
Industrialized countries	Letter-post items, domestic	216,759.4	-13.9%	-4.0%
Industrialized countries	Letter-post items, international	1,396.4	-16.9%	-10.7%
Industrialized countries	Parcel-post items, domestic	16,960.0	11.6%	9.9%
Industrialized countries	Parcel-post items, international	174.4	-2.8%	10.8%
Latin America and Caribbean	Letter-post items, domestic	4,620.9	-20.1%	-14.2%
Latin America and Caribbean	Letter-post items, international	18.8	-27.8%	-10.6%
Latin America and Caribbean	Parcel-post items, domestic	171.9	13.9%	12.7%
Latin America and Caribbean	Parcel-post items, international	2.6	508.2%	35.6%
World	Letter-post items, domestic	259,986.5	-13.6%	-4.6%
World	Letter-post items, international	3,027.7	-27.6%	-4.4%
World	Parcel-post items, domestic	24,802.7	17.7%	15.2%
World	Parcel-post items, international	188.9	-1.5%	10.4%

Source: Regional estimates based on UPU official statistics and UPU big data platform.

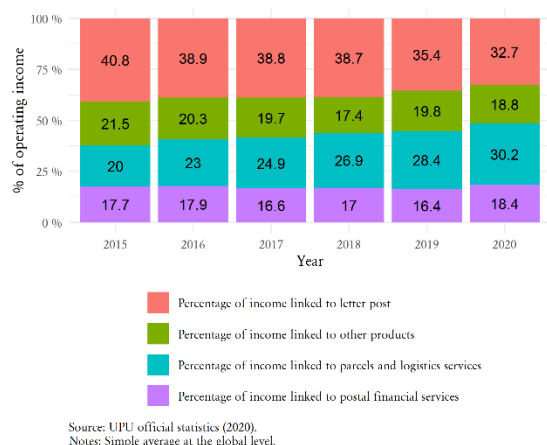
3. Postal revenue

The redistribution of revenue streams continues

The latest postal statistics indicate two intertwined features in the evolution of designated operators' postal revenue.

Firstly, a breakdown of postal revenue by segment over the long term shows that, on average, an increasing proportion of the postal business is dependent on parcels and logistics. In 2020, for the first time, revenue from parcels and logistics accounted, on average, for more than 30% of postal operators' overall revenue (Figure 7). At the same time, the proportion of revenue from letter post has continued to decline, dropping from an average of 35.4% in 2019 to 32.7% in 2020. This is the lowest average proportion ever observed.

Figure 7 Evolution of business models



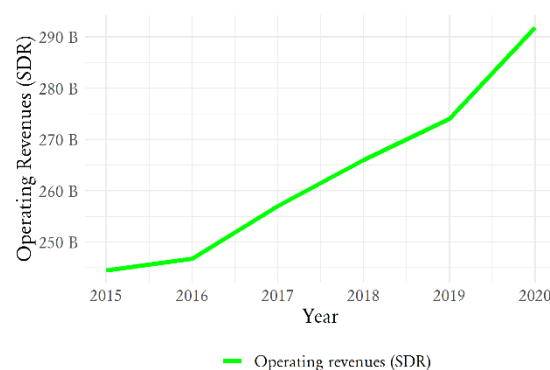
Secondly, in 2020, despite the global recession, postal operators' nominal revenue surprisingly soared to 291 billion SDR at a record annual growth rate of 6.4%, which was significantly higher than the past 5-year trend of 3.6% (Table 66). While this result suggests significant progression in the revenue of postal operators worldwide, the increase originates largely from developed countries. In particular, 14 countries (out of 205 territories taken into account) currently represent 90% of DOs' total operating revenue. This corroborates the notion of significant gaps in postal development, as highlighted in previous UPU studies.^{xi}

Table 6 Worldwide operating revenue

Operating revenue in SDR (2020)	Annual growth (2020)	5-year CAGR (2015–2020)
291.86 billion	6.5%	3.6%

Source: UPU estimates based on UPU official statistics (2021).

Figure 8 Evolution of operating revenue



Operating expenditure remains a major concern

Despite the seemingly encouraging sign of record growth in operating revenue, costs also spiked in 2020 and many (large) operators posted negative net results. Postal operators around the world have had to adapt their business practices to the new reality of the pandemic. This has been a tall order, as the sector's infrastructure is notoriously labour-intensive, often accounting for 70% of total production costs. In this context, the pandemic has been taxing and postal operators have had to face numerous challenges, including labour shortages and the associated hiring of more temporary staff, the disinfection of mail items and post offices, the mass purchase of protective equipment for workers, and the need to operate back offices during lockdowns.

The 2020 statistics reveal an indisputable outcome: operating expenditure rose to unprecedented levels (up 7.9% compared with 2019). While the geographical distribution remains uneven, it is clear that the trend has been towards operations that are more costly, such as those required for the delivery of parcels.

Postal operators are using different strategies to respond to the rapid transformations of the sector

Although there is a general global trend towards an increase in parcels and logistics with a decline in letter mail, no single dominant model is emerging. Instead, postal operators seem to be pursuing one or several of four main strategies.

The first strategy entails concentrating the business entirely on the growing parcels segment, even to the detriment of traditional letter-post activities. Under this model, the entire infrastructure and any associated investments are being (or, indeed, have already been) repurposed to accommodate the rising volumes of parcels.

The second strategy is more of a hybrid model. It consists of adapting the infrastructure and business to serve the growing parcels segment, but without turning away from letter-post activities. In fact, the latter are defended, in part through measures such as price increases intended to protect profitability as volumes continue to decline.

The third option involves pursuing diversification beyond parcels and logistics. This may include postal payments, as well as insurance and other types of financial service. It may also comprise social services (e.g. visiting services to check on the vulnerable), issuing of official documents, and other auxiliary services.

The fourth strategy revolves around acquiring other delivery companies or competitors in other segments in order to pursue synergies, scale and market power, as the infrastructure is adapted to new flows and revenue streams.

Moreover, all of these strategies may include a strong international component, as operators continue to develop their cross-border activities. Some large operators in Europe generate up to 40% of their annual turnover through their international activities.^{xii}

4. Postal infrastructure and staff

Access to postal services

The proportions of the world's population with access to different postal delivery modes are set out in the table below. The figures were estimated based on a sample of 117 countries and the proportions are weighted according to the population of these countries. The sample covers a global population of around 6.363 billion.

These figures are not comparable over time and are dependent on the number of responses, particularly from Africa, where the variability and dispersion of service modes are greatest.

The proportion of the population without access to postal services is negligible in the ICs and in Eastern Europe and the CIS, but is high in Africa.

It should be noted that access to postal services is not the same as home delivery of mail, which in Africa remains the exception rather than the rule. To date, the most popular means of receiving mail in this region is to rent a post office box.^{xiii}

Table 7 Access to postal services

	Population having mail delivered at home	Population having to collect mail from a postal establishment	Population without postal services
Africa	11.2%	45.2%	43.6%
Arab region	74.2%	9.8%	16.0%
Asia-Pacific region	96.2%	1.2%	2.6%
Europe and CIS	99.3%	0.7%	0.0%
Industrialized countries	99.2%	0.8%	0.0%
Latin America and Caribbean	86.5%	10.9%	2.6%
World	86.5%	6.6%	6.9%

Source: Estimates based on UPU official statistics.

Notes: The regional groups are defined in Annex 2.

Postal infrastructure

The total number of postal establishments open to the public in 2020 has been estimated at approximately 618,000, of which 30% are outsourced offices. The number of offices run by postal operators remains relatively stable, whereas the number of outsourced offices varies considerably in some countries. For example, in Mexico, this number decreased by more than 50% in 2020. It must be noted that outsourced offices in many developing countries do not offer a full spectrum of postal services. They may be, for instance, a grocery shop acting as a simple collection or delivery point. On the other hand, some of the leading European operators have completely outsourced their points of contact with their customers.

Although almost half of permanent postal offices are located in the Asia-Pacific region, the most dense network (in terms of offices per capita) can be found in Eastern Europe and the CIS, followed by the ICs (20.5 and 17 offices per 100,000 inhabitants, respectively). By contrast, the African postal network is becoming increasingly sparse every year, with only 1.2 offices per 100,000 inhabitants. This highly disadvantageous phenomenon coincides with a growing population and decreasing mail volumes, in a trend that could further threaten the relevance of postal operators in that region.

Together with the network of post offices, sorting centres constitute another important element of postal infrastructure, although they are not open to the public. During the last 10 years, a growing number of sorting centres have been dedicated exclusively to the processing of parcel traffic. This is understandable given the shift towards this business segment and the differences that the processing of parcels entails in terms of postal operations.

Postal staff

According to the latest estimations, the total number of staff employed by DOs stood at approximately 5.1 million as of 31 December 2020, i.e. a decrease of 3.9% compared with 2019. This result is mainly due to two large employers, namely the Chinese and Japanese postal operators, which, according to their

responses, reduced their staff by 17.6% and 7.9% respectively in 2020. For other large operators, the reduction was in the range of 1% to 5%, with the exception of Germany and the US, where postal employment actually increased.

Part-time staff, accounting for 22.5% of the total number, decreased worldwide at a similar pace (-3.7% in 2020).

It is important to note that the term “postal staff” is used to mean persons who have a contract with the operator. The definition thus excludes people employed by entities to which certain tasks have been outsourced.

In this context, it may be interesting to compare the proportions of delivery staff for certain operators, as outlined in the table below.

Table 8 Percentage of delivery staff

	Percentage of delivery staff 2020	Percentage of delivery staff 2019
New Zealand	73.0	75.7
Switzerland	67.9	69.7
United Kingdom	65.3	63.5
Mexico	55.6	55.1
United States of America	no data	53.9
Brazil	51.0	52.0
Austria	50.9	50.7
Thailand	49.6	47.7
Korea (Rep.)	41.1	39.3
India	39.1	40.3
Morocco	37.0	31.0
Russian Federation	35.5	35.5
France	32.5	32.0
Poland	32.4	32.4
Turkey	29.3	29.8
Indonesia	22.8	21.0
Italy	22.4	22.3
Tunisia	15.0	15.0

	Percentage of delivery staff 2020	Percentage of delivery staff 2019
China (People's Rep.)	8.7	19.4

Source: UPU official statistics.

Geographically speaking, the postal workforce is highly concentrated. The postal operators of three regions (ICs, Asia-Pacific, and Eastern Europe and the CIS) together employ more than 93% of the world's postal staff.

When it comes to productivity, there is an even higher degree of concentration. Using the number of postal items generated per staff member as a measure of productivity, the ICs (which account for almost 50% of total staff) are clearly ahead, in yet another corroboration of discrepancies in worldwide postal development.

Table 9 Post offices

Region	Measure	Value (2020)	Annual growth (%)	CAGR (2015–2020, %)
Africa	Outsourced offices	4,756	-4.5%	-1.1%
Africa	Offices managed by the operator	7,891	-2.3%	0.0%
Africa	Total number of post offices	12,647	-3.1%	-0.4%
Arab region	Outsourced offices	5,984	-9.3%	3.7%
Arab region	Offices managed by the operator	13,589	5.9%	3.2%
Arab region	Total number of post offices	19,573	0.7%	3.3%
Asia-Pacific region	Outsourced offices	68,759	-2.6%	-7.4%
Asia-Pacific region	Offices managed by the operator	223,895	1.0%	0.6%
Asia-Pacific region	Total number of post offices	292,654	0.1%	-1.6%
Europe and CIS	Outsourced offices	9,323	28.4%	6.9%
Europe and CIS	Offices managed by the operator	93,076	-1.7%	-0.8%
Europe and CIS	Total number of post offices	102,399	0.4%	-0.2%
Industrialized countries	Outsourced offices	80,264	0.2%	-2.9%
Industrialized countries	Offices managed by the operator	82,427	-0.4%	0.6%
Industrialized countries	Total number of post offices	162,691	-0.1%	-1.2%
Latin America and Caribbean	Outsourced offices	16,241	-36.2%	-11.5%
Latin America and Caribbean	Offices managed by the operator	12,211	-2.7%	-2.1%
Latin America and Caribbean	Total number of post offices	28,452	-25.2%	-8.1%
World	Outsourced offices	185,327	-5.0%	-5.1%
World	Offices managed by the operator	433,089	0.1%	0.3%
World	Total number of post offices	618,416	-1.5%	-1.5%

Source: Regional estimates based on UPU official statistics.

Note: The regional groups are defined in Annex 2.

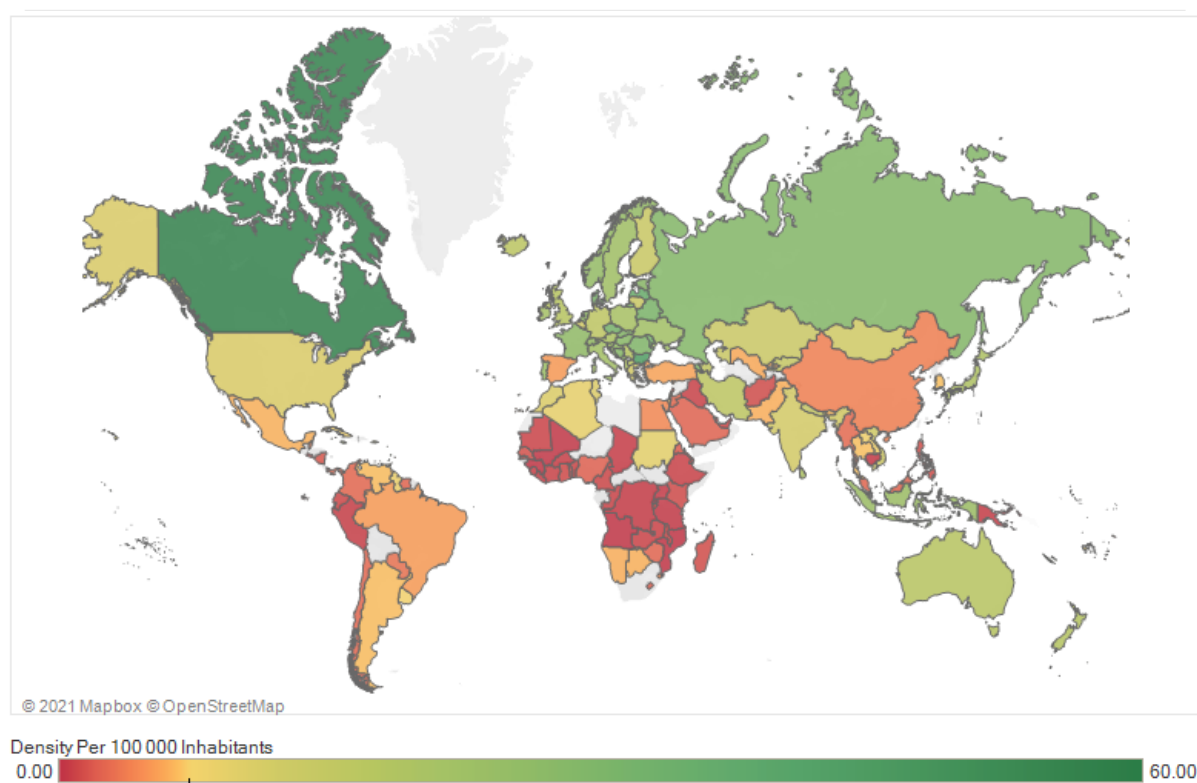
Table 10 Postal staff

Region	Measure	Value (2020)	Annual growth (%)	CAGR (2015–2020, %)
Africa	Full-time staff	56,500	-4.0%	1.1%
Africa	Part-time staff	2,548	-10.7%	3.4%
Africa	Total staff	59,048	-4.3%	1.2%
Arab region	Full-time staff	116,964	-0.2%	1.6%
Arab region	Part-time staff	1,414	-40.7%	-8.4%
Arab region	Total staff	118,378	-1.0%	1.4%
Asia-Pacific region	Full-time staff	1,184,575	-12.9%	-3.2%
Asia-Pacific region	Part-time staff	325,990	1.4%	-1.0%
Asia-Pacific region	Total staff	1,510,565	-10.2%	-2.7%
Europe and CIS	Full-time staff	540,852	-1.9%	-2.2%
Europe and CIS	Part-time staff	180,715	-1.6%	0.2%
Europe and CIS	Total staff	721,567	-1.8%	-1.6%
Industrialized countries	Full-time staff	1,859,511	1.7%	-0.1%
Industrialized countries	Part-time staff	619,106	-6.8%	0.4%
Industrialized countries	Total staff	2,478,617	-0.6%	0.0%
Latin America and Caribbean	Full-time staff	166,360	-0.5%	-3.5%
Latin America and Caribbean	Part-time staff	3,540	40.1%	11.0%
Latin America and Caribbean	Total staff	169,900	0.2%	-3.3%
World	Full-time staff	3,924,762	-3.9%	-1.4%
World	Part-time staff	1,133,313	-3.7%	0.0%
World	Total staff	5,058,075	-3.9%	-1.1%

Source: Regional estimates based on UPU official statistics.

Note: The regional groups are defined in Annex 2.

Figure 9 Post office density per 100,000 inhabitants



Source: Estimates based on UPU official statistics (2021).

Notes: The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of the UPU, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.

5. Competition

Market share indicators

In the past, governments would designate a unique postal operator (the DO), which held monopoly rights in the provision of postal services. Following major undertakings to break up several state-owned monopolies, especially since the 1990s, the postal sector has been liberalized in many countries. As a result, competition has increased among DOs and non-DOs in the letter-post, parcel-post and express-mail segments.

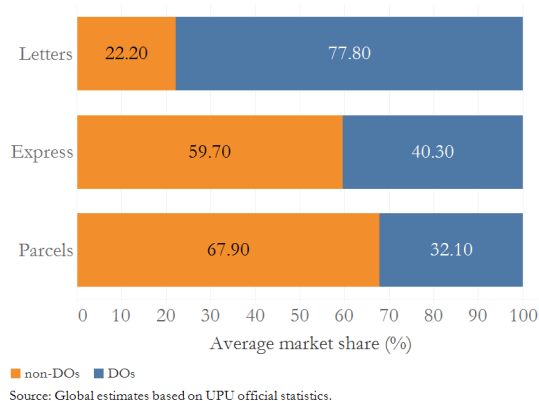
To date, it is not possible to obtain detailed data on the operations of all postal operators in every country. In some cases, such data may simply not be collected centrally, either by regulators or by private entities.

However, with regard to traffic, market share indicators for DOs can be calculated from the UPU official statistics questionnaires that are sent every year to DOs and regulators around the globe. As DOs have historically been the main providers of postal services, a detailed analysis of their market share is helpful in order to understand the evolution of competition in the sector.

Global estimates of market share

This section presents the results of market share estimates from a sample of 86 countries over the 2018–2020 period. A detailed methodology for this estimation exercise is available in Annex 1. The overall average distribution of market share is shown in Figure 11.

Figure 11 DOs' global average market share



Letter-post market share

The letter-post market is currently dominated by DOs. This is unsurprising for two reasons. Firstly, in some countries, DOs still hold monopoly rights for the supply of certain letter-post products. Secondly, the letter-post market is declining. Therefore, even in countries that have liberalized this segment, newcomers may not wish to incur the costs of entering the market in order to displace the dominant incumbent. Figure 10 shows the density estimates of the statistical distribution. It can be deduced that at least 50% of DOs hold 81% or more of their domestic letter-post market.

Figure 10 Density estimate – DOs' market share – letter post

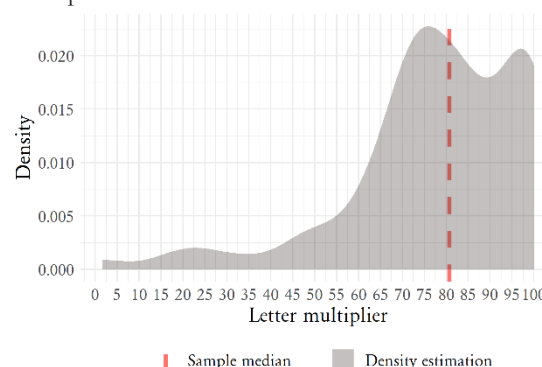


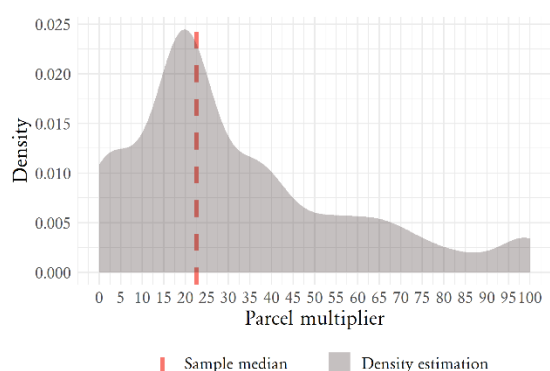
Figure 14 shows the geographical distribution of DOs' market share in the letter-post segment over the 2018–2020 period. DOs hold the highest average market share in this segment in the ICs, with 83.2%. This is slightly above the market share observed in Europe and the CIS (81.6%), and in the Asia-Pacific region (79.4%). Competition seems to be somewhat higher in the Arab region (77%), Africa (73.4%) and Latin America and the Caribbean (72.8%).

Parcel-post market share

The parcel-post segment has experienced the fastest growth. Demand for prompt physical delivery of e-commerce transactions, coupled with business-to-business exchanges in intermediate goods and samples, has led to a considerable surge in demand for parcels and logistics services.

Figure 12 shows the distribution of DOs' market share in parcels and logistics. Unlike in the letter-post segment, DOs do not, on average, hold the majority of their domestic parcels and logistics markets. Over the 2018–2020 period, the average market share of incumbents was 32.2%, with 50% of DOs holding less than 25% of the domestic parcel-post market.

Figure 12 Density estimate – DOs' market share – parcel post



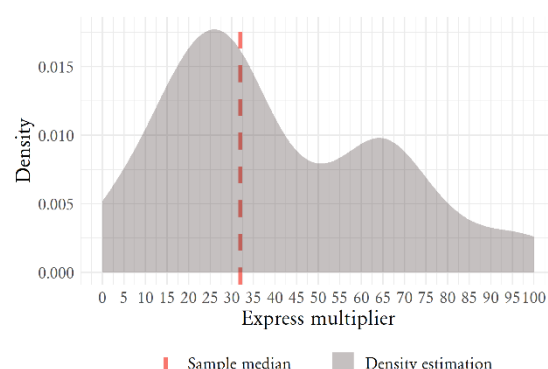
Source: Global estimates based on UPU official statistics.
Notes: Kernel density estimate.

Figure 15 shows the geographical distribution of parcel-post market share. At present, no region has an average DO market share above 50% in the parcel-post segment.

DOs have the strongest presence in this segment in the ICs (47.7%) and in Europe and the CIS (38.9%). In Latin America and the Caribbean, the average market share of DOs stands at 34%. The most dynamically competitive regions appear to be the Asia-Pacific region (26.3%), the Arab region (24.1%) and Africa (19.5%).

Express-mail market share

Figure 13 Density estimate – DOs' market share – express mail

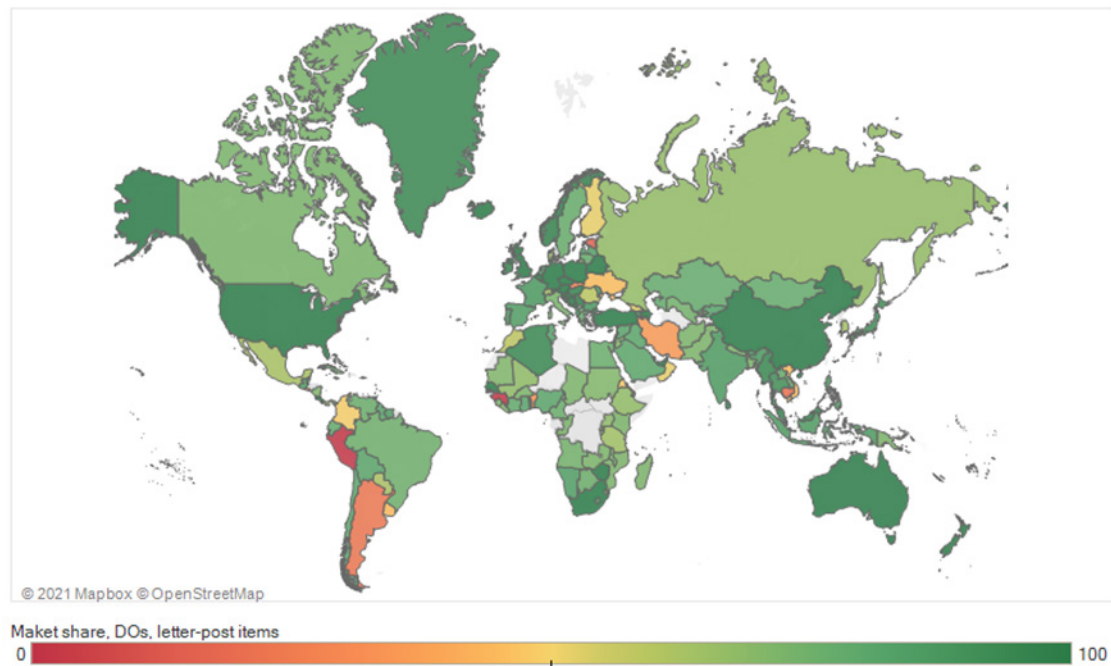


Source: Global estimates based on UPU official statistics.
Notes: Kernel density estimate.

The geographic distribution of market share in the express-mail segment is depicted in Figure 16, which reveals that the market for express delivery of goods and documents has a very similar structure to that of parcel post. On average, DOs hold 40% of their domestic express-mail market.

In the ICs, this average reaches 54.4%. In Europe and the CIS, market share is substantially lower (28.7%). However, the results are relatively homogeneous across the other geographical groups, with 34.4% in the Arab region, 42.5% in the Asia-Pacific region, 32.1% in Latin America and the Caribbean, and 45.7% in Africa. It appears that DOs hold a slightly larger market share in domestic express mail than in parcel post.

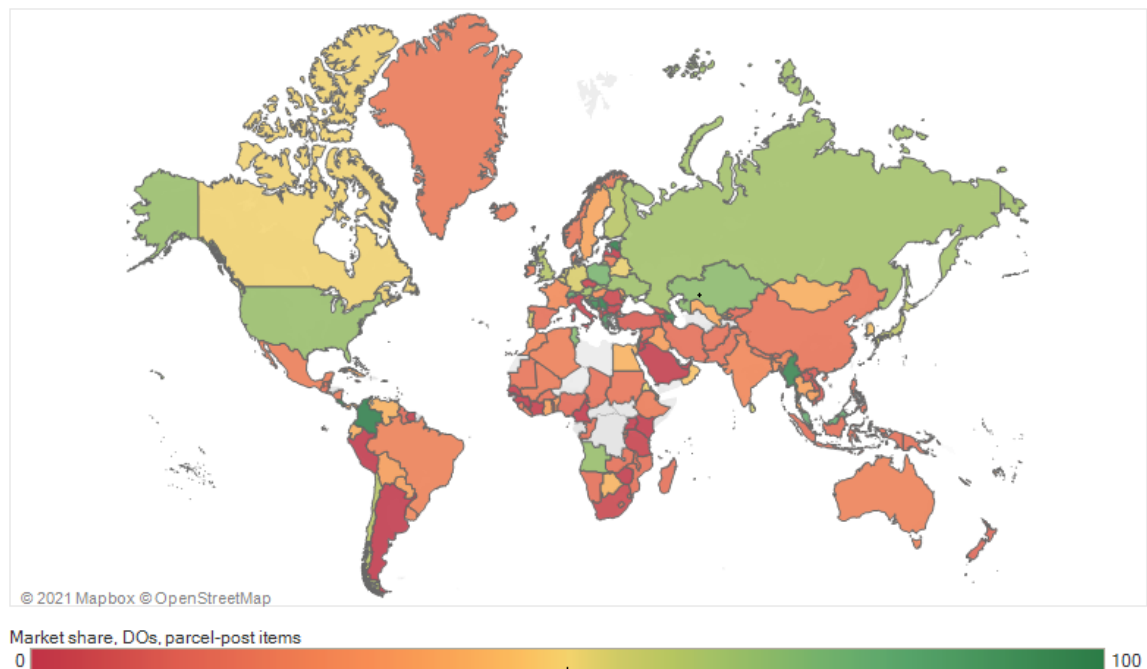
Figure 14 Geographic distribution – DOs' market share – letter post



Source: Estimates based on UPU official statistics.

Notes: The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of the UPU, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.

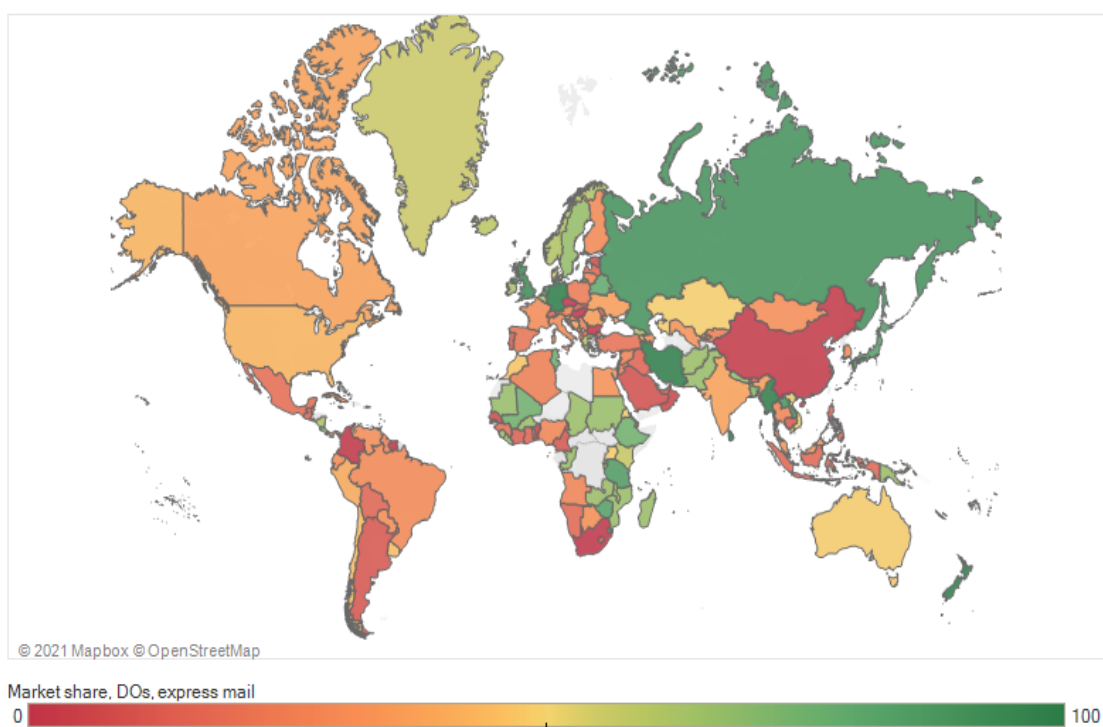
Figure 15 Geographic distribution – DOs' market share – parcel post



Source: Estimates based on UPU official statistics.

Notes: The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of the UPU, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.

Figure 16 Geographic distribution – DOs' market share – express mail



Source: Estimates based on UPU official statistics.

Notes: The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of the UPU, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.

6. Conclusion

As this report has shown, despite numerous signs of a recovery, great risks abound both for the world economy and the postal sector.

In the world economy, the strong surge in demand, powered *inter alia* by strong governmental stimuli, has boosted GDP growth. However, this has also pushed up inflation and exacerbated macroeconomic imbalances that were years in the making.

As digital connectivity continues to progress in all regions, e-commerce growth shows no signs of abating and this sector may emerge as one of the main “winners” in the aftermath of the COVID-19 crisis.

For the postal sector, and especially postal operators, the main spill-over from this macroeconomic context has been a boost to parcel-post transactions. However, accelerated digitalization has gone hand-in-hand with increased substitution of letter mail, which was hitherto the “cash cow” for DOs.

As postal operators attempt to make parcels and logistics (and, potentially, other activities such as financial services) their new star segment(s), they may face a number of challenges. These challenges may define the future of the sector for years, if not decades, to come.

One main hurdle to overcome will be the continued pressure on the profitability and overall financial sustainability of postal operations. As this report has shown, although DOs’ revenue increased in 2020, expenditure rose at an even faster pace, suggesting difficulties with regard to sustainable growth.

One possible explanation for this trend could be the series of constraints on labour supply at the height of the pandemic in 2020. Another more general explanation could be the set of challenges that postal operators may face in converting a large, physical and labour-intensive infrastructure that is designed to process letters into one that focuses primarily on parcels and logistics or other services. More data and focused research will be required to confirm or discount any of these hypotheses.

Another major hurdle for the postal sector will be its ability to attract a greater share of public investment in an era of expanding government stimulus and indebtedness. According to the International Monetary Fund, debt – issued by governments, non-financial corporations and households — reached 226 trillion USD in 2020 having increased by 27 trillion USD.^{xiv} By May 2021, the size of COVID-19 stimulus packages as a proportion of GDP had reached double-digit percentages, surpassing the 20% mark in sizeable economies such as Japan (53.7%), Germany (34.8%), Italy (30.8%) and the United States (26.5%).^{xv} Further infrastructure bills and stimulus packages approved since then will undoubtedly push these percentages upwards.

However, there is currently no readily available evidence that the postal sector, at a global level, has benefited from a surge in governmental financial support, despite being deemed essential by public authorities and being allowed to continue to operate even in the midst of the most stringent lockdowns.

The level of public financial engagement in the sector may be one of the reasons why development gaps continue to grow, with global revenue, traffic and infrastructure becoming increasingly concentrated in a few regions.

Furthermore, as already alluded to in the introduction, climate change will be a growing factor for the world economy and the postal sector in the years to come. Nevertheless, there is still much uncertainty as to how it will be addressed in the medium-to-long term, and how it will affect existing postal infrastructure and operations.

In essence, as the world becomes ever more connected and digitalized, the postal network, with its set of rules, standards and practices, can serve as the physical connector of choice for e-commerce and beyond. However, this will require greater financial commitment from governments, more tailored regulation, improved performance by operators, and greater interoperability with other sectors.

Annex 1: Methodology for the estimation of market share multipliers

The estimation of market share multipliers is an extrapolation of the statistical country database to a sample of 172 countries using standard methods for the treatment of missing data.^{xvi} The procedure comprises two steps. Firstly, for all the countries with available data, a set of “competition multipliers” is defined as follows:

$$M_{letters} = \frac{DO \text{ letter traffic}}{Total \text{ letter traffic}}$$

$$M_{parcels} = \frac{DO \text{ parcel traffic}}{Total \text{ parcel traffic}}$$

$$M_{express} = \frac{DO \text{ express mail traffic}}{Total \text{ express mail traffic}}$$

Secondly, the missing data points are estimated using a 5-fold nearest neighbour imputation algorithm.^{xvii} The algorithm requires that a number of similarity measures between DOs and countries be defined, so that missing values can be estimated on the basis of a weighted average of the closest available neighbours. For the purposes of this study, the following six similarity measures are used:

- i) **Income level of the country:** measured by GDP per capita in current USD;
- ii) **Digital environment:** measured by the percentage of the population with Internet access;
- iii) **Density of the postal network:** measured by the number of post offices per square km;
- iv) **Economies of scale in letter post:** measured by the designated operator’s per-capita letter traffic;
- v) **Economies of scale in parcel post:** measured by the designated operator’s per-capita parcel traffic;
- vi) **Competition in a mail segment:** value of the competition multiplier in one of the segments adjacent to that missing.

The detailed table of medians and means is provided below, together with density estimation graphs.

	Starting sample		Imputed sample	
	Mean	Number of obs.	Mean	Number of obs.
M letters	76.4%	86	77.8%	172
M parcels	39.3%	74	30.2%	172
M express	36.2%	63	40.3%	172

Source: UPU official statistics.

Notes: Imputed sample based on 5-fold nearest neighbour imputation algorithm. The results are presented both for the non-imputed and imputed samples for comparison purposes.

Annex 2: List of countries and regional classification

ISO	Country name	Region	ISO	Country name	Region	ISO	Country name	Region
AC	Ascension	IC	GM	Gambia	Africa	NL	Netherlands	IC
AE	United Arab Emirates	Arab Region	GN	Guinea	Africa	NO	Norway	IC
AF	Afghanistan	Asia Pacific	GQ	Equatorial Guinea	Africa	NP	Nepal	Asia Pacific
AG	Antigua and Barbuda	Latin America and Caribbean	GR	Greece	IC	NR	Nauru	Asia Pacific
AI	Anguilla	Latin America and Caribbean	GT	Guatemala	Latin America and Caribbean	NZ	New Zealand	IC
AL	Albania	Europe and CIS	GW	Guinea-Bissau	Africa	OM	Oman	Arab Region
AM	Armenia	Europe and CIS	GY	Guyana	Latin America and Caribbean	PA	Panama (Rep.)	Latin America and Caribbean
AN	Netherlands Antilles	Latin America and Caribbean	HK	Hongkong, China	Asia Pacific	PE	Peru	Latin America and Caribbean
AO	Angola	Africa	HN	Honduras (Rep.)	Latin America and Caribbean	PF	French Polynesia	IC
AR	Argentina	Latin America and Caribbean	HR	Croatia	Europe and CIS	PG	Papua New Guinea	Asia Pacific
AT	Austria	IC	HT	Haiti	Latin America and Caribbean	PH	Philippines	Asia Pacific
AU	Australia	IC	HU	Hungary	Europe and CIS	PK	Pakistan	Asia Pacific
AW	Aruba	Latin America and Caribbean	ID	Indonesia	Asia Pacific	PL	Poland	Europe and CIS
AZ	Azerbaijan	Europe and CIS	IE	Ireland	IC	PN	Pitcairn Islands	IC
BA	Bosnia and Herzegovina	Europe and CIS	IL	Israel	IC	PT	Portugal	IC
BB	Barbados	Latin America and Caribbean	IM	Isle of Man	IC	PY	Paraguay	Latin America and Caribbean
BD	Bangladesh	Asia Pacific	IN	India	Asia Pacific	QA	Qatar	Arab Region
BE	Belgium	IC	IQ	Iraq	Arab Region	RO	Romania	Europe and CIS
BF	Burkina Faso	Africa	IR	Iran (Islamic Rep.)	Asia Pacific	RS	Serbia	Europe and CIS
BG	Bulgaria (Rep.)	Europe and CIS	IS	Iceland	IC	RU	Russian Federation	Europe and CIS
BH	Bahrain (Kingdom of)	Arab Region	IT	Italy	IC	RW	Rwanda (Rép.)	Africa
BI	Burundi	Africa	JE	Jersey	IC	SA	Saudi Arabia	Arab Region
BJ	Benin	Africa	JM	Jamaica	Latin America and Caribbean	SB	Solomon Islands	Asia Pacific
BM	Bermuda	Latin America and Caribbean	JO	Jordan	Arab Region	SC	Seychelles	Africa
BN	Brunei Darussalam	Asia Pacific	JP	Japan	IC	SD	Sudan	Arab Region
BO	Bolivia	Latin America and Caribbean	KE	Kenya	Africa	SE	Sweden	IC
BR	Brazil	Latin America and Caribbean	KG	Kyrgyzstan	Europe and CIS	SG	Singapore	Asia Pacific
BS	Bahamas	Latin America and Caribbean	KH	Cambodia	Asia Pacific	SH	St Helena	Latin America and Caribbean
BT	Bhutan	Asia Pacific	KI	Kiribati	Asia Pacific	SI	Tristan da Cunha	IC
BW	Botswana	Africa	KM	Comoros	Arab Region	SI	Slovenia	Europe and CIS
BY	Belarus	Europe and CIS	KN	Saint Christopher (St. Kitts) and Nevis	Latin America and Caribbean	SK	Slovakia	Europe and CIS
BZ	Belize	Latin America and Caribbean	KP	Dem People's Rep. of Korea	Asia Pacific	SL	Sierra Leone	Africa
CA	Canada	IC	KR	Korea (Rep.)	Asia Pacific	SM	San Marino	IC
CD	Democratic Republic of the Congo	Africa	KW	Kuwait	Arab Region	SN	Senegal	Africa
CF	Central African Rep.	Africa	KY	Cayman Islands	Latin America and Caribbean	SO	Somalia	Arab Region
CG	Congo (Rep.)	Africa	KZ	Kazakhstan	Europe and CIS	SR	Suriname	Latin America and Caribbean
CH	Switzerland	IC	LA	Lao People's Dem. Rep.	Asia Pacific	SS	South Sudan (Rep)	Arab Region
CI	Côte d'Ivoire (Rep.)	Africa	LB	Lebanon	Arab Region	ST	Sao Tome and Principe	Africa
CL	Chile	Latin America and Caribbean	LC	Saint Lucia	Latin America and Caribbean	SV	El Salvador	Latin America and Caribbean
CM	Cameroon	Africa	LI	Liechtenstein	IC	SY	Syrian Arab Rep.	Arab Region
CN	China (People's Rep.)	Asia Pacific	LK	Sri Lanka	Asia Pacific	SZ	Eswatini	Africa
CO	Colombia	Latin America and Caribbean	LR	Liberia	Africa	TC	Turks and Caicos Islands	Latin America and Caribbean
CR	Costa Rica	Latin America and Caribbean	LS	Lesotho	Africa	TD	Chad	Africa
CU	Cuba	Latin America and Caribbean	LT	Lithuania	Europe and CIS	TG	Togo	Africa
CV	Cape Verde	Africa	LU	Luxembourg	IC	TH	Thailand	Asia Pacific
CY	Cyprus	Europe and CIS	LV	Latvia	Europe and CIS	TJ	Tajikistan	Europe and CIS
CZ	Czech Rep.	Europe and CIS	LY	Libya (State of)	Arab Region	TL	Timor-Leste (Dem. Rep.)	Asia Pacific
DE	Germany	IC	MA	Morocco	Arab Region	TM	Turkmenistan	Europe and CIS
DJ	Djibouti	Arab Region	MC	Monaco	IC	TN	Tunisia	Arab Region
DK	Denmark	IC	MD	Moldova	Europe and CIS	TO	Tonga	Asia Pacific
DM	Dominica	Latin America and Caribbean	ME	Montenegro	Europe and CIS	TR	Turkey	Europe and CIS
DO	Dominican Republic	Latin America and Caribbean	MG	Madagascar	Africa	TT	Trinidad and Tobago	Latin America and Caribbean
DZ	Algeria	Arab Region	MK	North Macedonia	Europe and CIS	TV	Tuvalu	Asia Pacific
EC	Ecuador	Latin America and Caribbean	ML	Mali	Africa	TZ	Tanzania (United Rep.)	Africa
EE	Estonia	Europe and CIS	MM	Myanmar	Asia Pacific	UA	Ukraine	Europe and CIS
EG	Egypt	Arab Region	MN	Mongolia	Asia Pacific	UG	Uganda	Africa
ER	Eritrea	Africa	MO	Macao, China	Asia Pacific	US	United States of America	IC
ES	Spain	IC	MR	Mauritania	Arab Region	UY	Uruguay	Latin America and Caribbean
ET	Ethiopia	Africa	MS	Montserrat	Latin America and Caribbean	UZ	Uzbekistan	Europe and CIS
FI	Finland	IC	MT	Malta	Europe and CIS	VA	Vatican	IC
FJ	Fiji	Asia Pacific	MU	Mauritius	Africa	VC	Saint Vincent and the Grenadines	Latin America and Caribbean
FK	Falkland Islands (Malvinas)	IC	MV	Maldives	Asia Pacific	VE	Venezuela (Bolivarian Rep.)	Latin America and Caribbean
FO	Faroe Islands	IC	MW	Malawi	Africa	VG	Virgin Islands	Latin America and Caribbean
FR	France	IC	MX	Mexico	Latin America and Caribbean	VN	Viet Nam	Asia Pacific
GA	Gabon	Africa	MY	Malaysia	Asia Pacific	VU	Vanuatu	Asia Pacific
GB	Great Britain	IC	MZ	Mozambique	Africa	WF	Wallis and Futuna Islands	IC
GD	Grenada	Latin America and Caribbean	NA	Namibia	Africa	WS	Samoa	Asia Pacific
GE	Georgia	Europe and CIS	NC	New Caledonia	IC	YE	Yemen	Arab Region
GG	Guernsey	IC	NE	Niger	Africa	ZA	South Africa	Africa
GH	Ghana	Africa	NF	Norfolk Island	IC	ZM	Zambia	Africa
GI	Gibraltar	IC	NG	Nigeria	Africa	ZW	Zimbabwe	Africa
GL	Greenland	IC	NI	Nicaragua	Latin America and Caribbean			

Endnotes

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- ⁱ For real-time updates, visit the WHO COVID-19 dashboard. Available at covid19.who.int/
- ⁱⁱ At the time of writing, the epidemiologic situation in Europe remains delicate, with some countries (e.g. Austria) reintroducing lockdown policies.
- ⁱⁱⁱ ICAO (November 2021). Effects of Novel Coronavirus (COVID-19) on Civil Aviation: Economic Impact Analysis. Available at www.icao.int/sustainability/Documents/COVID-19/ICAO_Coronavirus_Econ_Impact.pdf
- ^{iv} International Monetary Fund (October 2021). World Economic Outlook: Recovery during a Pandemic – Health Concerns, Supply Disruptions, and Price Pressures. Washington, DC. Available at <https://www.imf.org/en/Publications/WEO/Issues/2021/10/12/world-economic-outlook-october-2021>.
- ^v World Bank Group (October 2020). Phase II: COVID-19 Crisis through a Migration Lens. Migration and Development Brief 33. Washington, D.C. Available at www.knomad.org/publication/migration-and-development-brief-33
- ^{vi} ITU (2020). Measuring digital development: Facts and figures 2020. Available at <https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2020.pdf>.
- ^{vii} World Bank Group (October 2020). Phase II: COVID-19 Crisis through a Migration Lens. Migration and Development Brief 33. Washington, D.C. Available at www.knomad.org/publication/migration-and-development-brief-33
- ^{viii} For example, PostNL increased its letter-post volumes in 2020 by 17% through the acquisition of Sandd.
- ^{ix} The series of international letter-post volumes has been re-estimated from 2015 onwards, so as to take into account the restated amounts for exports from China (People's Rep.).
- ^x It is worth noting that an international parcel may not mean the same as a domestic parcel in individual countries. According to UPU regulations, a large proportion of items containing goods and not exceeding certain size and weight limits fall under the letter-post regime.
- ^{xi} UPU (2021). Postal Development Report. Available at <https://www.upu.int/en/Publications/2IPD/Postal-Development-Report-2021>.
- ^{xii} The annual revenue of La Poste Groupe reached 31.185 billion EUR in 2020, 40% of which was generated internationally. This information is presented in the group's key financial figures. Available at www.lapostegroupe.com/en/financial-key-figures
- ^{xiii} In their responses to the statistical questionnaire, some countries do not distinguish between the population that has the possibility of renting a post office box and does not do so, and the population that does not even have potential access to this option.
- ^{xiv} International Monetary Fund (October 2021). Fiscal Monitor: Strengthening the Credibility of Public Finances. Washington, DC. Available at <https://www.imf.org/en/Publications/FM/Issues/2021/10/13/fiscal-monitor-october-2021>.
- ^{xv} Statista (2021). Value of COVID-19 fiscal stimulus packages in G20 countries as of May 2021, as a share of GDP. Available at <https://www.statista.com/statistics/1107572/covid-19-value-g20-stimulus-packages-share-gdp/>.
- ^{xvi} Cover T. & Hart P. (1967). Nearest neighbour pattern classification. In: IEEE transactions on information theory, vol. 13, No. 1, pp 21-27.
- ^{xvii} Ibid.

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