

# Developments in the Dutch Postal Market

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## List of abbreviations

B2B	Business to business
B2C	Business to consumer (individuals)
bn	billion
C2C	Consumer to consumer
CAGR	Compound annual growth rate
CLA	Collective labour agreement
CPB	Centraal Planbureau
DDMA	Dutch Dialogue Marketing Association
e.g.	for example
g	Gram
h	Hour
i. a.	inter alia (among other things)
IPC	International Post Corporation
kg	Kilogram
m	million
NMa	Nederlandse Mededingingsautoriteit
NUV	Nederlands Uitgevers Verbond (Dutch Publisher Association)
OPTA	Onafhankelijke Post en Telecommunicatie Autoriteit
OVO	Overeenkomst van opdracht
SME	Small and medium-sized enterprises
SOHO	Small office, home office
VGP	Vereniging Grootgebruikers Postdiensten
UPU	Universal Postal Union
US	Universal service

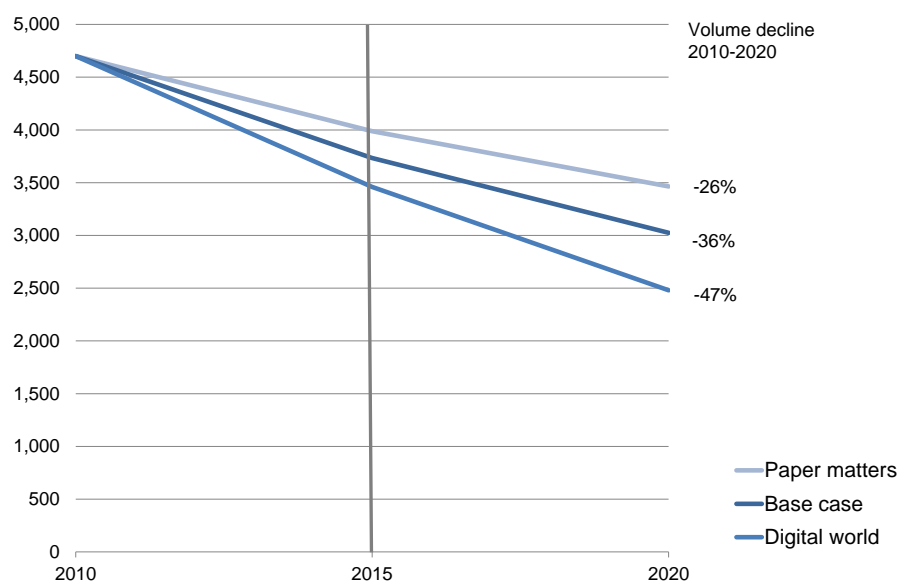


## Executive summary

The Ministry of Economic Affairs, Agriculture and Innovation commissioned WIK to prepare a study on future developments in the Dutch postal market. This study was prepared between May and August 2011.

Based on extensive desk research and interviews with postal operators, mailers and associations, WIK expects that domestic and international mail volumes will continue to decline.

Figure ES-1 Trend forecast: total domestic mail volume 2010-2020



Source: Estimation WIK-Consult

The figure below presents our estimate for the future development of domestic mail volume in the Netherlands, for three scenarios called “paper matters”, “base case” and “digital world”.

From 2010 onwards, we expect that domestic mail volume will decline between 3.0 and 6.2 per cent per year, i.e. domestic mail volume will decline between 15 to 26 per cent until 2015, and between 26 and 47 per cent until 2020.

However, volume developments differ between mail segments (see table below)

- Transaction mail, including regular invoices, statements and notifications to consumers and businesses, will decline most substantially of all segments, driven by digitalisation and the active promotion of digital channels.

- The development of social and office mail (daily correspondence from businesses and institutions) is more influenced by continuous changes in communication behaviour. Volume losses in these segments are expected to be lower than for transaction mail.
- Addressed advertising mail will maintain its position in the marketing mix of advertisers. Volumes will decline slightly, less than total letter volume.
- Periodicals are also challenged by digitalisation but increasing variety of titles and the traditionally close relationship of Dutch people to paper-based magazines limits this process.

Table ES-1 Volume trends for domestic mail segments by 2015 and 2020, all scenarios

Scenario	Total volume change in % 2010-2015			Total volume change in % 2010-2020		
	Letters	Advertising mail	Periodicals	Letters	Advertising mail	Periodicals
Paper matters	-21%	-6%	-9%	-33%	-15%	-19%
Base case	-27%	-11%	-13%	-45%	-22%	-25%
Digital world	-34%	-16%	-17%	-55%	-36%	-37%

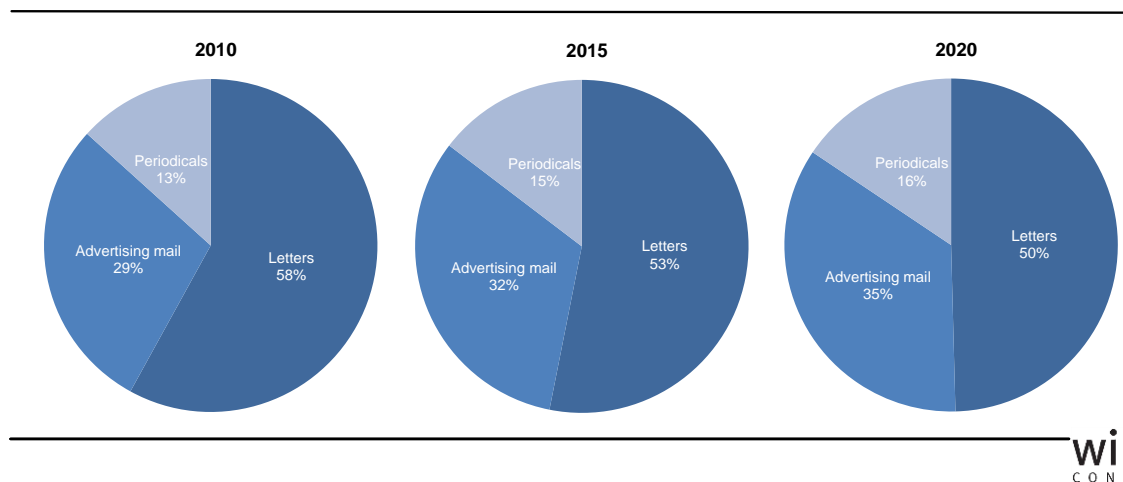
Source: Estimation WIK-Consult

The negative mail trend also affects the volume of universal services (defined by postal legislation as single piece domestic mail and all international mail). In the three different scenarios, universal service volume will drop by 20 to 28 per cent until 2015, and by 32 to 49 per cent of today's volume until 2020. Overall, the share of universal service volume in total letter volume will decline because of the continuous migration of from universal service products to non-universal products, particularly in the office mail segment.

Recent data reported by OPTA for 2010 and by PostNL the first three quarters of 2011 (after completion of our forecasts) suggests that the Dutch mail volume is currently developing more in line with the "digital world" scenario than with the base case. In November 2011, the "digital world" scenario therefore appears as the most likely scenario.<sup>1</sup>

<sup>1</sup> This paragraph was added to the report in November 2011.

Figure ES-2 Structure of domestic mail in 2010, 2015 and 2020 (“base case”)



Source: Estimation PostNL (2010), Estimation WIK-Consult (2015 and 2020)

For the foreseeable future, we expect that businesses and individuals will continue mailing addressed advertising mail, periodicals and letters even though this report cannot forecast a possible bottom line for mail volume. Even after 2020, there will be individuals who are either not able to switch to digital communication or who still prefer paper communication, at least for some types of communication. For example, we expect that Christmas and greeting cards, and addressed advertising mail will not be substantially replaced by digital solutions soon. The composition of mail is clearly changing: As overall volumes decline, letters are becoming a less important part of mail, and advertising and periodicals are getting relatively more important (see figure above).

In contrast to the negative volume trend in mail, the Dutch parcel market, particularly the B2C segment (business parcels sent to consumers), is dynamically growing with exceptionally high growth rates. The key players in the Dutch mail market, PostNL and Sandd, are both trying to capitalize on this opportunity: PostNL is intensifying its domestic and cross-border parcel activities while Sandd plans to enter the parcel market next year.

Two years after full market opening the acquisition of Selekt Mail by Sandd has led to a quasi-duopoly in the Dutch mail market. WIK expects that this duopoly will be stable as long as both companies are successful in further improving productive efficiency, limiting future cost increases, and extending their business activities into growing areas.

We expect that prices in the Dutch postal mail market will increase in most segments. Price developments in the postal market are influenced by a number of factors, most important of which are price elasticity, competition and substitution. Price elasticity gives an indication of the expected market volume change with a price change for different market segments, irrespective of competitive pressure or effects of, for example, digitalisation. Competition has a disciplining effect on the pricing policy of postal

operators. Digitalisation also has such a disciplining effect since it leads to a decline in total volumes and subsequently more competitive pressure over the remaining volumes. However, because of the lower total market volume, digitalisation also puts pressure on postal companies to increase prices to compensate higher cost per post item. The price increases we expect will partly be driven by the foreseen collective labour agreement between PostNL's competitors in the mail market and the unions, and the resulting wage increases. Price increases will vary between segments, depending on current price levels and intensity of competition in each market segment:

- Price increases will be limited and, at most, reflect future cost increases in the most competitive mail segments: advertising mail and periodicals.
- Prices in segments with little competitive pressure will rise more substantially. This particularly affects priority mail services, and thus domestic universal services. Much of these price increases will result from a decline in priority volumes, and the higher average cost at lower volume (the extra cost for next-day delivery will have to be funded by fewer priority letters, and average cost for priority letters increase).
- We expect prices will not increase much, and may in fact decline in those segments where more competition is expected for the future. These segments are non-priority products for office mail and transaction mail.

## 1 Introduction

### 1.1 Background and objectives of the study

Postal markets worldwide face declining mail volumes, while parcel markets, particularly the delivery of parcels to consumers, are growing. The Netherlands is one of the European countries that appears to be most affected by declining mail volumes. PostNL (formerly TNT Post) claims in its 2010 annual report that “the ongoing substitution of physical mail by electronic forms of communication and competition in the first full year of a liberalised market led to a letter volume decline in the Netherlands of 9.0%”<sup>2</sup>.

The Ministry of Economic Affairs, Agriculture and Innovation commissioned WIK to prepare a study on future developments in the Dutch postal market. More specifically, the Ministry requested answers to the following research questions:

- What factors will influence the development of the postal market in the years to come and in what ways?
- What will be the volume of the postal market and its various market segments in 2015 and 2020?
- What portion of this volume falls under Universal Service and how great is the demand for Universal Service?
- What does this mean for the viability of postal companies and competition?
- How will prices develop in the postal market?
- What does it mean for the position of mail carriers?
- In what ways does the government have an influence on postal market developments?

The main purpose of the study is to provide data and background information on the developments in the Dutch postal market to the Ministry and Parliament to support upcoming reviews of Dutch postal legislation.

The report is structured in two major parts. In chapter 2, we provide the overall market assessment. In this chapter each of the research questions listed above will be addressed, based, where possible, on a quantitative assessment, and on a qualitative assessment. In chapter 3, we first present the forecast results for each segment and, second, assess and explain the developments of each mail segment in more detail.

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<sup>2</sup> TNT, Annual Report 2010, p. 6.

## 1.2 Market segmentation

Any market segmentation depends on the purpose of the analysis. In many studies<sup>3</sup> the segmentation departs from operational (i.e. supply-side) product features. The primary objective of this study is to forecast future developments of mail volumes, and our segmentation serves this purpose. In this study we combine the operational view with a more demand-oriented view in order to clearly separate differences; first, in relevant influence factors that affect volume development; and second, in competition intensities. Additionally, restrictions on data availability were taken into account.

We distinguish between the Dutch mail and the Dutch parcel market. The mail market consists of domestic and international mail. Domestic mail is split into letters, advertising mail and periodicals. Letters play the most important role in the Dutch mail market in terms of volume and revenues and are further broken down into social mail, office mail and transaction mail:

- Social mail consists of single-piece letters sent between individuals, mainly greeting and Christmas cards, and from individuals to businesses (including public authorities). These letters are stamped single-piece items, thus universal service letters, and usually delivered the next working day by PostNL (priority respectively 24-hour delivery service).
- Office mail consists of single-piece letters sent between businesses (including public authorities) and from businesses to individuals for daily communication purposes. Office mail is sent by all groups of business mailers: small, medium-sized and large businesses and public authorities. It is usually unsorted and heterogeneous in format and weight. Only part of office mail is sent as universal service mail (i.e. as “losse post” as offered by PostNL for stamped and franked mail), particularly by small and medium-sized enterprises.<sup>4</sup> Business customers have the opportunity to use a special bulk mail product of PostNL called “Postage paid mixed”.<sup>5</sup> Additionally, mailers may consolidate their office mail within the company and benefit from PostNL’s special tariffs (e.g. volume discounts). Office mail is usually delivered the next working day (priority mail or 24-hour delivery service). Recently, the PostNL’s major competitor Sandd has introduced a non-priority delivery service for unsorted office mail.<sup>6</sup>
- Transaction mail is industrially produced bulk mail sent by a relatively small number of business customers and thus not part of the universal service. Large mailers are for example banks and insurance companies (bank statements and

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<sup>3</sup> E.g. EIM (2005), RBB Economics (2007), OPTA (2010).

<sup>4</sup> Intomart GfK (2011), Onderzoek naar de betekenis, behoeften en belang van post en de postdienstverlening, Table 3.4, p. 21. On average, surveyed SME’s sent around 70% of their letters stamped or franked (with the NetSet contract), i.e. as universal service mail, per month.

<sup>5</sup> See PostNL, Tariffs January 2011, Business products and services, p. 26.

<sup>6</sup> Interview Sandd.

notifications), telecommunication companies and utilities (invoices) and public authorities. They have the choice between next day delivery services (24-hour delivery service offered by PostNL) and non-priority services with longer delivery times (48-hour and 72-hour delivery service of PostNL, two-day per week delivery service of Sandd) and benefit from special rates for postal delivery. In this study transaction mail is further segmented into priority and non-priority mail because of emerging competition in the non-priority mail segment.

- Addressed advertising mail is, similar to transaction mail, also industrially produced bulk mail. However, contents are different. While transaction mail, like bank statements and invoices, is part of the contractual relationship between businesses and their customers, advertising mail is part of the marketing mix of businesses. Advertising mail supports companies' efforts to retain existing customers and to acquire new customers. Sponsored magazines (e.g. BMW magazine) that are mainly published for strengthening specific labels and trademarks are also part of advertising mail. By definition, advertising mail is not within the scope of universal service. Key players in this segment are PostNL and its subsidiary Netwerk VSP, Sandd and, until recently, Selekt Mail (acquired by Sandd this spring).
- Periodicals consist of subscribed magazines (weeklies, two-weeklies, monthlies) and club magazines (e.g. published by the Royal Dutch Touring club ANWB). In the Netherlands subscribed magazines are mainly delivered by postal operators (i.e. PostNL and Sandd). Periodicals are usually sent in bulk and not part of the universal service mail.

International mail is split into international inbound and outbound mail. International inbound mail (letters, advertising mail and periodicals) are sent from abroad to destinations in the Netherlands. International outbound mail is sent from the Netherlands to destinations abroad. Due to data limitations and the relatively low volume share of international mail we refrain from further disaggregating these segments. All international mail collected and delivered by PostNL is part of the universal service, independent whether sent as single-piece or in bulk.

Table 1 Segmentation of the Dutch mail market

Level 0	Level 1	Level 2	Level 3
Domestic mail	Letters	Social mail	
		Office mail	Priority mail
			Non-priority mail
	Transaction mail	Priority mail	
		Non-priority mail	
		Advertising mail	
	Periodicals		
International mail	Inbound		
	Outbound		

Source: WIK Consult.

In this study we have developed a quantitative forecast model that solely refers to the Dutch mail market segments. In this model the future volumes for each sub-segment of domestic mail, i.e. social mail, office mail, transaction mail, advertising mail and periodicals, and for international inbound and outbound mail are estimated taken a bundle of influence factors into account (see section 2.1 for more detail).

Based on more qualitative assessments we will discuss trends in the market for standard parcels (or deferred parcels, i.e. without accelerated delivery that is usually offered at higher prices). Special focus will be laid on four segments:

- Packages and parcels sent between individuals and from individuals to businesses (often “return to sender” parcels in relation with distance selling activities). Parcels sent between individuals are usually universal service parcels.
- Packages and parcels sent from businesses to individuals, usually distance selling parcels (goods ordered by phone, post or via internet, so-called e-commerce). These are parcels sent in bulk and are usually outside the scope of universal service.
- Packages and parcels sent between businesses (mostly outside the scope of universal service).
- International parcels that include international inbound and outbound parcels

Other segments of the wider market for parcels and express services comprise express delivery and courier services that are outside the scope of this study. Various routing times, many of which are considered express services, are abundant particularly in the B2B segment. Note that in the highly competitive market for parcels and express services, it is increasingly difficult to separate traditional parcel services from express services. The trend seems to be that express services on the one hand and traditional



parcel services (provided by the incumbent PostNL) on the other hand are merging into one market. This is reflected by two separate developments. First, established express operators (such as TNT express, FedEx or DHL) are now offering a diverse bundle of services, including “deferred” services that are often similar to traditional parcel services. Second, the quality of PostNL’s traditional parcel service has increased over the last decades to such a standard that parcel services today have become more similar to what was considered an express service previously. TNT Express states that there are “blurring boundaries between the various segments of the transportation industry”<sup>7</sup> and the company plans to expand “to a larger addressable market, which includes the parcel market not normally classified as express (standard parcels), business-to-consumers (B2C) and intercontinental shipments”<sup>8</sup>.

### 1.3 Methodology

The methodology of the study includes the following elements:

- Extensive desk research (Dutch and international studies)
- Interviews with postal operators and postal customers
- Forecast model for the quantitative assessment of volume developments in the mail segments

#### *Extensive desk research*

The study team has collected specific data through extensive desk research, including:

- Reports on the Dutch mail markets (e.g. commissioned resp. published by the Ministry of Economic Affairs, OPTA, TNT, unions (ABVAKABO FNV, BVPP, CNV Publieke zaak, CNV Bedrijvenbond and FNV Bondgenoten), associations and independent consulting companies)
- Information on the Dutch markets for advertising and periodicals (as published by associations, e.g. NUV or DDMA)
- Annual reports and publications of Dutch regulatory authorities (Ministry of Economic Affairs, OPTA)
- Annual reports, presentations and other publications by Dutch postal operators
- European and international studies on market developments and electronic substitution (e.g. studies commissioned by the European Commission, studies on communication trends published by IPC and Pitney Bowes, and studies on international mail by UPU)
- Statistical data (Statistics Netherlands, Centraal Planbureau, Eurostat)

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<sup>7</sup> TNT Express, Annual Report 2010, p. 12.

<sup>8</sup> TNT Express, Annual Report 2010, p. 21.

### *Interviews with postal operators, postal customers and associations*

The project team has undertaken substantial efforts for primary research activities with stakeholders. Interviews have been conducted with Dutch regulator OPTA and the postal operators PostNL and Sandd. Additionally, we cooperated with associations representing large mailers (VGP), marketers (DDMA), publishers (NUV) and the distance selling industry (Thuiswinkel). We spoke to customers from the financial industry, telecommunications and the public sector, representing in sum around one fifth of the Dutch mail market (~1 billion mail items), to get a deeper understanding of the demand for Dutch postal services. We gratefully acknowledge the collaborative assistance received in the preparation of this report from the Ministry, OPTA, PostNL and Sandd, the associations and from the mailers we talked to.

### *Forecast model for volume developments in the mail segments*

The quantitative forecast is based on an Excel-based spreadsheet model. The model comprises the segments of the Dutch mail market which are introduced in section 1.2. As output it provides the mail volumes per mail segment in the years 2015 and 2020, respectively.

The model is based on a partial approach which incorporates the direct effects of the main influencing factors. The relevant influence factors have been identified taking into account the findings of our market research. These factors are mainly price effects, substitution effects and macro-economic effects. In order to limit the model complexity neither interdependencies between the factors (i.e. indirect effects) nor second-round effects are considered. The total volume effect results from the sum of each of the direct effects. We have included in the model the following input parameters:

- the share of priority mail and non-priority mail for office mail and transaction mail;
- PostNL's market shares for each mail segment;
- the share of mail considered as universal service according to Dutch postal legislation (in relation to estimated PostNL's mail volume);
- price factors (expected price changes and price elasticities);
- substitution rates; and
- macroeconomic-based effects.

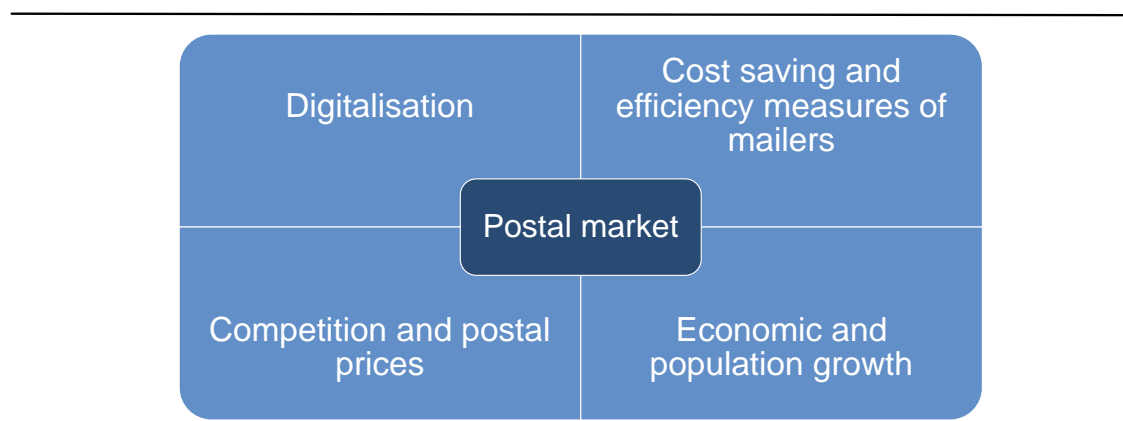
The parameterization of the input variables is based on WIK assumptions which we derived from the research part of this project (extensive desk research and interviews with customers, associations and postal operators) and from our long standing market expertise. Furthermore, model inputs were discussed with the operators PostNL and Sandd. More details on the model can be found in the annex.

## 2 Overall market assessment

### 2.1 Influence factors of the postal market and scenario building

Postal markets are affected by a number of factors as presented in Figure 1. However, the intensity with which the markets are affected varies between each factor and depends which segment of the postal market is considered.

Figure 1 Influence factors of the postal market



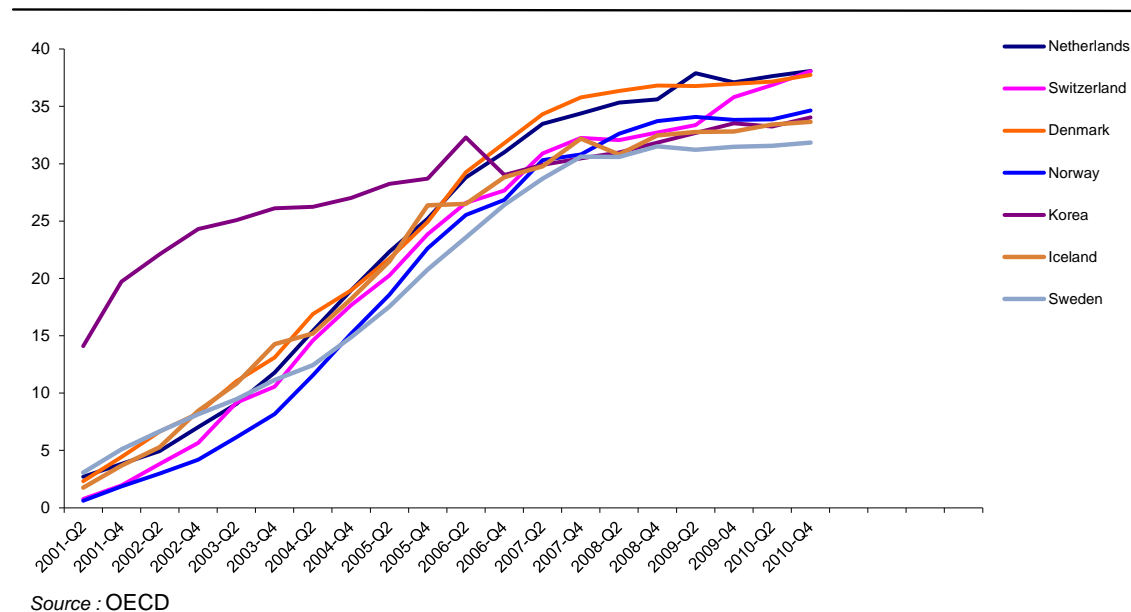
#### *Digitalisation*

In the postal world, digitalisation describes the process from paper-based to electronic or digital communication. Postal operators consider this process as the major threat for the future of the mail business.<sup>9</sup> For letters, this means that, among others, invoices, notifications or statements are sent by e-mail or can be collected from a company's website. In the case of advertising and periodicals, digitalisation means that with emerging online media an additional channel has been created to get into contact with a company's customers (e.g. by blogs or social networks), to place advertisements or to publish news and information. This new channel competes with more traditional ways of advertising and with the paper-based way of publishing newspapers and magazines. In this respect postal services are affected more indirectly: Advertisers decide how to distribute their budget to competing advertising media. If these budgets do not grow (as happened in the last years) and the number of advertising options increases, then the piece of the cake for each of the competing options becomes smaller. In the case of publications the impact is even more indirect. Postal operators have only limited influence on the development of subscriptions of paper-based dailies and magazines. If readers decide to switch to online dailies and magazines, subscriptions will decline which in turn implies less volume to deliver for postal operators.

<sup>9</sup> See i.a. IPC (2011), Role of Mail 2020 and current annual reports of TNT, Deutsche Post DHL, Itella, Posten Norden (now PostNord).

The basic condition for a successful process of digitalisation is the existence of a powerful digital infrastructure. This precondition is perfectly fulfilled in the Netherlands; the country is leading in fixed broadband penetration with 38.1 fixed broadband subscriptions per 100 inhabitants (see Figure 2) and reaches the same penetration rate for mobile broadband subscriptions.

Figure 2 Fixed (wired) broadband penetration per 100 inhabitants, for leading OECD countries, December 2010



Source: OECD Broadband statistics [oecd.org/sti/ict/broadband]

Within the European Union, and even worldwide, the Netherlands is a leader with regard to internet and broadband connection as recently acknowledged by the Dutch Ministry of Economic Affairs, Agriculture and Innovation:

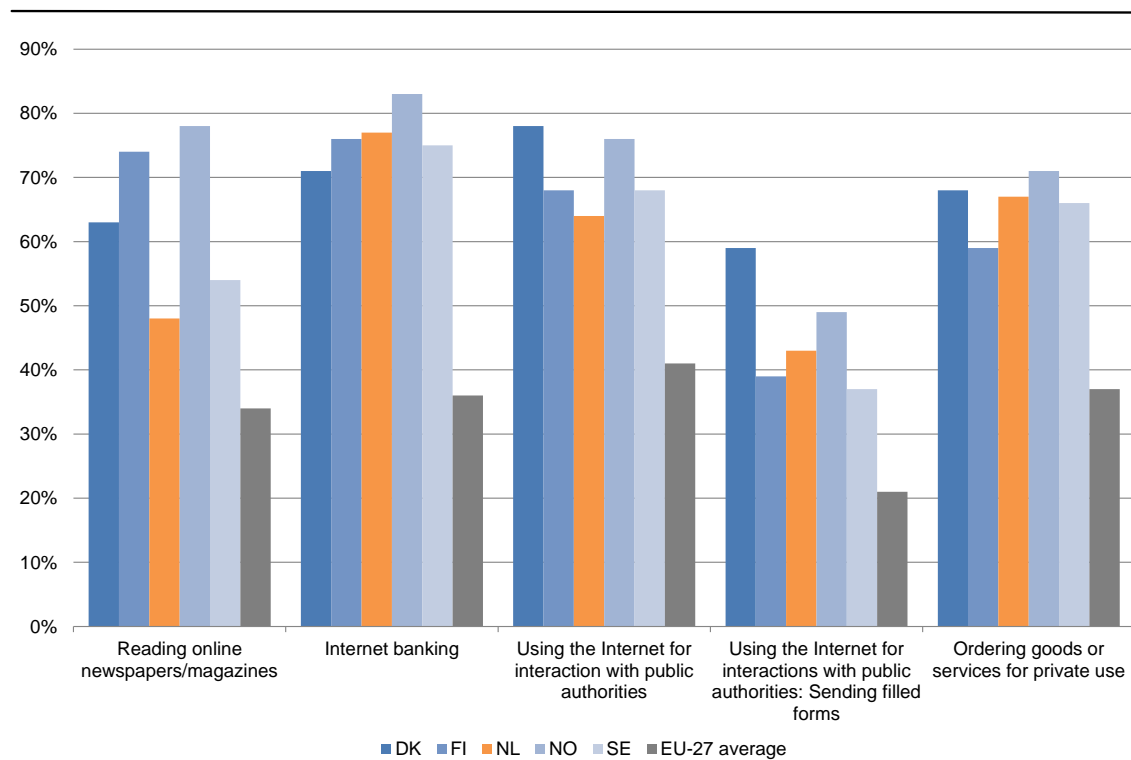
“The Netherlands is one of the global leaders when it comes to broadband coverage, thanks to competition in and between various networks. Access to high-speed broadband in the Netherlands is already close to the European targets for 2020: 98% of Dutch households already have access to broadband with a speed of 30 Mbps, and more than 90% have connections with speeds of at least 100 Mbps. Given the national availability of satellite (currently up to 4 Mbps), there is 100% coverage for functional Internet access.”<sup>10</sup>

As the infrastructure has successfully been established at this point in time, it depends on the communication and the buying behaviour of Dutch people whether the existence

<sup>10</sup> Ministerie van Economische Zaken, Landbouw en Innovatie (2011), Digital agenda.nl, p. 14.

of a high-capacity digital infrastructure had and will have an impact on the postal market.

Figure 3 Use of internet services in % of population (2010)



Source: Based on Eurostat, Benchmarking Digital Europe: 2011-2015 indicators (Percentage of individuals aged 16 to 74)

The degree of “digital acceptance”<sup>11</sup> is reflected in the intensity with which Dutch people use online services, such as reading online newspapers magazines, internet banking, eGovernment services or ordering goods and services through the internet. Particularly with regard to the last activity, Dutch people ranks second EU wide.<sup>12</sup> Figure 3 shows that already in 2010 the digital acceptance of the Dutch population in terms of use of internet services was substantially higher than the EU average. The intensity of using online services by Dutch people is comparable to the Scandinavian countries that are in our view the most advanced European countries in terms of “digital acceptance”. Overall, we estimate that due to the relatively high degree of digital acceptance in the Dutch population, the current and future influence of digitalisation on the Dutch postal market is more significant than in many other European countries.

<sup>11</sup> This expression is used in IPC (2011), Role of Mail 2020, and means the degree that people and businesses make use of internet and online services.

<sup>12</sup> European Commission (2010), Europe’s Digital Competitiveness Report, ICT Country Profiles, The Netherlands, p. 175.

### *Cost saving and efficiency measures*

Digitalisation is not the only factor that results in declining mail volumes. The financial crisis 2008/2009 has revealed that bulk mailers and advertisers look for more (cost) efficient ways to distribute their messages. The potential of such measures is limited for social and office mail compared to transaction and advertising mail. The potential for cost saving is particularly relevant for transaction mail: The relationship between production and delivery cost of one transaction item is around 1 : 5.<sup>13</sup> In the case of transaction mail, measures like reducing the mailing frequency of invoices and statements (e.g. from monthly to quarterly) can substantially reduce letter volume. Advertisers have improved efficiency of addressed direct mailings by better analysing existing customer data and creating more customer-targeted advertisements.<sup>14</sup> This is reflected in a general trend of declining direct mail items per advertising campaign. However, whether this development results in overall declining mail volumes depends on how the total number of advertising campaigns develops.

Other measures to save costs do not result in declining mail volume but change the mail volume structure. Instead of using the relatively expensive 24-hour delivery service, bulk mailers increasingly switch to 48-hour delivery service or even 72-hour / next week delivery services. The economic crisis 2008/2009 has accelerated this development as not only observed by PostNL<sup>15</sup>, but also by foreign postal operators that offer priority and non-priority delivery services.<sup>16</sup> Additionally, they may switch from the incumbent PostNL to cheaper competitors like Sandd. However, while mail volumes remain roughly stable in these cases, market revenues (and possibly margins) decline.

### *Postal prices and competition*

Postal prices combined with service quality and service innovations (also in terms of customer orientation) are the key measures of postal operators to influence demand for postal services. Competition within the postal market promotes the development of new services and alignment of prices to costs. The developments in competition are addressed in section 2.5 of this chapter, while current and estimated future price developments in the Dutch postal market are summarized in section 2.6.

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<sup>13</sup> Customer interviews. In future this relationship may slightly change because of the introduction of colour printing.

<sup>14</sup> See IPC (2011), Role of Mail 2020, p.29-30.

<sup>15</sup> See TNT Post, Annual Report 2010, p. 38: "The continued underlying decline in addressed postal item volumes in 2010 was primarily due to a decline in single items and reduced demand for bulk mail as a result of cost saving programmes initiated by some of Mail's key customers and due to the continued substitution by electronic media. The economy product delivered through TNT Post and the budget mail service delivered through Netwerk VSP retained volumes in the market, resulting overall in a limited loss of volumes to competition."

<sup>16</sup> See for example Posten Norden, Annual Report 2010, p.5 (results for Denmark and Sweden) and Itella, Annual report 2010, p. 12: While first class letters have substantially declined, second class letters remained fairly stable or even increase.

*Macro-economic factors*

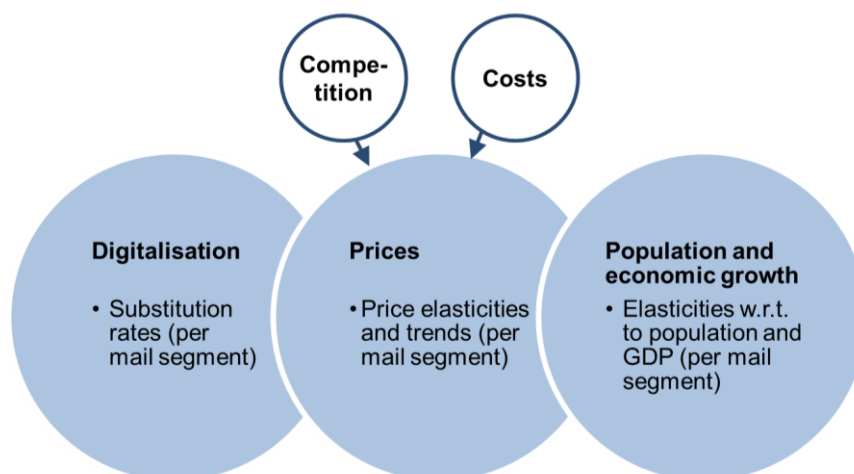
Economic, population or household growth<sup>17</sup> and the general development of prices (inflation rates) are the most important macro-economic factors affecting developments in the postal market. The economic and demographic developments generally influence the demand for postal services; an increasing number of households, for example, results in more invoices (e.g. for energy, water and so on). The inflation rate influences cost and price developments in the postal sector. Additionally, the development of consumer prices (measured with the consumer price index) is an important benchmark in Dutch price regulation for the universal service.

**2.2 Forecast model, assumptions, and scenarios**

2.2.1 Key assumptions

In order to quantitatively estimate the future volume developments in the Dutch mail market we have developed an Excel spreadsheet model that takes into account each of the discussed influence factors. Figure 4 shows the indicators our model uses to translate the influence factors into estimates of mail volume.

Figure 4 Influence factors: Parameters in the forecast model



The total change in volume per mail segment is the sum of effects resulting from digitalisation, price changes and macro-economic influences.

<sup>17</sup> See for example IPC (2011), Role of Mail 2020.

The following paragraphs describe key assumptions of our model. These assumptions are identical for all scenarios.

- Digitalisation is reflected in the substitution rates our model assumes. It covers the change in mail volume due to digitalisation of communication, advertising and publishing activities. The substitution rate describes the percentage change in volume per year for each mail segment (i.e. social, office and transaction mail, advertising and periodicals as well as international inbound and outbound mail). Generally, we assume that substitution rates for the letter segments (social mail, office and transaction mail) are higher than for advertising and periodicals. Substitution rates for advertising and international mail are lowest. Particularly for advertising mail, interview partners expect that the sharp decline in transaction mail will be accompanied by increasing advertising mail volumes in order to remain in contact with customers (customer retention). Based on interviews and desk research we further assume that substitution is by far highest in the transaction mail segment and that in this segment the peak in volume declines will be reached before 2015 resulting in declining rates after 2015. Our detailed assumptions about future substitution, for three different scenarios, are stated in subsection 2.2.2 below.
- In our model, the price effect is a combination of price elasticity and the assumed change in postal prices.
  - A price elasticity describes the quantitative relationship between a price change and a volume change: A price elasticity of -1 means that a 1 per cent increase in prices results in 1 per cent decline in volumes. E.g. -0.5 implies that the volume decline would be 0.5 per cent (after a 1 per cent price increase). A price elasticity measures the expected market volume change that results from a price change for different market segments, In reality, price elasticity depends on many things, such as competitive pressure or possible substitute product, or (in the postal case:) digitalisation. In our model, however, price elasticity does not include the effect of e-substitution, for technical reasons. E-substitution is included in the model as a separate factor, the substitution effect.<sup>18</sup> Empirical studies found out that in mail markets price elasticities are usually between -1 and 0.<sup>19</sup> In empirical research the level of the own price elasticity always depends on how many additional influence factors are taken into account. In the forecast model, we assume per mail segment price elasticities between -1 and 0 that are

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<sup>18</sup> Note that e-substitution happens even without any changes in price. While price increases may accelerate e-substitution, volumes can get lost to digital media even if prices stay constant, or decrease.

<sup>19</sup> See for example Alan Robinson (2007), A Review of Price Elasticity Models for Postal Products, Background Paper No. 2007-01 prepared as part of the Pitney Bowes research project “The Future of Mail”.



constant over time.<sup>20</sup> The absolute levels per segment are derived from empirical studies about price elasticities in the postal market and vary between the segments: We assume the lowest price elasticities for social and office mail (-0.2 resp. -0.25), while for transaction mail we assume a slightly higher level in absolute terms (-0.3) because – as we learnt in interviews – bulk mailers reduced and will continue to reduce mail volumes by other measures than digital substitution, e.g. by reducing the mailing frequency of regular statements.<sup>21</sup> The price elasticity is highest for advertising mail and periodicals (-0.5). The reason for this is that besides using digital forms of advertising instead of direct mail, advertisers may also switch to unaddressed advertising that is substantially cheaper in delivery, or alternative media (e.g. TV). Publishers may promote other sales channels for distributing their magazines.

- Assumed price changes refer to average price levels per segment and not to prices for single products. Expected price changes depend on the competitive situation within the postal market and the substitution rate. Competition limits price increases and may even promote price declines. For this reason, we allow for different price development paths for each mail segment including priority and non-priority services for office and transaction mail. While priority mail services are mainly provided by PostNL, the non-priority mail services are somewhat more competitive. Price changes and substitution rates in practice are positively correlated: the more prices increase the higher are the substitution rates. Postal operators are aware that too drastic price increases promote substitution. For this reason digitalisation has a disciplining effect on postal operators' pricing strategies since it leads to lower total volumes and higher competitive pressure on the remaining volumes. However, substitution does not merely occur because of price developments, since even if prices remain stable substitution still exists (as has happened the last years). With a smaller total volume, average costs per mail item will increase, putting upward pressure on prices. Therefore, the more volumes decline due to digitalisation, the higher the expected price increases (resp. the lower expected price declines). For this reason, we expect that high substitution rates resulting in substantial volume declines will result in higher price increases than low substitution rates.
- Macro-economic effects, e.g. volume changes due to population and economic growth, are included by elasticities that translate macro-economic economic growth into mail volume growth rates. In the model, we assume that economic growth (i.e.

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<sup>20</sup> In order to limit complexity of the model, we assume price elasticities that are constant over time and independent from the rate of price change. In reality, price elasticities depend on various factors, including the amount of a price change. For example, a price elasticity may be higher the higher the rate of price change ('increasing elasticity to scale').

<sup>21</sup> For more information see section 0.

GDP growth) does not have an impact on volume development of letters and periodicals. During the last decade volume development and GDP growth appear to be increasingly unrelated – with the exception of advertising mail.<sup>22</sup> For this segment we assume an elasticity of 0.2. With regard to population growth, we assume the elasticity to be 1 for all mail segments except for international outbound mail.<sup>23</sup>

- Finally, we assume that the current regulatory framework, particularly the definition of the universal service and the universal service obligation of PostNL will not be changed during the forecast period.

### 2.2.2 Three scenarios for the future role of mail

Future mail volume development will depend on more general future trends in the communication and the mailing behaviour of Dutch citizens and businesses. In our model, this behaviour is expressed in the substitution rates we assume (for each segment).

While postal operators in the Netherlands have suffered from substantial volume losses in 2009 and 2010, the precise share that substitution has contributed to these losses is uncertain. Likewise, it is uncertain ‘how much more is to come’. Will substitution continue at current (high) levels? Will it disappear? Will this trend speed up? Based on our interviews, we are convinced that substitution will not ‘go away’, and volumes will continue to decrease, although it is very difficult to foresee by how much. However, it is likely that the migration of other products for communication will reach a peak at some point, and that substitution rates will decrease after that point. At present, it is not clear whether the peak substitution rate has already been reached in 2010 or will be reached by 2015, or even later.

In response to these uncertainties, we use three forecast scenarios that differ in the substitution rates we assume for each segment, and in related future price developments. These scenarios are named

- “Paper matters”
- “Base case”, and
- “Digital world”.

Based on research and interviews, we consider all three scenarios as relevant possibilities. Recent data reported by OPTA for 2010 and by PostNL the first three

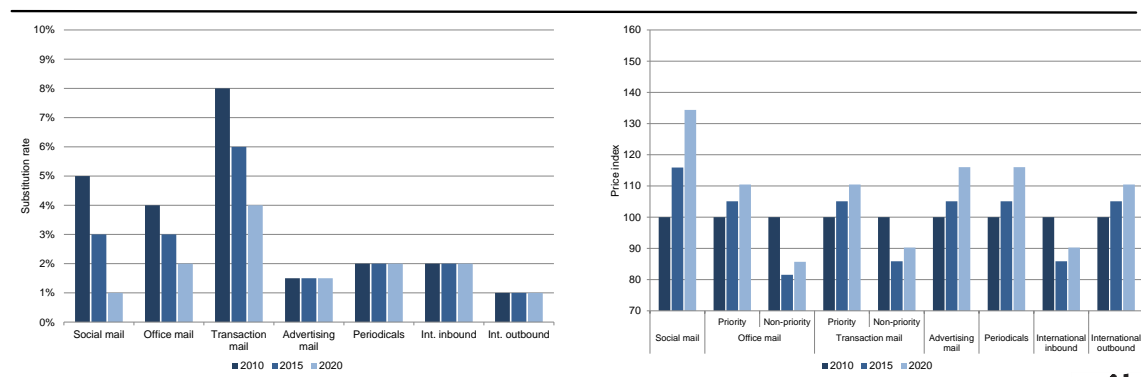
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<sup>22</sup> See The Boston Consulting Group (2010), *Projecting U.S. Mail Volumes to 2020*, p. 10. In this study a volume effects are expected for U.S. standard mail (advertising mail) due to economic growth. In contrast, GDP growth does not affect U.S. first class mail (letters).

<sup>23</sup> See IPC (2011), *Role of mail 2020*.

quarters of 2011 (after completion of our forecasts), suggests that the Dutch mail volume is currently developing more in line with the “digital world” scenario than with the base case. In November 2011, the “digital world” scenario therefore appears as the most likely scenario. We recommend our results for the three scenarios should be understood as a range of possible future volumes while in 2011 the market is developing most in line with the “digital world” scenario.<sup>24</sup>

Figure 5 Scenario “paper matters”: Assumptions on substitution rates and price developments per mail segment



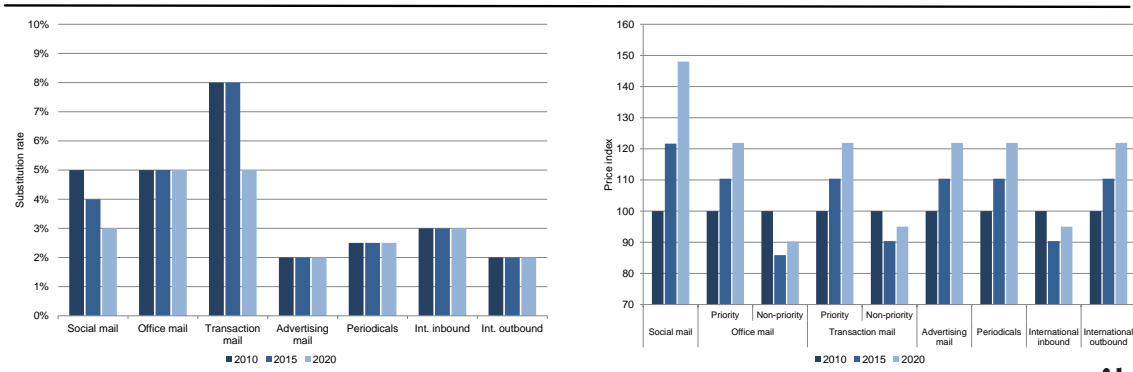
Source: WIK estimations

Note: In the spreadsheet model the parameter values between 2010 and 2015 (i.e. for 2011, 2012, 2013 and 2014) as well as between 2015 and 2020 are calculated by linear interpolation.

In the scenario “paper matters” the switch from paper-based to electronic media will be less rapid than was witnessed in recent years. Particularly, we assume that the peak substitution rate has already been reached in the segments for social, office and transaction mail. Volumes in these segments will continue to decline until 2020, but at lower rates. Prices increase only slightly as the relatively high volumes prevent drastic increases in average cost. For advertising, periodicals and international mail we assume constant, low substitution rates.

<sup>24</sup> This paragraph was altered in November 2011, after completion of the report in August 2011.

Figure 6 Scenario “base case”: Assumptions on substitution rates and price developments per mail segment

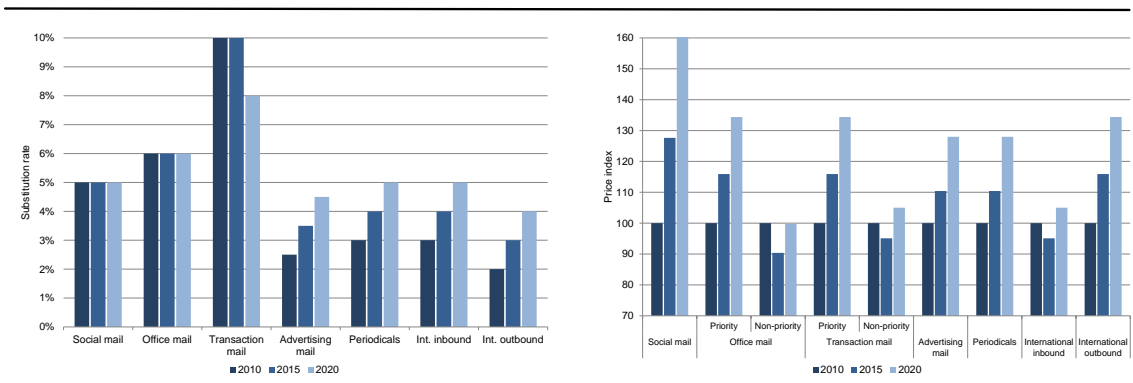


Source: WIK estimations

Note: In the spreadsheet model the parameter values between 2010 and 2015 (i.e. for 2011, 2012, 2013 and 2014) as well as between 2015 and 2020 are calculated by linear interpolation.

In the “base case” scenario is based on research and various interviews we had carried out in May and June 2011. In this scenario, we expect that substitution rates have already peaked for social mail and will be increasing until 2015 for transaction mail.

Figure 7 Scenario “digital world”: Assumptions on substitution rates and price developments per mail segment



Source: WIK estimations

Note: In the spreadsheet model the parameter values between 2010 and 2015 (i.e. for 2011, 2012, 2013 and 2014) as well as between 2015 and 2020 are calculated by linear interpolation.

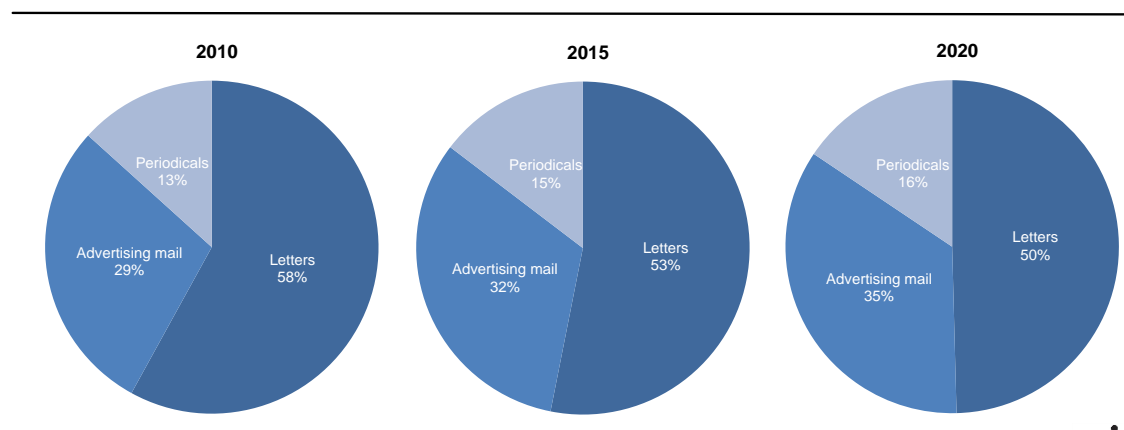
In this last scenario, “digital world”, communication behaviour changes most rapidly. In this scenario, new products and applications for digital communication are rapidly becoming popular, thus fostering electronic substitution of letters, advertising, and publications. This is reflected in relatively high substitution rates for all years. For transaction mail the peak in the substitution rate will be reached by 2015, while social and office mail would continue to decline at current (high) rates. Advertising mail and

periodicals, we assume, would be strongly affected by the increasing penetration of mobile devices (e.g. smart phones and tablet PCs). The decline in mail volumes substantially increases average costs and results in higher price increases compared to the “base case”.

## 2.3 Volume development

### *Domestic mail volume*

Figure 8 Structure of domestic mail in 2010, 2015 and 2020 (“base case”)

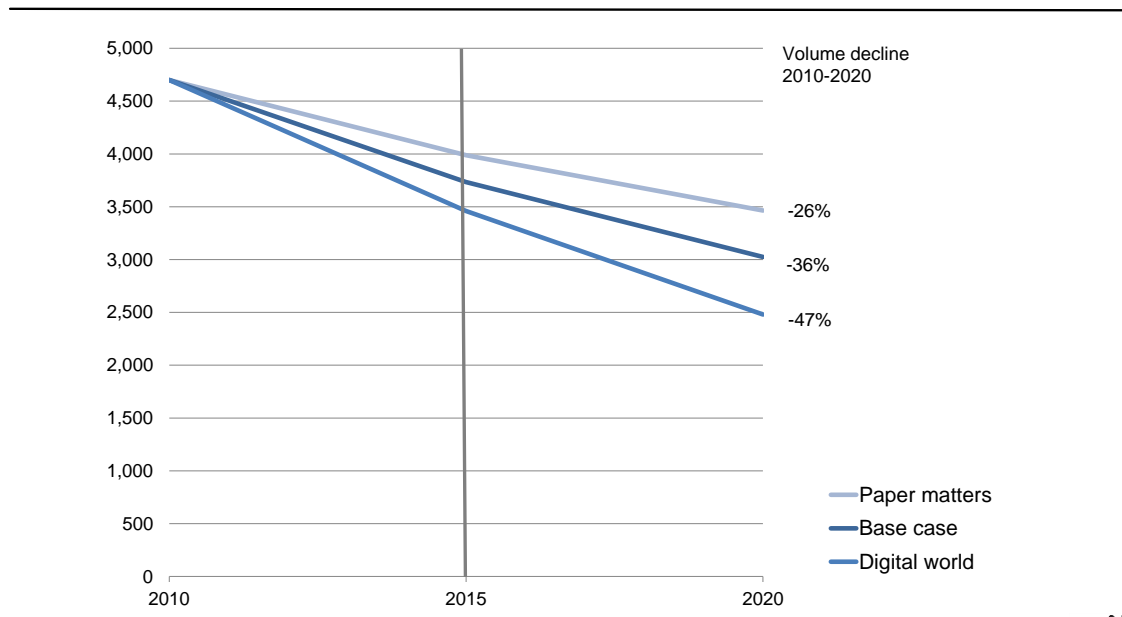


Source: Estimation PostNL (2010), Estimation WIK-Consult (2015 and 2020)

In 2010 about 4.7bn mail items were collected and delivered within the Netherlands.<sup>25</sup> This compares to estimated 0.13bn mail items inbound international mail and 0.25bn mail items outbound international mail. Letters account for 58 per cent of domestic mail, while advertising and periodicals reach 42 per cent. We estimate that more than half of letters were transaction mail. Office mail comprised around one-third; the rest (less than 15%) remained for social mail.

<sup>25</sup> PostNL estimation.

Figure 9 Trend forecast: total domestic mail volume 2010-2020

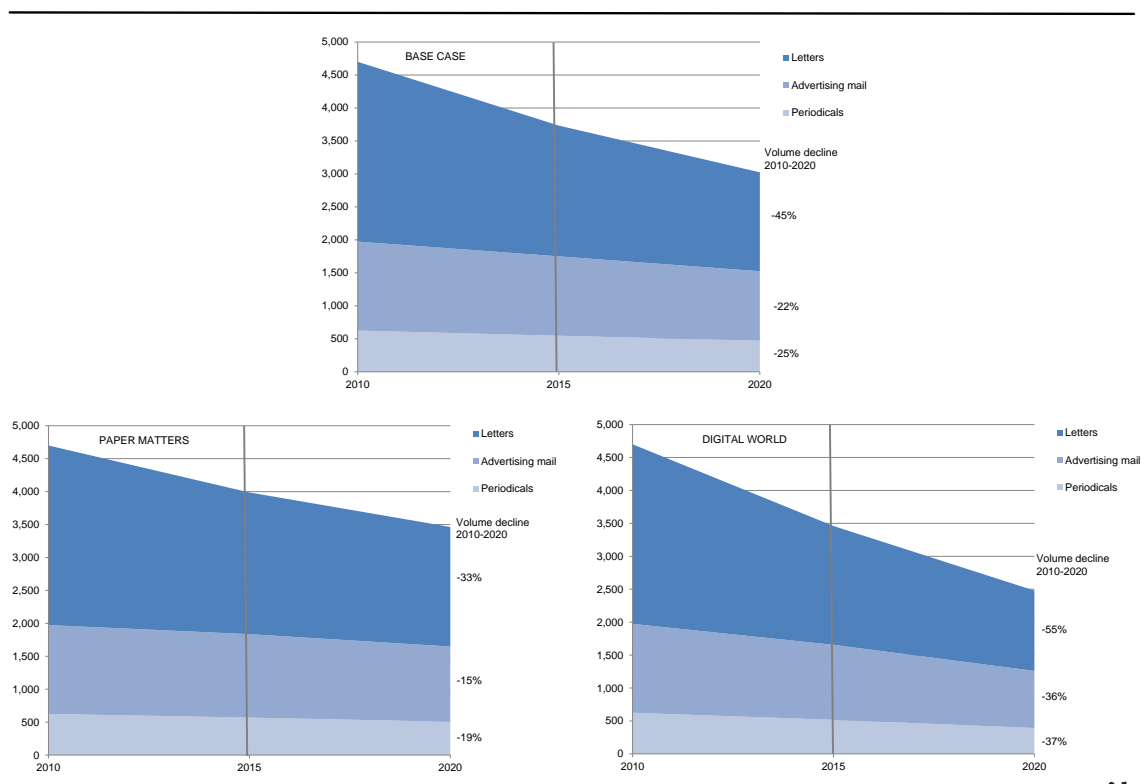


Domestic mail	Total volume change in %			Average change rate per year (CAGR, %)		
	2010-2020	2010-2015	2015-2020	2010-2020	2010-2015	2015-2020
Paper matters	-26%	-15%	-13%	-3.0%	-3.2%	-2.8%
Base case	-36%	-21%	-19%	-4.3%	-4.5%	-4.1%
Digital world	-47%	-26%	-28%	-6.2%	-5.9%	-6.4%

Source: Estimation WIK-Consult

In each of the scenarios, we expect that the total domestic volume will decline. This development basically results from the overall dominance of the substitution effect. However, the pace of volume decline substantially varies between the scenarios. In the base case domestic mail will decline by around one fifth until 2015 and more than one third until 2020. Between 15 and 26 per cent until 2015 and between 26 and nearly half of today's volume until 2020 will vanish in the scenarios "paper matters" and "digital world" respectively.

Figure 10 Volume trends for domestic mail per segment 2010-2020, scenarios



Scenario	Total volume change in % 2010-2015			Total volume change in % 2010-2020		
	Letters	Advertising mail	Periodicals	Letters	Advertising mail	Periodicals
Paper matters	-21%	-6%	-9%	-33%	-15%	-19%
Base case	-27%	-11%	-13%	-45%	-22%	-25%
Digital world	-34%	-16%	-17%	-55%	-36%	-37%

Source: Estimation WIK-Consult

Overall, all mail segments face declining volumes, however, at different paces (see Figure 10). Letter volumes will decrease the most, while the decline in advertising mail and periodicals is substantially lower. This result in an increasing share of advertising mail and periodicals in total domestic mail: in the scenarios “base case” and “digital world” from today’s 42 per cent to about half of total domestic mail volume in 2020.<sup>26</sup>

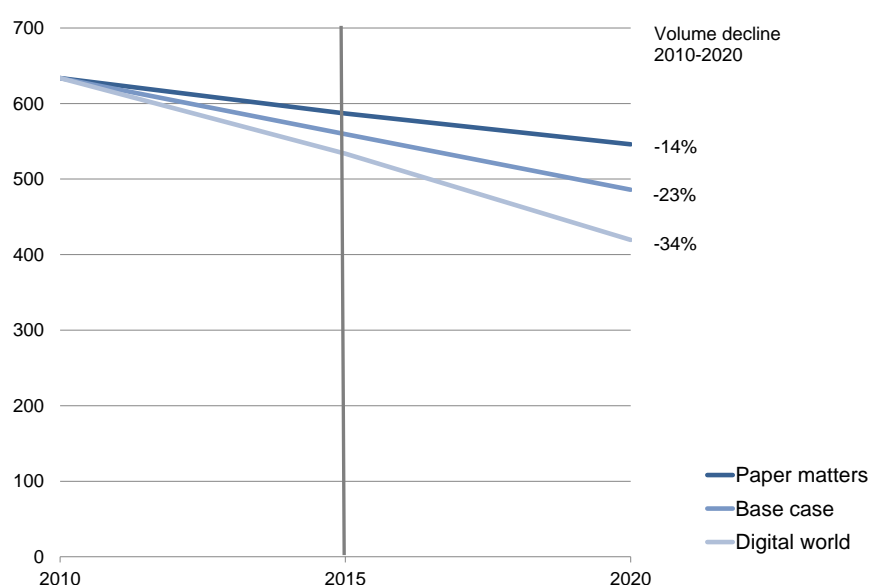
The development of the letter volume is particularly driven by the drastic decline in transaction mail. The share of transaction mail in total domestic mail sinks in our estimation from today’s estimated one third to less than one quarter in 2020 in all

<sup>26</sup> In the scenario “paper matters” the share increases to 48 per cent.

scenarios. The decline in social and office mail is less drastic, but still higher than advertising mail and periodicals. In the long run (after 2020) we expect that addressed advertising mail, periodicals and letters will continue to exist. The share of letters will continue to decline mainly due to further substitution of office and particularly transaction mail. However, after 2020 there will still be individuals who are either not able to switch to digital communication or who still prefer paper communication. Particularly, we do not expect that Christmas and greeting cards, which account for roughly half of today's social mail, will be fully replaced by digital solutions.

### International mail

Figure 11 Trend forecast total international mail volume 2010-2020



International mail	Total volume change in %			Average change rate per year (CAGR, %)		
	2010-2020	2010-2015	2015-2020	2010-2020	2010-2015	2015-2020
Paper matters	-14%	-7%	-7%	-1.5%	-1.5%	-1.4%
Base case	-23%	-12%	-13%	-2.6%	-2.5%	-2.8%
Digital world	-34%	-16%	-21%	-4.0%	-3.4%	-4.7%

Source: WIK-Consult estimation

For international mail we expect less significant declines in each scenario. International mail consists of mail items sent from the Netherlands abroad, or sent to the Netherlands from other countries. We expect that declines in international mail volume will be (somewhat) less significant than for domestic mail for three reasons: First, there will be a positive marginal impact on international mail volumes in the future because



European enterprises increasingly centralize their European printing facilities (or globalize worldwide printing). As a result, mail streams that once were domestic are becoming international. This trend will likely affect Dutch outbound volumes more than Dutch inbound volumes, because the Netherlands have a very competitive printing industry and are a favoured location for many firm's central printing facilities. Second, we expect that electronic substitution will be less significant for international mail, because many powerful online communication tools that contribute to substitution (e.g. eGovernment, banking portals) are essentially national systems. Moreover, the Dutch population has adopted digital communication channels more than most other countries. Consequently, other countries use digital communication less than the Netherlands; and Dutch businesses and consumers therefore have to rely on paper for communicating with foreigners more than for communicating with compatriots. As international communication is a relatively small part of total communication for each firm, there is less of an incentive to invest in digitalizing this part of communication.<sup>27</sup> Third, the overall importance of international business is expected to grow for the Dutch economy. This will lead to more communication with foreigners, including letters and, more importantly, small packages and parcels sent abroad and received from abroad. In the "digital world" scenario, international mail would still lose nearly a third of its current volume by the end of the projection period in 2020, almost as much as domestic mail in the "base case". In the other scenarios international mail volume declines less: 24 per cent in the "base case" and 14 per cent in the scenario "paper matters".

#### *Domestic and international parcels*

The parcel business, overall, clearly is a growing market in terms of volumes and revenues.<sup>28</sup> This growth is basically driven by the B2C segment, i.e. by parcels sent from retailers and distance sellers to consumers. Growth rates in this segment exceed general economic growth rates. The B2B segment that comprises parcels sent between businesses (via parcel or express service) is also growing, but at lower growth rates than the B2C segment. Market growth here is more oriented to the general economic development. Growth is expected for both domestic and international market segments.

## **2.4 Universal service volume**

In the Netherlands, the universal postal service includes domestic addressed letters weighing up to 2,000g and domestic single-piece parcels ("counter parcels") weighing up to 10kg, priced at the single-piece tariff, collected and delivered by the designated universal service provider PostNL. 95 per cent of these letters shall be delivered the next working day; collection and delivery take place each working day, i.e. six days per

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<sup>27</sup> Compare Adrenale (2010), Market Research on International Letters and Lightweight Parcels and Express Mail Service Items, Report commissioned by the Universal Postal Union (UPU). Adrenale, too, expects that electronic substitution will affect international mail less than domestic mail.

<sup>28</sup> See Herna Verhagen (2011), PostNL: a compelling investment opportunity, Capital Markets Day, 9 May 2011.

week.<sup>29</sup> International inbound and outbound items, i.e. letters, advertising mail, periodicals and parcels (weighing up to 20kg) collected or delivered by the designated universal service provider PostNL are part of universal service independent of whether they are sent in single-piece or in bulk.<sup>30</sup>

Based on the legal definition of the universal service, social mail and parts of office mail are within the scope of the universal service for domestic mail items. Domestic mail sent in bulk, i.e. transaction and advertising mail and periodicals, are outside the scope of the universal service. Additionally, domestic parcels and packages sent between individuals (C2C) are part of the universal service. Finally, PostNL's international parcels (inbound and outbound, weighing up to 20kg) are part of the universal service. In our understanding, returns sent from consumers to businesses (C2B, mainly distance-selling goods that do not fit, e.g. shoes or clothes) and business parcels (B2X) are outside the scope of the universal service, because they are usually not priced at the single-piece tariff. We estimate the universal service share in total domestic parcels to be below one quarter of PostNL's domestic parcel volume.<sup>31</sup>

For the future, the share of universal service parcels in total parcels will most likely decline due to the more dynamically growing business and distance selling parcels.<sup>32</sup> For international parcels (inbound and outbound), figures are not publicly available. Due to growing cross-border e-commerce activities we expect that the number international parcels increase, too.

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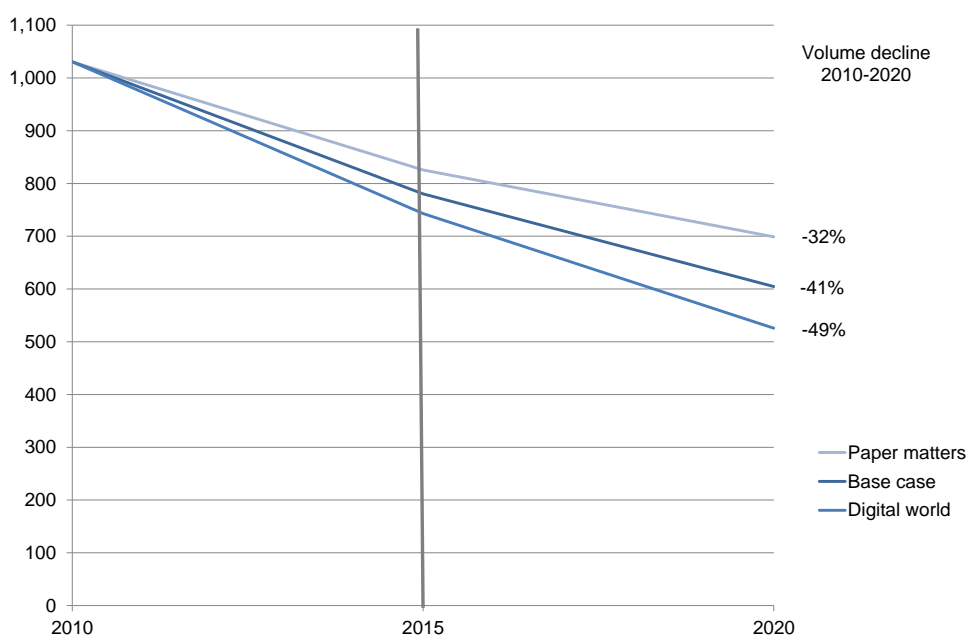
**29** See Postwet 2009, Art. 16, para.1, 3. Domestic universal service is limited to mail items sent at the single-piece tariff ("enkelstukstarief") in Postbesluit 2009, Art. 3.

**30** See Postwet 2009, Art. 16 para. 4 "Onder de universele postdienst vallen bij postvervoer van en naar gebieden buiten Nederland ten minste de postvervoerdiensten, opgenomen in de akten van de Wereldpostunie."

**31** Assuming that each Dutch household would send 3 universal service parcels per year (e.g. to relatives) on average this would result in roughly 20m universal service parcels per year or around 20% of PostNL's total parcel volume of 100m in 2010 (including parcels within the Netherlands and to Belgium); see Herna Verhagen, PostNL: a compelling investment opportunity, Capital Markets Day, 9 May 2011, slide 5.

**32** See Herna Verhagen (2011), PostNL: a compelling investment opportunity, Capital Markets Day, 9 May 2011, slide 5: The average growth rate between 2005 and 2010 was nearly 9%. This trend is expected to continue mainly driven by growing B2C and B2B parcels (slide 7). PostNL's 2011 half-year results show a parcel volume growth of 10% (see Harry Koorstra, Jan Bos (2011), Q2 & HY 2011 Results, 8 August 2011, slide 6).

Figure 12 Trend forecast: total universal service mail volume 2010-2020



Universal service	Total volume change in %			Average change rate per year (CAGR, %)		
	2010-2020	2010-2015	2015-2020	2010-2020	2010-2015	2015-2020
Paper matters	-32%	-20%	-15%	-3.8%	-4.3%	-3.3%
Base case	-41%	-24%	-22%	-5.2%	-5.4%	-5.0%
Digital world	-49%	-28%	-29%	-6.5%	-6.3%	-6.7%

Source: Estimation WIK-Consult

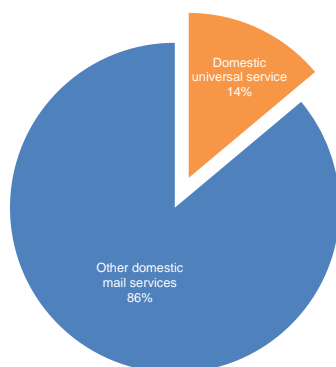
We estimate that today total universal service mail accounts for about one fifth of total mail volume (sum of domestic, international inbound and outbound mail). Domestic universal service mail accounts for two thirds and international universal mail for about one third of total universal service mail.

In 2010, the share of domestic universal service mail in total domestic mail was around 14 per cent (Figure 13). About half of this mail was social mail, i.e. letters sent by individuals.<sup>33</sup>

We expect that total universal service volume will decline between 32 and 49 per cent until 2020. This corresponds to an average decline of 3.8 and 6.5 per cent per year.

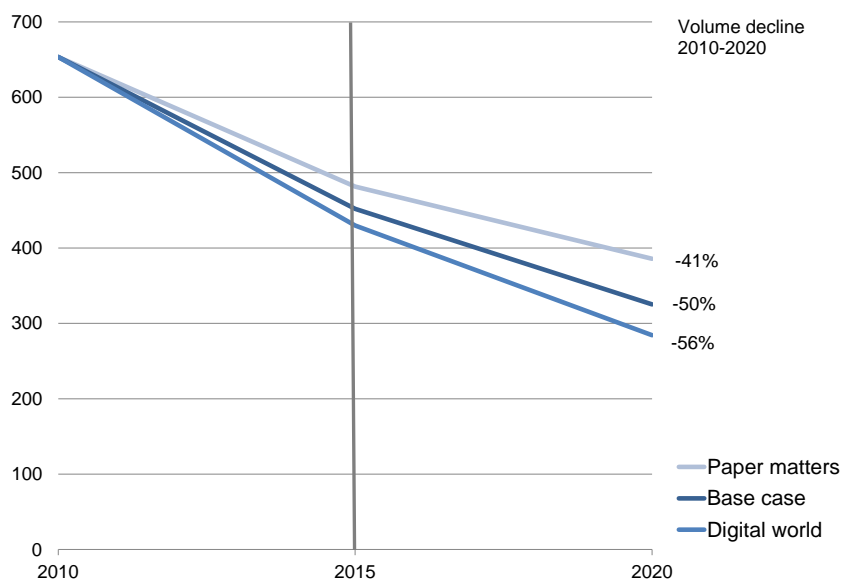
<sup>33</sup> Interview PostNL.

Figure 13 Domestic mail volume: universal service share in 2010



Source: PostNL estimation

Figure 14 Trend forecast: domestic universal service mail volume 2010-2020



Domestic universal service	Total volume change in %			Average change rate per year (CAGR, %)		
	2010-2020	2010-2015	2015-2020	2010-2020	2010-2015	2015-2020
Paper matters	-41%	-26%	-20%	-5.1%	-5.9%	-4.3%
Base case	-50%	-31%	-28%	-6.7%	-7.1%	-6.4%
Digital world	-56%	-34%	-34%	-8.0%	-8.0%	-7.9%

Source: Estimation WIK-Consult

We expect that domestic universal service volume will decline more than total universal service volume (independently from the scenario) because, first, substitution rates of international mail are generally lower than for domestic universal service letters. Second, domestic universal mail is seeing additional declines due to a migration from domestic universal service letter products to non-universal service letter products. For example, more office mail will be posted at discounted (non-universal service) prices that PostNL increasingly offers. In the three scenarios, we estimate a decline of 26 to 34 per cent until 2015 and another 20 to 34 per cent between 2015 and 2020 so that in 2020, domestic universal service volume would be around half of today's level.

The development of domestic universal service mail is basically driven by the mailing behavior of consumers, SOHO's and SME's, i.e. by the development of social mail and parts of office mail.

Social mail, an important part of universal service, is dominated by greeting cards. In 2010 around half of all letters sent by individuals were greeting cards.<sup>34</sup> 2003 and 2010 survey results on the mailing behavior of Dutch consumers<sup>35</sup> have shown that the number of private letters (i.e. letters and greeting cards sent to other individuals) remained fairly stable, while letters sent to businesses and administrations have substantially. We expect that individuals' "business" letters will continue to decline but will not completely vanish because in 2020 there will still be digital illiterates and individuals who do not want to use the digital channel for business letters.

Office mail is sent by businesses and administrations to individuals as well as to other businesses and administrations. We estimate that around one third of office mail is universal service mail. This is mainly used by small and medium-sized business mailers whose daily mail volume is not large enough to get special discounts. Many small business mailers sent franked mail<sup>36</sup> in order to benefit from franking discounts that PostNL offers for its universal service products.<sup>37</sup> After full market opening, PostNL introduced revenue related discounts for metered mail (that used to be part of the universal service) so that parts of universal service office mail migrates to non-universal service office mail.<sup>38</sup>

We do not expect that small business mailers will benefit directly from the market entry of Sandd in the office mail segment because Sandd will mainly target medium-sized and large mailers.<sup>39</sup> In the case that PostNL would introduce a non-priority office mail

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<sup>34</sup> Intomart GfK (2011), Onderzoek naar de betekenis, behoeften en belang van post en de postdienstverlening (p. 19).

<sup>35</sup> TNS/nipo consult (2004), Betekenis en belang van postdienstverlening (p. 9) and Intomart GfK (2011), Onderzoek naar de betekenis, behoeften en belang van post en de postdienstverlening (p. 19). See section 3.1 for more detail.

<sup>36</sup> See Intomart GfK (2011), Onderzoek naar de betekenis, behoeften en belang van post en de postdienstverlening (p. 19-21), see also section 3.2 for more detail.

<sup>37</sup> See TNT Post, Tariffs January 2011, p. 22.

<sup>38</sup> Interview PostNL.

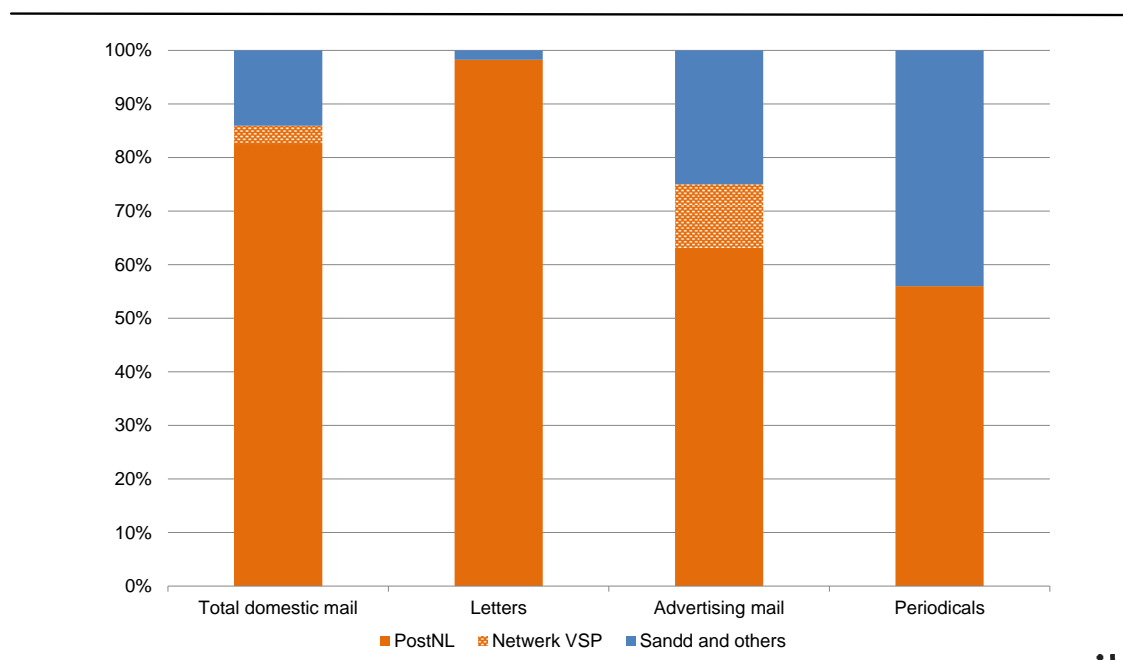
<sup>39</sup> Interview Sandd.

product, we expect that business mailers will partly switch to the non-priority delivery option. As large and medium-sized business mailers usually receive special rates, their office mail volumes are already outside the scope of universal service. However, if small business mailers switch to the non-priority letter service, universal service volume will decline accordingly.

## 2.5 Competition and viability of postal companies

In 2010 the overall market share of PostNL (including Network VSP) in terms of domestic mail volume was about 86 per cent. The two most important competitors of PostNL were Sandd and Selekt Mail. Since Sandd has successfully acquired Selekt Mail in Spring 2011, we combine Sandd's and Selekt Mail's market shares in the following. Figure 12 presents the market shares of PostNL, its subsidiary Network VSP and Sandd & Selekt Mail in total and per segment.<sup>40</sup>

Figure 15 Estimated market shares per segment by volume (2010)



Source: Estimation WIK-Consult

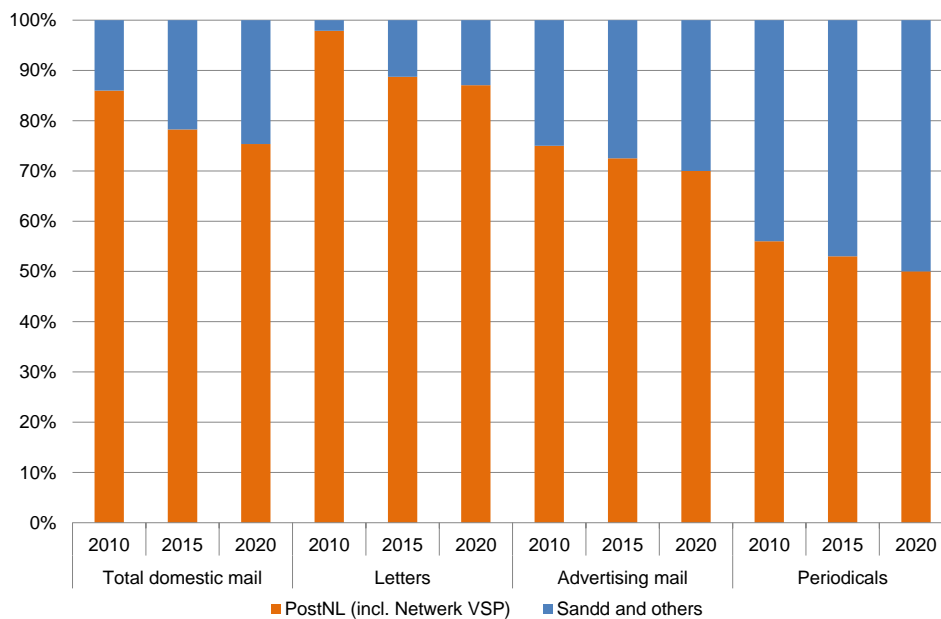
So far, competition in the letters segments is quite limited while the market shares of competitors in the segments of advertising mail and periodicals are already substantial. Based on customer interviews we expect that Sandd's market share in the letters segment, and particularly in the sub-segment of non-priority transaction mail, will

<sup>40</sup> WIK estimations based on interviews with postal operators combined with public available sources (NMa (2011), Besluit betreff 7124 / Sandd – Selekt Mail, 8 April 2011, p. 8; OPTA (2010), De Nederlandse Postmarkt 2008-2009; OPTA (2011), Market Monitor 2010; TNT, Annual Report 2010).

substantially increase in the next years. Bulk mailers are interested in a competitively structured market for mail delivery, because this improves their bargaining position.<sup>41</sup> Emerging competition in this field has already reduced average contract periods so that mailers are able to renegotiate agreements or to switch the postal service provider more often.<sup>42</sup>

The development of the market shares in advertising mail partly depends on the future of Network VSP. Some observers expect that Network VSP may stop its delivery activities in the Dutch mail market and refocus on the distribution of unaddressed advertising.<sup>43</sup> If this happens some of the volume currently delivered by Network VSP may switch to Sandd, resulting in an increasing market share in advertising mail. In that case Sandd's market share may reach 30 per cent. For the periodicals segment we expect generally stable market shares. Overall, we expect that the overall market share of Sandd will increase to 20-25 per cent in the next years.

Figure 16 Expected development of market shares per segment by volume (2010/2015/2020)



Source: Estimation WIK-Consult

<sup>41</sup> Customer interviews.

<sup>42</sup> Customer interviews.

<sup>43</sup> We heard this expectation in several interviews. A market exit of Network VSP appears quite plausible for three reasons. First, like Sandd, Network VSP has to implement the foreseen CLA for its mail deliverers which results in higher wage costs. Second, PostNL has recently introduced a 72-hour delivery service and is reorganizing its delivery operations switching from full-time to part-time employees. This reorganisation substantially increases the number of mail deliverers (in headcount) from today 11,000 postmen to expected 35,000 mail deliverers (see TNT Post, Annual report 2010, p. 260). These additional mail deliverers can be acquired from Network VSP. Third, the reputation of Network VSP in terms of delivery quality is – compared to Sandd's – quite low.

We do not expect substantial market entry outside existing niches (e.g. local delivery). With Sandd and PostNL (including Netwerk VSP) there are two well-established players with nationwide delivery networks and settled customer relations in the mail market. Additionally, market volume will continue to decline. Successful market entry particularly at national scale requires substantial investments and result in high losses during the first years. Foreign postal operators like Deutsche Post have left the Dutch mail market. The expected labour agreement will result in higher wage costs also for market entrants. Sandd expects its labour costs to increase by 40 per cent until 2013.<sup>44</sup> With this in mind, we do not see any potential investor that may be willing to incur the risk for such an undertaking.

Sharp volume declines may in theory risk the viability of postal operators. However, neither PostNL nor Sandd passively observes the developments in the Dutch mail market, making such a situation unlikely.

- In order to meet the challenges occurring from mail decline, PostNL, for example, has recently introduced a 72-hour delivery service called “Basic”.<sup>45</sup> This service is more comparable to Sandd’s two-day delivery service (on Tuesday and Friday) than the next week delivery service of PostNL’s subsidiary Netwerk VSP. Additionally, PostNL plans to concentrate delivery on three days per week (Tuesday, Thursday and Saturday). Lastly, PostNL has already announced to their key customers that the company plans to replace the 48-hour delivery service by the 72-hour delivery service when the three-day delivery model is fully implemented (beginning 2013). In the meantime, the company promotes the migration of 48-hour volume (mainly transaction mail) to the “Basic” service.<sup>46</sup>
- Sandd took the opportunity to acquire Selekt Mail. The market exit of Deutsche Post DHL from the Dutch mail market has relaxed Sandd’s economic situation. After full market opening (combined with the financial crisis in 2009) prices for mail delivery have dramatically gone down mainly driven by Selekt Mail’s pricing policy.<sup>47</sup> We expect that this process has been successfully stopped by the acquisition.<sup>48</sup>
- After full market opening Sandd has entered the segment of non-priority transaction mail and started offering a non-priority delivery service for office mail. As prices and thus margins are substantially higher in these segments compared to the delivery of advertising mail and periodicals this will most likely additionally support the viability

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<sup>44</sup> Sandd interview.

<sup>45</sup> TNT Post, Tariffs January 2011 Business products and services.

<sup>46</sup> Interview PostNL.

<sup>47</sup> Customer interviews and SEO (2010), Evaluatie ingroeimodel maart 2010.

<sup>48</sup> Customer interviews, Sandd interview.



of Sandd. Furthermore, the competitiveness of Sandd would be further improved if the company introduces a third delivery day as mentioned in an interview.<sup>49</sup>

- Finally, both companies see the opportunities of the dynamically growing market for distance selling parcels. Sandd has announced plans to enter the parcel market.<sup>50</sup> PostNL, too, pursues a focused strategy in the Dutch parcel market to safeguard its dominant position.<sup>51</sup>

So far, the viability of mail service providers depends mostly on the ability of postal operators to implement a flexible working organization that can deal with declining mail volume. Declining mail volumes will be followed by rescaling of postal business. However, market entry of new postal operators in the mail market is not likely under the current conditions and the foreseen decline in mail volumes. The now established duopoly appears to be stable in our view, independently of which scenario will turn out.

## 2.6 Price developments in the Dutch postal market

We expect increasing price levels in most mail segments. However, the extent of price increases varies between the segments, particularly depending on existing and expected future competition, and the mail volume development per segment. Mail volume declines basically result in increasing average costs in postal operations which in turn result in either price increases or reduced operational margins, or both. Competition within the mail market as well as competition between paper-based and digital communication, however, will prevent prices from increasing substantially above (economic) costs. As outlined in section 2.5, the intensity of competition differs between the mail segments: While competition in the segments for advertising mail and periodicals is already substantial, in the letters segment, particularly for non-priority letters it is only now emerging. For priority mail competition is not an issue. Moreover, substitution, i.e. competition with digital media, is more relevant in the letter segment than for advertising mail and periodicals.

Table 2 summarizes our rating that is based on interviews with customers and postal operators, as well as extensive desk research. For forecasting purposes, we make use of this rating when deriving assumptions on future price developments per segment that are presented for each scenario in Figure 17. It should be noted that our estimations on future price developments refer to average price levels per segment and not to prices

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<sup>49</sup> See VIP/Doc (February 2011), "Sandd is politiek de slim af", p.17. In the article Sandd's decision on a third delivery day depends on a volume threshold of 800m items per year that they have not yet reached.

<sup>50</sup> Reuters (6 June 2011), "INTERVIEW-PostNL's main rival Sandd plans expansion" (<https://www.bbva.ch/v3/market/news/instr/europe/aex/PTNL.AS/1307373071nLDE7551UU>).

<sup>51</sup> Herna Verhagen (2011), Parcels, PostNL Capital Markets Day 9 May 2011.

for each product offered in this segment.<sup>52</sup> Therefore, it is very likely that actual price increases (per product) will be different from our assumptions on future price development.

Table 2 Development of competition and prices

Segment		Competition (market share of PostNL's competitors)		Average price level	
		2010 level	Change	2010 level	Change
Social mail		None	0	High	+++
Office mail	Priority	Minor	0	High	++
	Non-priority	Minor	+	High*	-*
Transaction mail	Priority	None	0	Medium	++
	Non-priority	Emerging	+++	Medium	--
Advertising/Periodicals		Substantial	+	Low	+

Note: Based on interview results with customers and postal operators and WIK expertise.

\* Price development of non-priority office mail in relation to prices for priority office mail in 2010.

0: no change; + increase, - decline; the number of +/- indicates the estimated magnitude of the change.

We expect the highest price increases for single piece items, particularly for social mail (see Figure 17). In this segment there is no competition and we do not expect that significant competition will emerge in the next years. However, since these items are part of the universal service, price changes in this segment are subject to price regulation. The current framework (substantially revised in 2009) determines that at the beginning of each price cap period (the next one starts most likely in 2011<sup>53</sup>) the starting tariffs for universal services shall reflect the actual costs including a reasonable profit margin (Art. 13, Postregeling 2009). Recently, Parliament has fixed the reasonable profit margin at 10 per cent of total universal service revenues.<sup>54</sup> During the price cap period increases are capped by the inflation rate measured by the consumer price index as published by the Centraal Planbureau (Art. 17, Postregeling 2009). PostNL expects price increases for single piece mail between 10 and 15 per cent for regulated postal services on average in the next few years.<sup>55</sup> In this context, we assume that price increases for stamped mail will be more substantial than for franked mail, because of emerging competition in the office mail segment and the possibility that PostNL introduces a non-priority office mail service. We note, however, that the final

<sup>52</sup> In the model we use price indices for each "level 2" segment starting with 100 in 2010. If we expect price increases on average the index is set above 100 for the following years, in case of average price declines the index is set below 100. See section 2.1 and the annex for more detailed information.

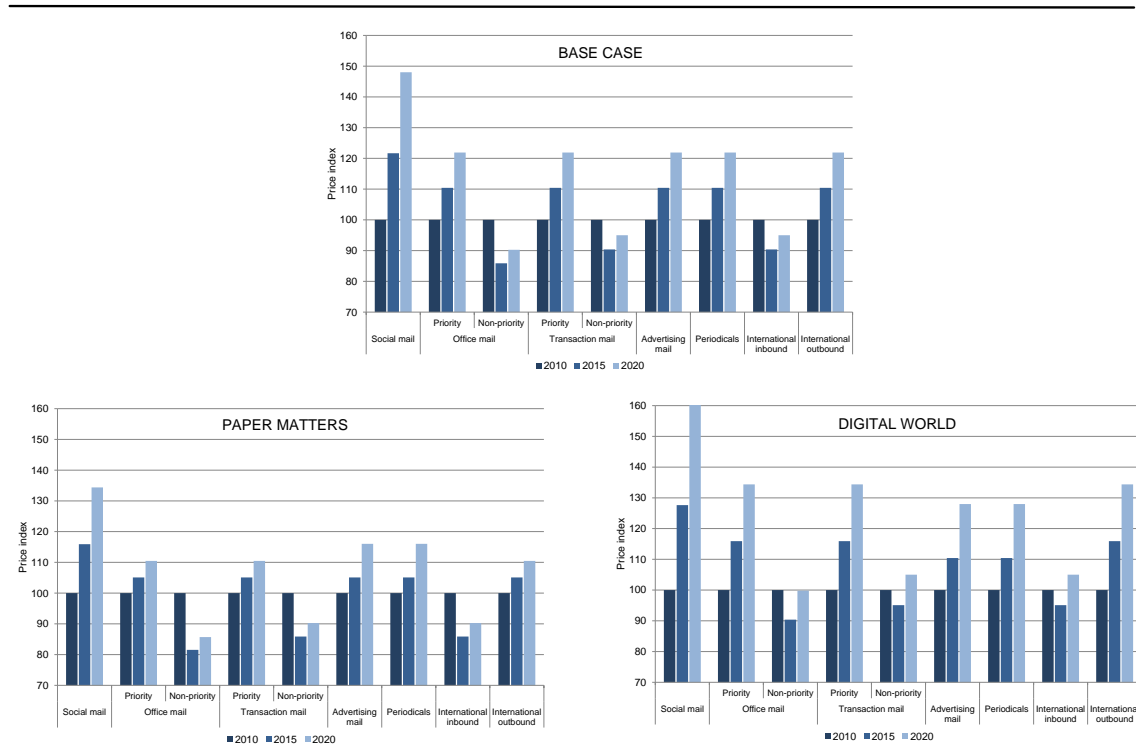
<sup>53</sup> At the point when the price cap is agreed, it will have formally started on 1<sup>st</sup> January of the year in which it has been agreed. Therefore, if the price cap is agreed in 2011, it will have taken effect (retrospectively) on 1 January 2011.

<sup>54</sup> Harry Koorstra (2011), Mail in NL, Capital Markets Day, 9 May 2011, slide 8.

<sup>55</sup> Telegraaf of 10 May 2011, "Postzegel wordt duurder" ([http://www.telegraaf.nl/overgeld/consument/9738785/\\_Postzegel\\_wordt\\_duurder\\_.html](http://www.telegraaf.nl/overgeld/consument/9738785/_Postzegel_wordt_duurder_.html)).

decision is up to the regulatory authority OPTA who is responsible for implementing the price cap.

Figure 17 Price trends for domestic mail per segment 2010-2020, scenarios



Source: Estimation WIK-Consult

For other priority letter services (within office and transaction mail) we expect lower price increases than for social mail because at least medium-sized and large business mailers have the opportunity to switch from the priority to the non-priority service or even to competition. For this reason these customers have more bargaining power. Additionally, it is also possible that in reaction to declining mail volumes postal operators reduce the volume thresholds for receiving discounts which would limit increases in average prices. We assume similar price increases for priority transaction mail and for priority office mail, however starting from different price level.

The price development for non-priority office mail and transaction mail is driven by competition and the introduction of new mail products. For office mail non-priority services emerge for two reasons. First, Sandd has entered this segment at the end of 2010. Second, we expect that PostNL will introduce a non-priority service for office mail to meet Sandd's market entry. The non-priority office mail product will be lower priced

than current priority office mail products.<sup>56</sup> For non-priority transaction mail we also expect declining tariffs, because after full market opening Sandd started business in this segment and will continue to gain market share. Another reason is that 2011 PostNL has introduced a new 72-hour delivery service, called “Basic” that allows bulk mailers to further reduce delivery costs. PostNL has already announced to their key customers that the company plans to replace the 48-hour delivery service by the 72-hour delivery service when the three-day delivery model is fully implemented (beginning 2013).<sup>57</sup> PostNL’s foreseen concentration of delivery on three delivery days per week provides leeway for further price declines in this segment due to scale effects.

For advertising mail and periodicals we also expect price increases, comparable to the expected price increases for priority letter services. Postal tariffs for the delivery of advertising and periodicals are already very low. Particularly in the advertising segment average prices went down the last three years. For this reason, we assume that average prices are near or even below cost so that price increases are more likely than price declines in these segments. Additionally, competitors expect increasing labour cost in the context of the expected labour agreement.<sup>58</sup> Finally, after the acquisition of Selekt Mail by Sandd this year,<sup>59</sup> the competitive pressure has been reduced. A conceivable market exit of Netwerk VSP (as expected by several interviewees) would further increase average prices particularly in the segment of advertising mail.

## 2.7 Position of mail carriers

In 2009 the total number of deliverers was 63,000, about two-third working under an employment contract (mainly at PostNL), one-third as self-employees.<sup>60</sup> Although the acquisition of Selekt Mail by Sandd has negatively affected the total number of deliverers, we expect that the per headcount number will increase in the next few years. We share the expectation of Copenhagen Economics that the labour conditions of incumbents and competitors deliverers are aligning.<sup>61</sup> This will happen in the next two years. The lower limit of wages paid for deliverers is determined by the Dutch statutory minimum wage.<sup>62</sup> This development is driven by two factors. First, PostNL is restructuring its delivery activities with substantial effects on labour conditions of mailmen. Second, the other postal operators, particularly Sandd and Netwerk VSP (owned by PostNL), are still working on a collective labour agreement (CLA) with the

<sup>56</sup> In 2009 PostNL required 0.40€ for a 20g franked letter (next day delivery, universal service product). The delivery of Christmas Post that is most comparable to non-priority service (exemption from next day delivery) cost 0.34€ in the same year.

<sup>57</sup> Interview PostNL.

<sup>58</sup> See section 2.7 to this subject.

<sup>59</sup> NMa (2011), Besluit betreft 7124 / Sandd – Selekt Mail, 8 April 2011.

<sup>60</sup> OPTA (2011), Market Monitor 2010, p. 22.

<sup>61</sup> Copenhagen Economics (2011), “How does liberalisation affect postal workers?”, Presentation held at the 19th Conference on Postal and Delivery Economics, 3 June 2011.

<sup>62</sup> The minimum wage for Dutch workers aged above 23 years is 1,424.40€ (Federation of European Employers, <http://www.fedee.com/minwage.html>, retrieval date 12 July 2011). Assuming 160 working hours per month the minimum wage rate per hour is 8.90€ in 2011.

unions. This agreement foresees that 80 per cent of competitors' labour force shall be paid according to the CLA by October 2013.<sup>63</sup> Sandd expects that the implementation of this agreement will substantially increase labour costs that forces Sandd to increase tariffs.<sup>64</sup>

Postal operators face declining mail volumes in the coming years, but these are not the only changes that result in changed requirements to delivery personnel. Historically, TNT was a frontrunner with regard to modernization of postal operations. The first wave of modernization happened in the 90's with the introduction of centralized sorting facilities. This innovation was followed by optimization of transport and delivery routes using sophisticated operations research techniques and outsourcing of transport services (for the line haul between the sorting centres and between sorting centres and delivery offices). Finally, TNT has outsourced the major part of parcel delivery to third parties. In 2010 85 per cent of parcels were delivered by subcontractors.<sup>65</sup> These developments already had substantially reduced the number of personnel (in terms of full-time equivalents) at TNT. The current wave of modernization measures includes the introduction of sorting machines able to sort the mail to delivery sequence. Consequently, the volume to be sorted to delivery round by mailmen has substantially reduced. This implies first, that mailmen's sorting activities have reduced or even vanished and second, that delivery becomes a more standardized activity that requires less qualifications. Based on its assessment of emerging competition and declining mail volumes in the market, PostNL is in the process of a reorganisation which involves replacing 11,000 full-time postmen ("postbode") by 35,000 part-time deliverers ("postbezorger").<sup>66</sup> The wages (per hour) of this "new generation" of deliverers at PostNL are substantially lower than that of the traditional postman (around 40 per cent) and oriented on the statutory minimum wage.<sup>67</sup> Similar to Sandd – which focuses on individuals considering delivery as side job – PostNL will operate with less qualified delivery personnel than today. Some customers expect that this fundamental change in delivery organization may lead to temporary quality of service problems.<sup>68</sup>

## 2.8 Governmental influence

There are two major ways for Dutch public institutions to influence the postal market: first in its role as legislator and policy maker, second in its role as mailer (public authorities).

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<sup>63</sup> Harry Koorstra (2011), Mail in NL, Capital Markets Day, 9 May 2011, slide 12 according to the proposal of SEO (2011), Uitwerking arbeidsovereenkomstenfonds op de postmarkt.

<sup>64</sup> Interview with Sandd, and Reuters, 6 June 2011, "INTERVIEW – PostNL's main rival Sandd plans expansion" (<https://www.bbva.ch/v3/market/news/instr/europe/aex/PTNL.AS/1307373071nLDE7551UU>).

<sup>65</sup> TNT, Annual Report 2010, p. 39.

<sup>66</sup> TNT, Annual Report 2010, p. 205.

<sup>67</sup> Copenhagen Economics (2011), "How does liberalisation affect postal workers?", Presentation held at the 19th Conference on Postal and Delivery Economics, 3 June 2011, slide 12.

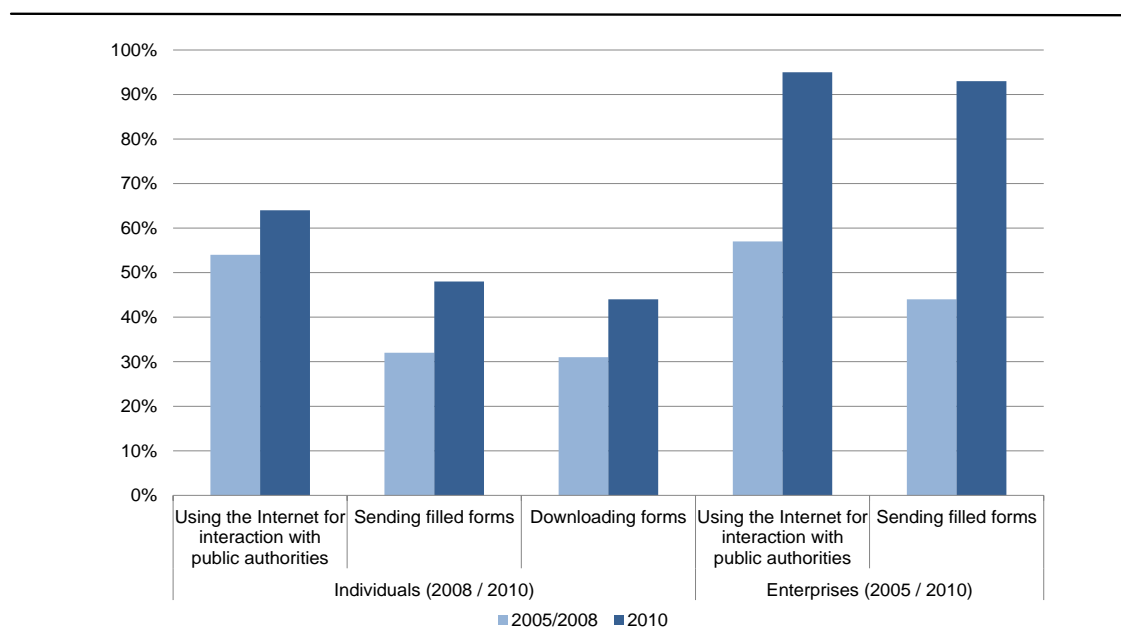
<sup>68</sup> Based on customer interviews.

Government's basic policy is to promote the digitalisation of the society to safeguard and even improve the competitiveness of the Dutch economy.<sup>69</sup> This, per se, negatively affects postal market volumes.

The Dutch postal sector is subject to sector-specific regulation that has been fully revised with full market opening in April 2009. This framework defines the rules of the game and shall create a level playing field in the liberalized mail market to promote sustainable competition. In our view, competition is the key driver for the development of more customer-oriented postal services which would result in an increasing number of delivery options at least for business customers. This general development promoted by competition helps to safeguard the competitiveness of the mail sector in general.

Based on interviews with public authorities, we see that two factors that influence the mailing behaviour of public institutions; the digital agenda, particularly with regard to eGovernment activities; and cost saving efforts.

Figure 18 Use of eGovernment services in The Netherlands (2010)



Source: Based on Eurostat, Benchmarking Digital Europe: 2011-2015 indicators.

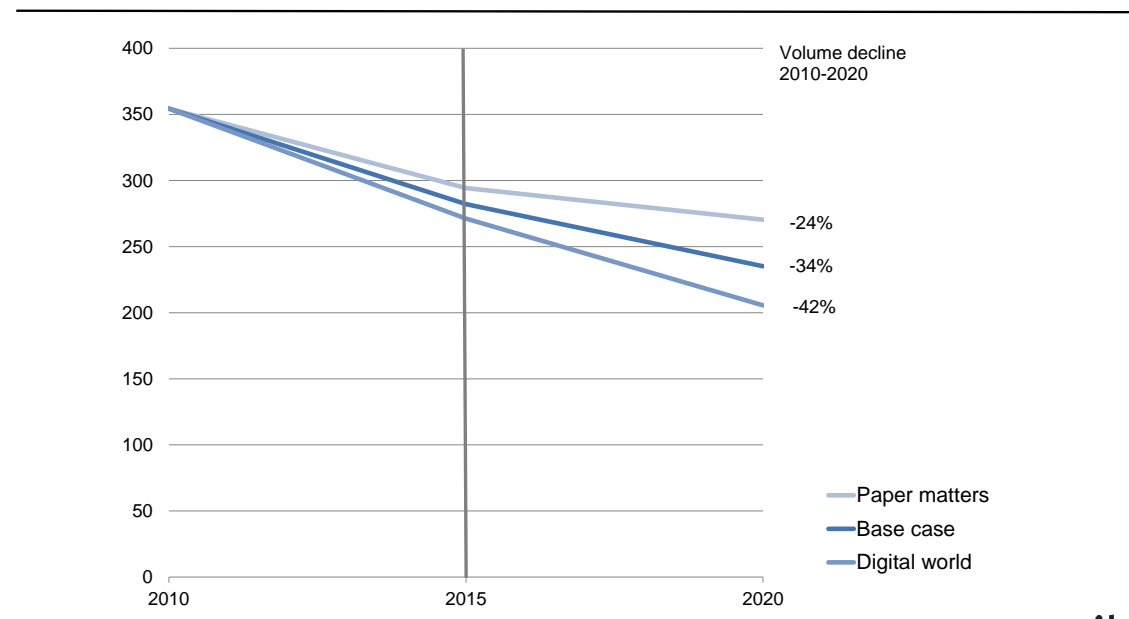
The process of digitalised communication between public authorities and enterprises (with more than 10 employees) is already more advanced as presented in Figure 18. Based on interviews with public authorities, we expect a steady shift over the coming years from physical to digital communication between public authorities and individuals and small businesses in the coming years.

<sup>69</sup> Ministry of Economic Affairs, Agriculture and Innovation (2011), Digitale Agenda.nl.

### 3 Developments per market segment

#### 3.1 Social mail

Figure 19 Trend forecast: social mail 2010-2020



Social mail	Total volume change in %			Average change rate per year (CAGR, %)		
	2010-2020	2010-2015	2015-2020	2010-2020	2010-2015	2015-2020
Paper matters	-24%	-17%	-8%	-2.7%	-3.7%	-1.7%
Base case	-34%	-20%	-17%	-4.0%	-4.5%	-3.6%
Digital world	-42%	-23%	-24%	-5.3%	-5.2%	-5.4%

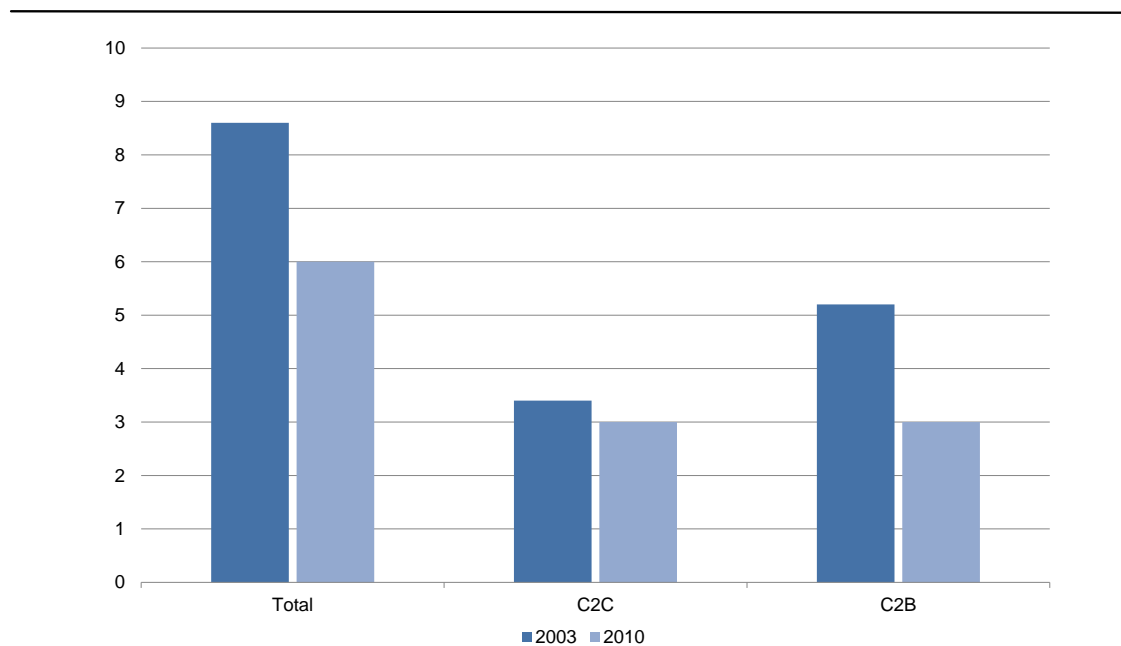
Source: Estimation WIK-Consult

Social mail comprises letters and greeting cards sent from individuals and letters sent from individuals to businesses or public authorities (C2X). Due to the nature of social mail, individuals usually send stamped mail via postal outlets or street letter boxes. The collection and delivery of these items is part of the universal service that is solely provided by PostNL. We estimate that social mail will decline by around one third until 2020 (“base case”), which corresponds to an average rate of -4 per cent.

The communication behaviour of the Dutch population has substantially changed during the last two decades. Data and voice services are available via fixed lines or mobile phones. The internet is omnipresent and increasingly serves as communication platform. Dutch people are leaders in using social networks: Between March 2010 and March 2011 nearly 11.5m people have visited such platforms (e.g. Hyves or

Facebook.com).<sup>70</sup> Around 90 per cent of young Dutch people (aged between 16 and 25 years) have used social networks in 2010.<sup>71</sup> These developments are reflected in a changing mailing behaviour of individuals (see Figure 20).

Figure 20 Average number of letters and greeting cards sent by individuals per month (2003 and 2010)



Source: WIK-Consult based on survey results of TNS/nipo consult (2004), *Betekenis en belang van postdienstverlening* (p. 9) and Intomart GfK (2011), *Onderzoek naar de betekenis, behoeften en belang van post en de postdienstverlening* (p. 19).

The number of letters and cards sent monthly by individuals has substantially reduced between 2003 and 2010, by nearly one third in total, amounting to a 5% decline on average per year. While letters sent between individuals remained roughly stable, letters sent to businesses (and administrations) have substantially declined.<sup>72</sup> Mail between individuals is by far dominated by greetings cards, particularly Christmas and New Year greeting cards.<sup>73</sup> Based on the 2010 survey results of Intomart GfK,

<sup>70</sup> Comscore Inc. (2011), "The Netherlands Ranks #1 Worldwide in Penetration for Twitter and LinkedIn", press release of 26 April 2011, [http://www.comscore.com/Press\\_Events/Press\\_Releases/2011/4/The\\_Netherlands\\_Ranks\\_number\\_one\\_Worldwide\\_in\\_Penetration\\_for\\_Twitter\\_and\\_LinkedIn](http://www.comscore.com/Press_Events/Press_Releases/2011/4/The_Netherlands_Ranks_number_one_Worldwide_in_Penetration_for_Twitter_and_LinkedIn).

<sup>71</sup> Web magazine, 11 January 2011, "Dutch youth very active on social networks", <http://www.cbs.nl/en-GB/menu/themas/dossiers/jongeren/publicaties/artikelen/archief/2011/2011-3296-wm.htm>.

<sup>72</sup> See TNS/nipo consult (2004), *Betekenis en belang van postdienstverlening* (p. 9) and Intomart GfK (2011), *Onderzoek naar de betekenis, behoeften en belang van post en de postdienstverlening* (p. 19).

<sup>73</sup> Christmas Post's tariffs are substantially lower than the standard tariffs because PostNL needs more time for delivery in December due to peak volume. In 2008 and 2009 a 20g Christmas letter cost 0.34€, 0.10€ less than the standard tariff of 0.44€ (see Opta (2010), *De Nederlandse Postmarkt 2008-2009*, p. 29).



Christmas post accounts for about half of total mail sent by individuals on average.<sup>74</sup> Overall, this outcome shows that, so far, greeting cards are much less subject to substitution than mail communication to businesses and administrations. Based on these observations, we expect that sending greeting cards will remain an important element in individuals' communication behaviour in the future while individuals' "business" letters will continue to be challenged by electronic substitution.

Tariffs for undiscounted single-piece letters and parcels are subject to price regulation. In the past the development of these tariffs was oriented to the Dutch consumer price index. PostNL has submitted a new tariff proposal at the end of May 2011.<sup>75</sup> Based on recently adapted price regulation requirements, the tariffs can be reset taking return on sales of 10 per cent as reasonable profit into account (see section 2.5 for more details). In subsequent years the tariff development is capped by the inflation (i.e. the development of the consumer price index). According to PostNL, the profitability of the USO services has substantially declined since 2008. With this in mind, PostNL expects that the tariff for universal service items will increase between 10 and 15 per cent in the next few years.<sup>76</sup> Based on this information, we assume that tariffs for social mail will substantially increase at least 3 per cent ("paper matters") and 5 per cent ("digital world") per year on average between 2010 and 2020. We do not expect significant market entry in this segment during the projection period.

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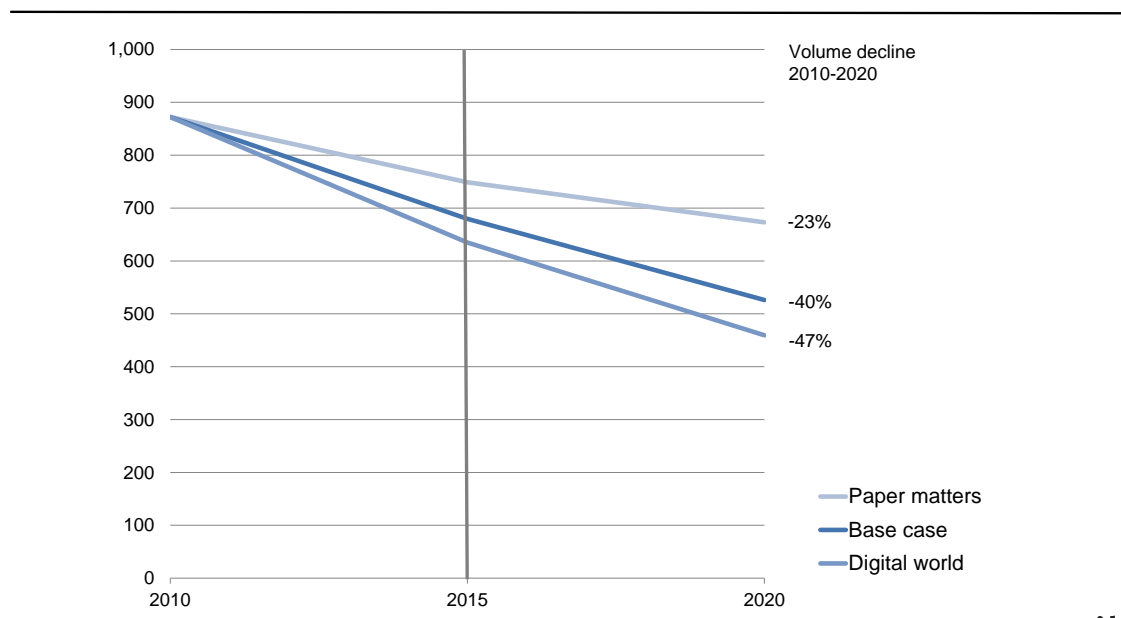
<sup>74</sup> Intomart GfK (2011), Onderzoek naar de betekenis, behoeften en belang van post en de postdienstverlening (p. 19): On average individuals send 37 Christmas and New Year greeting cards per year, this corresponds to half of total letters sent by individuals per year (i.e. 12 months \* 6 letters per month).

<sup>75</sup> Harry Koorstra (2011), PostNL: a compelling investment opportunity, Capital Markets Day, 9 May 2011, slide 8.

<sup>76</sup> De Telegraaf, 10 May 2011, "Postzegel wordt duurder"  
[http://www.telegraaf.nl/overgeld/consument/9738785/\\_Postzegel\\_wordt\\_duurder\\_.html](http://www.telegraaf.nl/overgeld/consument/9738785/_Postzegel_wordt_duurder_.html).

### 3.2 Office mail

Figure 21 Trend forecast: office mail 2010-2020



Office mail	Total volume change in %			Average change rate per year (CAGR, %)		
	2010-2020	2010-2015	2015-2020	2010-2020	2010-2015	2015-2020
Paper matters	-23%	-14%	-10%	-2.6%	-3.0%	-2.1%
Base case	-40%	-22%	-23%	-4.9%	-4.9%	-5.0%
Digital world	-47%	-27%	-28%	-6.2%	-6.2%	-6.3%

Source: Estimation WIK-Consult

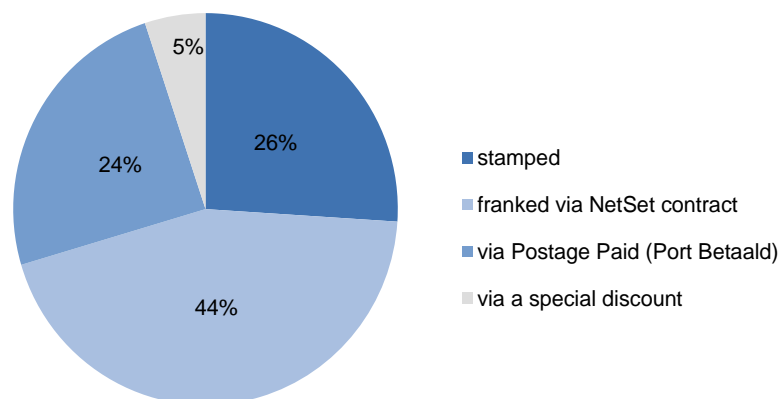
Office mail consists of letters daily sent by all types of enterprises and public institutions to their customers resp. citizens. The major part of office mail usually comprises inquiries, notifications and answers to requests. In 2010 office mail accounted for roughly 20 per cent of total domestic mail.<sup>77</sup> Between 2010 and 2020, we estimate the office mail volume to decline annually by nearly 5 per cent on average in the “base case” (see Figure 21).

In 2010 office mail was mainly been delivered by PostNL. Competition only exists at a local scale (niche players like Businesspost). Thus, office mail is usually delivered the next working day, i.e. mailers use the 24-hour delivery service of PostNL for lack of alternatives. Senders can receive discounts on single-piece letter tariffs either by using

<sup>77</sup> Estimation PostNL.

alternative payment channels to stamps (NetSet contract, postage paid) or by special discounts.<sup>78</sup>

Figure 22 Volume shares per payment channel used by SME's



Source: WIK-Consult based on survey results of Intomart GfK (2011), Onderzoek naar de betekenis, behoeften en belang van post en de postdienstverlening, p. 19-21.

Around one-third of office mail is universal service mail<sup>79</sup>, mainly used by small and medium-sized enterprises. A recent survey among SME's has shown that at most 70 per cent of SME's mail volume account to the universal service (stamped or franked via NetSet).<sup>80</sup> Figure 22 presents the SME's volume shares per payment channel.

We assume that on average the tariffs for priority office mail will increase between 2% and 3% per year between 2010 and 2020. Furthermore, we assume that office mail volumes, particularly those sent by SME's, are less sensitive to price changes than transaction mail.<sup>81</sup> The costs for mail services usually play a minor role in total cost. Cost savings due to cheaper mail services or due to the switch to digital communication are therefore not the main driver for companies' decision which communication channel to use. The main feature of office mail is its ad hoc character; it is individually produced to deal with specific customer requests. Furthermore, it is more a two-sided communication (compared for example to transaction mail). Depending on which communication channel the request reaches the recipient, the answer in many cases is

<sup>78</sup> See TNT Post, Tariffs January 2011.

<sup>79</sup> Estimation PostNL.

<sup>80</sup> Intomart GfK (2011), Onderzoek naar de betekenis, behoeften en belang van post en de postdienstverlening, p. 19-21. We assume that business mailers that use the NetSet contract do not benefit from revenue related discounts because this requires a special contract for "franking machine with revenue related discount" (see PostNL, Rates January 2011 Business products and services, p. 16).

<sup>81</sup> See also section 2.6.

sent using the same channel.<sup>82</sup> For this reason, we assume that the substitution rate of office mail is lower than for transaction mail.

Sandd has recently started to deliver office mail of some of its key accounts, usually large and medium-sized mailers.<sup>83</sup> As office mail is usually unsorted, this requires extra sorting capacities and most likely increasing pick up capacity at Sandd.<sup>84</sup> In reaction to Sandd's market entry, we expect that PostNL will introduce a non-priority delivery service for office mail. However, the success of the non-priority services depends on final pricing and on the preferences of mailers and their customers with regard to delivery speed. We do not expect that small business mailers will significantly benefit from the market entry of Sandd in the office mail segment, because Sandd mainly targets medium-sized and large mailers.<sup>85</sup> In the case that PostNL would introduce a non-priority office mail product, we expect that large and medium-sized business mailers but also small business mailers will switch to the non-priority delivery option. For all scenarios, we therefore expect that the share of priority office mail will decline from 100 per cent in 2010 to 70 per cent in 2020.

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<sup>82</sup> WIK expertise based on interviews with German mailers (WIK-Consult (2009), Nachfrage nach Postdienstleistungen von Geschäftskunden).

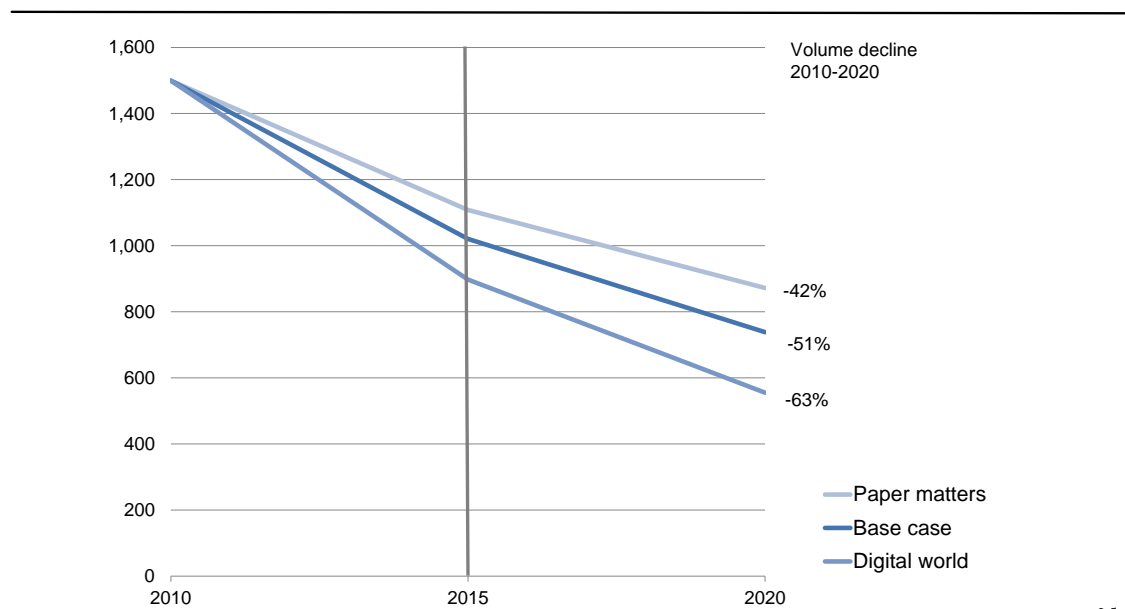
<sup>83</sup> Interview Sandd.

<sup>84</sup> Interview Sandd.

<sup>85</sup> Interview Sandd.

### 3.3 Transaction mail

Figure 23 Trend forecast: transaction mail 2010-2020



Transaction mail Scenario	Total volume change in %			Average change rate per year (CAGR, %)		
	2010-2020	2010-2015	2015-2020	2010-2020	2010-2015	2015-2020
Paper matters	-42%	-26%	-21%	-5.3%	-5.9%	-4.7%
Base case	-51%	-32%	-28%	-6.8%	-7.4%	-6.3%
Digital world	-63%	-40%	-38%	-9.5%	-9.8%	-9.2%

Source: Estimation WIK-Consult

Transaction mail is the major part of the letters segment and consists of, among others, industrially produced invoices, statements and notifications. In 2010, we estimate transaction mail accounted for about one-third of total domestic mail. Between 2010 and 2020, we estimate transaction mail volume to decline annually by nearly 7 per cent on average in the “base case” (see Figure 23).

Mailers of transaction mail have the choice between priority and several non-priority delivery services (48-hour plus delivery services). The share of transaction mail delivered the next working day (priority mail or 24-hour delivery service of PostNL) has substantially declined particularly driven by the economic crisis 2008/2009 that pushed large mailers to look for ways to reduce delivery costs.<sup>86</sup> According to PostNL,

<sup>86</sup> Customer interviews.

customers decided to use a non-priority delivery service for about two thirds of transaction mail in 2010.<sup>87</sup>

Priority and non-priority transaction mail will decline. While we expect increasing average prices for priority transaction mail (depending on the scenario, between 1 and 3 per cent per year during the projection period) for non-priority transaction mail declining tariffs are more likely for two reasons:

- Sandd has successfully entered this market segment after full market opening in 2009. Most of the customers that we interviewed already work with Sandd or plan to do so in the coming years.
- PostNL has recently introduced a 72-hour delivery service called “Basic”. Simultaneously, the company has informed its key accounts that it plans to replace the 48-hour delivery service by 2013 at the latest.<sup>88</sup> Customers expect that around 80 per cent of the today’s 48-hour service will shift to the new 72-hour delivery service (or to Sandd). This service is linked with the three-day-delivery model PostNL is implementing.<sup>89</sup> If PostNL is successful in concentrating the major part of its volume on these three days it provides leeway for price declines due to scale effects.

During the economic crisis 2008/2009 mailers were pushed to save delivery costs. We assume that this process will continue the coming years. This is reflected first in the shift to non-priority services or by switching to a cheaper postal operator.<sup>90</sup> Second, mailers can reduce volume by declining the mailing frequency or by improving efficiency (summarizing several items for the same customer to one mail item). In our model this second cost saving measure is reflected in the price elasticity that is set at a higher level compared to office or social mail.

In the opinion of the interviewed market participants (and in our view) transaction mail is the segment that is most challenged by digitalisation. Based on interviews with large mailers, we conclude that the majority of large companies and many public institutions are prepared to provide both physical and digital communication. Using both channels requires principal decisions of each company:

- A decision should be made on how to electronically deliver invoices and statements and whether this is implemented in-house or by using an external service provider (e.g. a mailing house)

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<sup>87</sup> Interview PostNL.

<sup>88</sup> Customer interviews, interview PostNL.

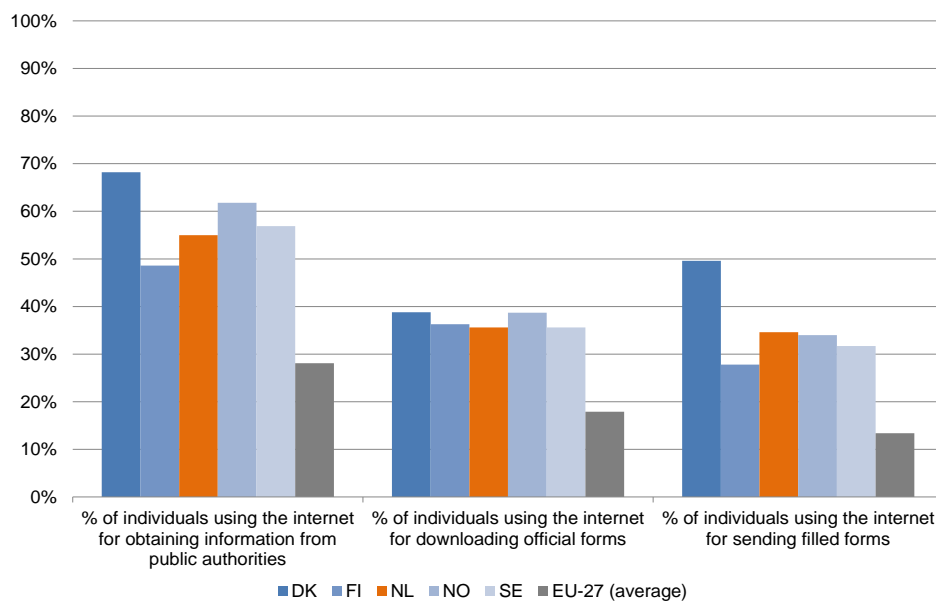
<sup>89</sup> Harry Koorstra (2011), Mail in NL, Capital Markets Day, 9 May 2011, slide 13.

<sup>90</sup> Moving towards 2020 we expect that the share of priority transaction mail will be at least stable (“paper matters”) or even increase. The increasing share of priority transaction mail results from the observation of customers that non-priority transaction mail is more challenged by substitution than priority transaction mail.

- Customers have to be informed and asked for their preferences and the customer databases have to be updated accordingly
- In case of website access, implementing secure internet sites and informing customers on access codes, maybe integrating payment facilities (e.g. by the very popular Dutch internet payment system iDEAL), will be necessary
- Promoting digital communication reduces physical mail volumes so that in-house production and investments in printing technologies may become redundant and outsourcing of mail production to mailing houses is more cost-efficient

Once decided and successfully implemented, the extra cost for producing and delivering a digital item is very low particularly compared with the production and delivery of a letter. Trend setters in this area are banks. Online banking is very popular in the Netherlands (see Figure 3 in section 2.1); people are used to check their online accounts regularly. For this reason, the willingness to switch from postal delivery of bank statements to delivery via the online post boxes at the banking website is comparatively high, particularly if physical delivery is combined with an additional fee.<sup>91</sup>

Figure 24 Individuals' use of the Internet for interaction with public authorities (2010)



Source: WIK-Consult based on Eurostat

<sup>91</sup> All important Dutch banks have established online-banking portals that are very well accepted. The Dutch population is used to check their accounts regularly by the internet.

eGovernment activities have also become an important driver in digitalisation. We estimate that roughly one-third of transaction mail originates from public institutions.<sup>92</sup> In the Netherlands the interaction of individuals with public authorities via internet is more advanced than in the EU average (see Figure 24). Dutch enterprises use the opportunity to communicate digitally with public authorities even more. For the coming years it is expected that digital channels will almost completely replace the letter in communicating with citizens.<sup>93</sup>

For other segments, like utilities or insurances, we expect the development to be less dynamic. Invoices and statements are usually sent only once a year so that the use of online post boxes at the company's website is less convenient for different reasons. First, people often forget their access codes to the respective online accounts if only used once per year. Second, in contrast to letters that are delivered to the letter box at the premises of each household, recipients of digital invoices are forced to collect their electronic mail from different websites. Additionally, after 2020, there will still be individuals who are either not able to switch to digital communication or who still prefer paper communication. From today's point of view it is therefore not imaginable that within one decade transaction mail will be fully replaced by digital communication. In contrast, we expect that substitution rates for transaction mail will decline after 2015.

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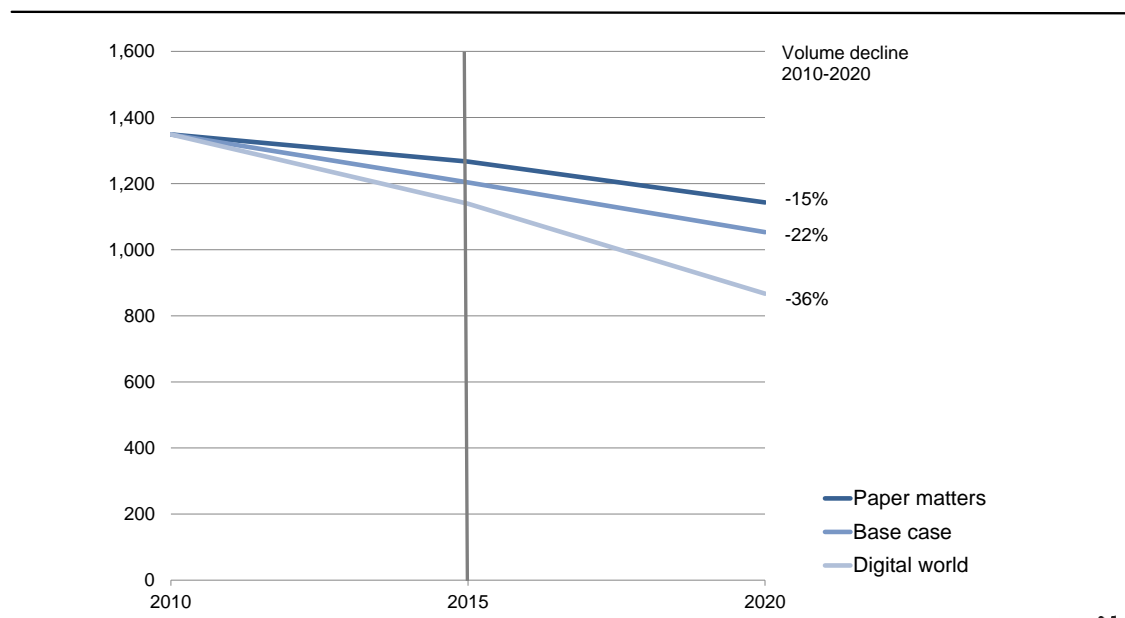
<sup>92</sup> Estimation based on customer interviews.

<sup>93</sup> Customer interviews.



### 3.4 Advertising mail

Figure 25 Trend forecast: advertising mail 2010-2020



Advertising mail	Total volume change in %			Average change rate per year (CAGR, %)		
	2010-2020	2010-2015	2015-2020	2010-2020	2010-2015	2015-2020
Paper matters	-15%	-6%	-10%	-1.6%	-1.3%	-2.0%
Base case	-22%	-11%	-13%	-2.4%	-2.3%	-2.6%
Digital world	-36%	-16%	-24%	-4.3%	-3.3%	-5.3%

Source: Estimation WIK-Consult

Addressed advertising mail, (including sponsored magazines) accounts for nearly 30 per cent of the total domestic mail market. Between 2010 and 2020, we estimate advertising mail volume to decline annually by 2.4 per cent on average in the “base case” (see Figure 25).

The delivery of addressed advertising mail or direct mail has traditionally been open to competition in the Netherlands (advertising mail defined as identical copies before market opening of the mail market). For this reason competition is fairly developed in this segment with originally three major players in this market: Selekt Mail, Sandd and the incumbent TNT Post, now PostNL. PostNL and its subsidiary Network VSP, which offers a low cost delivery service for direct mail (next week delivery, i.e. delivery one day per week), are active in this market segment. After the recent acquisition of Selekt Mail by Sandd there are basically two players remaining in this market segment with PostNL (including Network VSP) and Sandd. About three-quarter of total addressed

advertising mail was delivered by PostNL. Competition in this market segment has resulted in relatively low delivery tariffs.

In 2009/2010 a severe price battle, which particularly affected advertising mail, led to a further decline in price levels for the delivery of advertising mail.<sup>94</sup> Overall, over the coming years we expect increasing prices for the delivery of addressed mail. There are a number of reasons for this. First, the price level in 2010 was extremely low as explained above. Second, if Sandd and Netwerk VSP implement the foreseen collective labour agreement in their companies, this will result in substantially increasing labour costs. Third, if Netwerk VSP exits this segment, which is considered very likely by market participants, the competitive pressure will be further reduced. A market exit of Netwerk VSP appears quite plausible for three reasons. First, like Sandd, Netwerk VSP has to implement the foreseen CLA for its mail deliverers which results in higher wage costs. Second, PostNL needs additional mail deliverers that can be taken over from Netwerk VSP.<sup>95</sup> Third, the reputation of Network VSP in terms of delivery quality is – compared to Sandd’s – quite low. These factors, combined with continuously declining mail volumes, promote price increases above inflation rate in the delivery of advertising mail.

Advertising via direct mail competes with a number of other advertising media. This includes traditional advertising media like TV, newspapers and magazines and unaddressed advertising mail, as well as the emerging online advertising media via e-mail, internet or SMS. While customers are spending an increased amount of time surfing the internet, and considering that e-advertising in most cases is available at a lower price compared to direct mail, the question is how digitalisation will affect direct mail in the near future.<sup>96</sup> According to a survey conducted by DDMA<sup>97</sup>, the importance of addressed and unaddressed direct mail is expected to decrease in the future. In the near future, service providers and advertisers expect to increase their efforts especially with regard to mobile marketing and online communities.<sup>98</sup> Despite this trend, studies conclude that direct mail will remain an important channel for marketers’ multi-channel campaigns.<sup>99</sup>

Many consumers in the Netherlands seem to dislike banner advertising and e-mail marketing. A Dutch study asked consumers to rank direct marketing channels in the order they most preferred.<sup>100</sup> The choices included direct mail, advertising in

<sup>94</sup> Interview Sandd; see also SEO (2011), *Uitwerking arbeidsovereenkomstenfonds op de postmark*.

<sup>95</sup> PostNL has recently introduced a 72-hour delivery service and is reorganizing its delivery operations switching from full-time to part-time employees. This reorganisation substantially increases the number of mail deliverers (in headcount) from today 11,000 postmen to expected 35,000 mail deliverers (see TNT Post, Annual report 2010, p. 260).

<sup>96</sup> IPC (2009), *Direct Mail – A Winning Solution*, IPC Strategic Perspectives, p.2.

<sup>97</sup> DDMA (2011), *DM Barometer, De graad van DM bestedingen*, 1e kwartaal 2011.

<sup>98</sup> DDMA (2011), *DM Barometer, De graad van DM bestedingen*, 1e kwartaal 2011, p.10 and 19.

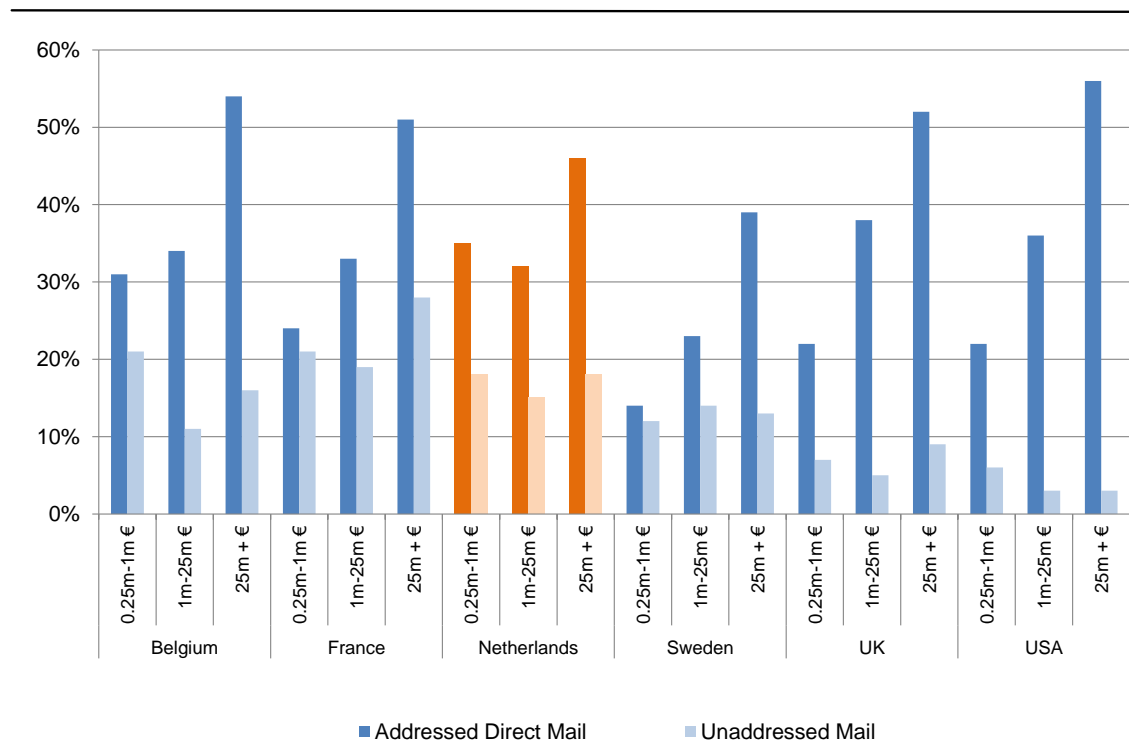
<sup>99</sup> IPC (2011), *Role of Mail 2020*, p. 28.

<sup>100</sup> Quix, F., *Zijn er nog Massa Media?*, Q&A presentation at the “*Dag van de Brievenbusreclame*”, 12.5.2009. URL: <http://www.brievenbusreclame.nl/congres2009.html> [retrieval date 11.7.2011].

newspapers, TV adverts and internet banners. Of these four choices, Internet banners were the least liked. Of all direct marketing media surveyed, consumers favour direct mail as the most informative direct marketing channel. In another study most respondents did not consider e-mail marketing to be a good alternative for addressed direct mail.<sup>101</sup>

With respect to unaddressed door drops, there is still a relatively high endorsement by advertisers for this advertising method in the Netherlands compared to other countries like the UK and the USA (see Figure 26).<sup>102</sup>

Figure 26 Use of addressed and unaddressed direct mail depending on enterprise size



Source: IPC (2009), What's New in Direct Mail? Some Initiatives...,IPC Strategic Perspectives, p.2.The figure shows the percentage of small companies (turnover 0.25m – 1m € per year), medium companies (turnover 1m – 25m € per year) and large companies (turnover of more than 25m € per year) using addressed direct mail and unaddressed door drops as part of their marketing and communication strategies.

According to the results of the IPC survey, consolidated and wrapped unaddressed mail available in the Netherlands provides an added-value medium for reaching customers; this is used predominantly by companies with a B2C focus. Analysis also indicates that

<sup>101</sup> Hoogewind, B., Dag brievenbusreclame?, WDM presentation at the “Dag van de Brievenbusreclame”, 12.5.2009. URL: <http://www.brievenbusreclame.nl/congres2009.html> [retrieval date 11.7.2011].

<sup>102</sup> IPC (2009), What's New in Direct Mail? Some Initiatives...,IPC Strategic Perspectives, p.2.

in the Netherlands, usage of addressed direct mail is mainly driven by businesses with a B2B focus.<sup>103</sup>

Among consumers in the Netherlands there is a relatively high acceptance for unaddressed door drops. For example, the average time per week looking through folders has increased over the past years.<sup>104</sup> Overall the volume of unaddressed mail send out to customers is expected to lie between 11.5 and 14 billion (including regional folders) for 2010.<sup>105</sup> Through which channels consumers are approached depends very much on the consumer preferences per sector. In the ICT sector companies are used to contact their existing or new customers via folders (33.6 times per year), whereas charities mainly use addressed direct mail (18 times per year).<sup>106</sup> In other sectors, such as the tourism sector, companies prefer to contact consumers via email.<sup>107</sup>

The partial substitution between addressed and unaddressed direct mail also depends on the economic development. During the economic crisis 2009/2010 addressed direct mail substantially declined, while the volume of unaddressed advertising increased. However, it appears that with the recovery of the economy, marketers switch back to addressed direct mail.<sup>108</sup> One reason for this may be that advertisers find unaddressed mail to be less effective for marketing purposes and therefore its share is expected to decline in campaigns of dialogue media.<sup>109</sup> Moreover, market participants expect additional demand for addressed direct mail as a consequence of rising digitalisation of transaction mail.<sup>110</sup> Banks that are the trendsetters in digitalisation of transactional mail increasingly use addressed direct mail to keep in contact with their customers. Direct mail is seen here as an effective instrument for customer retention.

Overall, we conclude that addressed direct mail will maintain its position in the marketing mix of companies and that both digitalisation and unaddressed advertising will only have a limited impact on its future volume development.

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<sup>103</sup> IPC (2009), What's New in Direct Mail? Some Initiatives..., IPC Strategic Perspectives, p.2.

<sup>104</sup> Berghahn, J., *Facts & figures: Brievenbusfolder, website met folder en e-mail nieuwsbrief*, Team Vier presentation at the "Dag van de Brievenbusreclame", 1.6.2010  
<http://www.brievenbusreclame.nl/congres2010.html> [retrieval date: 11.7.2011].

<sup>105</sup> Peelen, E., (2011) Economische aspecten van de huis-aanhuisfolder,  
[http://www.brievenbusreclame.nl/downloads/2011/Ed\\_Peelen\\_Dag\\_van\\_de\\_Brievenbusreclame\\_2011.pdf](http://www.brievenbusreclame.nl/downloads/2011/Ed_Peelen_Dag_van_de_Brievenbusreclame_2011.pdf) [retrieval date: 12.7.2011].

<sup>106</sup> DDMA (2010), Trendonderzoek Dialoogmedia Editie 2010, Samenvatting, p.2.

<sup>107</sup> DDMA (2010), Trendonderzoek Dialoogmedia Editie 2010, Samenvatting, p.2.

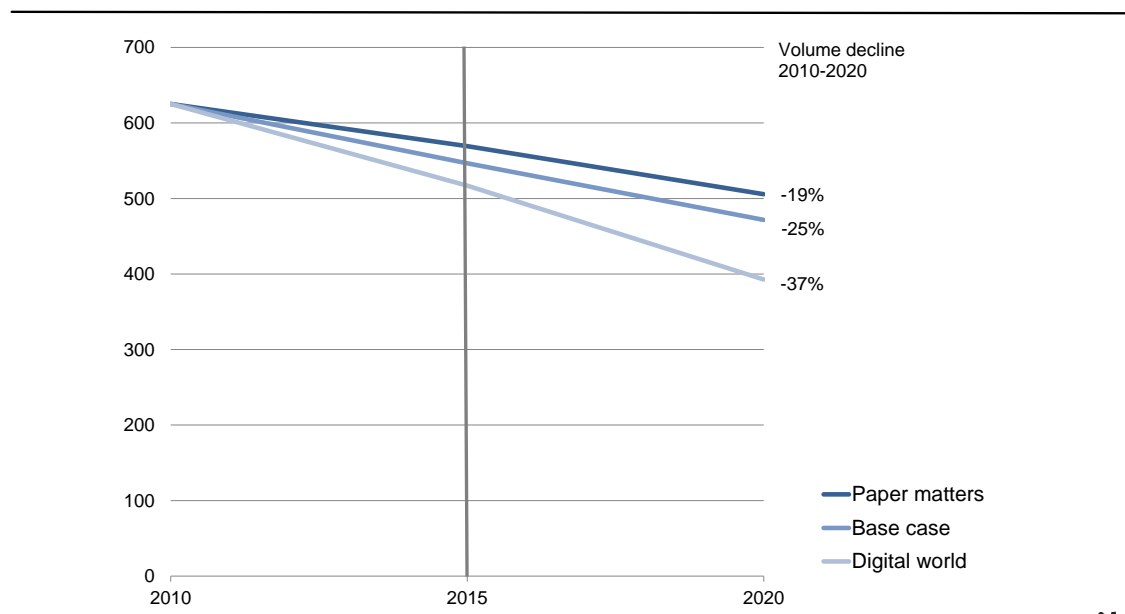
<sup>108</sup> Interview Sandd.

<sup>109</sup> DDMA (2011), DM Barometer, De graad van DM bestedingen, 1e kwartaal 2011, p.13.

<sup>110</sup> Customer interviews and interview Sandd.

### 3.5 Periodicals

Figure 27 Trend forecast: periodicals 2010-2020



Periodicals	Total volume change in %			Average change rate per year (CAGR, %)		
	2010-2020	2010-2015	2015-2020	2010-2020	2010-2015	2015-2020
Paper matters	-19%	-9%	-11%	-2.1%	-1.9%	-2.3%
Base case	-25%	-13%	-14%	-2.8%	-2.7%	-2.9%
Digital world	-37%	-17%	-24%	-4.5%	-3.7%	-5.3%

Source: WIK-Consult estimation

This segment comprises subscribed magazines and club magazines. Sponsored magazines (i.e. magazines used to retain customers and promote the brand) are accounted to advertising mail. In 2010, around 13 per cent of total domestic mail consisted of periodicals. Between 2010 and 2020, we estimate periodicals to decline annually by 2.8 per cent on average in the “base case” (see Figure 27).

Subscribed periodicals are exclusively delivered by postal operators (Sandd and PostNL).<sup>111</sup>We estimate future price increases to be limited for two reasons. First, there are two postal providers offering delivery services. Second, the number of publishers is very limited and they do not only send periodicals which results in substantial demand power.

<sup>111</sup> Interviews Sandd and PostNL.

Volume development in magazine delivery depends substantially on the overall development of periodicals subscriptions. In the Netherlands subscription rates are traditionally very high, the subscription rate of e.g. Radio and Television (RTV) magazines is 86 per cent of the paid circulation.<sup>112</sup> Generally, subscription rates of magazines are around 80 per cent.<sup>113</sup> However, digitalisation and changing reading behaviour has negatively affected the absolute number of subscriptions in the Dutch magazines segment. The circulation of paid magazines is continuously declining:

- The total number of subscriptions of the 20 largest magazines declined more than 2 per cent per year on average since 2003.<sup>114</sup>
- RTV magazines that accounted for 29 per cent of total circulation in 2008, declined by 5 per cent in both 2009 and 2010.<sup>115</sup>

In order to counter this decline, publishers managed to reach positive growth for individual magazine titles. Currently there are about 1,200 magazine titles available on the Dutch market.<sup>116</sup> Thereof around 270 magazine titles are registered at HOI,<sup>117</sup> the institute for media auditing, reaching a total circulation of 643 million in 2010.<sup>118</sup> In 1999 HOI listed 174 titles with a total circulation of 647 million.<sup>119</sup>

Studies show that individuals in the Netherlands are generally open to reading magazines online.<sup>120</sup> However, the share of individuals actually reading online newspapers and magazines is low compared to Scandinavian countries.<sup>121</sup> It is estimated that around 6.5 million people are reached by the websites of magazines publishers (about 60 websites).<sup>122</sup> In contrast, 91 percent of the Dutch population (around 14 million) continue reading printed magazines.<sup>123</sup> For this reason electronic substitution appears to be less important. Websites of magazines are usually considered to be an additional service to the printed versions.<sup>124</sup>

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**112** Based on HOI statistics for the first quarter of 2011 ([http://www.hoi-online.nl/798/Opvraagmodule.html#BLOCKTEMPLATE53115\\_tab2](http://www.hoi-online.nl/798/Opvraagmodule.html#BLOCKTEMPLATE53115_tab2)).

**113** Interview NUV.

**114** Mediamonitor (2009), Tijdschriftenmarkt (<http://mediamonitor.nl>).

**115** Estimation Sandd [based on HOI statistics].

**116** Magazines.nl, 30.6.2011, [http://www.magazines.nl/nl/research-en-results/research-en-results\\_2](http://www.magazines.nl/nl/research-en-results/research-en-results_2) [retrieval date: 1.7.2011].

**117** Magazines.nl, 30.6.2011, <http://www.magazines.nl/nl/faq/bereik-en-oplage/hoeveel-publiekstijdschriften-worden-er-totaal-in-nederland-uitgegeven> [retrieval date: 1.7.2011].

**118** Magazines.nl, 30.6.2011, URL: [http://www.magazines.nl/nl/research-en-results/research-en-results\\_2](http://www.magazines.nl/nl/research-en-results/research-en-results_2) [retrieval date: 1.7.2011].

**119** Mediamonitor.nl, Tijdschriftenmarkt (2009), <http://mediamonitor.nl/content.jsp?objectid=9880> [retrieval date: 11.7.2011].

**120** For example PWC (2007), Outlook tot 2012 Media en Entertainment, p. 101.

**121** See section 2.1.

**122** Cebuco, *Dagblad Academy*, 4.5.2011, p.7.

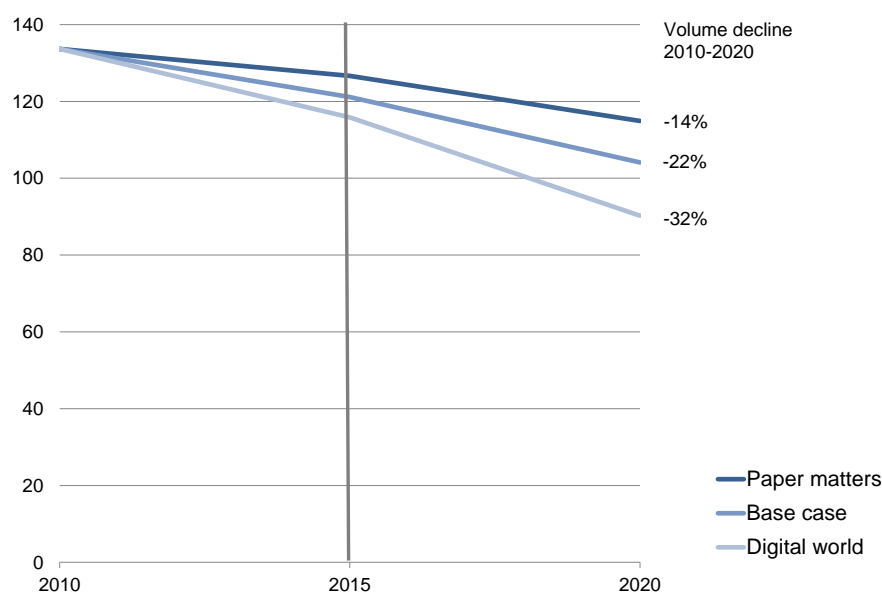
**123** Magazines.nl, 30.6.2011, URL: [http://www.magazines.nl/nl/research-en-results/research-en-results\\_2](http://www.magazines.nl/nl/research-en-results/research-en-results_2) [retrieval date: 1.7.2011]. Figures based on NOM Print Monitor.

**124** Interview NUV.

Generally, postal operators have limited influence on the development of magazines. We overall estimate magazines to continue to decline, however, at substantially lower rates compared to the letter volume. The close relation of Dutch people to paper-based magazines precludes for the next future that these will be replaced by digital media.

### 3.6 International inbound mail services

Figure 28 Trend forecast: international inbound mail 2010-2020



International inbound mail	Total volume change in %			Average change rate per year (CAGR, %)		
	2010-2020	2010-2015	2015-2020	2010-2020	2010-2015	2015-2020
Paper matters	-14%	-5%	-9%	-1.5%	-1.1%	-1.9%
Base case	-22%	-9%	-14%	-2.5%	-2.0%	-3.0%
Digital world	-32%	-13%	-22%	-3.9%	-2.8%	-4.9%

Source: Estimation WIK-Consult

Based on interviews, we estimate that inbound international mail represents approximately 2 to 3 per cent of all mail delivered in the Netherlands. No precise information is available on volumes for this segment.

We estimate that international inbound mail will decline by 2.5 per cent per year in the “base case”. The drivers are similar to the ones in domestic mail. However, we expect that substitution will affect inbound international mail slightly less than domestic mail, since many electronic alternatives to mail are essentially national systems, and are thus

unknown or unavailable to foreign senders. In addition, the Netherlands is one of countries where digital communication is most developed, and most accepted by consumers. As digital communication is less developed in other countries, Dutch businesses and consumers have to rely on mail more when they communication with foreigners.

At present, we understand that PostNL is the dominant player in the market even though inbound volumes could in principle be delivered by other carriers too. Other carriers that deliver inbound mail include Sandd, Selekt Mail, Royal Mail and Comprador. However, the total market share of those operators for inbound mail in the Netherlands is likely much less than 10 per cent. After the acquisition of Selekt Mail by Sandd it is possible that Sandd will deliver some international items for the former owner of Selekt Mail, DHL Global Mail. However, Sandd considers the delivery of international items only as niche service, and the fact that Sandd does not deliver every day may limit the value of Sandd's proposition to foreign mailers.

We assume that the price developments of inbound services are linked to the domestic price developments. The "price" for delivery of inbound mail in the Netherlands is the price PostNL charges to foreign postal operators. The technical term for these prices is "terminal dues" and terminal dues are not negotiated freely between all postal operators, but are highly regulated, including by the UPU "terminal dues" agreement.<sup>125</sup> However, PostNL is vigorously attempting (where other postal operators enter negotiations) to align terminal dues with domestic prices (both for inbound and outbound traffic). Therefore, we assume that prices for inbound international mail will develop similar to price for domestic bulk mail. With regard to the price effects on volume, however, what matters for foreign mailers is the price due to their (foreign) service provider. This factor can only be influenced by Dutch postal operators to a small degree, since prices for outbound mail are often an average price of mail addressed to many countries.

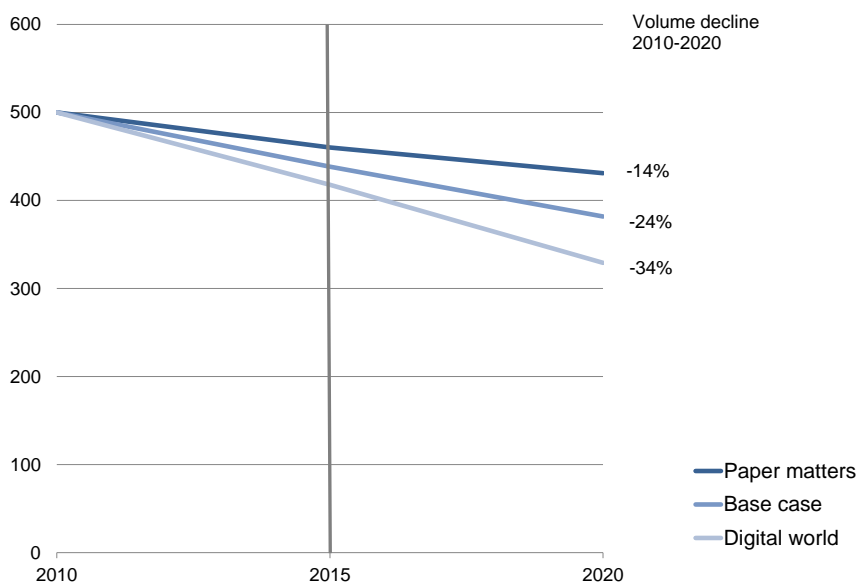
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**125** For a detailed discussion of international mail markets and terminal dues, see WIK-Consult/Campbell (2010): The external dimension of the EU postal acquis, Study for the European Commission.



### 3.7 International outbound mail services

Figure 29 Trend forecast: international outbound mail 2010-2020



International outbound mail	Total volume change in %			Average change rate per year (CAGR, %)		
	2010-2020	2010-2015	2015-2020	2010-2020	2010-2015	2015-2020
Paper matters	-14%	-8%	-6%	-1.5%	-1.6%	-1.3%
Base case	-24%	-12%	-13%	-2.7%	-2.6%	-2.7%
Digital world	-34%	-16%	-21%	-4.1%	-3.5%	-4.7%

Source: Estimation WIK-Consult

Based on interviews, we estimate that outbound international mail represents approximately 9 to 10 per cent of all mail posted in the Netherlands. No precise information is available on volumes for this segment. Note that outbound volume in the Netherlands is estimated to be substantially higher than inbound traffic, since this follows the more general trading pattern of the Dutch economy.<sup>126</sup>

We estimate that international outbound mail will decline by 2.7 per cent per year in the base case, slightly less significant than for inbound mail volume. We assume that the drivers are similar to the ones in domestic mail, but we expect that substitution will affect outbound international mail less than domestic mail for three reasons: First, there

<sup>126</sup> For a detailed estimation of inbound and outbound cross-border volumes, see WIK-Consult (2010), Study on the External Dimension of the EU Postal Acquis (Study for the European Commission, DG Internal Market), Appendix.

will be a positive marginal impact on international mail volumes in the future because European enterprises increasingly centralize their European printing facilities, or globalize worldwide printing. As a result, mail streams that once were domestic are becoming international. This trend will particularly affect Dutch outbound volumes because the Netherlands have a very competitive printing industry and are a favorite location for many firm's central printing facilities. Second, many electronic alternatives to mail are essentially national systems, and thus cannot be used for mail addressed to foreign destinations. While in the Netherlands digital communication is more developed and more accepted by consumers than in other countries, Dutch businesses and consumers have to rely on mail more when they communication with foreigners. Third, foreign trade is an increasingly important part of the Dutch economy, and increased foreign trade has a positive marginal effect on outbound mail volume, in particular for small packages and parcels.

PostNL is the dominant player in the market while other operators (primarily branches of other European incumbents) are likely to serve noticeable portions of the market for outbound international mail. No precise data on market shares are available for this segment, but experience from other countries suggests that competitors in the market for outbound mail international mail can have combined market shares of as much as 50 per cent. Alongside PostNL, DHL Global Mail, BPI (bpost international), SPI (Swiss Post International) and others are active in this market.

Since the market for outbound international mail is relatively competitive for a long time, we expect that PostNL's market share will not change substantially in the future. We expect that prices for outbound mail will increase modestly in the coming years, just as domestic tariffs.

### 3.8 Parcels sent by individuals

This segment contains parcels and packages sent from individuals to other individuals (for example Christmas parcels) and to businesses (mainly "return to sender" parcels in case of distance selling). According to a recently published survey, every Dutch citizen on average sent 5 parcels in 2010,<sup>127</sup> a number that has doubled since the last survey in 2003.<sup>128</sup> Multiplied with the number of Dutch households, individuals have sent around 37m parcels compared to 18m parcels in 2003.<sup>129</sup> Furthermore, the mailing behaviour differs substantially between younger and older people<sup>130</sup>, particularly in 2010. While in 2003 younger people sent less parcels than older people, the situation has fundamentally changed in 2010: The number of parcels sent by younger people has

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<sup>127</sup> Intomart GfK (2011), Onderzoek naar de betekenis, behoeften en belang van post en de postdienstverlening, p. 19.

<sup>128</sup> TNS/nipo consult (2004), Betekenis en belang van postdienstverlening, p. 9.

<sup>129</sup> The number of Dutch households was 7.386m in 2010 and 6.996m in 2003, see Statistics Netherlands.

<sup>130</sup> Younger people are aged between 18 and 24 years, older people comprise those older than 70 years.

tripled (from 2 to 6 parcels), while the figure for older people has remained stable (3 parcels).

We estimate that the number of parcels sent between individuals (C2C) is only a small fraction of this total number, between 20 or 30 per cent of total parcels (i.e. on average one to two parcels per household and year). These items are usually sent as universal service parcels.

In our understanding the rest of the parcels are “return to sender” parcels originated from distance selling resp. e-commerce activities. The growth of parcels sent by individuals is mainly caused by e-commerce / distance selling activities that have tremendously grown during the last decade. For the future we expect that this growth will continue (the average growth rate between 2003 and 2010 was nearly 10 per cent). “Return to sender” parcels are collected not only by PostNL, but also from other players in the B2C segment. As this specific service is often free of charge for the consumer we do not consider price developments and competition in more detail.

The prices for national single piece parcels up to 10 kg are regulated by a price-cap-regime and exempted from VAT. Prices for the product ‘Basis Pakket’ of PostNL up to 10 kg have increased by nearly 9 per cent (from EUR 6.20 – 6.75) in the last five years<sup>131</sup>. This price increase roughly corresponds to the development of the Dutch consumer price index (CPI) and reflects the cap PostNL is obliged to follow. For the coming years, price development for consumer parcels depends on OPTA’s decision on the next price cap, which also implies the recalculation of the starting price level. For this reason, average price increases exceeding the inflation rate are possible. As in the C2C segment competition barely exists, prices may increase more than for business parcels (which include C2B parcels if paid by the retailer).

### 3.9 B2C parcels

In 2010, the turnover of the market for parcels delivered to households amounted to approximately EUR 500m (see Figure 30).<sup>132</sup> According to the 2010 survey of GfK every Dutch citizen has received 13 parcels per year on average.<sup>133</sup> Between 2003 and 2010 this figure has grown by more than 7 per cent each year.<sup>134</sup> This development is mainly driven by e-commerce, i.e. distance selling via internet.

Between 2005 and 2010 the average amount spent by Dutch online shoppers has more than doubled (from EUR 433 to EUR 888). Today, half of this amount is spent on goods (e.g. computer, clothes) and half on services (travel services that account for about one

<sup>131</sup> Price lists from 2006 of TNT N.V. and from 2011 of PostNL.

<sup>132</sup> Herna Verhagen (2011), PostNL: a compelling investment opportunity, Capital Markets Day, 9 May 2011, slide 12.

<sup>133</sup> Intomart GfK (2011), Onderzoek naar de betekenis, behoeften en belang van post en de postdienstverlening, p. 19.

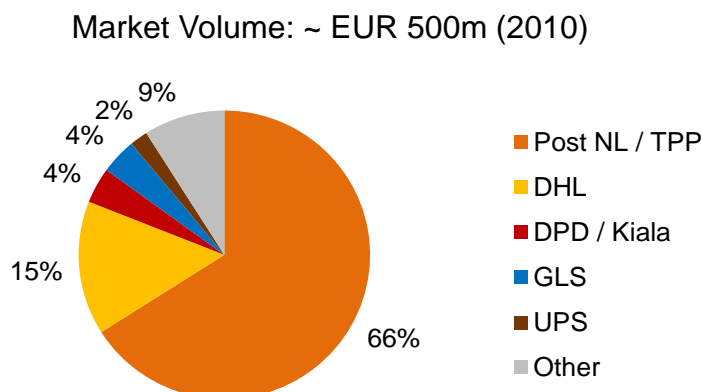
<sup>134</sup> TNS/nipo consult (2004), Betekenis en belang von postdienstverlening, p. 9.

third of total online revenues, tickets and insurance products). Between 2005 and 2010 the number of Dutch online buyers has increased by more than 50 per cent from 6m to 9.6m.<sup>135</sup> Nearly 70m online orders have been fulfilled in 2010.<sup>136</sup>

Particularly younger Dutch people are very active in this field. While the average number of parcels received by people older than 70 years has only slightly increased between 2003 and 2010, the number of parcels received by young people has doubled (from 7.7 to 15). Market participants<sup>137</sup> expect that this trend will continue in the coming years.

PostNL still dominates the X2C segment via TNT Post Pakketservice (TPP, see Figure 30). However, competition is emerging. International parcel and express service providers like DHL Global Mail, DPD, GLS and UPS have become active in this market. Sandd plans to enter this business.<sup>138</sup> Even TNT Express has announced to extend its activities to the Dutch B2C segment.<sup>139</sup>

Figure 30 Market size and structure of X2C parcel segment



Source: Herna Verhagen (2011), PostNL: a compelling investment opportunity, Capital Markets Day, 9 May 2011, slide 10.

We expect that competition, combined with powerful business customers, will keep price increases low and mainly driven by the cost development. The most important cost element in the parcel business (besides wage costs) is transport costs, particularly influenced by fuel prices.<sup>140</sup> Additionally, delivery to consumers is more costly than to businesses, because of lower volume per delivery (only one or two parcels) and the fact

<sup>135</sup> Thuiswinkel.org, Market Monitor.

<sup>136</sup> TNT Post/thuiswinkel.org/Blauw research (2011), Essential facts: Thuiswinkel Market Monitor 2/2010, p.14.

<sup>137</sup> PostNL also expects a growing parcel business, see Herna Verhagen (2011), PostNL: a compelling investment opportunity, Capital Markets Day, 9 May 2011, slide 7 and 12.

<sup>138</sup> Interview Sandd.

<sup>139</sup> TNT Express, Annual Report 2010, p. 21.

<sup>140</sup> TNT Post (2010), Annual Report 2009, p. 34.

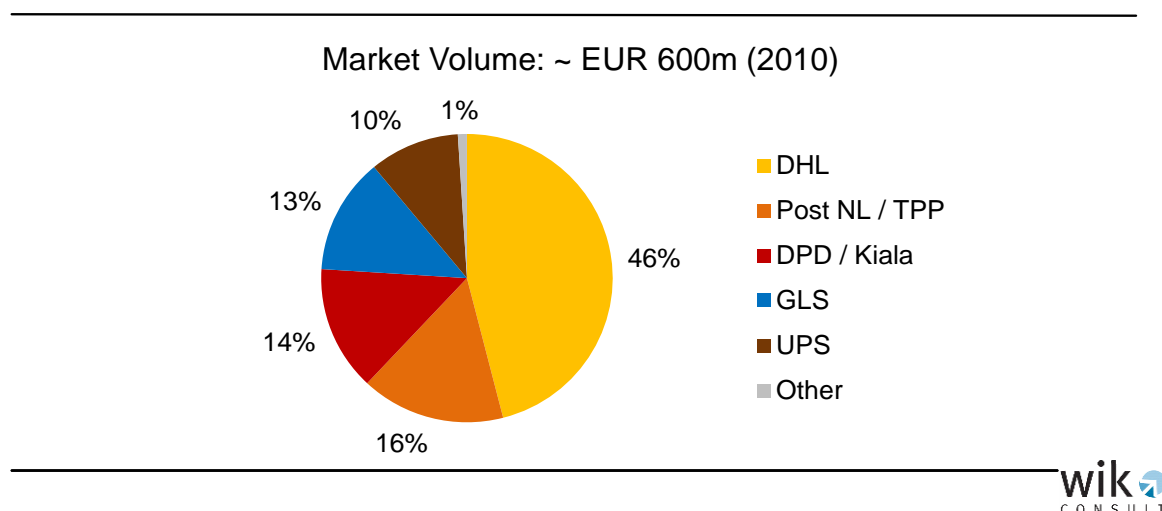
that consumers are more difficult to reach during the daytime. For this reason, parcel operators invest in innovative measures that help to reduce this important cost factor, e.g. SMS notifications, requesting delivery days and delivery times, or the construction of parcel-stations (like ‘Packstation’ of Deutsche Post).

### 3.10 B2B parcels

In 2010, the turnover of the market for parcels sent between businesses amount to approximately EUR 600m.<sup>141</sup> It is the largest segment in the Dutch parcel market and it is still growing, although less dynamic than the B2C segment. According to PostNL B2B growth is in line with GDP growth (1 to 1.5 per cent).<sup>142</sup>

The B2B segment is highly competitive, more competitive than the B2C segment. Market entry in this segment is easier than in the B2C segment, because of substantially lower collection and delivery costs. Returns are usually managed by picking up the parcels at the premises of the customer. Moreover, business customers are easier to reach during working hours than consumers. Based on PostNL statements, DHL, DPD, GLS and UPS are active in this market. PostNL, via TNT Post Pakketservice (TPP), has a market share of around 16 per cent (see Figure 31). Competition will keep price increases low and – similar to the B2C segment – oriented to cost changes.

Figure 31 Market size and structure of 2B parcel segment



Source: Herna Verhagen (2011), PostNL: a compelling investment opportunity, Capital Markets Day, 9 May 2011, slide 10.

<sup>141</sup> Herna Verhagen (2011), PostNL: a compelling investment opportunity, Capital Markets Day, 9 May 2011, slide 12.

<sup>142</sup> Herna Verhagen (2011), PostNL: a compelling investment opportunity, Capital Markets Day, 9 May 2011, slide 15. That is worth for the international as well as the national B2B parcel segment.

### 3.11 International parcel services

In the Netherlands, international parcels up to 20 kg are part of the universal service and are only handled by PostNL. The private customer segment has only a very small share in the international parcel market. In the international B2B and B2C parcel segments, PostNL generated revenues of EUR 105m in 2010.<sup>143</sup> PostNL expects strong growth in international outbound parcels due to strong growth in the B2C segment and continuous growth in line with GDP growth in the B2B segment. The company estimates the size of the parcel market for international outbound to be EUR 250m.<sup>144</sup> Other operators like DHL Global Mail, DPD, GLS and UPS are also active in this segment. Data on the market structure for international parcels is not publicly available.

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<sup>143</sup> Herna Verhagen (2011), PostNL: a compelling investment opportunity, Capital Markets Day, 9 May 2011, slide 4.

<sup>144</sup> Herna Verhagen (2011), PostNL: a compelling investment opportunity, Capital Markets Day, 9 May 2011, slide 15.

## Annex Description of the forecast model

### 1 Introduction

The forecast model aims at calculating volumes for different segments of the Dutch postal market over the period from 2010 to 2020. The model refers to the market segmentation which is described in section 1.2 of this paper (cf. following table).

Table 3 Segmentation of the Dutch mail market

Level 0	Level 1	Level 2	Level 3
Domestic mail	Letters	Social mail	
		Office mail	Priority mail
			Non-priority mail
		Transaction mail	Priority mail
	Non-priority mail		
		Advertising mail	
	Periodicals		
International mail	Inbound		
	Outbound		

Source: WIK Consult.

The model is constructed as a partial model, i.e. it covers the main factors influencing the market development and their direct effects on the market volume. Interdependencies between factors – particularly on a macro-economic level – are not modeled, rather input parameters for the factors are estimated straight based on our market analysis.

In the following sections we will describe the methodological approach and our assumptions in more detail.

## 2 Basic data for the starting year 2010

According to our analysis the total volume of the segment domestic mail amounts to 4.700 million items in 2010. The breakdown of this figure on the different sub-segments is shown in the following table.

Table 4 Share of sub-segments in the segment domestic mail

Mail segments	Share
Letters	58.0%
Advertising mail	28.7%
Periodicals	13.3%

Source: Estimation PostNL.

Going a level deeper, the volume in the sub-segment “Letters” is split onto further sub-segments according to the following table.

Table 5 Share of level 2 sub-segments in the level 1 sub-segment letters

Mail segments	Share
Social mail	13.0%
Office mail	32.0%
Transaction mail	55.0%

Source: Estimation WIK-Consult.

For office and transaction mail we assume shares on the third segmentation level, i.e. for priority mail and non-priority mail as set out in the following table.

Table 6 Share of priority mail and non-priority mail in the relevant segments

Mail segments	Share priority mail	Share non-priority mail
Office mail	100%	0%
Transaction mail	35%	65%

Source: Estimation WIK-Consult.

Priority mail in the sub-segments social mail and office mail relates at least partially to universal services. For the sub-segment social mail we assume that 100% of the priority mails are part of universal services, while in the sub-segment office mail 35% of the priority office mail is assigned to universal service.

Finally, in the level 2 sub-segments of letters the market share of the incumbent is set according to the following table.



Table 7 Market share of the Dutch incumbent in the sub-segment letters (2010)

Mail segments	Incumbent's market share	
Social mail	100%	
Office mail	Priority mail: 98%	Non-priority mail: 0%
Transaction mail	Priority mail: 100%	Non-priority mail: 96%
Advertising mail	75%	
Periodicals	56%	
International inbound mail	95%	
International outbound mail	50%	

Source: Estimation WIK-Consult.

### 3 Modelling parameters

For the purposes of estimating the volumes we distinguish between the seven segments letters/social mail, letters/office mail, letters/transaction mail, advertising mail, periodicals, international/inbound and international/outbound. For each the approach rests on the following input parameters:

- Share priority mail/non-priority mail;
- Incumbent's market shares;
- Share universal services;
- Price-based effects;
- Substitution-based effects;
- Macroeconomic-based effects.

#### 3.1 Share priority mail

For each of the relevant sub-segments with the exception of international/inbound and international/outbound we make assumptions for the share of priority mail and non-priority mail in the years 2010, 2015 and 2020 based on our market analysis. The shares within the periods 2010 – 2015 and 2015 – 2020, respectively, are assumed to develop linear, i.e. in each case we calculate the respective shares on basis of a linear interpolation taking into account the shares at the beginning and at the end of the respective period.

Table 8 Assumptions on shares of priority mail

Scenario	Mail segment	2010	2015	2020
Paper matters	Office mail	100%	85%	70%
	Transaction mail	35%	35%	35%
Base case	Office mail	100%	85%	70%
	Transaction mail	35%	38%	40%
Digital world	Office mail	100%	85%	70%
	Transaction mail	35%	40%	45%

Source: Estimation WIK-Consult.

#### 3.2 Incumbent's market shares

We estimate based on our market analysis for each relevant sub-segment the market shares of the incumbent in the years 2011 to 2020. Where necessary, this is done separately for priority mail as well as for non-priority mail.

Table 9 Assumptions for incumbent's market shares

Mail segments		2010	2015	2020
Social mail		100%	100%	100%
Office mail	Priority	98%	98%	98%
	Non-priority	0%	95%	90%
Transaction mail	Priority	100%	100%	100%
	Non-priority	96%	80%	75%
Advertising mail		75%	72.5%	70%
Periodicals		56%	53%	50%
International inbound		95%	90%	85%
International outbound		50%	50%	50%

Source: Estimation WIK-Consult.

### 3.3 Share universal services

We assume for social mail constant shares and for priority office mail a declining share of universal service (due to shift of universal service office mail to non-universal service office mail products) during the projection period. As the segments develop differently the total universal service share changes over time.

Table 10 Assumptions on shares of universal service mail

Mail segments	2010	2015	2020
Social mail	100%	100%	100%
Office mail – priority mail	35%	30%	25%
International mail – inbound (only PostNL volume)	100%	100%	100%
International mail – outbound (only PostNL volume)	100%	100%	100%

Source: Estimation WIK-Consult.

### 3.4 Price-based effects

The effects of changing prices on mail volumes are modeled in a three-step-approach.

Step 1: Development of prices

Table 11 Assumptions on price developments (per scenario)

Scenario	Mail segment	2010	2015	2020	
Paper matters	Social mail	100	116	134	
	Office mail	Priority	100	105	110
		Non-priority	100	82	86
	Transaction mail	Priority	100	105	110
		Non-priority	100	86	90
	Advertising mail	100	105	116	
	Periodicals	100	105	116	
	International inbound	100	86	90	
	International outbound	100	105	110	
Base case	Social mail	100	122	148	
	Office mail	Priority	100	110	122
		Non-priority	100	86	90
	Transaction mail	Priority	100	110	122
		Non-priority	100	90	95
	Advertising mail	100	110	122	
	Periodicals	100	110	122	
	International inbound	100	90	95	
	International outbound	100	110	122	
Digital world	Social mail	100	128	163	
	Office mail	Priority	100	116	134
		Non-priority	100	90	100
	Transaction mail	Priority	100	116	134
		Non-priority	100	95	105
	Advertising mail	100	110	128	
	Periodicals	100	110	128	
	International inbound	100	95	105	
	International outbound	100	116	134	

Source: Estimation WIK-Consult.

The price level in each of the relevant sub-segments is set to the index value 100 for the starting year 2010. For the years 2015 and 2020 we make assumptions for the price indices based on our market analysis. The development within the periods 2010 – 2015 and 2015 – 2020, respectively, is assumed to be linear, i.e. in each case we calculate a CAGR taking into account the price indices at the beginning and at the end of the respective period. If

applicable, this is done for priority mail as well as for non-priority mail, where applicable.

### Step 2: Price elasticity

Based on our market analysis we make assumptions for price elasticities in each of the relevant sub-segments for the years 2011 to 2020.

Table 12 Assumptions on price elasticities

Mail segments	Price elasticity
Social mail	-0.2
Office mail	-0.25
Transaction mail	-0.3
Advertising mail	-0.5
Periodicals	-0.3
International inbound mail	-0.3
International outbound mail	-0.3

Source: Estimation WIK-Consult.

### Step 3: Effect of price development on mail volumes

Taking into account the development of prices and the price elasticities we calculate for each of the relevant sub-segments the resulting change in volumes for the years 2011 to 2020 as an annual percentage  $p_{ij}$  ( $i$  = letters/social mail, letters/office mail, letters/transaction mail, advertising mail, periodicals, international/inbound, international/outbound;  $j$  = 2011, ..., 2020).

## 3.5 Substitution-based effects

The impact of substitution on the mail volumes is incorporated directly. Based on our market analysis we make assumptions for the annual changes  $s_{ij}$  (in %) in the years 2010, 2015 and 2020 for each of the relevant sub-segments ( $i$  = letters/social mail, letters/office mail, letters/transaction mail, advertising mail, periodicals, international/inbound, international/outbound;  $j$  = 2010, 2015, 2020). The effect within the periods 2010 – 2015 and 2015 – 2020, respectively, is assumed to develop linear, i.e. in each case we calculate the respective annual changes on basis of a linear interpolation taking into account the substitution rates at the beginning and at the end of the respective period.

Table 13 Assumptions on substitution rates (per scenario)

Scenario	Mail segment	2010	2015	2020
Paper matters	Social mail	5.0%	3.0%	1.0%
	Office mail	4.0%	3.0%	2.0%
	Transaction mail	8.0%	6.0%	4.0%
	Advertising mail	1.5%	1.5%	1.5%
	Periodicals	2.0%	2.0%	2.0%
	International inbound	2.0%	2.0%	2.0%
	International outbound	1.0%	1.0%	1.0%
Base case	Social mail	5.0%	4.0%	3.0%
	Office mail	5.0%	5.0%	5.0%
	Transaction mail	8.0%	8.0%	5.0%
	Advertising mail	2.0%	2.0%	2.0%
	Periodicals	2.5%	2.5%	2.5%
	International inbound	3.0%	3.0%	3.0%
	International outbound	2.0%	2.0%	2.0%
Digital world	Social mail	5.0%	5.0%	5.0%
	Office mail	6.0%	6.0%	6.0%
	Transaction mail	10.0%	10.0%	8.0%
	Advertising mail	2.5%	3.5%	4.5%
	Periodicals	3.0%	4.0%	5.0%
	International inbound	3.0%	4.0%	5.0%
	International outbound	2.0%	3.0%	4.0%

Source: Estimation WIK-Consult.

### 3.6 Macroeconomic-based effects

The model allows for macro-economic effects coming from population growth and from GDP growth. Data for population in the Netherlands is taken from Eurostat<sup>145</sup> for the years 2010, 2015 and 2020. The development of population within the periods 2010 – 2015 and 2015 – 2020, respectively, is assumed to be linear, i.e. in each case we calculate a CAGR taking into account the population at the beginning and at the end of the respective period. In the following the parameter is denominated mpop. Our assumed figures for the parameter are listed in the following table.

<sup>145</sup> Eurostat DataExplorer: [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=proj\\_10c2150p](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=proj_10c2150p)

Table 14 Assumptions on the population growth rate

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
mpop <sub>j</sub>	0.45%	0.45%	0.45%	0.45%	0.45%	0.31%	0.31%	0.31%	0.31%	0.31%

Remark: The macroeconomic parameter mpop does not differ between the particular sub-segments.  
Source: WIK-Consult on basis of Eurostat.

The impact of a change in population on mail volume differs between the sub-segments. We incorporate this relationship by using an elasticity factor  $epop_{ij}$  ( $i = \text{letters/social mail, letters/office mail, letters/transaction mail, advertising mail, periodicals, international/inbound, international/outbound}$ ;  $j = 2011, \dots, 2020$ ). With this factor a change in population leads to a change of  $epop_{ij} * mpop_j$  in the mail volume in each of the relevant sub-segments.

Table 15 Assumptions on the elasticity related to population growth

Mail segments	Elasticity related to population growth
Social mail	1
Office mail	1
Transaction mail	1
Advertising mail	1
Periodicals	1
International inbound mail	1
International outbound mail	0

Source: Estimation WIK-Consult.

Data for the real growth rate of GDP of the Netherlands is taken from the Dutch Centraal Planbureau for the years until 2012.<sup>146</sup> For the remaining period until 2020 we assume a real growth rate of 1.25% p.a.<sup>147</sup> In the following we use mgdp for this parameter. Our assumed growth rates are listed in the following table.

Table 16 Assumptions on GDP growth rate

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
mgdp <sub>j</sub>	2.0%	1.75%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%

Remark: The macroeconomic parameter mgdp does not differ between the particular sub-segments.  
Source: WIK-Consult on basis of Dutch Centraal Planbureau.

<sup>146</sup> Centraal Planbureau (2011), Economische vooruitzichten 2011 en 2012, CPB Policy Brief 2011/06, p.6.

<sup>147</sup> Centraal Planbureau (2010), Actualisatie Economische Verkenning 2011-2015, CPB document No. 213, p. 21. We assume the same rate for the period after 2015.

The impact of a change in GDP on mail volume differs between the sub-segments. We incorporate this relationship by using an elasticity factor  $egdp_{ij}$  ( $i$  = letters/social mail, letters/office mail, letters/transaction mail, advertising mail, periodicals, international/inbound, international/outbound;  $j$  = 2011, ..., 2020). With this factor a change of the GDP leads to a change of  $egdp_{ij} * mgdp_j$  in the mail volume in each of the relevant subsegments.

Table 17 Assumptions on the elasticity related to GDP growth

Mail segments	Elasticity related to GDP growth
Social mail	0
Office mail	0
Transaction mail	0
Advertising mail	0.2
Periodicals	0
International inbound mail	0
International outbound mail	0

Source: Estimation WIK-Consult.



## 4 Calculation of volumes

For each of the relevant sub-segments letters/social mail, letters/office mail, letters/transaction mail, advertising mail, periodicals, international/inbound, and international/outbound the calculation follows the same principle.

Starting point for calculating the volume  $v_{ij}$  in a given year  $j$  represents the volume  $v_{i(j-1)}$  of the previous year ( $i$  = letters/social mail, letters/office mail, letters/transaction mail, advertising mail, periodicals, international/inbound, international/outbound;  $j$  = 2011, ..., 2020). This volume  $v_{i(j-1)}$  is influenced by price-based effects  $p_{ij}$ , substitution-based effects  $s_{ij}$  ( $i$  = letters/social mail, letters/office mail, letters/transaction mail, advertising mail, periodicals, international/inbound, international/outbound,  $j$  = 2011, ..., 2020) and the macroeconomic-based effects  $mpop$  and  $mgdp$ . Against the background of working with a partial model these effects are treated to be additive. Overall, the new volume is in each case the result of the following calculation:

$$v_{ij} = v_{i(j-1)} * (1 + p_{ij} + s_{ij} + epop_{ij} * mpop_j + egdp_{ij} * mgdp_j)$$

where

$i$  = letters/social mail, letters/office mail, letters/transaction mail,  
advertising mail, periodicals, international/inbound,  
international/outbound,

$j$  = 2011, ..., 2020

The volume  $v_{ij}$  is allocated (if applicable) to the different sub-categories (priority/non-priority mail; universal service/non-universal service mail) using the shares as defined in the sections 3.1 to 3.3 of this annex by multiplying the volume with the share of the respective segment.