UNIVERSAL POSTAL UNION

UPU Think Tank Brief

No. 1/2023 // thinktank@upu.int // www.upu.int

Decoupling postal growth and environmental impact: a path to sustainable deliveries and development

I. Introduction

The concept of "environmental decoupling", which can be defined as "*breaking the link between environmental bads and economic goods*",[1] is critical for pro-planet, long-term, sustainable economic growth. While greenhouse gas emissions have generally been increasing worldwide, there are certain instances where some countries have reduced their CO_2 emissions over consecutive years, even as their gross domestic product continued to grow: decoupling was achieved[2].

This policy brief explores the potential for, and the economic implications of, "decoupling" the global postal sector, which is a contributor to global CO_2 emissions. It also discusses the types of decoupling and the need for better postal decoupling outcomes, namely for absolute declines of CO_2 emissions in spite of growth in parcel-post activity (strong decoupling), or lower-than-proportional emissions increases (weak decoupling) effectively responding to climate change.

II. Context and importance of the issue

The postal sector is undergoing significant structural changes owing to a number of systemic, macrosocial factors[3]. Two significant factors affecting the sector are the rise of digital communication and the growth of global e-commerce. Both of these have implications for the sector's environmental footprint, particularly its CO_2 emissions, through substantial increases in parcel deliveries and declines in letter-post volumes.

According to a recent report on the main developments in the postal sector between 2017 and 2021[4], total CO_2 emissions from domestic letter and parcel delivery in the European Union (EU) was relatively constant between 2013 and 2016. Indeed, a decrease in emissions from falling letter volumes compensated for increasing emissions from higher volumes of parcel deliveries. However, since 2017, total carbon emissions by EU postal operators have grown by an annual average rate of 12%, owing to changes in the letter-parcel mix and the facts that the decrease in letter-post volume doesn't translate into a proportional decrease of CO_2 emissions and that parcel delivery requires significantly more logistical and transportation capacity than letter-post delivery. There is now an increasing proportion of heavy parcels, which can also be explained by the fact that consumers purchase a greater variety of products online. In 2020, in the EU, 71% of postal CO_2 emissions resulted from deliveries of parcels (56% in 2017)[5].

Postal operators are taking cogent and coherent steps to mitigate this rise in emissions. This includes the increasing use of environmentally friendly transport, from electric vehicles powered by renewable energies to employees delivering postal items on foot.

For the global postal sector, the need to decouple postal business growth from its carbon footprint is not only crucial for the sector's long-term sustainable development, but it is also central to contribute to global efforts to mitigate the effects of climate change.

However, as studies show, environmentally decoupling the global economy is a controversial issue. Some have even suggested that it may not be feasible on a global scale or in the long term[6].

III. Findings and analysis

A. Decoupling the postal sector: Tapio's approach

To analyze this topic, we have applied the Tapio elasticity indicator methodology, which has become the most extensively used and agreed-upon method of analysis among researchers studying the relationship between growth in one sector of economic activity and changes in CO_2 emissions in this sector[7].

[1] OECD (2008). Measuring material flows and resource productivity: The OECD Guide.

[2] Hubacek K. et al. (2021). "Evidence of decoupling consumption-based CO_2 emissions from economic growth". Advances in Applied Energy, 4, pp. 1–10.

[3] UPU (2023). State of the Postal Sector. UPU, forthcoming.

[4] Cerpickis M. et al. (2002). Main developments in the postal sector (2017–2021). Study for the European Commission, Directorate General for Internal Market, Industry, Entrepreneurship, and SMEs, November.

[5] Ibid

[6] Parrique T. et al. (2019). Decoupling debunked: Evidence and arguments against green growth as a sole strategy for sustainability. European Environmental Bureau.

[7] Tapio, P. (2005). "Towards a theory of decoupling: degrees of decoupling in the EU and the case of road traffic in Finland between 1970 and 2001". Transport Policy, Volume 12, Issue 2, pp. 137–151.

We have used postal CO_2 emissions data on total emissions per postal operator (including scopes 1, 2 and 3), as well as their specific letter-post and parcel-post carbon footprint. For this purpose, data from the UPU and International Post Corporation was combined for 38 countries for the 2017–2020 period. UPU data on emissions is provided in a standardized way in OSCAR (Online Solution for Carbon Analysis and Reporting).

We then added data on volumes per postal product, distinguishing three cases: the number of letter-post (mail) items delivered by a postal company; the number of parcel-post items delivered; and the total number of postal items delivered, corresponding to the sum of the two previous product categories.

The combination of both data sources allows for the creation of the largest dataset on carbon emissions in the postal sector, covering countries at different stages of economic development. The variability in postal emissions data in the dataset is critical to test our hypotheses.

Our analysis shows that the decoupling of postal output from postal emissions **varies across countries,** but so far we **cannot detect a clear pattern towards strong or weak decoupling achievements**.

Only four operators were found to be in a situation of strong or weak decoupling, as shown by the distribution of decoupling outcomes in Figure 1. These "green growth" operators were able to **combine growth in delivery volumes with proportionally lower increases – or even reductions – in total postal emissions** between 2017 and 2020. This means that **green growth is possible in the postal sector** and some green success stories can be found.

However, more than half of postal operators in our subsample were classified in a **situation of weak or strong negative decoupling**, with postal emissions clearly falling at a slower pace than total delivery volumes (Figure 1).

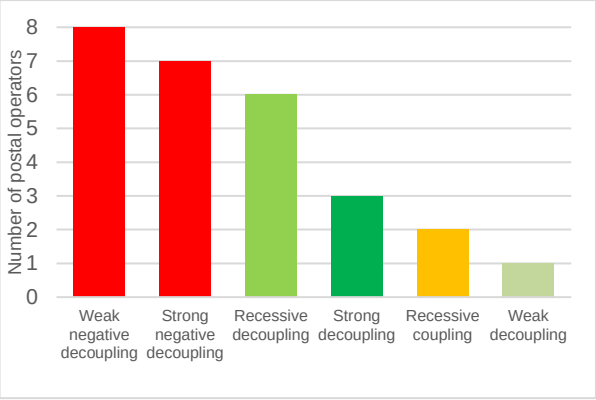

Figure 1: *Distribution of decoupling outcomes related to all postal items for the 2017–2020 period (colours reflect desirability level of the outcomes: green for desirable, orange and red for undesirable).*

If we take a closer look at decoupling by letter-post and parcel-post deliveries versus their carbon footprint impact, the 2017–2020 Tapio decoupling analysis becomes **less favourable in terms of environmental damage caused by letter-post deliveries**.

Except for six operators in recessive decoupling (Figure 1), we find that there is **no "green degrowth" for the letter-post segment**, meaning that lower volumes of mail do not necessarily contribute to accelerating declines in postal CO_2 emissions.

This **might be linked to the universal service obligation** (USO), with some postal operators facing challenges in the requirement to maintain, over time, a costly and dense infrastructure to deliver decreasing mail volumes, while retaining high quality of service standards (e.g. leading to an increasing share of postal vehicles operating routes with very low letter-post volumes that must still be delivered on a five to six times a week basis, in many countries, under their current USO constraints and for the next day in some cases, limiting letter-post-delivery decarbonization).

B. Impact of postal volumes on emissions

To further analyze these findings, we conducted a cross-country analysis, which suggests a less than proportional impact of growth in total postal volumes on emissions and underscores the **potential for decoupling in the postal sector** (Figure 2).

Overall, we find that, all others thing being equal, a **10% surge in the total number of postal items being delivered led to an increase of 3.2% in total postal CO_2 emissions** in 2020.

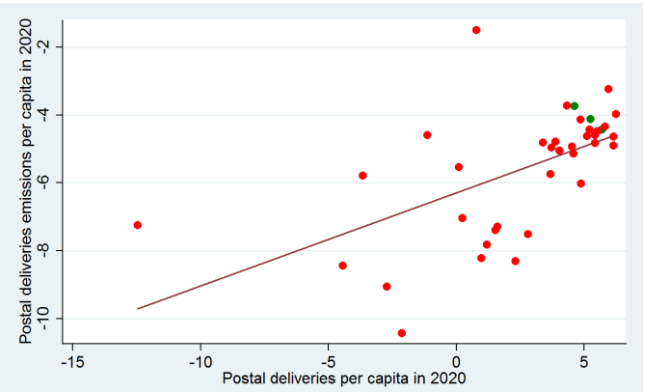

Figure 2: *Relationship between postal emissions per capita and the number of delivered items per capita (total items). Green dots indicate cases of operators having already clearly achieved decoupling of their volumes and CO_2 emissions growth while red dots correspond to postal operators that are not showing any clear pattern towards strong or weak decoupling yet.*

We find that, in 2020, the delivery elasticity for the letter-post was statistically significant and much lower than one, whereas the delivery elasticity for the parcel-post was almost equal to one.

This suggests, once deliveries of letter-post and parcel-post items are combined in the same last-mile network, less then proportionally higher CO_2 emissions resulting from higher parcel volumes. **Decarbonization is supported by greater delivery consolidation across different categories of delivery services.**

C. Letter-post activity and emissions

The decline in letter-post activity often triggers **a less than proportional decline, or even an increase, in postal emissions** related to letter-post deliveries.

We hypothesize that this could be linked to the USO and, in particular, the obligation to deliver letters every working day, one or two days after posting, throughout the entire territory of many countries around the world. Large active fleets of vehicles are transporting fewer and fewer letter-post items while keeping delivery routes and frequencies unchanged. As a result, CO_2 emissions are not decreasing as much as letter-post volumes in these circumstances (negative decoupling).

D. Parcel segment and emissions

The parcel segment shows a **slightly more environmentally friendly picture**, with one operator proving that it was feasible to grow parcel volumes while simultaneously decreasing parcel delivery emission levels.

The most frequent case among parcel delivery decoupling outcomes corresponds to weak decoupling, meaning that **emissions generated by parcel deliveries were growing at a slower pace than parcel volumes** between 2017 and 2020.

However, as highlighted by almost equally frequent cases of expansive negative decoupling, when growth in volumes is outpaced by growth in CO_2 emissions, higher online shoppers' expectations in terms of delivery service speed challenge the ability of some posts to decisively reduce carbon emissions or limit their growth**.** In this respect, **a shift from delivery speed to delivery time predictability in consumers' preferences could strengthen decarbonization**.

IV. Research conclusions

Our findings suggest that, while some progress has been made towards decoupling in the postal sector**, there is still a long way to go**.

To achieve sectoral "green goals", we consider that there is significant potential for "*hypercollaboration*" between all stakeholders in the postal sector.

Indeed, given the fact that postal operators have already made significant voluntary efforts to reduce their CO_2 emissions and are opting for greater investment in green technologies, better postal decoupling patterns could be observed if customers were to become more aware of the environmental impacts of their consumption behaviour.

Moreover, if policymakers' review of the USO was to led to a relaxation of delivery obligations, **we could expect the postal sector to strongly contribute to general economic decoupling in the near future, too**.

These broad transformations based on cooperation, collaboration and "efforts" made by all stakeholders would not only make the postal sector more sustainable but would also contribute to wider efforts to mitigate climate change.

V. The role of hypercollaboration

Hypercollaboration is a process that involves intense cooperation and coordination among various stakeholders. This approach could be a game-changer in addressing climate challenges in the postal sector.

By bringing together postal and logistics operators, policymakers, customers and other stakeholders to work collectively, the sector can take significant steps towards decoupling economic growth from its environmental impact.

Within this model, each stakeholder has a unique role:

i Postal and logistics operators can lead the way by investing in green technologies and adopting sustainable practices. They can also share best practices and learn from each other to accelerate the transition towards a more sustainable postal sector, and even consider, in some circumstances, the possibility of greater delivery infrastructure sharing leading to consolidated deliveries in the last mile.

ii Policymakers can create an enabling environment for decoupling by relaxing outdated delivery obligations and providing incentives for green practices and technologies. They can also facilitate collaboration among different stakeholders through policy frameworks and platforms adapted to their country's development level.

iii Customers can contribute by becoming more aware of the environmental impacts of their consumption behaviour and choosing more sustainable delivery options. They can also demand greener services, which can drive postal operators to adopt more sustainable practices.

iv E-commerce platforms, as a major driver of parcel delivery volumes, have a significant role to play. They can implement sustainable packaging practices, offer carbon-neutral shipping options, and educate their customers about the environmental impact of their purchases and returns. They can also collaborate with postal operators to optimize

delivery routes and schedules, reducing the carbon footprint of deliveries.

- Other stakeholders – technology providers, research institutions and civil society organizations – can also contribute to this approach. For instance, technology providers can develop innovative solutions to reduce the environmental impact of the postal sector, research institutions can provide evidence-based insights to inform decision making, and civil society organizations can raise public awareness and advocate for sustainable delivery practices.

VI. Benefits of hypercollaboration

Hypercollaboration among all postal sector stakeholders could offer several benefits.

By working together, stakeholders could **create synergies that could accelerate the transition towards a more sustainable postal sector**. For instance, the combination of technological innovations from technology providers, supportive policies from policymakers, demand for greener services from customers and sustainable practices from postal operators could lead to significant reductions in CO_2 emissions.

Hypercollaboration could foster innovation by bringing together diverse perspectives and expertise. This could lead to the development of novel solutions to reduce the environmental impact of e-commerce deliveries.

This hypercollaborative model could also distribute the responsibility of tackling climate challenges among various stakeholders, making it a shared endeavour.

Lastly, this way of working could increase the commitment and accountability of each stakeholder, leading to more effective and sustainable outcomes over time.

VII. Recommendations

Based on our analysis and understanding of the sector as a whole, we can make the following recommendations to postal sector policymakers, regulators and postal operators.

A. Continue investing in green technologies

Postal operators **should continue to invest in green technologies** to reduce their environmental impact, particularly in terms of CO_2 emissions. These investments could include more energy-efficient vehicles, renewable energy sources for facilities and innovations in packaging and delivery processes.

B. Undertake appropriate policy reforms

Policymakers **could consider relaxing onerous delivery obligations** and **avoid imposing additional and costly regulatory measures on postal operators**, which could facilitate decoupling in the postal sector.

Policies that incentivize the adoption of green practices, greater delivery infrastructure sharing and consolidation, and eco-friendly technologies in the postal sector could also be beneficial.

C. Foster research and development

Further research is needed to understand the barriers to decoupling in the postal sector and how they can be overcome. This **research could inform the development of new technologies and practices** that could reduce the environmental impact of the postal sector.

Measurement is critical to progress. Econometric analysis could be systematically used to estimate and monitor the statistical relationship between postal emissions per capita and postal delivery volumes per capita across countries, and over time, after the introduction of climate change mitigation measures.

D. Raise public awareness

Public awareness campaigns and nudging should be conducted **to make customers more aware of the environmental impacts of their consumption behaviours**.

These campaigns could encourage customers to choose more sustainable delivery options and reduce their demand for fast delivery, which often leads to higher emissions, and moderate their rate of return.

Information and disclaimers

This brief was co-authored by Dr Claire Borsenberger (La Poste Group) and Dr José Anson (UPU). It was first presented as a discussion paper to the 31st Postal and Delivery Economics Conference in Gdańsk, Poland.