VodafoneZiggo Group B.V.

Annual Report
December 31, 2019

VodafoneZiggo Group B.V.
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The Netherlands

VODAFONEZIGGO GROUP B.V.

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FORWARD-LOOKING STATEMENTS

Certain statements in this annual report constitute forward-looking statements. To the extent that statements in this annual report are not recitations of historical fact, such statements constitute forward-looking statements, which, by definition, involve risks and uncertainties that could cause actual results to differ materially from those expressed or implied by such statements. In particular, statements under *Management's Discussion and Analysis of Financial Condition and Results of Operations* may contain forward-looking statements, including statements regarding our business, product, foreign currency and finance strategies, subscriber growth and retention rates, competitive, regulatory and economic factors, the timing and impacts of proposed transactions, the maturity of our market, the anticipated impacts of new legislation (or changes to existing rules and regulations), anticipated changes in our revenue, costs or growth rates, our liquidity, credit risks, foreign currency risks, target leverage levels, our future projected contractual commitments and cash flows and other information and statements that are not historical fact. Where, in any forward-looking statement, we express an expectation or belief as to future results or events, such expectation or belief is expressed in good faith and believed to have a reasonable basis, but there can be no assurance that the expectation or belief will result or be achieved or accomplished. In evaluating these statements, you should consider the risks and uncertainties in the following list, and those described herein, as some but not all of the factors that could cause actual results or events to differ materially from anticipated results or events:

- economic and business conditions and industry trends in the Netherlands;
- the competitive environment in the Netherlands for both the fixed and mobile markets, including competitor responses to our products and services for our residential and business customers;
- government and/or regulatory intervention that requires opening our broadband distribution network to competitors, and/or other regulatory interventions;
- fluctuations in currency exchange rates and interest rates;
- instability in global financial markets, including sovereign debt issues and related fiscal reforms;
- consumer disposable income and spending levels, including the availability and amount of individual consumer debt;
- changes in consumer television viewing preferences and habits;
- changes in consumer mobile usage behavior;
- customer acceptance of our existing service offerings, including our cable television, broadband internet, fixed-line telephony, mobile and business service offerings, and of new technology, programming alternatives and other products and services that we may offer in the future;
- the outcome of governmental requests for proposals related to contracts for B2B communication services;
- our ability to manage rapid technological changes;
- our ability to maintain or increase the number of subscriptions to our cable television, broadband internet, fixed-line telephony and mobile service offerings and our average revenue per household;
- our ability to provide satisfactory customer service, including support for new and evolving products and services;
- our ability to maintain or increase rates to our subscribers or to pass through increased costs to our subscribers;
- the impact of our future financial performance, or market conditions generally, on the availability, terms and deployment of capital;
- changes in, or failure or inability to comply with, applicable laws and/or government regulations in the Netherlands and adverse outcomes from regulatory proceedings, including regulation related to interconnect rates;
- our ability to obtain regulatory approval and satisfy other conditions necessary to close acquisitions and dispositions and the impact of conditions imposed by competition and other regulatory authorities in connection with acquisitions;

- our ability to successfully acquire new businesses and, if acquired, to integrate, realize anticipated efficiencies from, and implement our business plan with respect to the businesses we have acquired or with respect to the formation of the VodafoneZiggo JV;
- changes in laws or treaties relating to taxation, or the interpretation thereof, in the Netherlands;
- changes in laws and government regulations that may impact the availability and cost of capital and the derivative instruments that hedge certain of our financial risks;
- our ability to navigate the potential impacts on our business of the U.K.'s departure from the European Union (**EU**);
- the ability of suppliers and vendors to timely deliver quality products, equipment, software, services and access;
- our ability to secure sufficient and required spectrum for our mobile service offerings in upcoming spectrum auctions;
- the availability of attractive programming for our video services and the costs associated with such programming, including retransmission and copyright fees payable to public and private broadcasters;
- uncertainties inherent in the development and integration of new business lines and business strategies;
- our ability to adequately forecast and plan future network requirements, including the costs and benefits associated with our planned network extensions, programs pursuant to which we connect additional homes and businesses to our broadband communications network (**Network Extensions)**;
- the availability of capital for the acquisition and/or development of telecommunications networks and services;
- problems we may discover post-closing with the operations, including the internal controls and financial reporting process, of businesses we acquire, including in relation to the VodafoneZiggo JV;
- the leakage of sensitive customer data;
- the outcome of any pending or threatened litigation;
- the loss of key employees and the availability of qualified personnel;
- changes in the nature of key strategic relationships with partners and joint ventures; and
- events that are outside of our control, such as political unrest in international markets, terrorist attacks, malicious human acts, natural disasters, pandemics or epidemics (such as the Corona virus (COVID-19)) and other similar events and our ability to effectively continue the business after such an event.

The broadband distribution and mobile service industries are changing rapidly and, therefore, the forward-looking statements of expectations, plans and intent in this annual report are subject to a significant degree of risk. These forward-looking statements and the above-described risks, uncertainties and other factors speak only as of the date of this annual report, and we expressly disclaim any obligation or undertaking to disseminate any updates or revisions to any forward-looking statement contained herein, to reflect any change in our expectations with regard thereto, or any other change in events, conditions or circumstances on which any such statement is based. Readers are cautioned not to place undue reliance on any forward-looking statement.

BUSINESS OF VODAFONEZIGGO

*In this "Business of VodafoneZiggo" section, unless the context otherwise requires, the terms "we," "our," "our company" and "us" may refer, as the context requires, to VodafoneZiggo (or its predecessor, herein referred to as "**Old Ziggo**") or collectively to VodafoneZiggo (or its predecessor) and its subsidiaries. Unless otherwise indicated, operational and statistical data, including subscriber statistics and product offerings, are as of December 31, 2019.*

Introduction

VodafoneZiggo Group B.V. (**VodafoneZiggo**) provides video, broadband internet, fixed-line telephony, and mobile services to residential and business customers in the Netherlands. The primary subsidiaries of VodafoneZiggo consist of (i) VodafoneZiggo Employment B.V. (formerly known as Ziggo Holding B.V.) (**Ziggo**) and its subsidiaries, including Ziggo Services B.V. (**Ziggo Services**), and (ii) Vodafone Libertel B.V. (**Vodafone NL**).

Prior to the closing of the JV Transaction, as defined in note 1 to our consolidated financial statements, VodafoneZiggo was a wholly-owned subsidiary of Liberty Global plc (**Liberty Global**). On December 31, 2016, upon closing the JV Transaction, VodafoneZiggo became a wholly-owned subsidiary of VodafoneZiggo Group Holding B.V. (**VodafoneZiggo Group Holding**). VodafoneZiggo Group Holding is a 50:50 joint venture (the **VodafoneZiggo JV**) between Vodafone Group Plc (**Vodafone**) and Liberty Global. In connection with the closing of the JV Transaction, Vodafone NL became an indirect wholly-owned subsidiary of VodafoneZiggo. Prior to the closing of the JV Transaction, Vodafone NL and its subsidiaries operated Vodafone's mobile business in the Netherlands.

Liberty Global is one of the world's leading converged video, broadband and communications companies, that develops market-leading products delivered through next-generation networks, that connect over 11 million customers subscribing to 25 million TV, broadband internet, and telephony services. As of December 31, 2019, Liberty Global also served over six million mobile subscribers and offered WiFi service through millions of access points across its footprint.

Vodafone is one of the world's largest telecommunications companies and has mobile operations in 24 countries, partners with mobile networks in 42 more, and fixed broadband operations in 19 markets. As of December 31, 2019, Vodafone had 625 million mobile customers and 27 million fixed broadband customers.

In connection with the JV Transaction, on December 31, 2016, Liberty Global and Vodafone entered into a shareholders agreement (the **Shareholders Agreement**) with VodafoneZiggo Group Holding in respect of the VodafoneZiggo JV. Each of Liberty Global and Vodafone (each a **Shareholder**) holds 50% of the issued share capital of VodafoneZiggo Group Holding. The Shareholders Agreement contains customary provisions for the governance of a 50:50 joint venture that result in Liberty Global and Vodafone having joint control over decision making with respect to the VodafoneZiggo JV. We also entered into a framework agreement with Vodafone and Liberty Global to provide us access to each of their expertise in the telecommunications media technology business. For additional information on the foregoing agreements, see note 11 to our consolidated financial statements.

The following table presents our operating statistics as of December 31, 2019:

Footprint	
Homes Passed[1]	7,250,800
Two-way Homes Passed[2]	7,237,200
Subscribers (RGUs)	
Basic Video[3]	491,300
Enhanced Video[4]	3,378,800
Total Video	3,870,100
Internet[5]	3,362,100
Telephony[6]	2,409,500
Total RGUs	9,641,700
Penetration	
Enhanced Video Subscribers as a % of Total Video Subscribers[7]	87.3%
Internet as a % of Two-way Homes Passed[8]	46.5%
Telephony as a % of Two-way Homes Passed[8]	33.3%
Fixed Customer Relationships	
Fixed Customer Relationships[9]	3,875,100
RGUs per Fixed Customer Relationship	2.49
Fixed Customer Bundling	
Single-Play	13.0%
Double-Play	25.2%
Triple-Play	61.8%
Mobile SIMs[10]	
Postpaid	4,483,700
Prepaid	581,200
Total Mobile	5,064,900
Convergence	
Converged[11] Households	1,345,000
Converged[11] SIMs	2,081,000
Converged[11] Households as a % of Internet RGUs	40.0%

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1. Homes Passed are homes, residential multiple dwelling units or commercial units that can be connected to our networks without materially extending the distribution plant. Our Homes Passed counts are based on internally maintained databases of connected addresses, which are updated monthly. Due to the fact that we do not own the partner networks, we do not report homes passed for partner networks.

2. Two-way Homes Passed are Homes Passed by those sections of our networks that are technologically capable of providing two-way services, including video, internet and telephony services.

3. Basic Video Subscriber is a home, residential multiple dwelling unit or commercial unit that receives our video service over our broadband network either via an analog video signal or via a digital video signal without subscribing to any recurring monthly service that requires the use of encryption-enabling technology. Encryption-enabling technology includes smart cards, or other integrated or virtual technologies that we use to provide our enhanced service offerings. We count Revenue Generating Units ("RGUs") on a unique premises basis. In other words, a subscriber with multiple outlets in one premises is counted as one RGU and a subscriber with two homes and a subscription to our video service at each home is counted as two RGUs.

4. Enhanced Video Subscriber is a home, residential multiple dwelling unit or commercial unit that receives our video service over our broadband network or through a partner network via a digital video signal while subscribing to any recurring monthly service that requires the use of

encryption-enabling technology. Enhanced Video Subscribers are counted on a unique premises basis. For example, a subscriber with one or more set-top boxes that receives our video service in one premises is generally counted as just one subscriber. An Enhanced Video Subscriber is not counted as a Basic Video Subscriber. As we migrate customers from basic to enhanced video services, we report a decrease in our Basic Video Subscribers equal to the increase in our Enhanced Video Subscribers. Subscribers to enhanced video services provided by our operations over partner networks receive basic video services from the partner networks as opposed to our operations.

5. Internet Subscriber is a home, residential multiple dwelling unit or commercial unit that receives internet services over our networks, or that we service through a partner network.

6. Telephony Subscriber is a home, residential multiple dwelling unit or commercial unit that receives voice services over our networks, or that we service through a partner network. Telephony Subscribers exclude mobile telephony subscribers.

7. Enhanced video penetration is calculated by dividing the number of enhanced video subscribers by the total number of basic and enhanced video subscribers.

8. Internet and telephony penetration is calculated by dividing the number of internet RGUs and telephony RGUs, respectively, by total Two-way Homes Passed.

9. Fixed Customer Relationships are the number of customers who receive at least one of our video, internet or telephony services that we count as RGUs, without regard to which or to how many services they subscribe. Fixed Customer Relationships generally are counted on a unique premises basis. Accordingly, if an individual receives our services in two premises (e.g., a primary home and a vacation home), that individual generally will count as two Fixed Customer Relationships. We exclude mobile-only customers from Fixed Customer Relationships.

10. Our mobile subscriber count represents the number of active subscriber identification module ("SIM") cards in service rather than services provided. For example, if a mobile subscriber has both a data and voice plan on a smartphone this would equate to one mobile subscriber. Alternatively, a subscriber who has a voice and data plan for a mobile handset and a data plan for a laptop (mobile broadband or secondary SIM) would be counted as two mobile subscribers. Our mobile subscriber count includes both prepaid and postpaid plans. Prepaid customers are excluded from our prepaid mobile telephony subscriber counts after a period of inactivity of 9 months.

11. Converged households or converged SIMs represent customers in either our Consumer or small office/home office ("**SOHO**", generally fewer than 5 employees) segment that subscribe to both a fixed-line digital TV and an internet service (like Connect Start, Complete and Max) and a Vodafone and/or hollandsnieuwe postpaid mobile telephony service.

History

We provide video, broadband internet, fixed-line telephony, and mobile services to residential and business customers in the Netherlands. Our primary subsidiaries consist of (i) Ziggo Services, (ii) Ziggo and its subsidiaries, and (iii) Vodafone NL, effective December 31, 2016 upon closing the JV Transaction, as defined and described in note 1 to our consolidated financial statements. Prior to the closing of the JV Transaction, VodafoneZiggo was a wholly-owned subsidiary of Liberty Global. On December 31, 2016, and upon closing the JV Transaction, VodafoneZiggo became a wholly-owned subsidiary of VodafoneZiggo Group Holding. VodafoneZiggo Group Holding is a 50:50 joint venture among Vodafone and Liberty Global. Also upon completion of the JV Transaction, Vodafone NL became an indirect wholly-owned subsidiary of VodafoneZiggo. Vodafone NL and its subsidiaries operated Vodafone's mobile business in the Netherlands.

Products and Services

We provide services either individually or bundled as a package for video, broadband internet, fixed-line telephony, and mobile services to residential and business customers. Our bundled services offerings include "**double-play**" for two services, "**triple-play**" for three services, and "**quad-play**" for four services.

Video Services

Our video service is one of the key foundations of our product offerings. Our cable operation offers multiple tiers of digital video programming and audio services starting with a basic video service. Subscribers to our basic video service pay a fixed monthly fee and generally receive at least 45 digital or analog video channels (including four high definition "**HD"** channels) and several digital and analog radio channels. Because our basic digital service is unencrypted, the cost of our digital service is the same cost as the monthly fee of our analog service. We tailor our video services based on programming preferences, culture, demographics, and regulatory requirements. Our channel offerings include general entertainment, sports, movies, documentaries, lifestyles, news, adult, children, and ethnic and foreign channels.

We also offer a variety of premium channel packages to meet the special interests of our subscribers. For an additional monthly charge, a subscriber may upgrade to one of our extended digital tier services and receive an increased number of video and radio channels, including the channels in the basic tier service and additional HD channels. Digital subscribers may also subscribe to one or more packages of premium channels for an additional monthly charge.

To meet customer demands, we have enhanced our video services with various products that enable our customers to control when, where and how they watch their programming. These products range from digital video recorders (**DVRs**) to our multimedia home gateway system "**Mediabox XL**" (former Horizon TV), “**Mediabox Next**”, as well as various mobile applications (**apps**). Mediabox XL has an interface, that enables customers to view and share, across multiple devices, linear channels, video-on-demand (**VoD**) programming, and personal media content and to pause, replay, and record programming. Mediabox Next is a multiscreen entertainment platform that combines linear television, VoD and mobile viewing. In addition to the features of Mediabox Xl, Mediabox Next also allows customers to pause a program, series or movie and seamlessly continue watching from where they left off on another device, whether a television, tablet, smart phone or laptop. Customers also have access to cloud storage for up to 2,000 hours of recording, as well as our Replay TV service (described below).

For our Mediabox XL and Mediabox Next subscribers, we offer various features and functionalities, including television apps for various online services (such as Netflix, social platforms, sports experience, music, news, and games). We also offer an online mobile app for viewing on a second screen called “**Ziggo GO**”. Ziggo GO is available on mobile devices (iOS, Android, and Windows) and via an internet portal that allows video customers to view linear channels and VoD, with a substantial part of this content available outside of the home. For Mediabox XL and Mediabox Next customers, when in the home, the second screen device can act as a remote control. Additionally, through Ziggo GO, customers have the ability to remotely schedule the recording of a television program on their Mediabox XL box at home.

One of our key video services is “**Replay TV**”. Replay TV records virtually all programs across numerous linear channels. The recordings are available up to seven days after the original broadcast. This allows our customers to catch-up on their favorite television shows without having to set their DVR or browse separate menus on their set-top boxes. Instead, customers can open the electronic programing guide, scroll back and replay linear programming instantly. Replay TV also allows our customers to replay a television program from the start even while the live broadcast is in progress. Replay TV is accessible through Mediabox XL, Mediabox Next and Ziggo GO.

We offer pay-per-view programming through VoD giving subscribers access to thousands of movies and television series. We continue to develop our VoD services to provide a growing collection of programming from local and international suppliers, such as Viacom, the BBC, and Sony, among others. Our subscription VoD service “**Movies & Series**” is included in our mid-tier enhanced video service accessed through Mediabox XL and is available for an additional fee with our basic video services. We also offer exclusive HBO programming through our “**Movies & Series L”** VoD service and is included in our enhanced video service as part of our converged services (see *converged services*). For an additional monthly charge, we also offer approximately 40 additional TV channels on top of the exclusive HBO programming through our “**Movies & Series XL**” VoD service which is included in our high tier enhanced video service. Our VoD services, including catch-up TV, are available on a subscription or a transaction basis, depending on the tier of enhanced video service selected by the subscriber.

In April 2018, we started with digitalizing our TV service offerings. Customers watching analogue cable TV will be switching to digital in a region-by-region phased rollout. We expect the phased rollout to be completed by the end of 2020.

WiFi and Internet Services

Connectivity is a building block for vibrant communities. Our fiber-rich broadband network is the backbone of our fixed-line business and the basis of our connectivity strategy. To meet our customers’ expectations to be seamlessly connected, we are investing in our broadband network, mobile, WiFi solutions, and customer premises equipment.

Internet speed is of crucial importance to our customers, as they spend more time streaming video and other bandwidth-heavy services on multiple devices. Our extensive broadband network enables us to deliver ultra high-speed internet service across our footprint. Our residential subscribers access the internet via cable modems connected to their internet capable devices, or wirelessly via a WiFi gateway device. We offer multiple tiers of broadband internet service ranging from a basic service of 40 Mbps to an ultra high-speed internet service of 200 Mbps, 400 Mbps, and 500 Mpbs. The speed of service depends on the tier of service selected. In addition, by leveraging our fiber-rich broadband network, we are in a position to deliver Gigabit (**GB**) services in the Netherlands, by deploying the next generation Data Over Cable Service Interface Specification (**DOCSIS**) 3.1 technology. We can extend our download speeds to at least 1 Gbps where deployed. DOCSIS technology is an international standard that defines the requirements for data transmission over a cable system.

Our internet service generally includes email, address book, security (e.g., anti-virus, anti-spyware, firewall, and spam protection) and, parental controls. We offer value-added broadband services for an incremental charge. These services include additional security packages for multiple devices. We offer mobile broadband services with internet access as described above.

Subscribers to our internet service pay a monthly fee based on the tier of service selected. In addition to the monthly fee, customers pay an activation service fee upon subscribing to an internet service. This one-time fee may be waived for promotional reasons. We determine pricing for each different tier of internet service through an analysis of speed, market conditions, and other factors.

Our "**Connect Box**", is a dedicated connectivity device that delivers superior in-home WiFi coverage. The Connect Box is a WiFi and telephony gateway that enables us to maximize the impact of our ultrafast broadband networks by providing reliable wireless connectivity anywhere in the home. It has an automatic WiFi optimization function, which selects the best possible wireless frequency at any given time. This gateway can be self-installed and allows customers to customize their home WiFi service. Robust wireless connectivity is increasingly important with our customers spending more and more time using bandwidth-heavy services on multiple devices. In addition, WiFi boosters are available to optimize connectivity.

We have deployed community WiFi via routers in our customers' homes (the **Community WiFi**), which provides secure access to the internet for our customers. Community WiFi is enabled by a cable modem WiFi access point (**WiFi modem**), the Connect Box, or the Mediabox XL of our internet customers. The Community WiFi is created through the sharing of access to the public channel of our customers' home wireless routers. Use of the Community WiFi does not affect the internet speeds of our customers. The public channel is a separate network from the secure private network used by the customer within the home and is automatically enabled when the WiFi modem is installed. Access is free for our internet customers. Our customers also have access to an extensive network of public WiFi access points, (covering stadiums, shopping centers, and other public places). We have expanded our Community WiFi through access points covering public places. In addition, our internet customers have access to the Community WiFi in other European countries through an arrangement with Liberty Global.

Mobile Services

Mobile services are another key building block for us to provide customers with seamless connectivity. We provide our mobile services nationwide through our long-term evolution (**LTE**) wireless services, also called "4G", as well as our 2G networks. As of February 4, 2020, we deactivated our 3G network to free up more capacity for a faster and more stable 4G network. We recently opened our 5G Hub in Eindhoven together with our partners Ericsson, Brainport Development and the High Tech Campus. On this location, companies, start-ups, authorities and students are joining forces to put the new technology of 5G into practice. The ambition of this Hub is to have at least six organizations working on new applications by the end of 2020.

We have over 4,900 base stations with over 98% of them capable of high capacity transmission. This allows us to provide reliable high speed data transmission and ample data capacity in and out of the home. Our mobile subscribers are able to call, text, access the internet, stream music, and watch videos both in and out of the home. We also provide mobile wholesale access services, hosting several mobile virtual network operators (**MVNO**) on our networks.

We typically charge a one-time activation fee to our customers for each SIM card. Our mobile services typically include voice, short message service (**SMS**) and internet access. Calls, both within and out of network, incur a charge or are covered under a postpaid monthly service plan. Our mobile services are primarily on a postpaid basis with customers subscribing to services for periods ranging from activation for a SIM-only contract to up to 24 months, with the latter often taken with a mobile handset and the option to pay off the handset over a period not to exceed 24 months. We also offer a prepaid service, where the customers pay in advance for a pre-determined amount of airtime or data and generally have no minimum contract term.

In June 2018, Vodafone launched a new type of subscription, "**Red Together"**. This offer enables family members to merge subscriptions, resulting in one large data bundle for all to share. Customers opting for this offer receive twice the amount of data plus unlimited voice in the Netherlands as well as all other countries in the EU. Customers can create a Red Together group starting from two persons; registering their subscriptions under one account. The group administrator can use various functionalities in the My Vodafone app, like monitoring usage and apportioning data. It is also possible to create notifications for each user and to activate a pause button.

The offer of a Red Together subscription has a Red Together "**Extra**" option. The Red Together subscription costs €35 and consists of 50 GB with unlimited voice and SMS and 100 voice minutes from the Netherlands to numbers in the EU. The 'Extra' option costs €15, has the same voice and SMS benefits, but has no data bundle until the subscriptions have been merged. In doing so, the amount of data doubles, amounting to 100 GB for all to share. When combined with Ziggo, the nonstop free extras apply as well: customers receive a €5 discount and the data bundle is doubled once again to 200 GB. It is possible for any third, fourth or fifth family member to take out an Extra subscription and join the group, thus benefiting from the shared data bundle.

We introduced "**5G-ready**" and unlimited data bundle subscriptions for consumers and business customers in March 2020. All new and existing Vodafone customers with a "**Red (Pro)"** subscription will have access to 5G at no extra cost. Vodafone is offering three versions of the Samsung S20, which is the first 5G ready mobile phone available to our customers. In preparation for the arrival of 5G, Vodafone continues to invest heavily in its mobile network.

Fixed-line Telephony Services

Multi-feature telephony services are available through voice-over-internet-protocol (**VoIP**) technology. We pay interconnect fees to other telephony and internet providers when calls by our subscribers terminate on another network and receive similar fees from providers when calls by their users terminate on our network through interconnection points.

Our telephony service may be selected in combination with one or more of our other services. Our telephony service includes a basic fixed-line telephony product for line rental and various calling plans, which may consist of any of the following: unlimited network, national or international calling, unlimited off-peak calling and minute packages, including calls to fixed and mobile phones. We also offer value added services, such as a personal call manager, unified messaging and a second or third phone line at an incremental cost.

Converged services

We offer additional benefits to customers that are both mobile and fixed customers of VodafoneZiggo. Eligible video customers taking a broadband product and a postpaid mobile subscription receive extra benefits at no incremental cost. Benefits include double mobile data allowance, an extra premium TV package consisting of either HBO, Ziggo Sport Total or Kids entertainment and an internet security package. A monthly discount of €5 will be given for quad-play acquisition and retention purposes, providing a premium converged offer at competitive prices to new and renewing customers.

Business Services

In addition to our residential services, we offer business services. For business and public sector organizations, we provide a range of voice, advanced data, video, wireless and cloud-based services, as well as mobile and converged fixed-mobile services. Our business customers include SOHO, small businesses and medium and large enterprises. We also provide our services, and in particular mobile services, on a wholesale basis to other operators.

In June 2018, Vodafone completed a long term evolution for machines network (**LTE-M)**, with national coverage. LTE-M efficiently connects devices with the internet. LTE-M technology is declared a fundamental part of 5G technology by the GSM Association (the mobile network operators trade body). With LTE-M Vodafone expands its Internet of Things (**IoT**) portfolio for customers, which makes it the first provider to offer the most complete radio network for IoT services. This is another major step in the development of 5G, which further enhances the speed and reliability of the network. With the launch of the new network business customers can get started with smart solutions. With LTE-M, online devices use lesser battery capacity than with normal 2, 3 and 4G connections. Vodafone already has a Narrowband-Internet of Things (**NB-IoT**) network with national coverage.

Our business services are designed and differentiated to meet the specific needs of our business customers with a wide range of connectivity services. These services fall into six broad categories:

- mobile services, including voice calling, SMS and wireless data anywhere in the world;
- broadband data for SOHO and small customers, based on residential services and differentiated with higher speed and business service level agreements;
- enterprise data services for medium to large customers: internet access, virtual private networks, high capacity point-to-point services, and managed WiFi networks;
- enterprise voice services, using VOIP technology, and Service Number services;
- value added (ICT based) services like: Unified Communications, IoT, Hosted Cloud, Security; and
- bulk video services with B2B and B2C video applications for targeted industries, like health care and student-housing.

With over 300,000 converged seats (Skype for Business, Office 365, One Net Enterprise, and private cloud hosting) installed through the end of 2019, we are now one of the leading providers of integrated unified communication solutions to B2B customers in the Netherlands.

Our business services are provided to customers at contractually established prices based on; the size of the business, type of services received and the volume and duration of the service agreement. SOHO and small business customers pay business market prices on a monthly subscription basis to receive enhanced service levels and business features that support their needs. For more advanced business services, these customers generally enter into a service agreement. For medium to large business customers, we enter into individual agreements that address their needs. These agreements are generally contracted for a period of one to five years.

Operations

Marketing and Sales

We market and sell our products to customers using a broad range of sales channels, primarily online sales through our website, inbound and outbound telemarketing, and partner retailers. We also sell our services direct to the customers at certain marketing events and through our own retail stores: 143 Vodafone NL stores, four Ziggo stores and 49 Ziggo shop-in-shop in MediaMarkt. Since 2016, we have a shop-in-shop partnership agreement with the largest electronic retailer in the Netherlands (MediaMarkt), extending our retail presence by 49 locations.

We encourage customers to purchase our services and products through our website. We believe our website provides customers a clear explanation of our services and pricing. We currently outsource our inbound and outbound telemarketing operations to external service providers. We also have exclusive stores and partner shops in various cities in our footprint. We further target residential customers through partnerships with retail outlets, such as multi-media retailers, electronics and telecommunications stores. The sales through these partnerships generally focus on enhanced video services.

For our business sales, we use multiple sales channels, both direct and indirect, to better service our customers. For SOHO and small customers we use a mix of in- and outbound service desks and increasingly on-line channels. We have a team of dedicated account managers who work exclusively with our key account customers. Furthermore, we have an extensive network and support program for external business partners who sell our products and services to small and medium customers as well as manage these customer relationships.

Customer Service

Our customer service operations are responsible for all customer care activities, including handling customer queries and complaints. Their focus is on developing and enhancing customer lifetime management as well as offline and online marketing integration. Customer service also provides inbound telemarketing and sales support functions for residential and SOHO customers. To reduce our customer service call volume, we utilize an online customer web service, 'Ziggo Community'. In addition, we utilize an automated voice response center and social media like Twitter and Facebook to reduce customer call volume. We also operate dedicated customer service centers throughout the Netherlands.

Our customer service agents are skilled in multiple areas, including marketing campaigns, customer care, and sales for a variety of products as well as technical service. All of our customer services agents are regularly trained in soft skills and on new product offerings. We also have a specialized team for sales and customer care in relation to our business services and also teams specifically focusing on customer retention as well as complaint management.

We are required to operate a "switch desk", which enables customers to transition between different television, internet access, and telephony (including mobile) service providers with minimal disruption to their service.

For our business services related to our SOHO, small, medium, and corporate customers we operate dedicated service desks.

Network and Technology

Our video, broadband internet, and fixed-line telephony services are transmitted over a hybrid fiber coaxial cable network. This network is composed of national and regional fiber networks, which are connected to the home over the last few hundred meters by coaxial cable. This network allows for two-way communications and is flexible enough to support our current services, as well as new services.

We also provide our services over certain partner networks. We offer this service on an exclusive and non-exclusive basis to small cable network owners who have not developed the capability to offer premium products, such as digital video, broadband internet, and telephony. The 7.3 million homes passed on our network exclude homes reached by a partner network. We expect that by the end of 2020, almost 50% of homes passed will be able to benefit from a speed of up to 1 Gbps.

To connect ‘remote’ locations we lease fiber connectivity from fiber wholesale suppliers, when economically feasible.

We closely monitor our network capacity and customer usage. Where necessary, we increase our capacity incrementally, for instance by splitting nodes in our network. We also continue to explore new technologies that will enhance our customers’ connected entertainment experience, such as:

- recapturing bandwidth and optimizing our networks by increasing the number of nodes in our markets and using digital compression technologies;
- increasing the bandwidth of our hybrid fiber coaxial cable network to 1.2GHz;
- enhancing our network to accommodate additional business services;
- using wireless technologies to extend our services outside the home;
- offering remote access to our video services through personal computers, smart phones, and tablets;
- introducing new Mediabox Next with 4k ultra HD and voice control remote capabilities; and
- introducing online media sharing and streaming or cloud based video.

To deliver our mobile services, we acquire mobile spectrum licenses for various radio frequencies. Vodafone NL has steadily increased its mobile spectrum license holdings to boost network quality and its capacity to carry more data. As of December 31, 2019, we had over 4,900 base stations in the Netherlands of which approximately 98% were connected with high capacity transmission. High capacity transmission allows us to provide customers with broad coverage both indoors and outdoors, a reliable connection, high speed data transmission and ample data capacity. We continue to evaluate and acquire additional mobile spectrum licenses and extend our licenses, enabling us to expand our network quality and capacity. The majority of our mobile spectrum licenses expire in 2030 and the license for the 2100 MHz band expires in 2020. The Dutch Government is planning to re-auction the 2100 MHz license used by Vodafone NL in mid 2020, as well as licenses for the new 700 and 1400 MHz bands.

Supply Sources

For our video services, we license most of our programming and on-demand offerings from content providers and third-party rights holders, including broadcasters and cable programming networks. For such licenses, we generally pay a monthly fee on a per channel or per subscriber basis with minimum pay guarantees in certain cases. We generally enter into long-term programming licenses with volume discounts and marketing support. For on-demand programming, we generally enter into shorter-term agreements and also pay royalties based on our subscribers’ usage. For our distribution agreements, we seek to include the rights to offer the licensed programming to our customers through multiple delivery platforms and through our apps for smart phones and tablets. In addition, we own the Ziggo Sport Channel, which provides full coverage of the Premier League, the Primera Division ‘La Liga’, Formula One and other leading sports events to our video customers.

We purchase each type of customer premises equipment from a number of different suppliers. Customer premises equipment includes set-top boxes, WiFi routers, DVRs, tuners, modems and similar devices. For each type of equipment, we retain specialists to provide customer support. Similarly, we use a variety of suppliers for mobile handsets to offer to our customers taking mobile services.

We license software products, including email and security software, and content, such as news feeds, from several suppliers for our internet services. The agreements for these products require us to pay a per subscriber fee for software licenses and a share of advertising revenue for content licenses. For our mobile network operations and our fixed-line telephony services, we license software products, such as voicemail, text messaging, and caller ID, from a variety of suppliers. For these licenses, we seek to enter into long-term contracts, which generally require us to pay based on usage of the services.

Competition

The Netherlands market for video, broadband internet, fixed-line telephony, and mobile services is highly competitive and rapidly evolving. Technological advances and product innovations have increased and are likely to continue to increase giving customers several options for the provision of their telecommunications services. Our customers want access to high quality telecommunication services that allow for seamless connectivity. Accordingly, our ability to offer converged services (video, internet, fixed telephone, and mobile) is a key component of our strategy. We compete with companies that provide fixed-mobile convergence bundles, as well as companies that are established in one or more communication products and services. Consequently, our business faces significant competition.

For all our services, we compete with the provision of similar services from operator KPN N.V. (**KPN**), T-Mobile Netherlands B.V. (**T-Mobile**) (as of January 2019 merged with Tele2**)**, and smaller parties. KPN and other competitors using KPN's fixed network offer (i) internet protocol television (**IPTV**) over fiber optic lines where the fiber is to the home, cabinet, or building or to the node networks (fiber-to-the-home/-cabinet/-building/-node is referred to herein as **FTTx**) networks and through broadband internet connections using DSL or very high-speed DSL technology (**VDSL**), KPN's network also offers several enhancements to VDSL, such as "vectoring" and "pair bonding", and (ii) digital terrestrial television (**DTT**). Where KPN has enhanced its VDSL system, it allows for offers of broadband internet with download speeds of 200 Mbps and on its FTTx networks, it allows for download speeds of up to 1 Gbps. The ability of competitors to offer a bundled triple-play of video, broadband internet and telephony services and fixed-mobile convergence services, creates significant competitive pressure on our operations, including the pricing and bundling of our video products. The video services of competitors include many of the interactive features we offer our subscribers (e.g. KPN introduced a new set-top box that is capable of 4K TV that is expected to enhance the video experience for its customers). Portions of our network have been overbuilt by KPN's and other providers' FTTx networks and expansion of these networks is expected to continue.

We also experience competition from (i) direct-to-home satellite (**DTH**) service providers, such as Canal Digital, a subsidiary of M7 Group S.A., (ii) over the top (**OTT**) video content aggregators utilizing our or our competitors' high-speed internet connections, and (iii) movie theaters, video stores, video websites and home video products. In addition, we compete to varying degrees with other sources of information and entertainment, such as online entertainment, newspapers, magazines, books, live entertainment/ concerts and sporting events. Free-to-air television is not a significant competitive factor because the Netherlands is predominately a pay television market.

We compete with mobile operators KPN and T-Mobile in the mobile market, offering 2, 3 and 4G services, where pressure on market price continues, characterized by aggressive promotional campaigns, heavy marketing spend, and increasing data bundles. Furthermore, there is increasing competition from MVNO's, some of which focus on niche segments such as no frills, youth or ethnic markets. While in the business market, we see growing customer requirements to provide unified communication solutions with a focus on employee mobility, seamless fixed and mobile transition, and digital workspace.

Connectivity Services in the high end business market are also offered by competitors like Eurofiber (nationwide fiber access services) and international service providers like British Telecom, Colt, etc.

In the business segment we also compete with service providers offering 'value added services', mostly in OTT service models based on Hosted Cloud technologies. These can be both local providers with nationwide coverage and international cloud hosting providers like Microsoft, Amazon Web Services, IBM, etc.

Changes in market share are driven primarily by the combination of price and quality of services provided. To improve our competitive position, we continuously monitor and update our portfolios.

We offer attractive bundle options, plus fixed-mobile convergence options, allowing our subscribers the ability to select various combinations of services to meet their needs. Our competitive strategy with respect to our services includes:

- Video services: We include Mediabox Next, Mediabox XL, Replay TV, and Movies & Series in our extended digital video tier offers. Ziggo GO is also available, providing subscribers the ability to watch linear and VoD programming through a second or third screen application on smart phones, tablets, and laptops and to record programs remotely. In addition, we continue to improve the quality of our programming and modify our video options by offering attractive content packages.

- Mobile services: We offer a wide range of 2, 3, and 4G mobile services and are expanding our Community WiFi network. We also continue to invest in our mobile network to improve the availability and quality of our services.

- Broadband internet services: The speed of service depends on the location and the tier of service selected. In addition, by leveraging our existing fiber rich broadband networks and our Network Extensions, we are in a position to deliver gigabit services by deploying the next generation DOCSIS 3.1 technology. We currently offer this technology in parts of our network *(Utrecht, Hilversum)*. By using DOCSIS 3.1, we can extend our download speeds to at least 1 Gbps where deployed. DOCSIS 3.1 technology improves not only our internet speed offers but also allows for network growth. DOCSIS technology is an international standard that defines the requirements for data transmission over a cable system. Currently, our ultra high-speed internet service is based primarily on DOCSIS 3.0 technology.

- Fixed-line telephony services: We position our services as "anytime", "anywhere", and "any destination" and offer a variety of innovative calling plans to meet the needs of our customers, such as national or international calling, unlimited off-peak calling and minute packages, including calls to fixed and mobile phones.

Regulatory Matters

For a description of current regulatory developments in the Netherlands, which will affect our operations, see the "Regulatory" section in this annual report.

Other

In addition to the foregoing items, we have contingent liabilities related to (i) legal proceedings, (ii) wage, property, VAT/ sales and other tax issues, (iii) disputes over interconnection fees, and (iv) other matters arising in the ordinary course of business. We expect that the amounts, if any, which may be required to satisfy these contingencies will not be material in relation to our financial condition or results of operations.

REGULATORY

Overview

The following section provides a summary of certain of our regulatory requirements and obligations in the Dutch market. This description is not intended to be a comprehensive description of all regulation in this area nor a review of specific obligations which have been imposed on us. Adverse regulatory developments could subject our business to a number of risks. Regulation could limit growth, revenue, and the number and types of services offered and could lead to increased operating costs and capital expenditures. In addition, regulation may restrict our operations and subject them to further competitive pressure, including pricing restrictions, interconnect and other access obligations, and restrictions or controls on content. Failure to comply with current or future regulation could expose our businesses to penalties.

The video distribution, broadband internet, fixed-line telephony and mobile businesses are regulated at the EU level. In the Netherlands, these regulations are implemented through the Telecommunicatiewet (the Dutch Telecommunications Act, "**DTA**") and the Mediawet (the Dutch Media Act, "**DMA**") and related legislation and regulations. The Authority for Consumers and Markets ("**ACM**", Autoriteit Consument & Markt), in which the former Independent Post and Telecommunications Authority ("**OPTA**", Onafhankelijke Post en Telecommunicatie Autoriteit) has been integrated, and the Dutch Radiocommunications Agency ("**AT**", Agentschap Telecom) supervise and enforce compliance with certain parts of the DTA. Pursuant to the DTA, the ACM is designated as a National Regulatory Authority (**NRA**). The Dutch Media Authority ("**CvdM**", Commissariaat voor de Media) is authorized to enforce compliance with the DMA.

In addition to complying with industry specific regimes, we must comply with both specific and general legislation concerning, among other areas, competition, data protection, data retention, internet service provider liability, consumer protection, and e-commerce.

European Union

The current body of EU law that deals with electronic communications regulation consists of a variety of legal instruments and policies (collectively referred to as the "**Regulatory Framework**"). The key elements of the Regulatory Framework are various legal measures, which we refer to as "Directives," that require the EU Member States to harmonize their laws as well as certain EU regulations that have effect without any specific adoption at the national level. The main Directives within the Regulatory Framework are the so-called Framework Directive, Access Directive, Authorisation Directive, Universal Service Directive, and e-Privacy Directive. The main regulations are the Net Neutrality and Roaming Regulations.

The Regulatory Framework primarily seeks to create an internal market for electronic communication networks and services within the EU. It harmonizes the rules within the EU for the establishment and operation of electronic communications networks, and the offer of electronic communications services, such as telephony, internet and, to some degree, television services. The Regulatory Framework does not generally address issues of content.

On May 6, 2015, the European Commission (**EC)** published its Digital Single Market strategy document. The strategy is an aggregation of many different policy areas with the purpose of creating a digital single market to expand jobs and stimulate growth. The strategy includes policy review in the areas of EU communications regulation, broadcasting law, copyright reform and anti-competitive geo-blocking practices.

On September 14, 2016 the EC published a proposal for the European Electronic Communications Code, which would replace the Regulatory Framework. The proposal recognizes the need for greater incentives to boost private sector investment in very high capacity networks. The proposal maintains the key elements of the Regulatory Framework, notably market analysis with remedies only being imposed on operators with Significant Market Power. The European Council and European Parliament are discussing other forms of access - extending the system of symmetrical access powers and the notion of joint Significant Market Power. The proposal captures all types of services that are relevant to consumers, not only the traditional electronic communications services as captured under the Regulatory Framework but also OTT services. The proposal brings greater harmonization to the timetables for spectrum licensing and renewal that will encourage investment in mobile networks and will result in more advanced services. Following the negotiations among the EC, European Council and European Parliament agreement was reached and the European Electronic Communications Code has entered into force on December 20, 2018. Member states have until December 21, 2020, to transpose the EECC into national law.

The operation of broadcasting networks and the distribution of broadcasting signals by a cable operator falls within the scope of the Regulatory Framework. The content related activities of a broadcaster are harmonized by other elements of EU law, in particular the Audiovisual Media Services Directive (**AVMS**). The AVMS, which was adopted on December 11, 2007, amended the EU's existing Television Without Frontiers Directive (**TVWF**). The AVMS has been implemented in the Netherlands through the DMA. Under the AVMS, broadcasts originating in and intended for reception within an EU Member State must generally respect the laws of that Member State. Pursuant to both the AVMS and TVWF, and in accordance with what is referred to as the "country of origin principle", an EU Member State must furthermore allow within its territory the free transmission of broadcast signals of a broadcaster established in another EU Member State so long as such broadcaster complies with the laws of its home state. The AVMS also establishes quotas for the transmission of European produced programming and programs made by European producers who are independent of broadcasters.

The Netherlands

The DTA comprises a wide variety of rights and obligations relevant to the provision of public electronic communications networks and services. Certain key provisions included in the DTA are described below, but this description is not intended to be a comprehensive description of all regulations in this area.

Licensing

The DTA contains a system of general authorizations. A provider of a public electronic communications network or service needs to notify the ACM of its network or service, who will register the notification. The purpose of the notification is to increase transparency and to ensure effective regulation and does not constitute a formal condition for market entry.

With regard to scarce resources such as telephone numbers and frequencies, a system of (individual) licenses applies. The ACM administers licenses with regard to telephone numbers. AT administers the frequency spectrum and grants licenses with regard to the use of frequencies. Licenses for frequencies are issued upon application, either on a first-come-first-serve basis, beauty contest or auction. A frequency license confers the right to use a specific set of frequencies in a specific band for a specific period of time and under specific conditions, such as coverage obligations. Frequency licenses are transferable with permission from the Minister of Economic Affairs. In addition to one-off license fees, holders of licenses have to pay annual supervision costs, based on the amount of spectrum held. We hold licenses in the 800, 900, 1800, 2100, and 2600 MHz bands to provide 2G (GSM), 3G (UMTS) and 4G (LTE) communications in the Netherlands. With the exception of the licenses for the 2100 MHz band, our licenses will expire in 2030. The license for the 2100 MHz will expire in 2020. The Dutch Government is planning to re-auction the 2100 MHz licenses in mid 2020, as well as licenses for the 700 and 1400 MHz bands. As of December 31, 2019, we hold approximately 30% of the total mobile spectrum licenses in the Netherlands, which are used to deliver mobile services.

Access, Interoperability and Interconnection

All providers of public electronic communications networks or services who control access to end-users are obliged to enter into negotiations upon the request of a competitor to conclude an interoperability agreement. Interoperability refers to all measures, including network interconnection, which should be implemented to ensure end-to-end connections. If a provider does not comply with its obligation to enter into negotiations, the ACM, at the other party's request, can impose proportionate obligations on the provider in order to ensure end-to-end connectivity.

Significant Market Power

To ensure that the telecommunications markets become genuinely competitive, the ACM can impose ex ante regulation by means of market analysis decisions on operators or service providers that have significant market power in a relevant market. Ex ante regulation means that the ACM sets behavioral rules beforehand with which providers with significant market power must comply. A company will be deemed to have significant market power if, either individually or jointly with others, it enjoys a market position equivalent to dominance, i.e., a position of economic strength affording it the power to behave to an appreciable extent independently of competitors, customers, and ultimately consumers.

Before it can be established whether an operator or service provider has significant market power, the ACM needs to determine, in accordance with the principles of general European competition law, in which relevant electronic communications market(s) the operator or service provider competes. The ACM must do this while taking into account the EC's "Recommendation on relevant product and service markets within the electronic communications sector", the latest version of which was published by the EC on October 9, 2014. The ACM may also define additional relevant markets provided that any such market meets the cumulative criteria defined by the EC in its so called three criteria test for determining whether a market is susceptible to ex ante regulation.

If the ACM determines that a company has significant market power, the ACM must impose one or more appropriate obligations. These obligations relate to, among other things, access and use of specific network facilities, non-discrimination, transparency, and price regulation at both the wholesale and retail level. To ensure a proper functioning of the market, these obligations may not be disproportionate. The investigation of a relevant market, the designation of parties with significant market power and the imposition of ex ante obligations culminate in so-called market analysis decisions of the ACM. These decisions normally apply for a period of three years, after which the market concerned needs to be re-investigated.

The ACM has completed various rounds of market analyses. Old Ziggo was designated as a party with significant market power on the market for fixed terminating access services and Vodafone NL was designated as a party with significant market power for both the fixed terminating and mobile terminating access markets. In the recent Local Loop Unbundling decision, see *ACM Local Loop Unbundling Decision* below, KPN and VodafoneZiggo are designated as parties with Joint Significant Market Power.

The analyses in respect of these markets are discussed below.

ACM Call Termination Market Analysis Decisions

In respect of the call termination market, the ACM has taken the view that all providers of call termination on fixed-line and mobile networks in the Netherlands have significant market power because all such providers exclusively control access to end-users connected to their respective public telephone networks. As a result, Old Ziggo (in relation to fixed call termination services) and Vodafone NL (in relation to both fixed and mobile call termination services), have been subject to specific ex ante obligations, including in particular tariff regulation (maximum termination charges), since the ACM's third market analysis decision of July 7, 2010. On August 5, 2013, the ACM published its fourth market analysis decision on call termination, which combined both the fixed termination market and the mobile termination market. The new tariffs became effective September 1, 2013, and applied for a three year period that ended September 1, 2016. The decision was appealed by various operators, including us, and on August 27, 2013, the Dutch Supreme Administrative Court decided in a preliminary decision that the price cap on mobile termination charges should be higher than the ACM had initially determined. The court ruled that the ACM should apply a so-called Bottom-up Long Run Incremental Cost (**BULRIC**) plus cost calculation method (taking into account common overhead costs relating also to other services than mobile call termination, (**BULRIC plus**)) rather than a pure BULRIC method (in which such common overhead costs are to be disregarded, **pure BULRIC**). These revised tariffs applied until the Dutch Supreme Administrative Court arrived at a final decision in the appeal proceedings on the merits (see below). Because the pure BULRIC method used by the ACM is in fact a method recommended by the EC in its 2009 Recommendation on the Regulatory Treatment of Termination Rates, the Supreme Administrative Court posed prejudicial questions to the European Court of Justice.

After an Advocate General opinion, the European Court of Justice ruled on September 15, 2016, that deviation from the EC's 2009 Recommendation on Termination Rates is only possible if justified by national circumstances. The ACM started a new (the fifth) market analysis and published a draft decision on November 18, 2016, in which they again regulate using a pure BULRIC calculation. The hearing at the Dutch Supreme Administrative Court was held on January 11, 2017, and ruling given on July 10, 2017, upheld the ACM's use of pure BULRIC, though not requesting retroactive adjustment.

In April 2017, the ACM provided their plan to impose tariff ceilings of €0.00139 per minute for fixed and €0.005819 cents per minute for mobile calls from July 1, 2017, to the EC. The EC approved these in May, 2017. The new tariff implementation was delayed by the court decision, until July 12, 2017, and will apply until July 12, 2020. VodafoneZiggo appealed ACM's market decision. In September 2018, the appeal court delivered its decision on VodafoneZiggo's appeal against the ACM's Mobile Termination/ Fixed-line Termination Rate ("MTR" and "FTR") regulations market decision. The verdict provides the relevant guidance sought by VodafoneZiggo about the interpretation and setting of interconnection tariffs among operators.

Further to the entry into force of the EECC, the EC is required to adopt a delegated act in the course of 2020 that will set maximum, EU-wide voice termination rates, both fixed and mobile, by December 31, 2020. Such rates will be applicable to any operator providing voice call termination services in the EU.

ACM Local Loop Unbundling Decision

On February 27, 2018, the ACM published a draft decision in its Local Loop Unbundling market analysis, now referred to as Wholesale Fixed Access (**WFA**) in which it aims to regulate VodafoneZiggo by imposing an obligation to offer wholesale cable access in addition to continuing existing regulation on KPN. Following a market consultation, the ACM notified the draft decision to the EC. On August 31, 2018, the EC responded, making a number of critical comments, but not rejecting the ACM's proposals (no serious doubts). The ACM then published a final decision on September 28, 2018, which entered into force October 1, 2018. We have appealed both the EC's letter and ACM's decision. In the latter case, we expect a verdict in the first quarter of 2020. A first obligation on VodafoneZiggo to publish a reference offer for January 1, 2019, has been complied with. VodafoneZiggo only has to invest in the implementation of cable access if there is actual demand (i.e., a signed contract with an access seeker). We do not expect cable access to be available before mid 2020. The actual financial impact on our business is not known yet.

Acquisition of Tele2 Netherlands by T-Mobile Netherlands

On November 27, 2018, the EC approved, under the EU Merger Regulation, the proposed acquisition of Tele2 Netherlands by T-Mobile Netherlands, the third and fourth players in the Dutch mobile market. The decision follows an in-depth investigation by the EC. The merger took effect on January 2, 2019. The combined entity remains the third largest player in the Dutch market after KPN and VodafoneZiggo.

Network and services security and continuity

As a provider of public electronic communication networks and services, we are subject to specific obligations to safeguard the security and integrity of our networks and services, and to ensure the continuity of electronic communications services in the event of disturbances or outages of the electricity grid. We are also required to notify the AT and the National Cyber Security Center ("**NCSC**") of security and integrity breaches which materially threaten the continuity of our networks and services. To mitigate the risks to continuity of mobile services, Vodafone NL, T-Mobile, and KPN voluntarily entered into national roaming arrangements in 2014, allowing for their respective subscribers to roam (voice and SMS) on the other parties' networks in the event of severe outages.

End-user Protection

As a provider of public electronic communication networks and services, we are subject to specific regulations aiming to protect end-users, including regulations concerning information obligations toward consumers, the enactment of amendments to end-user contracts, the term of end user contracts, termination rights of consumers, quality reporting, access to emergency numbers and subscriber information, and compensation of subscriber fees in the event of outages. Access to emergency numbers has to be provided without limitation and free of charge. Access to subscriber information includes the provision of access to the names, addresses and telephone numbers of our subscribers who have consented to be included in directory enquiry services.

Data Protection

For providers of public electronic communications networks or services and further to the European Data Protection Directive and the ePrivacy Directive, a strict data protection regime applies in the Netherlands. In addition to the general data protection framework of the Data Protection Act (Wet bescherming persoonsgegevens), the DTA sets out specific regulations for providers of public electronic communications networks and services. These regulations include an obligation to offer certain technical facilities, such as specification of invoices, telephone number identification and transfer of calls, rules regarding the use and processing of location data and traffic data (i.e., call detail records), an obligation to provide access to subscriber lists for directory services, obligations to implement security measures to protect personal data and rules regarding unsolicited commercial communications ("spam"). The DTA also obliges providers of public electronic communications networks to notify the ACM in case of a security breach which includes the leakage of personal data processed by the provider. In certain circumstances, data subjects involved will need to be informed as well. Non-compliance with the DTA can lead to a fine.

On May 25, 2018, the EU General Data Protection Regulation (**GDPR**), that replaces the European Data Protection Directive, came into force. The GDPR has direct effect in the Netherlands with additional data protection obligations relevant to our operations that include: (i) clear explanation and transparency of personal data usage to customers and employees, and maintaining an internal data processing register, (ii) affirmative consent from users for profiling by automated means, (iii) stronger privacy rights for users, and (iv) application of privacy by design/default to data processes.

On January 10, 2017, a draft ePrivacy Regulation (**ePR**) was proposed by the EC to replace the ePrivacy Directive. In a meeting on November 22, 2019, the EU member states did not reach an agreement on a common position regarding the ePR. The current Presidency of the EU, Croatia, proposed a revised ePR draft on February 24, 2020. More clarity about its status is expected in the course of 2020.

Lawful Interception

Providers of public telecommunication networks and services can only make their networks and services available to the public if they have arranged their networks and services in such a manner that they can be lawfully intercepted promptly. Providers of public telecommunication networks and services are obligated to cooperate fully in the execution of a lawfully given special tapping order or permission, in accordance with the technical and procedural requirements set forth on the basis of the DTA, and to provide relevant Dutch law enforcement agencies information on subscribers and telecommunications traffic.

Net Neutrality

On January 1, 2013, certain provisions in the DTA with respect to net neutrality entered into force. These provisions regulate net neutrality by, among other things, prohibiting operators of public telecommunication networks through which internet access is provided as well as internet service providers from blocking or restricting services or applications which are accessed via the internet other than in circumstances set forth in the DTA. In October 2015, the European Parliament adopted a new Regulation including the first EU-wide net neutrality regime. Following a lengthy legislative procedure, the regulation (directly applicable in all Member States from April 30, 2016) reflects a light-handed approach to net neutrality permitting the provision of specialized services optimized for specific content and approving reasonable traffic management. In October 2016, a bill to change the DTA pursuant to the EU net neutrality Regulation was adopted by the Dutch Senate. In the law, a specific obligation prohibiting tariff differentiation for data was maintained, which however did not follow from the Regulation. The Court in Rotterdam ruled on April 20, 2017, that the Dutch ban on differential pricing for data is not valid as the EU net neutrality regulation does not allow national regulation on this issue. As a result, the DTA was amended to reflect the EU regulation. The special interest group Bits of Freedom has brought a series of legal challenges aimed at prohibiting zero rating, all of which were unsuccessful.

Radio and Television Transmission

The distribution of must-carry television services to the public is regulated by the DMA, entailing obligations regarding the transmission of specified radio and television broadcast channels. On January 1, 2014, revised must carry obligations became effective. The revised must carry obligations do not only apply to cable operators, as was previously the case, but also apply to all providers of analog and digital program packages based on the principle of technology neutrality. Providers of digital program packages with 100,000 or more subscribers are subject to the obligation to provide at least 30 television channels, including six public television broadcasting channels as a must carry obligation, a limited amount of regional and local television broadcasting channels and a number of digital radio broadcasting channels. In addition, all providers of analog program packages with 100,000 or more subscribers must include at least 15 television channels, including five public broadcasting channels as a must carry obligation, a limited amount of regional and local television broadcasting channels and some analog radio broadcasting channels. The DMA can grant a (conditional) exemption from the obligation if the must carry obligations listed above give rise to disproportionate costs for the network operator, an impediment to innovation or other unreasonable outcomes.

There is no regulated financing mechanism in place between network operators and broadcasters. Commercial and public program providers must negotiate with network operators regarding transmission fees.

Property Rules regarding the Network

In accordance with the Dutch Civil Code, all public fixed-line electronic communication networks are the legal property of the rightful constructer of the network or its legal successor, and not (by accession) of the owner of the ground in which the network resides. Registration at the Land Registry (*het Kadaster*) is required for the transfer of legal ownership and/or to encumber public networks, for example by a right of mortgage. Registration is also required to enjoy statutory protection against title claims of third parties. We have currently registered a substantial majority of our HCF network at the Land Registry.

Roaming

As a result of the European Roaming Regulation, which has direct effect in the Netherlands, as of June 15, 2017, roaming retail surcharges are no longer permitted, subject to a fair use policy. On June 15, 2017, revised maximum wholesale roaming rates (exclusive of value added tax (**VAT**)) became effective as follows (i) outgoing calls at €0.032 per minute, (ii) incoming calls at €0.0114 per minute, (iii) €0.01 per SMS sent, and (iv) rates for data at €7.7 per GB decreasing annually ultimately to €2.5 per GB effective January 1, 2022.

International calls

New rules regarding intra EU communications impose regulated maximum retail prices charged to consumers of €0.19 per minute for calls and €0.06 per SMS messages (exclusive of VAT). The rates apply to fixed and mobile communications, effective from May 15, 2019 for a period of five years.

Consumer Credit

In June 2014, and February 2016, the Dutch (Civil) Supreme Court ruled that certain combined propositions of mobile services and a mobile handset could, under circumstances, be qualified as, inter alia, consumer credit and installment sales, which qualification could have consequences on the validity of certain customer contracts and the applicability of financial laws including the supervision of the Autoriteit Financiële Markten (the Dutch financial market supervisory body, "**AFM**"). Vodafone NL was not party to the above-mentioned proceedings.

In February 2018, the Dutch Consumer Federation made public that they had commenced collective proceedings against Vodafone NL and other mobile operators in the Netherlands and exploratory settlement talks with the Dutch Consumer Federation and the commercial claim vehicle Consumentenclaim B.V. are ongoing. These discussions have resulted in a preliminary understanding with the Dutch Consumer Federation and Consumentenclaim B.V. on the matter in December 2019, to be further negotiated and agreed upon in the course of 2020. As a result of this preliminary understanding, the collective claim proceedings against Vodafone NL have been withdrawn.

Furthermore, Vodafone NL has been in close consultation with the Financial Market Authority about the applicability and implementation of financial laws on consumer credit going forward and applied for a consumer credit license with the AFM in June 2016. The license was granted in December 2016.

Conditions Applied in Connection with the Ziggo Acquisition and KPN appeals against EC merger decisions for Ziggo Acquisition and VodafoneZiggo Joint Venture

Liberty Global's acquisition of Ziggo obtained regulatory clearance from the EC on October 10, 2014, subject to the following commitments from Old Ziggo that are transferred to our company:

- a commitment to carry *Film 1* channels on our network at least until October 2017; and
- a commitment until October 10, 2022, with respect to our fixed network (i) not to enforce certain clauses currently contained in carriage agreements with broadcasters that restrict the ability of broadcasters to offer their channels and content via OTT services, (ii) not to enter into carriage agreements containing such clauses, and (iii) to maintain adequate interconnection capacity through at least three uncongested routes into our network, at least one of which must be with a large transit provider.

In July 2015, KPN, one of our competitors in the Netherlands, lodged an appeal against the EC decision clearing the acquisition of the Ziggo business by Liberty Global. The VodafoneZiggo JV was not a party to these proceedings. On October 26, 2017, the General Court of the EU ruled that the EC did not state sufficient reasons for not analyzing the possible vertical anti-competitive effects on the market for premium pay TV sports channels and consequently annulled the EC decision. Article 10 (5) of the Merger Regulation provides in such a case that transaction shall be re-examined by the EC with a view to adopting a new decision. In April 2018, we filed a formal re-notification of this merger with the EC. On May 30, 2018, the EC again cleared the acquisition of the Ziggo business by Liberty Global. The earlier agreed commitments from Old Ziggo that were transferred to our company, have been extended to May 2026. On November 22, 2018, KPN lodged a pro-forma appeal with the General Court of the EU against the May 30, 2018, clearance decision of the EC. On February 15, 2019, we have, together with our shareholders, filed a request to intervene in these proceedings with the General Court and submitted our reply in June 2019. We expect an oral hearing to be held in 2020.

On June 12, 2017, KPN lodged an appeal with the General Court of the EU against the EC's 2016 decision to clear the VodafoneZiggo JV between Vodafone and Liberty Global in the Netherlands. On May 23, 2019, the General Court dismissed KPN's appeal, and KPN decided not to further appeal this verdict.

Other

On April 10, 2018, the EC carried out inspections at several media companies in Europe including our sports channel, Ziggo Sport. The investigation is currently ongoing. To date, Ziggo Sport has not received a Statement of Objections, setting out the EC's possible concerns.

Legal Proceedings

From time to time, we may become involved in litigation relating to claims arising out of our operations in the normal course of business. We believe the ultimate resolution of any of these existing contingencies would not likely have a material adverse effect on our business, results of operations, financial condition or liquidity.

Employees

As of December 31, 2019, we, including our consolidated subsidiaries, have an aggregate of approximately 6,400 full-time equivalent employees, certain of whom belong to organized unions and works councils. Certain of our subsidiaries also use contract and temporary employees, which are not included in this number, for various projects. We believe that our employee relations are good.

MANAGEMENT AND GOVERNANCE

Management and Supervisory Directors

VodafoneZiggo is managed by its Managing Directors. The Managing Directors are responsible for the day-to-day management of the business and, among other things, the overall supervision and administration of the business activities, the appointment and removal of executive officers, and the review of financial statements for VodafoneZiggo and its affiliates. Responsibilities for operations are delegated to members of senior management.

The Managing Directors of VodafoneZiggo consists of Jeroen Hoencamp as Chief Executive Officer (**CEO**) and Ritchy Drost as Chief Financial Officer (**CFO**).

Jeroen Hoencamp was appointed CEO of Vodafone NL on September 1, 2016. A Dutch citizen, he led Vodafone's U.K. business as CEO from September 2013 to September 2016 and was previously CEO of Vodafone Ireland. Before that, he spent 12 years in a number of senior executive roles (including Sales Director and Enterprise Business Unit Director) with Vodafone NL. Earlier in his career he worked in senior marketing and sales positions with Canon Southern Copy Machines, Inc. in the U.S. and Thorn EMI/Skala Home Electronics in the Netherlands. He is a former officer in the Royal Dutch Marine Corps.

Ritchy Drost was appointed CFO and member of the Management Board of Ziggo Group Holding, in September 2015. Ritchy Drost was appointed CFO, European Broadband Operations, of Liberty Global in January 2012. Mr. Drost served as Managing Director and CFO of Ziggo Services and its predecessors, from January 2006 to January 2012. Prior to that, he held various management positions after joining a predecessor of Liberty Global Europe in November 1999. Previously he was with Arthur Andersen LLP in their assurance practice.

The business address of each of the Managing Directors named above is Boven Vredenburgpassage 128, 3511 WR Utrecht, the Netherlands. There are no potential conflicts of interest between the duties of the Managing Directors noted above towards VodafoneZiggo and his or her personal interests and duties.

The Supervisory Board of VodafoneZiggo consists of three representatives from each of Liberty Global (currently Manuel Kohnstamm, Baptiest Coopmans and Charlie Bracken), and Vodafone (currently John Otty, Carmen Velthuis and Serpil Timuray), and two members nominated by the former Works Councils of Vodafone (currently Carla Mahieu) and Ziggo (currently Huub Willems). The composition of the Supervisory Board changed during 2019: (i) on March 22, 2019, Diederik Karsten resigned as Supervisory Director and Manuel Kohnstamm was appointed as his successor; and (ii) on December 31, 2019, Margherita Della Valle resigned as Supervisory Director and Carmen Velthuis was appointed as her successor. Certain matters require approval of both companies' representatives. The post of Chairman will be held for alternating 12 month periods by a Liberty Global or Vodafone appointed director, currently Serpil Timuray (Manuel Kohnstamm from March 22, 2019 through December 31, 2019).

PRINCIPAL SHAREHOLDERS

VodafoneZiggo is wholly-owned by VodafoneZiggo Group Holding. VodafoneZiggo Group Holding is a 50:50 joint venture among Liberty Global and Vodafone.

Liberty Global is one of the world's leading converged video, broadband and communications companies, with operations in six European countries under the consumer brands Virgin Media, Telenet and UPC. Liberty Global develops market-leading products delivered through next-generation networks that connect 11 million customers subscribing to 25 million TV, broadband internet and telephony services. Liberty Global also serves six million mobile subscribers and offers WiFi service through millions of access points across its footprint. Liberty Global owns significant investments in ITV, All3Media, ITI Neovision, LionsGate, the Formula E racing series and several regional sports networks.

Vodafone Group has mobile operations in 24 countries, partners with mobile networks in 42 more, and fixed broadband operations in 19 markets. As of December 31, 2019, Vodafone Group had approximately 625 million mobile customers, 27 million fixed broadband customers and 22 million TV customers, including all of the customers in Vodafone's joint ventures and associates.

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion and analysis, which should be read in conjunction with our consolidated financial statements, is intended to assist in providing an understanding of our results of operations and financial condition and is organized as follows:

- *Overview.* This section provides a general description of our business and recent events.
- *Results of Operations.* This section provides an analysis of our results of operations for the years ended December 31, 2019 and 2018.
- *Liquidity and Capital Resources.* This section provides an analysis of our corporate and subsidiary liquidity, consolidated statements of cash flows and contractual commitments.
- *Critical Accounting Policies, Judgments, and Estimates.* This section discusses those material accounting policies that involve uncertainties and require significant judgment in their application.

The capitalized terms used below have been defined in the notes to our consolidated financial statements. In the following text, the terms "we," "our," "our company", and "us" may refer, as the context requires, to VodafoneZiggo or collectively to VodafoneZiggo and its subsidiaries.

Unless otherwise indicated, convenience translations into euros are calculated, and operational data is presented, as of December 31, 2019.

Included below is an analysis of our results of operations and cash flows for 2019, as compared to 2018. An analysis of our results of operations and cash flows for 2018, as compared to 2017, can be found under *Management's Discussion and Analysis of Financial Condition* and *Results of Operations* included in our Annual Report for the year ended December 31, 2018, which is available through the Liberty Global's website at www.libertyglobal.com.

Overview

General

VodafoneZiggo is a provider of video, broadband internet, fixed-line telephony, and mobile services to residential and business customers in the Netherlands. VodafoneZiggo is a wholly-owned subsidiary of VodafoneZiggo Group Holding. VodafoneZiggo Group Holding is a 50:50 joint venture between Vodafone and Liberty Global.

Operations

At December 31, 2019, we owned and operated networks that passed 7,250,800 homes and served 9,641,700 Revenue Generating Units (**RGUs**), consisting of 3,870,100 video subscribers (including 3,378,800 enhanced video subscribers), 3,362,100 broadband internet subscribers and 2,409,500 fixed-line telephony subscribers. In addition, at December 31, 2019, we served 5,064,900 mobile subscribers, which includes 4,483,700 postpaid subscribers.

The following table provides details of our organic RGU and mobile subscriber changes for the years indicated. Organic RGU and mobile subscriber changes exclude the effect of acquisitions (RGUs and mobile subscribers added on the acquisition date) and other non-organic adjustments, but includes post-acquisition date RGU and mobile subscriber additions or losses.

	Year ended December 31,	
	2019	2018
Organic RGU additions (losses):		
Video:		
Basic	(26,300)	(58,700)
Enhanced	(6,200)	18,900
Total video	(32,500)	(39,800)
Broadband internet	44,800	50,600
Fixed-line telephony	(90,000)	(51,800)
Total organic RGU losses	(77,700)	(41,000)
Organic mobile subscriber additions (losses):		
Postpaid net additions	268,700	156,900
Prepaid net losses	(169,800)	(78,900)
Total organic mobile subscriber additions	98,900	78,000

Video services. For most of our customers, we have enhanced our video offerings with various products that enable such customers to control when they watch their programming. These products range from digital video recorders to multimedia home gateway systems capable of distributing video, voice, and data content throughout the home and to multiple devices.

Broadband internet services. Subscribers to our residential broadband internet services generally access the internet at various download speeds of up to 1 Gbps, depending on network capability and the tier of service selected. We determine pricing for each tier of broadband internet service through analysis of speed, market conditions and other factors. We continue to invest in new technologies that allow us to increase the internet speeds we offer to our customers.

Fixed-line telephony services. We offer fixed-line telephony services to all of our broadband communications subscribers, primarily using VoIP technology.

Mobile services. We offer mobile services as a mobile network operator.

B2B services. We provide B2B services, including voice, broadband internet, data, video, wireless, and cloud services.

For additional information regarding the details of our products and services, see the "*Business of VodafoneZiggo*" section in this annual report.

Strategy and management focus

We believe we are able to add value to our customers through each and every connection related to our video, broadband internet, fixed-line telephony and mobile services. We enable our customers to connect with their loved ones and build new meaningful relationships and enjoy fantastic content and entertainment in familiar and refreshing ways thereby creating more satisfying experiences for our customers.

The formation of the VodafoneZiggo JV, of which we are a wholly-owned subsidiary, created a national, fully converged organization in the Netherlands and, as such, we believe we are able to better serve our customers and compete with our key competitors. As a converged company, we expect we will be able to create growth opportunities, including quad-play, and cross-selling and upselling opportunities. We expect that we will improve customer satisfaction and loyalty to our company and the services we provide. Furthermore, we expect to leverage the knowledge and expertise of our ultimate parent companies, Liberty Global and Vodafone, as well as realize synergies as we begin integrating and operating as one converged company.

From a strategic perspective, we are seeking to build a broadband communications and mobile business that has strong prospects for future growth.

We strive to achieve organic revenue and customer growth in our operations by developing and marketing bundled entertainment and information and communications services, and extending and upgrading the quality of our networks where appropriate. While we seek to obtain new customers, we also seek to maximize the average revenue we receive from each household by increasing the penetration of our digital cable, broadband internet, fixed-line telephony and mobile services with existing customers through product bundling and upselling towards a converged product offering.

Competition and Other External Factors

Our mobile and fixed-line operations are experiencing significant competition. In particular, our mobile operations continue to experience pressure on pricing, characterized by aggressive promotion campaigns, heavy marketing spend and increasing or unlimited data bundles. Furthermore, there is increasing competition from MVNOs that focus on certain niche segments such as no frill, youth or ethnic markets. This significant competition, together with the macroeconomic factors, has adversely impacted our revenue, RGU and average monthly subscription revenue per average cable RGU or mobile subscriber, as applicable (**ARPU**). For additional information regarding the revenue impact of changes in RGUs and ARPU, see *Results of Operations* below.

In addition to competition, our operations are subject to macroeconomic, political, and other risks that are outside of our control. For example, on June 23, 2016, the United Kingdom (**U.K.**) held a referendum in which U.K. citizens voted in favor of, on an advisory basis, an exit from the European Union (**EU**), commonly referred to as "**Brexit.**" The U.K. formally left the EU on January 31, 2020, and has now entered into a transition period until December 31, 2020, during which the U.K. and the EU will negotiate to formalize the future U.K.-EU relationship with respect to a number of matters, most notably trade. Although the U.K. has ceased to be an EU member, during the transition period their trading relationship will remain the same, the U.K. will continue to follow the EU's rules, such as accepting rulings from the European Court of Justice, and the U.K. will continue to contribute to the EU's budget. It is possible that the U.K. will fail to agree to specific separation terms with the EU by the end of the transition period, which, absent extension, may require the U.K. to leave the EU under a so-called "hard Brexit" or "no-deal Brexit" without specific agreements on trade, finance and other key elements. The foregoing has caused uncertainty as to Brexit's impact on the free movement of goods, services, people and capital between the U.K. and the EU, customer behavior, economic conditions, interest rates, currency exchange rates, and availability of capital. The effects of Brexit could adversely affect our business, results of operations and financial condition, and liquidity.

Results of Operations

General

Our revenue is earned in the Netherlands and is subject to applicable value added tax (**VAT**). Any increases in these taxes could have an adverse impact on our ability to maintain or increase our revenue to the extent that we are unable to pass such tax increases onto our customers.

We pay interconnection fees to other telephony providers when calls or text messages from our subscribers terminate on another network, and we receive similar fees from such providers when calls or text messages from their customers terminate on our network. The amounts we charge and incur with respect to fixed-line telephony and mobile interconnection fees are subject to regulatory oversight. To the extent that regulatory authorities introduce fixed-line or mobile termination rate changes, we would experience prospective changes in our interconnect revenue and costs. The ultimate impact of any such changes in termination rates on our interconnect revenue and costs would be dependent on the call or text messaging patterns that are subject to the changed termination rates.

*Operating Cash Flow (**OCF**)*

OCF is the primary measure used by our management to evaluate the operating performance of our businesses. It is also a key factor that is used by our management and our Supervisory Board to evaluate the effectiveness of our management for purposes of annual and other incentive compensation plans. OCF is defined as operating income before depreciation and amortization, share-based compensation, provisions, and provision releases related to significant litigation and impairment, restructuring and other operating items. Other operating items include (i) gains and losses on the disposition of long-lived assets, (ii) third-party costs directly associated with successful and unsuccessful acquisitions and dispositions, including legal, advisory and due diligence fees, as applicable, and (iii) other acquisition-related items, such as gains and losses on the settlement of contingent consideration.

We are subject to inflationary pressures with respect to certain costs and foreign currency exchange risk. Any cost increases that we are not able to pass on to our subscribers through rate increases would result in increased pressure on our operating margins.

Revenue

We earn revenue from (i) subscribers to our consumer broadband communications and mobile services and (ii) B2B services, interconnect fees, channel carriage fees, installation fees, and late fees. Consistent with the presentation of our revenue categories in note 14 to our consolidated financial statements, we use the terms "subscription revenue" and "service revenue" in the following discussion to refer to amounts received from subscribers for ongoing services. In the tables below, mobile service revenue excludes the related interconnect revenue.

Variances in the subscription and/or service revenue from our customers are a function of (i) changes in the number of RGUs or mobile subscribers outstanding during the period and (ii) changes in ARPU. Changes in ARPU can be attributable to (a) changes in prices, (b) changes in bundling or promotional discounts, (c) changes in the tier of services selected, (d) variances in subscriber usage patterns, and (e) the overall mix of cable and mobile products during the period. In the following discussion, we provide the net impact of the above factors on the ARPU that is derived from our video, broadband internet, fixed-line telephony, and mobile products.

2019 compared to 2018

Revenue

Our revenue by major category is set forth below:

	Year ended December 31,		Increase (decrease)	
	2019	2018	€	%
	in millions, except % amounts			
Consumer cable revenue (a):				
Subscription revenue	€ 2,004.6	€ 1,980.3	€ 24.3	1.2 %
Non-subscription revenue	19.3	17.8	1.5	8.4 %
Total consumer cable revenue	2,023.9	1,998.1	25.8	1.3 %
Consumer mobile revenue (b):				
Service revenue	627.7	669.5	(41.8)	(6.2)%
Non-service revenue	241.4	215.5	25.9	12.0 %
Total consumer mobile revenue	869.1	885.0	(15.9)	(1.8)%
Total consumer revenue	2,893.0	2,883.1	9.9	0.3 %
B2B cable revenue (c):				
Subscription revenue	440.6	407.1	33.5	8.2 %
Non-subscription revenue	25.4	24.3	1.1	4.5 %
Total B2B cable revenue	466.0	431.4	34.6	8.0 %
B2B mobile revenue (d):				
Service revenue	413.3	430.8	(17.5)	(4.1)%
Non-service revenue	112.5	100.0	12.5	12.5 %
Total B2B mobile revenue	525.8	530.8	(5.0)	(0.9)%
Total B2B revenue	991.8	962.2	29.6	3.1 %
Other revenue (e)	52.3	50.1	2.2	4.4 %
Total	€ 3,937.1	€ 3,895.4	€ 41.7	1.1 %

(a) Consumer cable revenue is classified as either subscription revenue or non-subscription revenue. Consumer cable subscription revenue includes revenue from subscribers for ongoing broadband internet, video, and voice services offered to residential customers and the recognition of deferred installation revenue over the associated contract period. Consumer cable non-subscription revenue includes, among other items, channel carriage fees, late fees, and revenue from the sale of equipment. Subscription revenue from subscribers who purchase bundled services at a discounted rate is generally allocated proportionally to each service based on the stand-alone price for each individual service. As a result, changes in the stand-alone pricing of our cable and mobile products or the composition of bundles can contribute to changes in our product revenue categories from period to period.

(b) Consumer mobile revenue is classified as either service revenue or non-service revenue. Consumer mobile service revenue includes revenue from ongoing mobile and data services offered under postpaid and prepaid arrangements to residential customers. Consumer mobile non-service revenue includes, among other items, interconnect revenue, mobile handset and accessories sales, and late fees.

(c) B2B cable revenue is classified as either subscription revenue or non-subscription revenue. B2B cable subscription revenue includes revenue from business broadband internet, video, voice, and data services offered to small office/home office (**SOHO**, generally fewer than five employees) and small and medium to large enterprises. B2B cable non-subscription revenue includes, among other items, revenue from hosting services, carriage fees, and interconnect.

(d) B2B mobile revenue is classified as either service revenue or non-service revenue. B2B mobile service revenue includes revenue from ongoing mobile and data services offered to SOHO, small, and medium to large enterprise customers. B2B mobile non-service revenue includes, among other items, interconnect revenue, mobile handset and accessories sales, and late fees.

(e) Other revenue includes, among other items, programming and advertising revenue and revenue related to certain personnel services provided to Vodafone and Liberty Global.

The details of the increase in our revenue during 2019, as compared to 2018, are set forth below:

	Subscription /Service revenue	Non-subscription /Non-service revenue	Total
		in millions	
Increase (decrease) in consumer cable subscription revenue due to change in:			
Average number of RGUs (a)	€ (32.4)	€ —	€ (32.4)
ARPU (b)	56.7	—	56.7
Increase in consumer cable non-subscription revenue	—	1.5	1.5
Total increase in consumer cable revenue	24.3	1.5	25.8
Increase (decrease) in consumer mobile revenue (c)	(41.8)	25.9	(15.9)
Increase in B2B cable revenue (d)	33.5	1.1	34.6
Increase (decrease) in B2B mobile revenue (e)	(17.5)	12.5	(5.0)
Increase in other revenue	—	2.2	2.2
Total	€ (1.5)	€ 43.2	€ 41.7

(a) The decrease in cable subscription revenue related to a change in the average number of RGUs is attributable to the net effect of (i) a decrease in the average number of fixed-line telephony and video RGUs and (ii) an increase in the average number of broadband internet RGUs.

(b) The increase in cable subscription revenue related to a change in ARPU is primarily attributable to higher ARPU from broadband internet, video and fixed-line telephony services.

(c) The decrease in mobile service revenue is primarily due to higher converged discounts compared to the prior year and lower out-of-bundle revenue. The increase in mobile non-service revenue is primarily attributable to an increase in revenue from mobile handset sales.

(d) The increase in B2B cable subscription revenue is due to higher average number of RGUs across all our B2B segments, which are primarily driven by ongoing demand of our successful business-oriented offers such as “Business Internet Pro” and integrated communication products, partially offset by a decline in ARPU. The increase in B2B cable non-service revenue is primarily attributable to higher interconnect and installation revenue.

(e) The decrease in B2B mobile service revenue is primarily due to lower ARPU. The increase in B2B mobile non-service revenue is primarily attributable to increase in revenue from mobile handset sales.

Programming and other direct costs of services

General. Programming and other direct costs of services include programming and copyright costs, mobile access and interconnect costs, mobile handset and other equipment cost of goods sold, and other direct costs related to our operations. Programming and copyright costs, which represent a significant portion of our operating costs, are subject to increase in future periods as a result of (i) higher costs associated with the expansion of our digital video content, including rights associated with ancillary product offerings and rights that provide for the broadcast of live sporting events, and (ii) rate increases. In addition, we are subject to inflationary pressures with respect to our labor and other costs. Any cost increases that we are not able to pass on to our subscribers through rate increases would result in increased pressure on our operating margins.

Our programming and other direct costs of services decreased by €3.8 million or 0.4% during 2019, as compared to 2018. This decrease includes the following factors:

- A decrease in interconnect costs of €5.9 million or 3.1%, primarily due to (i) lower mobile and fixed termination rates, (ii) a decrease in leased line and interconnect costs and (iii) a decrease in roaming costs;

- An increase in programming and copyright costs of €2.1 million or 0.7%, mainly due to the net effect of (i) higher costs for certain premium sports content, (ii) an increase in costs due to higher volume of subscribers and (iii) a decrease in costs due to lower content volume; and

- An increase in other equipment costs of €1.4 million or 1.3%, primarily due to an increase in B2B programming costs driven by higher RGUs, partially offset by a decrease in the cost of certain other equipment as a result of higher capitalization.

Other operating expenses

General. Other operating expenses include network operations, customer operations, customer care, and other costs related to our operations.

Our other operating expenses decreased by €8.1 million or 1.7% during 2019, as compared to 2018. This decrease includes the following factors:

- An increase in bad debt expenses of €9.1 million, primarily due to the reassessment of our bad debt provision during 2018 resulting in a release;

- A decrease in personnel costs of €7.1 million or 3.1%, primarily due to the net effect of (i) higher capitalizable lT labor activities, (ii) lower staffing levels, and (iii) higher average costs per employee;

- A decrease in network and IT costs of €6.5 million or 11.8%, primarily due to a decrease in IT operational costs as a result of higher capitalizable activities as compared to 2018, and a decrease resulting from the impact of the release of certain IT project related accruals during 2019; and

- A decrease in business services costs of €1.4 million or 2.8%, primarily due to a decrease in consultancy costs and car fleet operating expenses, partially offset by increased energy costs.

SG&A expenses

General. SG&A expenses include human resources, information technology, general services, management, finance, legal, external sales and marketing costs, share-based compensation, and other general expenses.

Our SG&A expenses decreased by €17.1 million or 2.7% during 2019, as compared to 2018. Our SG&A expenses include share-based compensation expense, which decreased €1.4 million. Excluding the effects of share-based compensation expense, our SG&A expenses decreased by €15.7 million or 2.5%. This decrease includes the following factors:

- A decrease in sales and marketing costs of €12.7 million or 6.0%, primarily driven by lower expenditures on media campaigns;

- A decrease in business services costs of €5.9 million or 7.5%, primarily due to lower consultancy and administrative costs;

- An increase in personnel costs of €4.7 million or 1.8%, primarily due to higher average costs per employee partially offset by a decrease in cost due to lower staffing levels; and

- An increase in other costs of €4.5 million or 14.6%, primarily due to higher legal costs, partially offset by lower property costs.

Charges for JV Services

We recorded charges for JV Services of €222.6 million during 2019, as compared to €227.7 million during 2018. For additional information regarding charges for JV Services, see note 11 to our consolidated financial statements.

Depreciation and amortization expense

Our depreciation and amortization expenses increased by €75.5 million or 4.9% during 2019, as compared to 2018. This increase is primarily due to accelerated depreciation on certain network assets.

Impairment, restructuring, and other operating items, net

We recognized impairment, restructuring, and other operating items, net, of €40.2 million and €35.7 million during 2019 and 2018, respectively.

The 2019 amount relates to (i) restructuring charges of €15.4 million, (ii) contract exit and termination fees of €15.7 million, (iii) a loss from disposal of assets of €6.9 million, and (iv) impairment charges related to tangible assets of €2.2 million.

The 2018 amount primarily relates to (i) restructuring charges of €36.5 million, (ii) a gain from disposal of assets of €3.9 million, and (iii) impairment charges related to tangible assets of €1.9 million.

Additional restructuring charges are expected for 2020, due to reorganization activities associated with the closing of the JV Transaction.

Interest expense–third-party

Our third-party interest expense increased by €15.2 million or 3.2% during 2019 as compared to 2018, due to higher LIBOR rates and a stronger U.S. dollar. For additional information regarding our third-party debt, see note 8 to our consolidated financial statements.

It is possible that the interest rates on (i) any new borrowings could be higher than the current interest rates on our existing indebtedness and (ii) our variable-rate indebtedness could increase in future periods. As further discussed in note 5 to our consolidated financial statements, we use derivative instruments to manage our interest rate risks.

In July 2017, the U.K. Financial Conduct Authority (the authority that regulates LIBOR) announced that it intends to stop compelling banks to submit rates for the calculation of LIBOR after 2021. Currently, it is not possible to predict the exact transitional arrangements for calculating applicable reference rates that may be used in the U.K., the U.S., the eurozone or elsewhere given that a number of outcomes are possible, including the cessation of the publication of one or more reference rates. Our loan documents contain provisions that contemplate alternative calculations of the base rate applicable to our LIBOR-indexed debt to the extent LIBOR is not available, which alternative calculations we do not anticipate will be materially different from what would have been calculated under LIBOR. Additionally, no mandatory prepayment or redemption provisions would be triggered under our loan documents in the event that the LIBOR rate is not available. It is possible, however, that any new reference rate that applies to our LIBOR-indexed debt could be different from any new reference rate that applies to our LIBOR-indexed derivative instruments. We anticipate managing this difference and any resulting increased variable-rate exposure through modifications to our debt and/or derivative instruments, however future market conditions may not allow immediate implementation of desired modifications and/or the Company may incur significant associated costs.

Interest expense–related-party

Our related-party interest expense decreased by €11.1 million or 11.0% during 2019 as compared to 2018. This decrease is primarily due to lower average outstanding loan balances. For additional information regarding our related-party debt, see note 11 to our consolidated financial statements.

Realized and unrealized gains (losses) on derivative instruments, net

Our realized and unrealized gains or losses on derivative instruments include (i) unrealized changes in the fair values of our derivative instruments that are non-cash in nature until such time as the derivative contracts are fully or partially settled and (ii) realized gains or losses upon the full or partial settlement of the derivative contracts.

The details of our realized and unrealized gains on derivative instruments, net, are as follows:

	Year ended December 31,	
	2019	2018
	in millions	
Cross-currency and interest rate derivative contracts (a)	€ 69.8	€ 292.4
Foreign currency forward contracts	0.3	3.4
Total	€ 70.1	€ 295.8

(a) The net gains are primarily attributable to a decrease in the value of the euro relative to the U.S. dollar. In addition, the net gains include a net gain (loss) of (€55.2 million) and €0.5 million during 2019 and 2018, respectively, resulting from changes in credit risk valuation adjustments.

For additional information regarding our derivative instruments, see notes 5 and 6 to our consolidated financial statements.

Foreign currency transaction gains (losses), net

Our foreign currency transaction gains or losses primarily result from the remeasurement of monetary assets and liabilities that are denominated in currencies other than our functional currency. Unrealized foreign currency transaction gains or losses are computed based on period-end exchange rates and are non-cash in nature until such time as the amounts are settled. The details of our foreign currency transaction losses, net, are as follows:

	Year ended December 31,	
	2019	2018
	in millions	
U.S. dollar-denominated debt	€ (90.5)	€ (232.5)
Restricted cash and cash denominated in a currency other than our functional currency	0.9	0.4
Other	(0.4)	(0.4)
Total	€ (90.0)	€ (232.5)

Gain on debt modification and extinguishment, net

We recognized a gain on debt modification and extinguishment, net, of €32.2 million and nil during 2019 and 2018, respectively. The gain in 2019 is due to the net effect of the write-off of (i) fair value adjustments of €84.7 million, (ii) €49.1 million of unamortized premiums and (iii) €3.4 million of deferred financing costs. For additional information concerning our gain on debt modification and extinguishment, net, see note 8 to our consolidated financial statements.

Income tax benefit

We recognized an income tax benefit of €38.0 million and €318.4 million during 2019 and 2018, respectively.

The income tax benefit recognized during 2019 differs from the expected income tax benefit of €114.4 million (based on the enacted Dutch income tax rate for 2019 of 25.0%), primarily due to an increase in net deferred tax liabilities due to enacted changes in tax law during 2019.

The income tax benefit during 2018 differs from the expected income tax benefit of €98.9 million (based on the Dutch income tax rate of 25.0%), primarily due to the positive impact of (i) a reduction in the net deferred tax liabilities due to enacted changes in tax law during the fourth quarter of 2018, and (ii) tax benefits associated with technology innovation.

For additional information regarding our income taxes, see note 10 to our consolidated financial statements.

Net loss

During 2019 and 2018, we reported net losses of €419.7 million and €77.5 million, respectively, including (i) operating income of €106.4 million and €110.6 million, respectively, (ii) net non-operating expense of €564.1 million and €506.5 million, respectively, and (iii) income tax benefit of €38.0 million and €318.4 million, respectively.

Gains or losses associated with (i) changes in the fair values of derivative instruments, (ii) movements in foreign currency exchange rates, and (iii) the disposition of assets are subject to a high degree of volatility and, as such, any gains from these sources do not represent a reliable source of income. In the absence of significant gains in the future from these sources or from other non-operating items, our ability to achieve earnings from operations is largely dependent on our ability to increase our OCF to a level that more than offsets the aggregate amount of our (a) share-based compensation expense, (b) related-party fees pursuant to the JV Service Agreements, (c) depreciation and amortization, (d) impairment, restructuring and other operating items, net, (e) interest expense, (f) other net non-operating expenses, and (g) income tax expenses.

Subject to the limitations included in our various debt instruments, we expect to maintain our debt at current levels relative to our Covenant EBITDA, as defined and described in note 11. As a result, we expect that we will continue to report significant levels of interest expense for the foreseeable future. For information concerning our expectations with respect to trends that may affect our operating results in future periods, see the discussion under *Overview* above.

2018 compared to 2017

For information regarding the discussion and analysis of our results of operations during 2018, as compared to 2017, see *Management's Discussion and Analysis of Financial Condition* and *Results of Operations* included in our 2018 annual report.

Liquidity and Capital Resources

Sources and Uses of Cash

As a holding company, VodafoneZiggo's primary assets are its investments in consolidated subsidiaries. As further described in note 8 to our consolidated financial statements, the terms of the instruments governing the indebtedness of certain of these subsidiaries may restrict our ability to access the assets of these subsidiaries. The ability to access the liquidity of our subsidiaries may also be limited by tax and legal considerations and other factors. At December 31, 2019, most of our €204.3 million of consolidated cash was held by our subsidiaries.

Liquidity of VodafoneZiggo

Our sources of liquidity at the parent level include, subject to the restrictions noted above, proceeds in the form of distributions or loans from our subsidiaries. It is the intention of the Shareholders of the VodafoneZiggo JV, that VodafoneZiggo will be a self-funding company capable of financing its activities on a stand-alone basis without recourse to either Shareholder. No assurance can be given that funding from our subsidiaries or external sources would be available on favorable terms, or at all.

VodafoneZiggo's corporate liquidity requirements include corporate general and administrative expenses and fees associated with the JV Service Agreements. From time to time, VodafoneZiggo may also require cash in connection with (i) the repayment of its related-party debt and interest, (ii) the funding of dividends or distributions pursuant to the Shareholders Agreement, which requires VodafoneZiggo to distribute all unrestricted cash (as defined in the Shareholders Agreement) to the Shareholders every two months (subject to VodafoneZiggo maintaining a minimum amount of cash and complying with the terms of its financing arrangements), (iii) the satisfaction of contingent liabilities, (iv) acquisitions and other investment opportunities and (v) income tax payments.

Liquidity of our Subsidiaries

In addition to cash, the primary sources of liquidity of our operating subsidiaries are cash provided by operations and, in the case of Ziggo B.V. and certain of its subsidiaries, any borrowing availability under the Revolving Facilities.

The liquidity of our operating subsidiaries generally is used to fund property and equipment additions, debt service requirements, and other liquidity requirements that may arise from time to time. For additional information regarding our consolidated cash flows, see the discussion under *Consolidated Statements of Cash Flows* below. Our subsidiaries may also require funding in connection with (i) the repayment of amounts due under the third-party and related-party debt instruments of our subsidiaries, (ii) acquisitions and other investment opportunities, (iii) distributions or loans to VodafoneZiggo (and ultimately to the Shareholders of the VodafoneZiggo JV) and (iv) the satisfaction of contingencies. No assurance can be given that any external funding would be available to our subsidiaries on favorable terms, or at all.

Capitalization

At December 31, 2019, our outstanding third-party debt and finance lease obligations aggregated €11.1 billion, including €1.2 billion that is classified as current in our consolidated balance sheet and €9.9 billion that is not due until 2022 or thereafter. For additional information regarding our current debt maturities, see note 8 to our consolidated financial statements.

As further discussed in note 5 to our consolidated financial statements, we use derivative instruments to mitigate foreign currency and interest rate risk associated with our debt instruments.

Our ability to service or refinance our debt and to maintain compliance with the leverage covenants in our credit agreements and indentures is dependent primarily on our ability to maintain or increase our Covenant EBITDA and to achieve adequate returns on our property and equipment additions and acquisitions. Pursuant to the Shareholders Agreement, we expect to maintain a leverage ratio between 4.5 and 5.0 times Covenant EBITDA. In addition, our ability to obtain additional debt financing is limited by the leverage covenants contained in the various debt instruments of our subsidiaries. In this regard, if our Covenant EBITDA were to decline, we could be required to repay or limit our borrowings under the Credit Facility in order to maintain compliance with applicable covenants. No assurance can be given that we would have sufficient sources of liquidity, or that any external funding would be available on favorable terms, or at all, to fund any such required repayment. We do not anticipate any instances of non-compliance with respect to any of our subsidiaries' debt covenants that would have a material adverse impact on our liquidity during the next 12 months.

Notwithstanding our negative working capital position at December 31, 2019, we believe that we have sufficient resources to repay or refinance the current portion of our debt and finance lease obligations and to fund our foreseeable liquidity requirements during the next 12 months. However, as our maturing debt grows in later years, we anticipate that we will seek to refinance or otherwise extend our debt maturities. No assurance can be given that we will be able to complete these refinancing transactions or otherwise extend our debt maturities. In this regard, it is not possible to predict how political and economic conditions, sovereign debt concerns or any adverse regulatory developments could impact the credit markets we access and, accordingly, our future liquidity and financial position. However, (i) the financial failure of any of our counterparties could (a) reduce amounts available under committed credit facilities and (b) adversely impact our ability to access cash deposited with any failed financial institution and (ii) tightening of the credit markets could adversely impact our ability to access debt financing on favorable terms, or at all. In addition, sustained or increased competition, particularly in combination with adverse economic or regulatory developments, could have an unfavorable impact on our cash flows and liquidity.

All of our debt and finance lease obligations at December 31, 2019 have been borrowed or incurred by our subsidiaries.

For additional information regarding our debt and finance lease obligations, see note 8 and 9, respectively, to our consolidated financial statements.

Consolidated Statements of Cash Flows

Consolidated Statements of Cash Flows – 2019 compared to 2018

Summary. Our consolidated statements of cash flows for 2019 and 2018 are summarized as follows:

	Year ended December 31, 2019	Year ended December 31, 2018	Change
	in millions		
Net cash provided by operating activities	€ 1,311.2	€ 1,143.2	€ 168.0
Net cash used by investing activities	(317.4)	(202.0)	(115.4)
Net cash used by financing activities	(1,029.2)	(976.9)	(52.3)
Effect of exchange rate changes on cash and cash equivalents and restricted cash	0.9	0.4	0.5
Net decrease in cash and cash equivalents and restricted cash	€ (34.5)	€ (35.3)	€ 0.8

Operating Activities. The increase in net cash provided by our operating activities is primarily attributable to an increase in the cash provided by our OCF and related working capital changes.

Investing Activities. The increase in net cash used by our investing activities is primarily attributable to higher capital expenditures, as a result of a decrease in assets acquired through vendor financing and finance lease arrangements.

The capital expenditures that we report in our consolidated statements of cash flows do not include amounts that our company has financed under vendor financing or finance lease arrangements. Instead, these amounts are reflected as non-cash additions to our property and equipment when the underlying assets are delivered and as repayments of debt when the principal is repaid. In this discussion, we refer to (i) our capital expenditures as reported in our consolidated statements of cash flows, which exclude amounts financed under vendor financing or finance lease arrangements, and (ii) our total property and equipment additions, which include our capital expenditures on an accrual basis and amounts financed under capital-related vendor financing or finance lease arrangements. For further details regarding our property and equipment additions and our debt, see notes 7 and 8, respectively, to our consolidated financial statements.

A reconciliation of our property and equipment additions to our capital expenditures as reported in our consolidated statements of cash flows is set forth below:

	Year ended December 31, 2019	Year ended December 31, 2018
	in millions	
Property and equipment additions	€ 793.2	€ 836.8
Assets acquired under capital-related vendor financing arrangements	(546.5)	(572.7)
Assets acquired under finance leases	(5.2)	(23.5)
Changes in current liabilities related to capital expenditures	79.4	(27.1)
Capital expenditures	€ 320.9	€ 213.5

The decrease in our property and equipment additions is primarily attributable to lower capacity and baseline expenditure, partially offset by an increase in new build expenditure related to expansion of our fixed-line network and customer premises equipment expenditure. During 2019 and 2018, our property and equipment additions represented 20.1% and 21.5% of our revenue, respectively.

Financing Activities. The increase in net cash used by our financing activities is primarily attributable to the net effect of (i) a decrease in cash used of €105.0 million related to lower distributions to VodafoneZiggo Group Holding, and ultimately to Liberty Global and Vodafone, (ii) an increase of €87.5 million related to higher net repayments of third-party debt and (iii) an increase in cash used of €68.3 million due to higher financing costs as a result of refinancing transactions during 2019.

Consolidated Statements of Cash Flows – 2018 compared to 2017

For information regarding the consolidated statements of cash flows for 2018, as compared to 2017, see *Management's Discussion and Analysis of Financial Condition and Results of Operations* included in our 2018 annual report.

Contractual Commitments

The following table sets forth the euro equivalents of our commitments as of December 31, 2019:

	Payments due during:						
	2020	2021	2022	2023	2024	Thereafter	Total
				in millions			
Debt (excluding interest):							
Third-party	€1,146.0	€ —	€ 186.0	€ —	€ 1.7	€ 9,787.8	€11,121.5
Related-party	—	—	—	—	—	1,400.0	1,400.0
Finance leases	8.6	6.1	3.7	1.6	0.7	0.1	20.8
Operating leases	80.1	76.4	73.5	69.8	66.9	180.6	547.3
JV Service Agreements (a)	152.8	111.1	111.1	32.2	30.0	30.0	467.2
Purchase commitments	185.1	132.0	127.7	1.3	1.1	1.6	448.8
Programming commitments	120.0	67.8	15.0	4.5	—	—	207.3
Network and connectivity commitments	18.4	15.4	8.5	0.2	—	—	42.5
Other commitments	23.3	20.8	12.7	4.3	1.8	6.1	69.0
Total (b)	€1,734.3	€ 429.6	€ 538.2	€ 113.9	€ 102.2	€11,406.2	€14,324.4
Projected cash interest payments on debt and finance lease obligations (c):							
Third-party	€ 438.8	€ 439.8	€ 439.4	€ 439.2	€ 439.1	€ 962.8	€ 3,159.1
Related-party	79.0	78.8	78.8	78.8	79.0	236.1	630.5
Total	€ 517.8	€ 518.6	€ 518.2	€ 518.0	€ 518.1	€ 1,198.9	€ 3,789.6

(a) Amounts represent fixed minimum charges from Liberty Global and Vodafone pursuant to the JV Service Agreements. In addition to the fixed minimum charges, the JV Service Agreements provide for certain JV Services to be charged to us based upon usage of the services received. The fixed minimum charges set forth in the table above exclude fees for the usage-based services as these fees will vary from period to period. Accordingly, we expect to incur charges in addition to those set forth in the table above for usage-based services. For additional information concerning the JV Service Agreements, see note 11 to our consolidated financial statements.

(b) The commitments included in this table do not reflect any liabilities that are included in our December 31, 2019 consolidated balance sheet other than debt and finance and operating lease obligations.

(c) Amounts include interest payments on third-party debt and finance lease obligations, as well as estimated interest payments on the Liberty Global Note and the Vodafone Note. Amounts related to third-party debt are based on interest rates, interest payment dates, commitment fees and contractual maturities in effect as of December 31, 2019. These amounts are presented for illustrative purposes only and will likely differ from the actual cash payments required in future periods. In addition, the amounts presented do not include the impact of our interest rate derivative contracts, deferred financing costs or original issue premiums or discounts.

For additional information concerning our debt and finance lease obligations, see note 8 to our consolidated financial statements. For additional information concerning the Liberty Global Note and the Vodafone Note, see note 11 to our consolidated financial statements. For information concerning our commitments, see note 13 to our consolidated financial statements.

In addition to the commitments set forth in the table above, we have commitments under (i) derivative instruments and (ii) multiemployer benefit plans, pursuant to which we expect to make payments in future periods. For information regarding projected cash flows associated with these derivative instruments, see *Projected Cash Flows Associated with Derivative Instruments* below. For information regarding our derivative instruments, including the net cash paid or received in connection with these instruments during 2019 and 2018, see note 5 to our consolidated financial statements.

Projected Cash Flows Associated with Derivative Instruments

The following table provides information regarding the projected cash flows associated with our derivative instruments. The euro equivalents presented below are based on interest rates and exchange rates that were in effect as of December 31, 2019. These amounts are presented for illustrative purposes only and will likely differ from the actual cash receipts/payments in future periods. For additional information regarding our derivative instruments, including our counterparty credit risk, see note 5 to our consolidated financial statements.

	Receipts (payments) due during:						
	2020	**2021**	**2022**	**2023**	**2024**	**Thereafter**	**Total**
				in millions			
Projected derivative cash receipts (payments), net:							
Interest-related (a)	€ (4.3)	€ 16.3	€ 16.4	€ 13.4	€ 10.5	€ (151.0)	€ (98.7)
Principal-related (b)	—	—	—	17.2	—	250.1	267.3
Total	€ (4.3)	€ 16.3	€ 16.4	€ 30.6	€ 10.5	€ 99.1	€ 168.6

(a) Includes the interest-related cash flows of our cross-currency and interest rate swap contracts.

(b) Includes the principal-related cash flows of our cross-currency swap contracts.

Critical Accounting Policies, Judgments, and Estimates

In connection with the preparation of our consolidated financial statements, we make estimates and assumptions that affect the reported amounts of assets and liabilities, revenue and expenses and related disclosure of contingent assets and liabilities. Critical accounting policies are defined as those policies that are reflective of significant judgments, estimates and uncertainties, which would potentially result in materially different results under different assumptions and conditions. We believe the following accounting policies are critical in the preparation of our consolidated financial statements because of the judgment necessary to account for these matters and the significant estimates involved, which are susceptible to change:

- Impairment of property and equipment and intangible assets (including goodwill);
- Costs associated with construction and installation activities;
- Fair value measurements; and
- Income tax accounting.

For additional information concerning our significant accounting policies, see note 3 to our consolidated financial statements.

Impairment of Property and Equipment and Intangible Assets

Carrying Value. The aggregate carrying value of our property and equipment and intangible assets (including goodwill) that was held for use comprised 92.2% of our total assets at December 31, 2019.

When circumstances warrant, we review the carrying amounts of our property and equipment and our intangible assets (other than goodwill) to determine whether such carrying amounts continue to be recoverable. Such changes in circumstance may include (i) an expectation of a sale or disposal of a long-lived asset or asset group, (ii) an adverse change in legal factors or business climate in the market in which we operate, and (iii) operating or cash flow losses. For purposes of impairment testing, long-lived assets are grouped at the lowest level for which cash flows are largely independent of other assets and liabilities, generally at or below the reporting unit level (see below). If the carrying amount of the asset or asset group is greater than the expected undiscounted cash flows to be generated by such asset or asset group, an impairment adjustment is recognized. Such adjustment is measured by the amount that the carrying value of such asset or asset group exceeds its fair value. We generally measure fair value by considering (a) sale prices for similar assets, (b) discounted estimated future cash flows using an appropriate discount rate and/or (c) estimated replacement cost. Assets to be disposed of are recorded at the lower of their carrying amount or fair value less costs to sell.

We evaluate goodwill for impairment at least annually on October 1 and whenever facts and circumstances indicate that their carrying amounts may not be recoverable. For impairment evaluations with respect to goodwill, we first make a qualitative assessment to determine if the goodwill may be impaired. If it is more-likely-than-not that the reporting unit's fair value is less than its carrying value, we then compare the fair value of the reporting unit to its respective carrying amount. Any excess of the carrying amount over the fair value would be charged to operations as an impairment loss. A reporting unit is an operating segment or one level below an operating segment (referred to as a "component").

When required, considerable management judgment is necessary to estimate the fair value of reporting units and underlying long-lived and indefinite-lived assets. We typically determine fair value using an income-based approach (discounted cash flows) based on assumptions in our long-range business plans and, in some cases, a combination of an income-based approach and a market-based approach. With respect to our discounted cash flow analysis used in the income-based approach, the timing and amount of future cash flows under these business plans require estimates of, among other items, subscriber growth and retention rates, rates charged per product, expected gross margins and OCF margins (OCF divided by revenue), and expected property and equipment additions. The development of these cash flows, and the discount rate applied to the cash flows, is subject to inherent uncertainties, and actual results could vary significantly from such estimates. Our determination of the discount rate is based on a weighted average cost of capital approach, which uses a market participant's cost of equity and after-tax cost of debt and reflects the risks inherent in the cash flows.

During the three years ended December 31, 2019, we did not record any significant impairment charges with respect to our property and equipment and intangible assets. For additional information regarding our long-lived assets, see note 7 to our consolidated financial statements.

If, among other factors, the adverse impacts of economic, competitive, regulatory or other factors were to cause our results of operations or cash flows to be worse than anticipated, which would result in a significant decrease in our enterprise value, we could conclude in future periods that impairment charges are required in order to reduce the carrying values of our goodwill and, to a lesser extent, other long-lived assets. Any such impairment charges could be significant.

Costs Associated with Construction and Installation Activities

We capitalize costs associated with the construction of new cable and mobile transmission and distribution facilities and the installation of new cable services. Installation activities that are capitalized include (i) the initial connection (or drop) from our cable system to a customer location, (ii) the replacement of a drop, and (iii) the installation of equipment for additional services, such as digital cable, telephone or broadband internet service. The costs of other customer-facing activities, such as reconnecting customer locations where a drop already exists, disconnecting customer locations, and repairing or maintaining drops, are expensed as incurred.

The nature and amount of labor and other costs to be capitalized with respect to construction and installation activities involves significant judgment. In addition to direct external and internal labor and materials, we also capitalize other costs directly attributable to our construction and installation activities, including dispatch costs, quality-control costs, vehicle-related costs, and certain warehouse-related costs. The capitalization of these costs is based on time sheets, time studies, standard costs, call tracking systems, and other verifiable means that directly link the costs incurred with the applicable capitalizable activity. We continuously monitor the appropriateness of our capitalization policies and update the policies when necessary to respond to changes in facts and circumstances, such as the development of new products and services, and changes in the manner that installations or construction activities are performed.

Fair Value Measurements

GAAP provides guidance with respect to the recurring and nonrecurring fair value measurements and for a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value into three broad levels. Level 1 inputs are quoted market prices in active markets for identical assets or liabilities that the reporting entity has the ability to access at the measurement date. Level 2 inputs are inputs other than quoted market prices included within Level 1 that are observable for the asset or liability, either directly or indirectly. Level 3 inputs are unobservable inputs for the asset or liability.

Recurring Valuations. We perform recurring fair value measurements with respect to our derivative instruments. We use cash flow valuation models to determine the fair values of our interest rate and foreign currency derivative instruments. For a detailed discussion of the inputs we use to determine the fair value of our derivative instruments, see note 7 to our consolidated financial statements. See also note 6 to our consolidated financial statements for information concerning our derivative instruments.

Changes in the fair values of our derivative instruments have had, and we believe will continue to have, a significant and volatile impact on our results. During 2019, 2018 and 2017, we recognized net gains (losses) of €70.1 million, €295.8 million and (€637.0 million), respectively, attributable to changes in the fair values of these items.

As further described in note 6 to our consolidated financial statements, actual amounts received or paid upon the settlement or disposition of these instruments may differ materially from the recorded fair values at December 31, 2019.

Nonrecurring Valuations. Our nonrecurring valuations are primarily associated with (i) the application of acquisition accounting, (ii) impairment assessments, and (iii) fair value assessments, each of which require that we make fair value determinations as of the applicable valuation date. In making these determinations, we are required to make estimates and assumptions that affect the recorded amounts, including, but not limited to, expected future cash flows, market comparables and discount rates, remaining useful lives of long-lived assets, replacement or reproduction costs of property and equipment and the amounts to be recovered in future periods from acquired net operating losses and other deferred tax assets. To assist us in making these fair value determinations, we may engage third-party valuation specialists. Our estimates in this area impact, among other items, the amount of depreciation and amortization, impairment charges and income tax expense or benefit that we report. Our estimates of fair value are based upon assumptions we believe to be reasonable, but which are inherently uncertain. A significant portion of our long-lived assets were initially recorded through the application of acquisition accounting and all of our long-lived assets are subject to impairment assessments. For additional information see note 6 to our consolidated financial statements. For information regarding the long-lived assets, see note 7 to our consolidated financial statements.

Income Tax Accounting

Tax laws in the Netherlands are subject to varied interpretation, and many tax positions we take may be subject to uncertainty regarding whether the position will be ultimately sustained after review by the relevant tax authority. We recognize the financial statement effects of a tax position when it is more-likely-than-not, based on technical merits, that the position will be sustained upon examination. The determination of whether the tax position meets the more-likely-than-not threshold requires a facts-based judgment using all information available.

We are required to estimate the amount of tax payable or refundable for the current year and the deferred tax assets and liabilities for the future tax consequences attributable to differences between the financial statement carrying amounts and income tax basis of assets and liabilities and the expected benefits of utilizing net operating loss and tax credit carryforwards, using enacted tax rates in effect for each taxing jurisdiction in which we operate for the year in which those temporary differences are expected to be recovered or settled. This process requires our management to make assessments regarding the timing and probability of the ultimate tax impact of such items.

Net deferred tax assets are reduced by a valuation allowance if we believe it more-likely-than-not such net deferred tax assets will not be realized. Establishing or reducing a tax valuation allowance requires us to make assessments about the timing of future events, including the probability of expected future taxable income and available tax planning strategies. The actual amount of deferred income tax benefits realized in future periods will likely differ from the net deferred tax assets reflected in our December 31, 2019 consolidated balance sheet due to, among other factors, possible future changes in income tax law or interpretations thereof in the jurisdictions in which we operate and differences between estimated and actual future taxable income. Any such factors could have a material effect on our current and deferred tax positions as reported in our consolidated financial statements. A high degree of judgment is required to assess the impact of possible future outcomes on our current and deferred tax positions.

For additional information concerning our income taxes, see note 10 to our consolidated financial statements.

INDEPENDENT AUDITOR'S REPORT

The Board of Directors
VodafoneZiggo Group B.V.:

Report on the Accompanying Consolidated Financial Statements

Our Opinion

We have audited the consolidated financial statements 2019, of VodafoneZiggo Group B.V., based in Utrecht, the Netherlands.

In our opinion the accompanying consolidated financial statements give a true and fair view of the financial position of VodafoneZiggo Group B.V. as at December 31, 2019 and the result of its operations and its cash flows for the year ended on December 31, 2019 in accordance with U.S. generally accepted accounting principles.

The consolidated financial statements comprise:

1. the consolidated balance sheet as at December 31, 2019;
2. the consolidated statement of operations, owner's equity and cash flows for the year ended on December 31, 2019; and
3. the related notes to the consolidated financial statements.

Basis for Our Opinion

We conducted our audit in accordance with Dutch law, including the Dutch Standards on Auditing. Our responsibilities under those standards are further described in the 'Our responsibilities for the audit of the consolidated financial statements' section of our report.

We are independent of VodafoneZiggo Group B.V. in accordance with the 'Verordening inzake de onafhankelijkheid van accountants bij assurance-opdrachten' (ViO, Code of Ethics for Professional Accountants, a regulation with respect to independence) and other relevant independence regulations in the Netherlands. Furthermore, we have complied with the 'Verordening gedrags- en beroepsregels accountants' (VGBA, Dutch Code of Ethics).

We believe the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Report on the Other Information Included in the Annual Report

In addition to the consolidated financial statements and our auditor's report thereon, the annual report contains other information that consists of:

- Forward-looking Statements;
- Business; and
- Management's Discussion and Analysis of Financial Condition and Results of Operations.

Based on the following procedures performed, we conclude that other information is consistent with the consolidated financial statements and does not contain material misstatements.

We have read the other information. Based on our knowledge and understanding obtained through our audit of the consolidated financial statements or otherwise, we have considered whether the other information contains material misstatements.

By performing these procedures, we comply with the requirements of the Dutch Standard 720. The scope of the procedures performed is less than the scope of those performed in our audit of the consolidated financial statements.

The Board of Directors is responsible for the preparation of the other information.

Description of the Responsibilities for the Consolidated Financial Statements

Responsibilities of the Board of Directors for the Consolidated Financial Statements

The Board of Directors is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with U.S. generally accepted accounting principles. Furthermore, the Board of Directors is responsible for such internal control as the Board of Directors determines is necessary to enable the preparation of the consolidated financial statements that are free from material misstatement, whether due to errors or fraud.

As part of the preparation of the consolidated financial statements, the Board of Directors is responsible for assessing the Company's ability to continue as a going concern. Based on the financial reporting framework mentioned, the Board of Directors should prepare the consolidated financial statements using the going concern basis of accounting unless the Board of Directors either intends to liquidate the Company or to cease operations, or has no realistic alternative but to do so. The Board of Directors should disclose events and circumstances that may cast significant doubt on the Company's ability to continue as a going concern in the consolidated financial statements.

O*ur Responsibilities for the Audit of the Consolidated Financial Statements*

Our objective is to plan and perform the audit engagement in a manner that allows us to obtain sufficient and appropriate audit evidence for our opinion.

Our audit has been performed with a high, but not absolute, level of assurance, which means we may not have detected all material errors and fraud during our audit.

Misstatements can arise from fraud or errors and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the consolidated financial statements. The materiality affects the nature, timing and extent of our audit procedures and the evaluation of the effect of identified misstatements on our opinion.

A further description of our responsibilities for the audit of the consolidated financial statements is located at the website of de 'Koninklijke Nederlandse Beroepsorganisatie van Accountants' (NBA, Royal Netherlands Institute of Chartered Accountants) at: http://www.nba.nl/ENG_algemeen_01. This description forms part of our independent auditor's report.

Amstelveen, the Netherlands
March 13, 2020
KPMG Accountants N.V.
C.A. Bakker RA

VODAFONEZIGGO GROUP B.V.

CONSOLIDATED BALANCE SHEETS

	December 31,			
	2019		2018	
	in millions			
ASSETS				
Current assets:				
Cash and cash equivalents	€	204.3	€	239.4
Trade receivables, net		192.4		206.2
Related-party receivables (note 11)		29.3		18.1
Prepaid expenses		15.6		46.4
Inventory held for sale, net		30.6		37.5
Derivative instruments (note 5)		78.1		74.5
Contract assets (note 4)		166.1		169.8
Other current assets, net		101.5		93.3
Total current assets		817.9		885.2
Property and equipment, net (note 7)		5,090.5		5,320.9
Goodwill (note 7)		7,375.5		7,375.5
Intangible assets subject to amortization, net (note 7)		5,946.9		6,554.1
Long-term contract assets (note 3)		54.7		55.0
Other assets, net (notes 4, 6 and 9)		686.5		116.8
Total assets	€	19,972.0	€	20,307.5

The accompanying notes are an integral part of these consolidated financial statements.

VODAFONEZIGGO GROUP B.V.

CONSOLIDATED BALANCE SHEETS — (Continued)

	December 31, 2019	December 31, 2018
	in millions	
LIABILITIES AND OWNER'S EQUITY		
Current liabilities:		
Accounts payable (note 11)	€ 328.1	€ 395.4
Accrued and other current liabilities:		
Third-party (note 12)	362.1	313.0
Related-party (note 11)	36.4	2.4
Deferred revenue and advance payments from subscribers and others (note 4)	208.1	203.6
VAT payable	131.2	107.8
Derivative instruments (note 5)	73.4	71.9
Accrued interest (note 8)	138.5	155.9
Current portion of debt and finance lease obligations (notes 8 and 9):		
Third-party	1,154.1	1,005.7
Related-party (note 11)	—	200.2
Total current liabilities	2,431.9	2,455.9
Long-term debt and finance lease obligations (notes 8 and 9):		
Third-party	9,929.5	9,946.2
Related-party (note 11)	1,400.0	1,400.0
Deferred tax liabilities (note 10)	1,032.3	1,070.2
Other long-term liabilities (notes 2, 4, 5 and 12)	921.5	465.1
Total liabilities	15,715.2	15,337.4
Commitments and contingencies (notes 5, 11 and 13)		
Total owner's equity (notes 2 and 3)	4,256.8	4,970.1
Total liabilities and owner's equity	€ 19,972.0	€ 20,307.5

The accompanying notes are an integral part of these consolidated financial statements.

VODAFONEZIGGO GROUP B.V.

CONSOLIDATED STATEMENTS OF OPERATIONS

	Year ended December 31,		
	2019	2018	2017
		in millions	
Revenue (notes 2, 3, 11 and 14)	€ 3,937.1	€ 3,895.4	€ 3,995.3
Operating costs and expenses (exclusive of depreciation and amortization, shown separately below):			
Programming and other direct costs of services (note 11)	854.6	858.4	874.4
Other operating (note 11)	471.2	479.3	478.1
Selling, general and administrative (**SG&A**) (notes 2, 3 and 11)	614.6	631.7	712.9
Charges for JV Services (note 11)	222.6	227.7	243.6
Depreciation and amortization	1,627.5	1,552.0	1,486.1
Impairment, restructuring and other operating items, net (note 12)	40.2	35.7	7.6
	3,830.7	3,784.8	3,802.7
Operating income	106.4	110.6	192.6
Non-operating income (expense):			
Interest expense:			
Third-party	(488.3)	(473.1)	(463.0)
Related-party (note 11)	(89.9)	(101.0)	(112.6)
Realized and unrealized gains (losses) on derivative instruments, net (note 5)	70.1	295.8	(637.0)
Foreign currency transaction gains (losses), net	(90.0)	(232.5)	666.8
Gains on debt modification and extinguishment, net (note 8)	32.2	—	15.2
Other income, net	1.8	4.3	16.5
	(564.1)	(506.5)	(514.1)
Loss before income taxes	(457.7)	(395.9)	(321.5)
Deferred tax benefit (notes 2, 3 and 10)	38.0	318.4	91.7
Net loss	€ (419.7)	€ (77.5)	€ (229.8)

The accompanying notes are an integral part of these consolidated financial statements.

VODAFONEZIGGO GROUP B.V.

CONSOLIDATED STATEMENT OF OWNER'S EQUITY

	Total owner's equity
	in millions
Balance at January 1, 2017	€ 5,939.1
Net loss	(229.8)
Distributions to VodafoneZiggo Group Holding (note 11)	(592.0)
Share-based compensation (note 11)	5.3
Balance at December 31, 2017	5,122.6
Accounting change (note 2)	321.0
Balance at January 1, 2018	5,443.6
Net loss	(77.5)
Distributions to VodafoneZiggo Group Holding (note 11)	(400.0)
Share-based compensation (note 11)	2.8
Other	1.2
Balance at December 31, 2018	4,970.1
Accounting changes (note 2)	0.2
Balance at January 1, 2019	4,970.3
Net loss	(419.7)
Distributions to VodafoneZiggo Group Holding (note 11)	(295.0)
Share-based compensation (note 11)	1.4
Other	(0.2)
Balance at December 31, 2019	€ 4,256.8

The accompanying notes are an integral part of these consolidated financial statements.

VODAFONEZIGGO GROUP B.V.

CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year ended December 31,		
	2019	2018	2017
		in millions	
Cash flows from operating activities:			
Net loss	€ (419.7)	€ (77.5)	€ (229.8)
Adjustments to reconcile net loss to net cash provided by operating activities:			
Share-based compensation expense	1.4	2.8	5.3
Depreciation and amortization	1,627.5	1,552.0	1,486.1
Impairment, restructuring and other operating items, net	40.2	35.7	7.6
Amortization of debt premiums, deferred financing costs and other non-cash interest	(4.3)	(11.5)	(11.4)
Realized and unrealized losses (gains) on derivative instruments, net	(70.1)	(295.8)	637.0
Foreign currency transaction losses (gains), net	90.0	232.5	(666.8)
Gains on debt modification and extinguishment of debt, net	(32.2)	—	(15.2)
Deferred income tax benefit	(38.0)	(318.4)	(91.7)
Changes in operating assets and liabilities	116.4	23.4	110.0
Net cash provided by operating activities	1,311.2	1,143.2	1,231.1
Cash flows from investing activities:			
Capital expenditures	(320.9)	(213.5)	(495.2)
Other investing activities, net	3.5	11.5	4.6
Net cash used by investing activities	€ (317.4)	€ (202.0)	€ (490.6)

The accompanying notes are an integral part of these consolidated financial statements.

VODAFONEZIGGO GROUP B.V.

CONSOLIDATED STATEMENTS OF CASH FLOWS — (Continued)

	Year ended December 31, 2019	2018	2017
		in millions	
Cash flows from financing activities:			
Repayments of third-party debt	€ (2,105.6)	€ (962.9)	€ (890.8)
Borrowings of third-party debt	1,642.3	587.1	1,031.1
Distributions to VodafoneZiggo Group Holding	(295.0)	(400.0)	(3,436.0)
Related-party payments, net	(200.2)	(200.8)	(201.6)
Payment of financing costs and debt premiums	(68.3)	—	(21.4)
Net cash received (paid) related to derivative instruments	(0.9)	0.9	(158.8)
Collection of VAT receivable	—	—	152.0
Other financing activities, net	(1.5)	(1.2)	0.4
Net cash used by financing activities	(1,029.2)	(976.9)	(3,525.1)
Effect of exchange rate changes on cash and cash equivalents and restricted cash	0.9	0.4	19.1
Net decrease in cash and cash equivalents and restricted cash	(34.5)	(35.3)	(2,765.5)
Cash and cash equivalents and restricted cash:			
Beginning of year	241.6	276.9	3,042.4
End of year	€ 207.1	€ 241.6	€ 276.9
Cash paid for third-party interest	€ 509.7	€ 484.3	€ 433.4
Cash paid for related-party interest	€ 89.9	€ 101.0	€ 112.6
Details of end of period cash and cash equivalents and restricted cash:			
Cash and cash equivalents	€ 204.3	€ 239.4	€ 274.5
Restricted cash (included in other current assets)	2.8	2.2	2.4
Total cash and cash equivalents and restricted cash	€ 207.1	€ 241.6	€ 276.9

The accompanying notes are an integral part of these consolidated financial statements.

(1) Basis of Presentation

VodafoneZiggo Group B.V. (**VodafoneZiggo**) provides video, broadband internet, fixed-line telephony, and mobile services to residential and business customers in the Netherlands. The primary subsidiaries of VodafoneZiggo include (i) VodafoneZiggo Employment B.V. (**VodafoneZiggo Employment) (**formerly known as Ziggo Holding B.V.) and its subsidiaries, including Ziggo Services B.V. (**Ziggo Services**), and (ii) Vodafone Libertel B.V. (**Vodafone NL**). In these notes, the terms "we," "our," "our company", and "us" may refer, as the context requires, to VodafoneZiggo or collectively to VodafoneZiggo and its subsidiaries.

On February 15, 2016, Liberty Global Europe Holding B.V., a corporation organized under the laws of the Netherlands and a wholly-owned subsidiary of Liberty Global plc (**Liberty Global**), and Vodafone International Holdings B.V., a corporation organized under the laws of the Netherlands and a wholly-owned subsidiary of Vodafone Group Plc (**Vodafone**) agreed to form a 50:50 joint venture (the **VodafoneZiggo JV**), pursuant to a Contribution and Transfer Agreement. On December 31, 2016, the formation of the VodafoneZiggo JV was completed (the **JV Transaction**) pursuant to which (i) VodafoneZiggo Group Holding B.V. (**VodafoneZiggo Group Holding**) became 50% owned by each of Liberty Global and Vodafone (each a **Shareholder**), (ii)VodafoneZiggo and its subsidiaries were contributed into the VodafoneZiggo JV and became wholly-owned by VodafoneZiggo Group Holding, and (iii) Vodafone NL and its subsidiaries were contributed into the VodafoneZiggo JV and became wholly-owned by VodafoneZiggo.

As of December 31, 2019, each Shareholder has the right to initiate an initial public offering (**IPO**) of the VodafoneZiggo JV , with the opportunity for the other Shareholder to sell shares in the IPO on a pro rata basis. Subject to certain exceptions, the Shareholders Agreement prohibits transfers of interests in the VodafoneZiggo JV to third parties until December 31, 2020. After December 31, 2020, each Shareholder will be able to initiate a sale of all of its interest in the VodafoneZiggo JV to a third party and, under certain circumstances, initiate a sale of the entire VodafoneZiggo JV; subject, in each case, to a right of first offer in favor of the other Shareholder.

Our functional currency is the euro (**€**). Unless otherwise indicated, convenience translations into euros are calculated as of December 31, 2019.

These consolidated financial statements reflect our consideration of the accounting and disclosure implications of subsequent events through March 13, 2020, the date of issuance.

(2) Accounting Changes and Recent Accounting Pronouncements

Accounting Changes

ASU 2016-02

In February 2016, the Financial Accounting Standards Board (**FASB**) issued Accounting Standards Update (**ASU**) No. 2016-02, *Leases* (**ASU 2016-02)**, which, for most leases, results in lessees recognizing right-of-use (**ROU**) assets and lease liabilities on the balance sheet. ASU 2016-02, as amended by ASU No. 2018-11, *Targeted Improvements*, requires lessees and lessors to recognize and measure leases at the beginning of the earliest period presented using one of two modified retrospective approaches. A number of optional practical expedients may be applied in transition. We adopted ASU 2016-02 on January 1, 2019.

The main impact of the adoption of ASU 2016-02 relates to the recognition of ROU assets and lease liabilities on our consolidated balance sheet for those leases classified as operating leases under previous accounting principals generally accepted in the U.S. (**GAAP**). We have applied the practical expedients that permit us not to reassess (i) whether expired or existing contracts contain a lease under the new standard, (ii) the lease classification for expired or existing leases or (iii) whether previously-capitalized initial direct costs would qualify for capitalization under the new standard. In addition, we have not used hindsight during transition.

Upon adoption of ASU 2016-02, on January 1, 2019, we recorded (i) ROU assets of €486.7 million and lease liabilities of €494.8 million related to operating leases, (ii) ROU assets of €7.9 million and lease liabilities of €7.7 million related to finance leases and (iii) an increase to our owner's equity of €0.2 million. In addition, (i) we reclassified our existing prepaid lease expense, accrued lease expense and lease incentive liabilities, resulting in a net reduction of our ROU assets of €6.3 million, and (ii) restructuring liabilities related to operating leases of €1.7 million are now reflected as operating lease liabilities. The adoption of ASU 2016-02 did not have a significant impact on our consolidated statements of operations or cash flows.

We have implemented a new lease accounting system and related internal controls over financial reporting to meet the requirements of ASU 2016-02.

For additional information regarding our leases, see note 9.

ASU 2014-09

In May 2014, the FASB issued ASU No. 2014-09, *Revenue from Contracts with Customers* (**ASU 2014-09**), which requires an entity to recognize the amount of revenue to which it expects to be entitled for the transfer of goods or services to customers. We adopted ASU 2014-09 effective January 1, 2018 by recording the cumulative effect of the adoption to our owner's equity. We applied the new standard to contracts that were not complete at January 1, 2018. The comparative information for the year ended December 31, 2017 contained within these consolidated financial statements and notes has not been restated and continues to be reported under the accounting standards in effect for such period.

The most significant impacts of ASU 2014-09 on our revenue recognition policies relate to our accounting for (i) time-limited discounts and free service periods provided to our customers, (ii) certain upfront fees charged to our customers, (iii) revenue related to mobile handset plans, and (iv) costs incurred to obtain and fulfill contracts, as follows:

- When we enter into contracts to provide services to our customers, we often provide time-limited discounts or free service periods. Under previous accounting standards, we recognized revenue net of discounts during the promotional periods and did not recognize any revenue during free service periods. Under ASU 2014-09, revenue recognition is accelerated for these contracts, as the impact of the discount or free service period is recognized uniformly over the total contractual period.

- When we enter into contracts to provide services to our customers, we often charge installation or other upfront fees. Under previous accounting standards, installation fees related to services provided over our cable networks were recognized as revenue during the period in which the installation occurred to the extent these fees were equal to or less than direct selling costs. Under ASU 2014-09, these fees are generally deferred and recognized as revenue over the contractual period.

- Previously, we offered handsets under a subsidized contract model, whereby upfront revenue recognition was limited to the upfront cash collected from the customer, as the remaining monthly fees to be received from the customer, including fees that may be associated with the handset, were contingent upon delivering future airtime. This limitation no longer applies under ASU 2014-09. The primary impact of this change is an increase in revenue allocated to handsets, which is recognized as non-service revenue when control of the device passes to the customer, and a decrease in service revenue.

- ASU 2014-09 also impacts our accounting for certain upfront costs directly associated with obtaining and fulfilling customer contracts. Previously, these costs were expensed as incurred unless the costs were in the scope of another accounting topic that allowed for capitalization. Under ASU 2014-09, certain upfront costs associated with contracts that have substantive termination penalties and a term of one year or more are recognized as assets and amortized to other operating expenses over the applicable period benefited.

For additional information regarding our adoption of ASU 2014-09, see note 4.

The cumulative effect of the adoption of ASU 2014-09 on our summary balance sheet information as of January 1, 2018 is as follows:

		Balance at December 31, 2017	ASU 2014-09 Adjustments (a)		Balance at January 1, 2018
			in millions		
Assets:					
Contract assets	€	—	176.8	€	176.8
Other current assets, net	€	33.0	65.5	€	98.5
Long-term contract assets	€	—	75.1	€	75.1
Other assets, net	€	49.5	20.2	€	69.7
Liabilities:					
Deferred revenue and advance payments from subscribers and others	€	192.2	13.7	€	205.9
Deferred income taxes	€	1,385.4	3.1	€	1,388.5
Other long-term liabilities	€	697.3	(0.2)	€	697.1
Owner's equity	€	5,122.6	321.0	€	5,443.6

(a) Amounts represent the cumulative effect of the adoption of ASU 2014-09 on our January 1, 2018 balance sheet.

The impact of our adoption of ASU 2014-09 on our consolidated balance sheet as of December 31, 2018 was not materially different from the impacts set forth in the above January 1, 2018 summary balance sheet information. Similarly, the adoption of ASU 2014-09 did not have a material impact on our consolidated statements of operations for the year ended December 31, 2018.

Recent Accounting Pronouncements

ASU 2018-15

In August 2018, the FASB issued ASU No. 2018-15, *Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement that is a Service Contract* (**ASU 2018-15**), which requires entities to defer implementation costs incurred that are related to the application development stage in a cloud computing arrangement that is a service contract. Deferred implementation costs will be amortized over the term of the cloud computing arrangement and presented in the same expense line item as the cloud computing arrangement. All other implementation costs will be expensed as incurred. We early adopted ASU 2018-15 on January 1, 2020 on a prospective basis. As a result of the adoption of ASU 2018-15, (i) certain implementation costs that were previously expensed as incurred will now be deferred as prepaid expenses and amortized over the term of the cloud computing arrangement and (ii) certain costs associated with developing interfaces between a cloud computing arrangement and internal-use software that were previously capitalized as property and equipment will now be deferred as prepaid expenses and amortized over the term of the cloud computing arrangement. We currently do not believe the adoption of ASU 2018-15 will have a significant impact on our consolidated financial statements.

ASU 2016-13

In June 2016, the FASB issued ASU No. 2016-13, *Measurement of Credit Losses on Financial Statements* (**ASU 2016-13**), which changes the recognition model for credit losses related to assets held at amortized cost. ASU 2016-13 eliminates the threshold that a loss must be considered probable to recognize a credit loss and instead requires an entity to reflect its current estimate of lifetime expected credit losses. We early adopted ASU 2016-13 on January 1, 2020 on a modified retrospective basis by recording a cumulative effect adjustment to our accumulated earnings. We currently believe that the adoption of ASU 2016-13 will not have a significant impact on our consolidated financial statements.

ASU 2019-12

In December 2019, the FASB issued ASU No. 2019-12, *Simplifying the Accounting for Income Taxes* (**ASU 2019-12**), which is intended to improve consistency and simplify several areas of existing guidance. ASU 2019-12 removes certain exceptions to the general principles related to the approach for intraperiod tax allocation, the methodology for calculating income taxes in an interim period and the recognition of deferred tax liabilities for outside basis differences. The new guidance also clarifies the accounting for transactions that result in a step-up in the tax basis of goodwill. ASU 2019-12 is effective for annual reporting periods beginning after December 15, 2020, including interim periods within those fiscal years, with early adoption permitted. We are currently evaluating the effect that ASU 2019-12 will have on our consolidated financial statements.

(3) Summary of Significant Accounting Policies

Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. Estimates and assumptions are used in accounting for, among other things, the valuation of acquisition-related assets and liabilities, allowances for uncollectible accounts, certain components of revenue, programming and copyright expenses, deferred income taxes and related valuation allowances, loss contingencies, fair value measurements, impairment assessments, capitalization of internal costs associated with construction and installation activities, useful lives of long-lived assets, and share-based compensation. Actual results could differ from those estimates.

Reclassifications

Certain prior year amounts have been reclassified to conform to the current year presentation.

Principles of Consolidation

The accompanying consolidated financial statements include our accounts and the accounts of all voting interest entities where we exercise a controlling financial interest through the ownership of a direct or indirect controlling voting interest and variable interest entities for which our company is the primary beneficiary. All significant intercompany accounts and transactions have been eliminated in consolidation.

Cash and Cash Equivalents and Restricted Cash

Cash equivalents consist of money market funds and other investments that are readily convertible into cash and have maturities of three months or less at the time of acquisition. We record money market funds at the net asset value as there are no restrictions on our ability, contractual or otherwise, to redeem our investments at the stated net asset value.

Restricted cash consists of cash held in restricted accounts, including cash held as collateral for debt and other compensating balances. Restricted cash amounts that are required to be used to purchase long-term assets or repay long-term debt are classified as long-term assets. All other cash that is restricted to a specific use is classified as current or long-term based on the expected timing of the disbursement.

Our significant non-cash investing and financing activities are disclosed in our consolidated statements of equity and in notes 8, 9 and 11.

Cash Flow Statement

For purposes of determining the classification of cash flows in our consolidated statements of cash flows, interest payments or receipts for related-party loans are included as cash flows from operating activities. Interest-bearing cash advances to related parties and repayments thereof are classified as investing activities. All other related-party borrowings, advances, and repayments are reflected as financing activities.

For purposes of our consolidated statements of cash flows, expenses financed by an intermediary are treated as hypothetical operating cash outflows and hypothetical financing cash inflows when the expenses are incurred. When we pay the financing to an intermediary, we record financing cash outflows in our consolidated statements of cash flows.

From time to time, we issue debt for which the proceeds are included in escrow. We reflect these transactions as non-cash financings in our consolidated financial statements.

Trade Receivables

Our trade receivables are reported net of an allowance for doubtful accounts. Such allowance aggregated €29.1 million and €30.6 million at December 31, 2019 and 2018, respectively. The allowance for doubtful accounts is based upon our assessment of probable loss related to uncollectible accounts receivable. We use a number of factors in determining the allowance, including, among other things, collection trends, prevailing and anticipated economic conditions, and specific customer credit risk. The allowance is maintained until either payment is received or the likelihood of collection is considered to be remote.

Concentration of credit risk with respect to trade receivables is limited due to the large number of customers. We also manage this risk by disconnecting services to customers whose accounts are delinquent.

Financial Instruments

Due to the short maturities of cash and cash equivalents, restricted cash, trade and other receivables, other current assets, accounts payable, accrued liabilities and other accrued and current liabilities, their respective carrying values approximate their respective fair values. For information concerning the fair values of certain of our derivatives and debt, see notes 5 and 8, respectively. For information regarding how we arrive at certain of our fair value measurements, see note 6.

Inventory Held for Sale

Inventory held for sale consists mainly of handsets and accessories, and are stated at the lower of cost or net realizable value. Inventory held for sale is net of a provision for obsolete items, which was €2.6 million and €2.9 million at December 31, 2019 and 2018, respectively.

Derivative Instruments

All derivative instruments are recorded on the balance sheet at fair value. As we generally do not apply hedge accounting to any of our derivative instruments, the changes in the fair value of our derivative instrument are recognized in earnings.

The net cash received or paid related to our derivative instruments is classified as an operating, investing or financing activity in our consolidated statements of cash flows based on the objective of the derivative instrument and the classification of the applicable underlying cash flows. For derivative contracts that are terminated prior to maturity, the cash paid or received upon termination that relates to future periods is classified as a financing activity in our consolidated statements of cash flows.

For information regarding our derivative instruments, see note 5.

Property and Equipment

Property and equipment are stated at cost less accumulated depreciation. We capitalize costs associated with the construction of new cable and mobile transmission and distribution facilities and the installation of new cable services. Capitalized construction and installation costs include materials, labor, and other directly attributable costs. Installation activities that are capitalized include (i) the initial connection (or drop) from our cable system to a customer location, (ii) the replacement of a drop, and (iii) the installation of equipment for additional services, such as digital cable, telephone or broadband internet service. The costs of other customer-facing activities, such as reconnecting and disconnecting customer locations and repairing or maintaining drops, are expensed as incurred. Interest capitalized with respect to construction activities was not material during any of the periods presented.

Capitalized internal-use software is included as a component of property and equipment. We capitalize internal and external costs directly associated with the development of internal-use software. We also capitalize costs associated with the purchase of software licenses. Maintenance and training costs, as well as costs incurred during the preliminary stage of an internal-use software development project, are expensed as incurred.

Depreciation is computed using the straight-line method over the estimated useful life of the underlying asset. Equipment under capital leases is amortized on a straight-line basis over the shorter of the lease term or estimated useful life of the asset. Useful lives used to depreciate our property and equipment are assessed periodically and are adjusted when warranted. The useful lives of cable and mobile distribution systems that are undergoing a rebuild are adjusted such that property and equipment to be retired will be fully depreciated by the time the rebuild is completed. For additional information regarding the useful lives of our property and equipment, see note 8.

Additions, replacements, and improvements that extend the asset life are capitalized. Repairs and maintenance are charged to operations.

We recognize a liability for asset retirement obligations in the period in which it is incurred if sufficient information is available to make a reasonable estimate of fair values. Asset retirement obligations may arise from the loss of rights of way that we obtain from local municipalities or other relevant authorities. Under certain circumstances, the authorities could require us to remove our network equipment from an area if, for example, we were to discontinue using the equipment for an extended period of time or the authorities were to decide not to renew our access rights. However, because the rights of way are integral to our ability to deliver broadband communications services to our customers, we expect to conduct our business in a manner that will allow us to maintain these rights for the foreseeable future. In addition, we have no reason to believe that the authorities will not renew our rights of way and, historically, renewals have been granted. We also have obligations in lease agreements to restore the property to its original condition or remove our property at the end of the lease term. Sufficient information is not available to estimate the fair value of our asset retirement obligations in certain of our lease arrangements. This is the case for long-term lease arrangements in which the underlying leased property is integral to our operations, there is not an acceptable alternative to the leased property and we have the ability to indefinitely renew the lease. Accordingly, for most of our rights of way and certain lease agreements, the possibility is remote that we will incur significant removal costs in the foreseeable future and, as such, we do not have sufficient information to make a reasonable estimate of fair value for these asset retirement obligations.

As of December 31, 2019 and 2018, the recorded value of our asset retirement obligations was €19.4 million and €17.2 million, respectively.

Intangible Assets

Our primary intangible assets relate to goodwill, customer relationships and mobile spectrum licenses. Our goodwill represents the equity of the VodafoneZiggo JV contributed businesses in excess of the fair value of our net identifiable assets and liabilities and the excess purchase price over the fair value of the identifiable net assets acquired in a business combination. Customer relationships are initially recorded at their fair values in connection with business combinations and subsequently at cost less accumulated amortization and impairments, if any. Upon closing the JV Transaction, our licenses were recorded at their fair value and subsequent to the closing of the JV Transaction, we record licenses at costs less accumulated amortization and impairments, if any.

Goodwill is not amortized, but instead is tested for impairment at least annually. Intangible assets with finite lives are amortized on a straight-line basis over their respective estimated useful lives to their estimated residual values and reviewed for impairment.

For additional information regarding the useful lives of our intangible assets, see note 7.

Impairment of Property and Equipment and Intangible Assets

When circumstances warrant, we review the carrying amounts of our property and equipment and our intangible assets (other than goodwill) to determine whether such carrying amounts continue to be recoverable. Such changes in circumstance may include (i) an expectation of a sale or disposal of a long-lived asset or asset group, (ii) adverse changes in market or competitive conditions, (iii) an adverse change in legal factors or business climate in the market in which we operate, and (iv) operating or cash flow losses. For purposes of impairment testing, long-lived assets are grouped at the lowest level for which cash flows are largely independent of other assets and liabilities, generally at or below the reporting unit level (see below). If the carrying amount of the asset or asset group is greater than the expected undiscounted cash flows to be generated by such asset or asset group, an impairment adjustment is recognized. Such adjustment is measured by the amount that the carrying value of such asset or asset group exceeds its fair value. We generally measure fair value by considering (a) sale prices for similar assets, (b) discounted estimated future cash flows using an appropriate discount rate and/or (c) estimated replacement cost. Assets to be disposed of are recorded at the lower of their carrying amount or fair value less costs to sell.

We evaluate goodwill for impairment at least annually on October 1 and whenever facts and circumstances indicate that their carrying amounts may not be recoverable. For impairment evaluations with respect to goodwill, we first make a qualitative assessment to determine if the goodwill may be impaired. If it is more-likely-than-not that the reporting unit’s fair value is less than its carrying value, we then compare the fair value of the reporting unit to its respective carrying amount. Any excess of the carrying amount over the fair value would be charged to operations as an impairment loss. A reporting unit is an operating segment or one level below an operating segment (referred to as a "component"). We have identified one reporting unit to which all goodwill is assigned.

Leases

For leases with a term greater than 12 months, we recognize on the lease commencement date (i) ROU assets representing our right to use an underlying asset and (ii) lease liabilities representing our obligation to make lease payments over the lease term. Lease and non-lease components in a contract are generally accounted for separately.

We initially measure lease liabilities at the present value of the remaining lease payments over the lease term. Options to extend or terminate the lease are included only when it is reasonably certain that we will exercise that option. As most of our leases do not provide enough information to determine an implicit interest rate, we generally use a portfolio level incremental borrowing rate in our present value calculation. We initially measure ROU assets at the value of the lease liability, plus any initial direct costs and prepaid lease payments, less any lease incentives received.

With respect to our finance leases, (i) ROU assets are generally depreciated on a straight-line basis over the shorter of the lease term or the useful life of the asset and (ii) interest expense on the lease liability is recorded using the effective interest method. Operating lease expense is recognized on a straight-line basis over the lease term. For leases with a term of 12 months or less (short-term leases), we do not recognize ROU assets or lease liabilities. Short-term lease expense is recognized on a straight-line basis over the lease term.

Income Taxes

Income taxes are accounted for under the asset and liability method. We recognize deferred tax assets and liabilities for the future tax consequences attributable to differences between the financial statement carrying amounts and income tax basis of assets and liabilities, and the expected benefits of utilizing operating loss and tax credit carryforwards. We measure deferred tax assets and liabilities using enacted tax rates in effect for each taxing jurisdiction in which we operate for the year in which those temporary differences and carryforwards are expected to be recovered or settled. We recognize the financial statement effects of a tax position when it is more-likely-than-not, based on technical merits, that the position will be sustained upon examination. Recognized tax positions are measured as the largest amount of tax benefit that is greater than 50 percent likely of being realized upon settlement. Net deferred tax assets are then reduced by a valuation allowance to the amount we believe is more-likely-than-not to be realized. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in earnings in the period that includes the enactment date. Interest and penalties related to income tax liabilities are included in income tax expense.

Upon closing of the JV Transaction, VodafoneZiggo Group Holding together with VodafoneZiggo and its subsidiaries, formed a new fiscal unity (the **VodafoneZiggo Fiscal Unity**). The VodafoneZiggo Fiscal Unity is one taxpayer for the period of time subsequent to the closing of the JV Transaction. Related-party tax allocations to our company from VodafoneZiggo Group Holding are not subject to tax-sharing agreements, and no cash payments will be made between VodafoneZiggo and VodafoneZiggo Group Holding related to the Dutch tax attributes. Accordingly, related-party tax allocations will be reflected as adjustments in our consolidated statements of owner's equity. For additional information regarding potential changes in Dutch tax law that may impact the VodafoneZiggo Fiscal Unity, see note 10.

Multiemployer Benefit Plans

We are a party to multiemployer benefit plans and we recognize the required contribution paid or payable for these plans during the period as net postretirement benefit costs.

Foreign Currency Transactions

Transactions denominated in currencies other than our functional currency are recorded based on exchange rates at the time such transactions arise. Changes in exchange rates with respect to amounts recorded in our consolidated balance sheets related to these non-functional currency transactions result in transaction gains and losses that are reflected in our consolidated statements of operations as unrealized (based on the applicable period end exchange rates) or realized upon settlement of the transactions.

Revenue Recognition

Subscription Revenue — Cable Networks. We recognize revenue from the provision of video, broadband internet and fixed-line telephony services over our cable network to customers over time in the periods the related services are provided, with the exception of revenue recognized pursuant to certain contracts that contain promotional discounts, as described below. Installation fees related to services provided over our cable network are generally deferred and recognized as revenue over the contractual period.

Sale of Multiple Products and Services. We sell video, broadband internet, fixed-line telephony and mobile services and handsets to our customers in bundled packages at a rate lower than if the customer purchased each product on a stand-alone basis. Revenue from bundled packages generally is allocated proportionally to the individual products or services based on the relative stand-alone selling price for each respective product or service.

Mobile Revenue — General. Consideration from mobile contracts is allocated to the airtime service component and the handset component based on the relative stand-alone selling prices of each component. Offers for handsets and airtime services in separate contracts entered into at the same time are accounted for as a single contract.

Mobile Revenue — Airtime Services. We recognize revenue from mobile services over time in the periods the related services are provided. Revenue from pre-pay customers is deferred prior to the commencement of services and recognized as the services are rendered or usage rights expire.

Mobile Revenue — Handset Revenue. Arrangement consideration allocated to handsets is recognized as revenue at the point in time in which the goods have been transferred to the customer. Mobile handset contracts that permit the customer to take control of the handset upfront and pay for the handset in installments over a contractual period may contain a significant financing component. For contracts with terms of one year or more, we recognize the significant financing component as revenue over the contractual period using the effective interest method.

B2B Cable Revenue. We defer upfront installation and certain nonrecurring fees received on B2B contracts where we maintain ownership of the installed equipment. The deferred fees are amortized into revenue on a straight-line basis over the term of the arrangement or the expected period of performance.

Contract Costs. Incremental costs to obtain a contract with a customer, such as incremental sales commissions, are generally recognized as assets and amortized over the applicable period benefited, which generally is the contract life, to (i) SG&A expenses or (ii) in the case of commissions earned on devices sold through indirect channels, against service revenue. If, however, the amortization period is less than one year, we expense such costs in the period incurred.

Contract fulfillment costs are recognized as assets and amortized to other operating costs over the applicable period benefited, which is generally the substantive contract term for the related service contract. Installation activities are not considered to be contract fulfillment costs. Instead, installation costs are capitalized, where applicable, under existing industry guidance for cable entities.

Promotional Discounts. For subscriber promotions, such as discounted or free services during an introductory period, revenue is recognized uniformly over the contractual period if the contract has substantive termination penalties. For subscriber promotions offered for longer than an introductory period, we allocate discounts over the related performance obligations and the related period of delivery.

Subscriber Advance Payments and Deposits. Payments received in advance for the services we provide are deferred and recognized as revenue when the associated services are provided.

Sales, Use, and Other Value-Added Taxes. Revenue is recorded net of applicable sales, use, and other value-added taxes.

For a summary of our revenue disaggregated by major category, see note 14.

Litigation Costs

Legal fees and related litigation costs are expensed as incurred.

(4) Revenue Recognition and Related Costs

Contract Balances

If we transfer goods or services to a customer but do not have an unconditional right to payment, we record a contract asset. Contract assets typically arise from the uniform recognition of introductory promotional discounts or the delivery of a handset that is paid for over the duration of the contract period. Our contract assets were €220.8 million and €224.8 million as of December 31, 2019 and 2018, respectively.

We record deferred revenue when we receive payment prior to transferring goods or services to a customer. We primarily defer revenue for (i) installation and other upfront services and (ii) other services that are invoiced prior to when services are provided. Our deferred revenue balances were €188.2 million and €181.0 million as of December 31, 2019 and 2018, respectively. The current and long-term portions of our deferred revenue balance at December 31, 2019 are included within deferred revenue and advance payment from subscribers and others and other long-term liabilities, respectively, in our consolidated balance sheet.

Contract Costs

Our aggregate assets associated with incremental costs to obtain a contract and contract fulfillment costs were €90.2 million and €85.1 million at December 31, 2019 and 2018, respectively. The current and long-term portions of our assets related to contract costs at December 31, 2019 are included within other current assets, net and other assets, net, respectively, on our consolidated balance sheet. During 2019 and 2018, we amortized €94.6 million and €92.2 million, respectively, to programming and other direct costs of service expenses and other operating expenses.

Unsatisfied Performance Obligations

A large portion of our revenue is derived from customers who are not subject to contracts. Revenue from customers who are subject to contracts will be recognized over the term of such contracts, which is generally 12 or 24 months for our residential service and mobile contracts and one to five years for our B2B contracts.

(5) Derivative Instruments

In general, we seek to enter into derivative instruments to protect against (i) increases in the interest rates on our variable-rate debt and (ii) foreign currency movements with respect to borrowings that are denominated in a currency other than our functional currency. In this regard, we have entered into various derivative instruments to manage interest rate exposure and foreign currency exposure with respect to the United States (**U.S.**) dollar.

The following table provides details of the fair values of our derivative instrument assets and liabilities:

	December 31, 2019			December 31, 2018		
	Current	Long-term (a)	Total	Current	Long-term (a)	Total
	in millions					
Assets:						
Cross-currency and interest rate derivative contracts (b)	€ 77.8	€ 167.3	€ 245.1	€ 74.1	€ 73.4	€ 147.5
Foreign currency forward contracts	0.3	—	0.3	0.4	—	0.4
Total	€ 78.1	€ 167.3	€ 245.4	€ 74.5	€ 73.4	€ 147.9
Liabilities:						
Cross-currency and interest rate derivative contracts (b)	€ 73.4	€ 441.5	€ 514.9	€ 71.9	€ 395.2	€ 467.1

(a) Our long-term derivative assets and liabilities are included in other assets, net, and other long-term liabilities, respectively, in our consolidated balance sheets.

(b) We consider credit risk relating to our and our counterparties' nonperformance in the fair value assessment of our derivative instruments. In all cases, the adjustments take into account offsetting liability or asset positions. The changes in the credit risk valuation adjustments associated with our cross-currency and interest rate derivative contracts resulted in net gains (loss) of (€55.2 million), €0.5 million and €63.8 million during the years ended December 31, 2019, 2018 and 2017, respectively. These amounts are included in realized and unrealized gains (losses) on derivative instruments, net, in our consolidated statements of operations. For further information regarding our fair value measurements, see note 6.

The details of our realized and unrealized gains (losses) on derivative instruments, net, are as follows:

	Year ended December 31,		
	2019	2018	2017
	in millions		
Cross-currency and interest rate derivative contracts	€ 69.8	€ 292.4	€ (635.5)
Foreign currency forward contracts	0.3	3.4	(1.5)
Total	€ 70.1	€ 295.8	€ (637.0)

The net cash received or paid related to our derivative instruments is classified as an operating, investing or financing activity in our consolidated statements of cash flows based on the objective of the derivative instrument and the classification of the applicable underlying cash flows. For derivative contracts that are terminated prior to maturity, the cash paid or received upon termination that relates to future periods is classified as a financing activity. The classification of these net cash inflows (outflows) is as follows:

	Year ended December 31,		
	2019	2018	2017
		in millions	
Operating activities	€ 21.3	€ 1.9	€ (18.7)
Financing activities	(0.9)	0.9	(158.8)
Total	€ 20.4	€ 2.8	€ (177.5)

Counterparty Credit Risk

We are exposed to the risk that the counterparties to our derivative instruments will default on their obligations to us. We manage these credit risks through the evaluation and monitoring of the creditworthiness of and concentration of risk with the respective counterparties. In this regard, credit risk associated with our derivative instruments is spread across a relatively broad counterparty base of banks and financial institutions. Collateral is generally not posted by either party under our derivative instruments. At December 31, 2019, our exposure to counterparty credit risk included derivative assets with an aggregate fair value of €6.9 million.

We have entered into derivative instruments under master agreements with each counterparty that contain master netting arrangements that are applicable in the event of early termination by either party to such derivative instrument. The master netting arrangements under each of these master agreements are limited to the derivative instruments governed by the relevant master agreement and are independent of similar arrangements.

Under our derivative contracts, it is generally only the non-defaulting party that has a contractual option to exercise early termination rights upon the default of the other counterparty and to set off other liabilities against sums due upon such termination. However, in an insolvency of a derivative counterparty, under the laws of certain jurisdictions, the defaulting counterparty or its insolvency representatives may be able to compel the termination of one or more derivative contracts and trigger early termination payment liabilities payable by us, reflecting any mark-to-market value of the contracts for the counterparty. Alternatively, or in addition, the insolvency laws of certain jurisdictions may require the mandatory set off of amounts due under such derivative contracts against present and future liabilities owed to us under other contracts between us and the relevant counterparty. Accordingly, it is possible that we may be subject to obligations to make payments, or may have present or future liabilities owed to us partially or fully discharged by set off as a result of such obligations, in the event of the insolvency of a derivative counterparty, even though it is the counterparty that is in default and not us. To the extent that we are required to make such payments, our ability to do so will depend on our liquidity and capital resources at the time. In an insolvency of a defaulting counterparty, we will be an unsecured creditor in respect of any amount owed to us by the defaulting counterparty, except to the extent of the value of any collateral we have obtained from that counterparty.

In addition, where a counterparty is in financial difficulty, under the laws of certain jurisdictions, the relevant regulators may be able to (i) compel the termination of one or more derivative instruments, determine the settlement amount and/or compel, without any payment, the partial or full discharge of liabilities arising from such early termination that are payable by the relevant counterparty or (ii) transfer the derivative instruments to an alternative counterparty.

Details of our Derivative Instruments

In the following tables, we present the details of the various categories of our derivative instruments, which are held by our wholly-owned subsidiary, Amsterdamse Beheer-en Consultingmaatschappij BV (**ABC B.V.**). The notional amounts of multiple derivative instruments that mature within the same calendar month are shown in the aggregate and interest rates are presented on a weighted average basis. In addition, for derivative instruments that were in effect as of December 31, 2019, we present a single date that represents the applicable final maturity date. For derivative instruments that become effective subsequent to December 31, 2019, we present a range of dates that represents the period covered by the applicable derivative instruments.

Cross-currency and Interest Rate Derivative Contracts

Cross-currency Swaps

As noted above, we are exposed to foreign currency exchange rate risk in situations where our debt is denominated in a currency other than our functional currency. Although we generally seek to match the denomination of our and our subsidiaries' borrowings with our functional currency, market conditions or other factors may cause us to enter into borrowing arrangements that are not denominated in our functional currency (unmatched debt). Our policy is generally to provide for an economic hedge against foreign currency exchange rate movements by using derivative instruments to synthetically convert unmatched debt into the applicable underlying currency. At December 31, 2019, substantially all of our debt was either directly or synthetically matched to our functional currency. The weighted average remaining contractual life of our cross-currency swap contracts at December 31, 2019 was 5.2 years.

The terms of our outstanding cross-currency swap contracts at December 31, 2019, which are held by ABC B.V., are as follows:

Final maturity date	Notional amount due from counterparty (a)	Notional amount due to counterparty	Interest rate due from counterparty	Interest rate due to counterparty
	in millions			
January 2025	$ 4,625.0	€ 4,087.4	3.19%	2.41%
April 2025	2,050.0	1,580.9	6 mo. LIBOR + 2.50%	4.14%
January 2028	500.0	450.0	4.88%	6 mo. EURIBOR + 3.04%
April 2025	475.0	442.4	6 mo. LIBOR + 2.50%	6 mo. EURIBOR + 2.43%
January 2023	400.0	339.0	5.88%	4.58%
	$ 8,050.0	€ 6,899.7		

(a) Includes certain derivative instruments that do not involve the exchange of notional amounts at the inception and maturity of the instruments. Accordingly, the only cash flows associated with these derivative instruments are interest-related payments and receipts. At December 31, 2019, the total euro equivalent of the notional amounts of these derivative instruments was €1,781.1 million.

Interest Rate Swaps

As noted above, we enter into interest rate swaps to protect against increases in the interest rates on our variable-rate debt. Pursuant to these derivative instruments, we typically pay fixed interest rates and receive variable interest rates on specified notional amounts. At December 31, 2019, the related weighted average remaining contractual life of our interest rate swap contracts was 8.4 years.

The terms of our outstanding interest rate swap contracts at December 31, 2019, which are held by ABC B.V., are as follows:

Final maturity date	Notional amount	Interest rate due from counterparty	Interest rate due to counterparty
	in millions		
January 2029	€ 2,250.0	6 mo. EURIBOR	1.20%
January 2028	450.0	6 mo. EURIBOR	0.03%
April 2025	442.4	6 mo. EURIBOR	2.12%
	€ 3,142.4		

Basis Swaps

Our basis swaps involve the exchange of attributes used to calculate our floating interest rates, including (i) the benchmark rate, (ii) the underlying currency, and/or (iii) the borrowing period. We typically enter into these swaps to optimize our interest rate profile based on our current evaluations of yield curves, our risk management policies and other factors. At December 31, 2019, the euro equivalent of the notional amount due from the counterparty was €2,248.6 million and the related weighted average remaining contractual life of our interest basis swap contracts was 0.7 years.

The terms of our outstanding basis swap contracts at December 31, 2019, which are held by ABC B.V., are as follows:

Final maturity date	Notional amount	Interest rate due from counterparty	Interest rate due to counterparty
	in millions		
October 2020	$ 2,000.0	1 mo. LIBOR + 2.50%	6 mo. LIBOR + 2.32%
April 2020	525.0	1 mo. LIBOR + 2.50%	6 mo. LIBOR + 2.26%
	$ 2,525.0		

Interest Rate Options

From time to time, we enter into interest rate cap, floor and collar agreements that lock in a maximum interest rate if variable rates rise, but also allow our company to benefit, to a limited extent in the case of collars, from declines in market rates. Purchased interest rate floors protect us from interest rates falling below a certain level, generally to match a floating rate floor on a debt instrument. At December 31, 2019, we had no interest rate collar agreements, and the notional amounts of our interest rate caps and floors were €205.0 million and €2,250.0 million, respectively.

Impact of Derivative Instruments on Borrowing Costs

The impact of the derivative instruments that mitigate our foreign currency and interest rate risk, as described above, was a decrease of 10 basis points to our borrowing costs as of December 31, 2019.

Foreign Currency Forwards

We enter into foreign currency forward contracts with respect to non-functional currency exposure. At December 31, 2019, the euro equivalent of the notional amount of our foreign currency forward contracts was €14.2 million.

(6) Fair Value Measurements

We use the fair value method to account for our derivative instruments. The reported fair values of these derivative instruments as of December 31, 2019, likely will not represent the value that will be paid or received upon the ultimate settlement or disposition of these assets and liabilities.

GAAP provides for a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value into three broad levels. Level 1 inputs are quoted market prices in active markets for identical assets or liabilities that the reporting entity has the ability to access at the measurement date. Level 2 inputs are inputs other than quoted market prices included within Level 1 that are observable for the asset or liability, either directly or indirectly. Level 3 inputs are unobservable inputs for the asset or liability. We record transfers of assets or liabilities into or out of Levels 1, 2 or 3 at the beginning of the quarter during which the transfer occurred. During 2019, no such transfers were made.

All of our Level 2 inputs (interest rate futures and swap rates) and certain of our Level 3 inputs (credit spreads) are obtained from pricing services. These inputs, or interpolations or extrapolations thereof, are used in our internal models to calculate, among other items, yield curves and forward interest and currency rates. In the normal course of business, we receive market value assessments from the counterparties to our derivative contracts. Although we compare these assessments to our internal valuations and investigate unexpected differences, we do not otherwise rely on counterparty quotes to determine the fair values of our derivative instruments. The midpoints of applicable bid and ask ranges generally are used as inputs for our internal valuations.

In order to manage our interest rate and foreign currency exchange risk, we have entered into various derivative instruments as further described in note 5. The recurring fair value measurements of these instruments are determined using discounted cash flow models. Most of the inputs to these discounted cash flow models consist of, or are derived from, observable Level 2 data for substantially the full term of these instruments. This observable data mostly includes interest rate futures and swap rates, which are retrieved or derived from available market data. Although we may extrapolate or interpolate this data, we do not otherwise alter this data in performing our valuations. We use a Monte Carlo based approach to incorporate a credit risk valuation adjustment in our fair value measurements to estimate the impact of both our own nonperformance risk and the nonperformance risk of our counterparties. Our and our counterparties' credit spreads represent our most significant Level 3 inputs, and these inputs are used to derive the credit risk valuation adjustments with respect to these instruments. As we would not expect changes in our or our counterparties' credit spreads to have a significant impact on the valuations of these instruments, we have determined that these valuations fall under Level 2 of the fair value hierarchy. Our credit risk valuation adjustments with respect to our cross-currency and interest rate swaps are quantified and further explained in note 5.

Fair value measurements are also used in connection with nonrecurring valuations performed in connection with impairment assessments and acquisition accounting. During 2019 and 2018, we did not perform significant nonrecurring fair value measurements.

(7) Long-lived Assets

Property and Equipment, Net

The details of our property and equipment and the related accumulated depreciation are set forth below:

	Estimated useful life at December 31, 2019	December 31, 2019	December 31, 2018
		in millions	
Distribution systems	4 to 30 years	€ 5,509.3	€ 5,226.7
Customer premises equipment	3 to 5 years	920.2	753.0
Support equipment, buildings and land	3 to 25 years	1,177.7	1,129.9
		7,607.2	7,109.6
Accumulated depreciation		(2,516.7)	(1,788.7)
Total property and equipment, net		€ 5,090.5	€ 5,320.9

Depreciation expense related to our property and equipment was €1,020.4 million, €934.6 million and €864.2 million during 2019, 2018 and 2017, respectively.

During 2019, 2018 and 2017, we recorded non-cash increases to our property and equipment related to vendor financing arrangements of €546.5 million, €572.7 million and €330.6 million, respectively, which exclude related VAT of €50.0 million, €45.3 million and €13.5 million, respectively, that was also financed by our vendors under these arrangements.

All of the support equipment, buildings and land is pledged as security under our various debt instruments. For additional information, see note 8.

During 2019, 2018 and 2017, we recorded impairment charges of €2.1 million, €1.9 million and €2.7 million, respectively. These amounts were primarily related to tangible assets.

Goodwill

Our goodwill represents the equity of the VodafoneZiggo JV contributed businesses in excess of the fair value of our net identifiable assets and liabilities. There was no change in the carrying amount of our goodwill during 2019 and 2018.

Our mobile and fixed-line operations are experiencing significant competition. In particular, our mobile operations continue to experience pressure on pricing, characterized by aggressive promotion campaigns, heavy marketing spend and increasing our unlimited data bundles. In light of these factors, as well as regulatory and economic factors, we could conclude in future periods that an impairment of goodwill and, to a lesser extent, long-lived assets, is required. Any such impairment of goodwill or long-lived assets could be significant.

Intangible Assets Subject to Amortization, Net

The details of our intangible assets subject to amortization are set forth below:

	December 31, 2019			December 31, 2018		
	Gross carrying amount	Accumulated amortization	Net carrying amount	Gross carrying amount	Accumulated amortization	Net carrying amount
	in millions					
Customer relationships (a)	€ 6,440.0	€ (1,549.7)	€ 4,890.3	€ 6,440.0	€ (1,039.8)	€ 5,400.2
Licenses (b)	1,078.9	(259.8)	819.1	1,078.9	(173.4)	905.5
Trade name (c)	270.0	(32.5)	237.5	270.0	(21.6)	248.4
Total	€ 7,788.9	€ (1,842.0)	€ 5,946.9	€ 7,788.9	€ (1,234.8)	€ 6,554.1

(a) As of December 31, 2019, our customer relationships have a weighted average useful life of approximately 15 years.

(b) Represents primarily mobile spectrum licenses associated with the mobile operations of Vodafone NL. As of December 31, 2019, our licenses have a weighted average useful life of approximately 17 years.

(c) Represents the Ziggo trade name. In connection with the fair value assessment of our assets and liabilities upon closing of the JV Transaction, we concluded that the Ziggo trade name has an estimated useful life of 25 years.

Amortization expense related to intangible assets with finite useful lives was €607.1 million, €617.4 million and €621.9 million during 2019, 2018 and 2017, respectively. Based on our amortizable intangible asset balances at December 31, 2019, we expect that amortization expense will be as follows for the next five years and thereafter (in millions):

2020	€ 607.4
2021	601.5
2022	601.5
2023	601.5
2024	592.9
Thereafter	2,942.1
Total	€ 5,946.9

(8) Debt

The euro equivalents of the components of our third-party debt are as follows:

	December 31, 2019		Principal amount	
	Weighted average interest rate (a)	Unused borrowing capacity (b)	December 31, 2019	December 31, 2018
			in millions	
Senior and Senior Secured Notes	4.97%	€ —	€ 5,289.2	€ 5,431.4
Credit Facilities (c) (d)	3.59%	800.0	4,651.3	4,455.0
Vendor financing (e)	1.85%	—	995.0	999.3
Other Debt	0.37%	—	186.0	—
Total principal amount of third-party debt before premiums, discounts and deferred financing costs (f)	4.04%	€ 800.0	€ 11,121.5	€ 10,885.7

(a) Represents the weighted average interest rate in effect at December 31, 2019 for all borrowings outstanding pursuant to each debt instrument, including any applicable margin. The interest rates presented represent stated rates and do not include the impact of derivative instruments, deferred financing costs, original issue premiums or discounts and commitment fees, all of which affect our overall cost of borrowing. Including the effects of derivative instruments, original issue premiums or discounts and commitment fees, but excluding the impact of deferred financing costs, the weighted average interest rate on our aggregate third-party variable- and fixed-rate indebtedness was 4.1% and 4.4% at December 31, 2019 and 2018, respectively. For information regarding our derivative instruments, see note 5.

(b) Unused borrowing capacity represents the maximum availability under the Credit Facilities (as defined and described below) at December 31, 2019 without regard to covenant compliance calculations or other conditions precedent to borrowing. At December 31, 2019, based on the most restrictive applicable leverage covenants and leverage-based restricted payment tests, the full €800.0 million of unused borrowing capacity was available to be borrowed and there were no additional restrictions on our ability to make loans or distributions from this availability. Upon completion of the relevant December 31, 2019 compliance reporting requirements, and based on the most restrictive applicable leverage covenants and leverage-based restricted payment tests, we expect that €662.0 million of unused borrowing capacity will be available, with no additional restriction to loan or distribute. Our above expectations do not consider any actual or potential changes in our borrowing levels or any amounts loaned or distributed subsequent to December 31, 2019, or the impact of additional amounts that may be available to borrow, loan or distribute under certain defined baskets under the Credit Facilities. For information regarding certain financing transactions completed subsequent to December 31, 2019 that could have an impact on the availability to be borrowed, loaned or distributed, see note 15.

(c) Amounts include €152.7 million and nil at December 31, 2019 and 2018, respectively, of borrowings pursuant to excess cash facilities under the Credit Facilities. These borrowings are owed to certain non-consolidated special purpose financing entities that have issued notes to finance the purchase of receivables due from our company to certain other third parties for amounts that we and our subsidiaries have vendor financed. To the extent that the proceeds from these notes exceed the amount of vendor financed receivables available to be purchased, the excess proceeds are used to fund these excess cash facilities.

(d) Unused borrowing capacity under the Credit Facilities relates to a revolving facility with an aggregate maximum borrowing capacity of €800.0 million, which was undrawn at December 31, 2019. During 2019, the maturity of this facility was extended from December 31, 2022 to January 31, 2026.

(e) Represents amounts owed pursuant to interest-bearing vendor financing arrangements that are used to finance certain of our property and equipment additions and operating expenses. These obligations are generally due within one year and include VAT that was paid on our behalf by the vendor. Repayments of vendor financing obligations are included in repayments of third-party debt and finance lease obligations in our consolidated statements of cash flows.

(f) At December 31, 2019 and 2018, our debt had an estimated fair value of €11.4 billion and €10.5 billion, respectively. The estimated fair values of our debt instruments are generally determined using the average of applicable bid and ask prices (mostly Level 1 of the fair value hierarchy) or, when quoted market prices are unavailable or not considered indicative of fair value, discounted cash flow models (mostly Level 2 of the fair value hierarchy). The discount rates used in the cash flow models are based on the market interest rates and estimated credit spreads, to the extent available, and other relevant factors. For additional information regarding fair value hierarchies, see note 6.

The following table provides a reconciliation of total third-party debt before premiums, discounts, and deferred financing costs to total debt and finance lease obligations:

	December 31, 2019	December 31, 2018
	in millions	
Total principal amount of third-party debt before premiums, discounts and deferred financing costs	€ 11,121.5	€ 10,885.7
Premiums, discounts and deferred financing costs, net	(57.7)	47.7
Total carrying amount of third-party debt	11,063.8	10,933.4
Third-party finance lease obligations	19.8	18.5
Total third-party debt and finance lease obligations	11,083.6	10,951.9
Related-party debt and finance lease obligations (note 11)	1,400.0	1,600.2
Total debt and finance lease obligations	12,483.6	12,552.1
Current maturities of debt and finance lease obligations	(1,154.1)	(1,205.9)
Long-term debt and finance lease obligations	€ 11,329.5	€ 11,346.2

Credit Facilities. We have entered into a senior secured credit facility agreement with certain financial institutions and a senior credit facility agreement with a non-consolidated special purpose financing entity (as described under *Credit Facilities* below) (the **credit facilities**). Our credit facilities contain certain covenants, the more notable of which are as follows:

- Our credit facilities contain certain consolidated net leverage ratios, as specified in the relevant credit facility, which are required to be complied with (i) on an incurrence basis and/or (ii) in respect of our senior secured credit facilities, when the associated revolving credit facility has been drawn on a net basis beyond a specified percentage of the total available revolving credit commitments, on a maintenance basis;

- Subject to certain customary and agreed exceptions, our credit facilities contain certain restrictions which, among other things, restrict the ability of certain of our subsidiaries to (i) incur or guarantee certain financial indebtedness, (ii) make certain disposals and acquisitions, (iii) create certain security interests over their assets, and (iv) make certain restricted payments to their direct and/or indirect parent companies through dividends, loans or other distributions;

- Our credit facilities require that certain of our subsidiaries (i) guarantee the payment of all sums payable under the relevant credit facility and (ii) in respect of our senior secured credit facilities, grant first-ranking security over substantially all of their assets to secure the payment of all sums payable thereunder;

- In addition to certain mandatory prepayment events, the instructing group of lenders under our senior secured credit facilities, under certain circumstances, may cancel the commitments thereunder and declare the loans thereunder due and payable at par after the notice period following the occurrence of a change of control (as specified in our senior secured credit facilities);

- In addition to certain mandatory prepayment events, the individual lender under our senior credit facilities, under certain circumstances, may cancel its commitments thereunder and declare the loans thereunder due and payable at a price of 101% after the notice period following the occurrence of a change of control (as specified in the senior credit facilities);

- Our credit facilities contain certain customary events of default, the occurrence of which, subject to certain exceptions, materiality qualifications and cure rights, would allow the instructing group of lenders to (i) cancel the total commitments, (ii) declare that all or part of the loans be payable on demand, and/or (iii) accelerate all outstanding loans and terminate their commitments thereunder;

- Our credit facilities require that we observe certain affirmative and negative undertakings and covenants, which are subject to certain materiality qualifications and other customary and agreed exceptions;

- In addition to customary default provisions, our senior secured credit facilities include cross-default provisions with respect to our other indebtedness, subject to agreed minimum thresholds and other customary and agreed exceptions; and

- Our senior credit facilities provide that any failure to pay principal at its stated maturity (after the expiration of any applicable grace period) of, or any acceleration with respect to, other indebtedness of the borrower or certain of our subsidiaries over agreed minimum thresholds (as specified under the senior credit facilities), is an event of default under the senior credit facilities.

Senior and Senior Secured Notes. Ziggo Bond Company B.V. (**Ziggo Bondco**) and Ziggo B.V. have issued certain senior and senior secured notes, respectively. Ziggo B.V. is a wholly-owned subsidiary of Ziggo Bondco, which is a wholly-owned subsidiary of VodafoneZiggo Employment. In general, our senior and senior secured notes are senior obligations of the issuer of such notes that rank equally with all of the existing and future senior debt of such issuer and are senior to all existing and future subordinated debt of such issuer. Our senior secured notes (i) contain certain guarantees from other subsidiaries of VodafoneZiggo (as specified in the applicable indenture), and (ii) are secured by certain pledges or liens over certain assets and/or shares of certain subsidiaries of VodafoneZiggo. In addition, the indentures governing our senior and senior secured notes contain certain covenants, the more notable of which are as follows:

- Subject to certain materiality qualifications and other customary and agreed exceptions, our notes contain (i) certain customary incurrence-based covenants and (ii) certain restrictions that, among other things, restrict the ability of certain of our subsidiaries to (a) incur or guarantee certain financial indebtedness, (b) make certain disposals and acquisitions, (c) create certain security interests over their assets, and (d) make certain restricted payments to their direct and/or indirect parent companies through dividends, loans or other distributions;

- Our notes provide that any failure to pay principal at its stated maturity (after the expiration of any applicable grace period) of, or any acceleration with respect to, other indebtedness of the issuer or certain of our subsidiaries over agreed minimum thresholds (as specified under the applicable indenture), is an event of default under the respective notes;

- If the relevant issuer or certain of its subsidiaries (as specified in the applicable indenture) sell certain assets, such issuer must, subject to certain materiality qualifications and other customary and agreed exceptions, offer to repurchase the applicable notes at par, or if a change of control (as specified in the applicable indenture) occurs, such issuer must offer to repurchase all of the relevant notes at a redemption price of 101%; and

- Our senior secured notes contain certain early redemption provisions including the ability to, during each 12-month period commencing on the issue date for such notes until the applicable call date, redeem up to 10% of the original principal amount of the notes at a redemption price equal to 103% of the principal amount of the notes to be redeemed plus accrued and unpaid interest.

Credit Facilities

The Credit Facilities are the senior and senior secured credit facilities of certain subsidiaries of VodafoneZiggo. The details of our borrowings under the Credit Facilities as of December 31, 2019 are summarized in the following table:

Credit Facility	Maturity	Interest rate	Facility amount (in borrowing currency) (a)	Outstanding principal amount	Unused borrowing capacity	Carrying value (b)
				in millions		
Senior Secured Facilities:						
Facility E (c)	April 15, 2025	LIBOR + 2.50%	$ 2,525.0	€ 2,248.6	€ —	€ 2,248.9
Facility H (d)	January 31, 2029	EURIBOR + 3.00%	€ 2,250.0	2,250.0	—	2,237.6
Revolving Facility (e)	January 31, 2026	(e)	€ 800.0	—	800.0	—
Total Senior Secured Facilities				4,498.6	800.0	4,486.5
Senior Facilities:						
Financing Facility (f)	January 31, 2024	2.50%	€ 152.7	152.7	—	147.7
Total				€ 4,651.3	€ 800.0	€ 4,634.2

(a) Amounts represent total third-party facility amounts as of December 31, 2019.

(b) Amounts are net of unamortized premiums, discounts, and deferred financing costs, as applicable.

(c) Facility E has a LIBOR floor of 0.0%. This facility has been refinanced in full subsequent to December 31, 2019. For details regarding subsequent events, see note 15.

(d) Facility H has a EURIBOR floor of 0.0%.

(e) Unused borrowing capacity under the Credit Facilities relates to a revolving facility with an aggregate maximum borrowing capacity of €800.0 million. During 2019, the maturity of this facility was extended from December 31, 2022 to January 31, 2026. This facility bears interest at EURIBOR plus 2.75% (subject to a margin ratchet) and has a fee on unused commitments of 40% of such margin per year.

(f) Amounts represent borrowings that are owed to certain non-consolidated special purpose financing entities that have issued notes to finance the purchase of receivables due from our company to certain other third parties for amounts that we and our subsidiaries have vendor financed. To the extent that the proceeds from these notes exceed the amount of vendor financed receivables available to be purchased, the excess proceeds are used to fund these excess cash facilities.

Senior and Senior Secured Notes

The details of the outstanding Senior and Senior Secured Notes as of December 31, 2019 are summarized in the following table:

Senior and Senior Secured Notes	Maturity	Interest rate	Outstanding principal amount		Carrying value (a)
			Borrowing currency	Euro equivalent	
				in millions	
2025 Euro Senior Notes (b)	January 15, 2025	4.625%	€ 950.0	€ 950.0	€ 965.4
2025 Dollar Senior Notes (b)	January 15, 2025	5.875%	$ 400.0	356.2	355.3
2027 Dollar Senior Secured Notes (c)	January 15, 2027	5.500%	$ 2,000.0	1,781.1	1,748.2
2027 Euro Senior Secured Notes (c)	January 15, 2027	4.250%	€ 775.0	775.0	775.6
2027 Senior Notes	January 15, 2027	6.000%	$ 625.0	556.6	544.1
2030 Dollar Senior Secured Notes (d)	January 15, 2030	4.875%	$ 500.0	445.3	442.3
2030 Euro Senior Secured Notes (d)	January 15, 2030	2.875%	€ 425.0	425.0	422.1
Total				€ 5,289.2	€ 5,253.0

(a) Amounts are net of unamortized premiums, discounts, and deferred financing costs, as applicable.

(b) These notes have been refinanced in full subsequent to December 31, 2019. For details regarding subsequent events, see note 15.

(c) These notes have been partially repaid subsequent to December 31, 2019. For details regarding subsequent events, see note 15.

(d) Additional notes were issued under these indentures subsequent to December 31, 2019. For details regarding subsequent events, see note 15.

All our notes are non-callable prior to the applicable Call Date presented in the table below. At any time prior to the applicable Call Date, we may redeem some or all of the applicable notes by paying a "make-whole" premium, which is the present value of all remaining scheduled interest payments to the applicable Call Date using the discount rate as of the redemption date plus a premium (each as specified in the applicable indenture).

Senior and Senior Secured Notes	Call Date
2025 Euro Senior Notes	January 15, 2020
2025 Dollar Senior Notes	January 15, 2020
2027 Dollar Senior Secured Notes	January 15, 2022
2027 Euro Senior Secured Notes	January 15, 2022
2027 Senior Notes	January 15, 2022
2030 Dollar Senior Secured Notes	October 15, 2024
2030 Euro Senior Secured Notes	October 15, 2024

After the applicable Call Date, we may redeem some or all of these notes at the following redemption prices (expressed as a percentage of the principal amount) plus accrued and unpaid interest and additional amounts (as specified in the applicable indenture), if any, to the applicable redemption date, as set forth below:

	Redemption price						
	2025 Euro Senior Notes	**2025 Dollar Senior Notes**	**2027 Dollar Senior Secured Notes**	**2027 Euro Senior Secured Notes**	**2027 Senior Notes**	**2030 Dollar Senior Secured Notes**	**2030 Euro Senior Secured Notes**
12-month period commencing	January 15	January 15	January 15	January 15	January 15	October 15	October 15
2020	102.313%	102.938%	N.A.	N.A.	N.A.	N.A.	N.A.
2021	101.542%	101.958%	N.A.	N.A.	N.A.	N.A.	N.A.
2022	100.771%	100.979%	102.750%	102.125%	103.000%	N.A.	N.A.
2023	100.000%	100.000%	101.833%	101.417%	102.000%	N.A.	N.A.
2024	100.000%	100.000%	100.917%	100.708%	101.000%	102.438%	101.438%
2025	N.A.	N.A.	100.000%	100.000%	100.000%	101.219%	100.719%
2026	N.A.	N.A.	100.000%	100.000%	100.000%	100.609%	100.359%
2027 and thereafter	N.A.	N.A.	N.A.	N.A.	N.A.	100.000%	100.000%

Financing Transactions

2019 Financing Transactions. In May 2019, we issued an additional €550.0 million principal amount of 2025 Euro Senior Notes. This additional series of notes was issued at 101.5% of par. The net proceeds from the issuance of these notes were used to partially redeem the 2024 Euro Senior Notes.

In August 2019, we entered into a handset securitization facility, with a committed amount of €205.0 million, relating to our mobile handset receivables with an initial drawdown of €181.2 million. This facility bears interest at a rate of EURIBOR plus 0.85% for the utilized portion and 0.45% for the unutilized portion. Amortizing repayments of the facility will start in 2022 and the facility is due to be repaid in full in 2024. The net proceeds from the initial drawdown of this facility, together with existing cash, were used to redeem the remaining €193.1 million outstanding principal of our 2024 Euro Senior Notes. In connection with the redemption in full of the 2024 Euro Senior Notes, we recognized a net gain on debt extinguishment of €46.6 million related to (a) the write-off of €73.1 million of fair value adjustment and premiums and (b) the payment of €26.5 million of redemption premiums.

In October 2019, we (i) entered into Facility H, a €2.25 billion term loan facility, issued at 99.75% of par, (ii) issued €425.0 million principal amount of the 2030 Euro Senior Secured Notes and (iii) issued $500.0 million (€445.3 million) principal amount of the 2030 Dollar Senior Secured Notes (together with the 2030 Euro Senior Secured Notes, the 2030 Senior Secured Notes). The 2030 Senior Secured Notes were issued at par.

The net proceeds from Facility H and the 2030 Senior Secured Notes were used to (i) prepay in full the €2.25 billion outstanding principal amount under Facility F and (ii) redeem in full (a) the €800.0 million outstanding principal amount of our 2025 Senior Secured Notes and (b) the remaining €71.7 million outstanding principal amount of our 2020 Senior Secured Notes. In connection with these transactions, we recognized a net loss on debt extinguishment of €14.4 million related to (a) the write-off of €8.2 million of fair value adjustment and unamortized deferred financing costs and (b) the payment of €22.6 million of redemption premiums.

In November 2019, VZ Vendor Financing B.V. (**VZ Vendor Financing**), a third-party special purpose financing entity that is not consolidated by VodafoneZiggo, issued €500.0 million principal amount of vendor financing notes (the **Vendor Financing Notes**). The net proceeds from the Vendor Financing Notes have been or will be used to purchase certain vendor financed receivables of VodafoneZiggo and its subsidiaries from various third parties. To the extent that the proceeds from the Vendor Financing Notes exceed the amount of vendor financed receivables available to be purchased, the excess proceeds will be used to fund an excess cash facility (the **Financing Facility**) under a new credit facility of VodafoneZiggo. VZ Vendor Financing can request the Financing Facility be repaid by VodafoneZiggo as additional vendor financed receivables become available for purchase.

2018 Financing Transactions. There were no financing transactions during 2018.

2017 Financing Transactions. During 2017, we completed certain refinancing transactions that resulted in a gain on debt modification and extinguishment, net, of €15.2 million. This amount includes the write-off of (i) €21.6 million of unamortized premium and (ii) €6.4 million of deferred financing costs.

Maturities of Debt

The euro equivalents of the maturities of our debt as of December 31, 2019 are presented below:

	Third-party	Related-party	Total
		in millions	
Year ending December 31:			
2020	€ 1,146.0	€ —	€ 1,146.0
2021	—	—	—
2022 (a)	186.0	—	186.0
2023	—	—	—
2024	1.7	—	1.7
Thereafter	9,787.8	1,400.0	11,187.8
Total debt maturities	11,121.5	1,400.0	12,521.5
Premiums, discounts and deferred financing costs, net	(57.7)	—	(57.7)
Total debt	€ 11,063.8	€ 1,400.0	€ 12,463.8
Current portion	€ 1,146.0	€ —	€ 1,146.0
Noncurrent portion	€ 9,917.8	€ 1,400.0	€ 11,317.8

(a) Amortizing repayments of the facility will start in 2022 and the facility is due to be repaid in full in 2024.

(9) Leases

General

We enter into operating and finance leases for network equipment, real estate, mobile site sharing and vehicles. We provide residual value guarantees on certain of our vehicle leases.

Lease Balances

A summary of our ROU assets and lease liabilities as of December 31, 2019, is set forth below:

	ROU assets	Lease liabilities
	in millions	
Operating leases (a)(b)	€ 477.9	€ 484.5
Finance leases (c)(d)	19.9	19.8
Total	€ 497.8	€ 504.3

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(a) Our operating lease ROU assets are included in other assets, net, on our consolidated balance sheet.At December 31, 2019, the weighted average remaining lease term for operating leases was 8.8 years and the weighted average discount rate was 3.0%. During 2019, we recorded additions to our ROU assets associated with operating leases of €59.9 million.

(b) The current and long-term portions of our operating lease liabilities are included within other accrued and current liabilities and other long-term liabilities, respectively, on our consolidated balance sheet.

(c) Our finance lease ROU assets are included in property and equipment, net, on our consolidated balance sheet. At December 31, 2019, the weighted average remaining lease term for finance leases was 3.0 years and the weighted average discount rate was 2.2%. As of December 31, 2018, we had €16.4 million of finance lease ROU assets included on our consolidated balance sheet. During 2019, 2018 and 2017, we recorded additions to our ROU assets associated with finance leases of €5.2 million, €23.5 million and nil, respectively.

(d) The current and long-term portions of our finance lease obligations are included within current portion of debt and finance lease obligations and long-term debt and finance lease obligations, respectively, on our consolidated balance sheets. As of December 31, 2018, we had €18.7 million of finance lease liabilities included on our consolidated balance sheet.

A summary of our aggregate lease expense recorded during 2019 is set forth below:

		in millions
Finance lease expense:		
Depreciation and amortization	€	9.5
Interest expense		0.5
Total finance lease expense		10.0
Operating lease expense (a)		83.3
Variable lease expense, net (b)		(1.0)
Total lease expense	€	92.3

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(a) Our operating lease expense is included in other operating expenses and SG&A expenses in our consolidated statements of operations.

(b) Variable lease expense represents payments made to a lessor during the lease term that vary because of a change in circumstance that occurred after the lease commencement date. Variable lease payments are expensed as incurred and are included in other operating expenses in our consolidated statements of operations.

A summary of our cash outflows from operating and finance leases recorded during 2019, is set forth below:

		in millions
Cash paid for amounts included in the measurement of lease liabilities:		
Operating cash outflows from operating leases	€	85.4
Operating cash outflows from finance leases		0.5
Financing cash outflows from finance leases		9.7
Total cash outflows from operating and finance leases	€	95.6

Maturities of our operating and finance lease obligations as of December 31, 2019 are presented below. Amounts presented below represent euro equivalents based on December 31, 2019, exchange rates:

	Operating leases	Finance leases
	in millions	
Year ending December 31:		
2020	€ 80.1	€ 8.6
2021	76.4	6.1
2022	73.5	3.7
2023	69.8	1.6
2024	66.9	0.7
Thereafter	180.6	0.1
Total principal and interest payments	547.3	20.8
Less: present value discount	(62.8)	(1.0)
Present value of net minimum lease payments	€ 484.5	€ 19.8
Current portion	€ 66.6	€ 8.1
Noncurrent portion	€ 417.9	€ 11.7

Maturities of our operating and finance lease obligations as of December 31, 2018 are presented below. Amounts presented below represent euro equivalents based on December 31, 2018, exchange rates:

	Operating leases	Finance leases
	in millions	
Year ending December 31:		
2019	€ 67.3	€ 7.0
2020	50.4	5.5
2021	42.4	3.6
2022	35.4	2.0
2023	30.5	0.8
Thereafter	92.3	0.2
Total payments	€ 318.3	19.1
Amounts representing interest		(0.4)
Total finance leases		€ 18.7
Current portion		€ 6.6
Noncurrent portion		€ 12.1

(10) Income Taxes

Our consolidated financial statements include the income taxes of all entities wholly owned by VodafoneZiggo Group Holding.

The VodafoneZiggo Fiscal Unity is one taxpayer for the period of time subsequent to the closing of the JV Transaction. VodafoneZiggo Group Holding did not implement a tax-sharing agreements and no cash payments will be made between VodafoneZiggo entities and VodafoneZiggo Group Holding related to the Dutch tax attributes. Accordingly, related-party tax allocations, if any, are reflected as adjustments in our consolidated statement of owner's equity.

On December 31, 2019 the Dutch Government enacted legislation regarding the yearly changes to the tax legislation (i.e., "Belastingplan 2020"). One of the most important changes within these legislative plans of the government has been an adjustment of the corporate income tax rate change enacted in 2019. The highest tax rate in the Netherlands will be adjusted from 22.5% to

25.0% in 2020 and from 20.5% to 21.7% in 2021. As a result of the enactment of these plans VodafoneZiggo recalculated the deferred tax balances and recorded a corporate income tax rate change expense as a result of the increase of the net deferred tax liability in 2019.

All of our income tax benefit for 2019, 2018 and 2017 is related to deferred tax benefits.

Income tax benefit attributable to our loss before income taxes differs from the amounts computed using the Dutch income tax rate of 25.0% as a result of the following:

	Year ended December 31,		
	2019	2018	2017
		in millions	
Computed "expected" tax benefit	€ 114.4	€ 98.9	€ 80.4
Enacted tax law and rate changes	(75.0)	213.8	—
Tax benefits associated with technology innovations	—	6.0	13.0
Change in valuation allowances	(0.3)	0.1	—
Non-deductible expenses	(0.7)	(1.1)	(1.8)
Other, net	(0.4)	0.7	0.1
Total income tax benefit	€ 38.0	€ 318.4	€ 91.7

The tax effects of temporary differences that give rise to significant portions of the deferred tax assets and deferred tax liabilities are presented below:

	December 31,	
	2019	2018
	in millions	
Deferred tax assets:		
Net operating loss and other carry forwards	€ 125.3	€ 94.6
Debt	74.9	74.5
Derivative instruments	4.3	11.3
Investments	—	18.4
Other future deductible amounts	23.4	10.9
Deferred tax assets	227.9	209.7
Deferred tax liabilities:		
Intangible assets	(1,047.8)	(1,060.2)
Property and equipment, net	(210.3)	(216.8)
Other future taxable amounts	(2.1)	(2.9)
Deferred tax liabilities	(1,260.2)	(1,279.9)
Net deferred tax liabilities	€ (1,032.3)	€ (1,070.2)

All of our deferred tax assets are supported by reversing taxable temporary differences.

Although we intend to take reasonable tax planning measures to limit our tax exposures, no assurance can be given that we will be able to do so.

All of our net operating losses and other carryforwards are Dutch. The details of our net operating loss and other carryforwards and the related tax assets at December 31, 2019 are as follows:

Expiration Date	Carryforward	Related tax asset
	in millions	
2020	€ 42.4	€ 9.3
2021	14.0	3.1
2022	64.5	14.2
2024	165.0	36.4
2025	112.1	24.7
2026	130.0	28.7
2027	40.2	8.9
Total carried forward	€ 568.2	€ 125.3

We and our subsidiaries file one consolidated income tax return. In the normal course of business, our income tax filings are subject to review by the Dutch tax authority. In connection with such review, disputes could arise with the tax authority over the interpretation or application of certain income tax rules related to our business in that tax jurisdiction. Such disputes may result in future tax and interest and penalty assessments by the tax authority. The ultimate resolution of tax contingencies will take place upon the earlier of (i) the settlement date with the tax authority in either cash or agreement of income tax positions or (ii) the date when the tax authority is statutorily prohibited from adjusting the company's tax computations. In this respect tax filings for 2016, 2017 and 2018 are still open for examination by the Dutch tax authority.

There were no material unrecognized tax benefits during 2019, 2018 or 2017.

(11) Related-party Transactions

Our related-party transactions for the periods are as follows:

	Year ended December 31,		
	2019	2018	2017
		in millions	
Revenue	€ 28.8	€ 41.0	€ 46.1
Programming and other direct costs of services	(36.8)	(41.7)	(39.8)
Share-based compensation expense	(1.4)	(2.8)	(5.3)
Charges for JV Services:			
Charges from Liberty Global:			
Operating (a)	(87.5)	(79.9)	(94.1)
Capital (b)	(20.7)	(31.0)	(32.3)
Total Liberty Global corporate charges	(108.2)	(110.9)	(126.4)
Charges from Vodafone:			
Operating, net (c)	(84.4)	(86.8)	(87.2)
Brand fees (d)	(30.0)	(30.0)	(30.0)
Total Vodafone corporate charges	(114.4)	(116.8)	(117.2)
Total charges for JV Services	(222.6)	(227.7)	(243.6)
Included in operating loss	(232.0)	(231.2)	(242.6)
Interest expense	(89.9)	(101.0)	(112.6)
Included in net loss	€ (321.9)	€ (332.2)	€ (355.2)
Property and equipment additions, net	€ 182.8	€ 160.5	€ 257.7

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(a) Represents amounts charged for technology and other services. These charges are included in the calculation of Covenant EBITDA, as defined and described below.

(b) Represents amounts charged for capital expenditures to be made by Liberty Global related to assets that we use or will otherwise benefit our company. These charges are not included in the calculation of Covenant EBITDA.

(c) Represents amounts charged by Vodafone for technology and other services, a portion of which are included in the calculation of Covenant EBITDA.

(d) Represents amounts charged for our use of the Vodafone brand name. These charges are not included in the calculation of Covenant EBITDA.

Revenue. Amounts represent charges for certain personnel services provided to Vodafone and Liberty Global subsidiaries.

Programming and other direct costs of services. Amounts represent interconnect fees charged to us by certain subsidiaries of Vodafone.

Share-based compensation expense. Amounts relate to charges to our company by Liberty Global and Vodafone for share-based incentive awards held by certain employees of our subsidiaries associated with ordinary shares of Liberty Global and Vodafone. Share-based compensation expense is included within SG&A expenses in our consolidated statements of operations.

Charges for JV Services - Framework and Trade Mark Agreements

Pursuant to a framework and a trade name agreement (collectively, the **JV Service Agreements**) entered into in connection with the formation of the VodafoneZiggo JV, Liberty Global and Vodafone charge us fees for certain services provided to us by the respective subsidiaries of the Shareholders (collectively, the **JV Services)**. The JV Services are provided to us on a transitional or ongoing basis. Pursuant to the terms of the JV Service Agreements, the ongoing services will be provided for a period of four to six years depending on the type of service, while transitional services will be provided for a period of not less than 12 months after which the Shareholders or VodafoneZiggo will be entitled to terminate based on specified notice periods. The JV Services provided by the respective subsidiaries of the Shareholders consist primarily of (i) technology and other services, (ii) capital-related expenditures for assets that we use or otherwise benefit us, and (iii) brand name and procurement fees. The fees that Liberty Global and Vodafone charge us for the JV Services, as set forth in the table above, include both fixed and usage-based fees.

Interest expense. Amount relates to the Liberty Global Note and the Vodafone Note, as defined and described below.

Property and equipment additions, net. These amounts, which are cash settled, represent customer premises and network-related equipment acquired from certain Liberty Global and Vodafone subsidiaries, which subsidiaries centrally procure equipment on behalf of our company.

The following table provides details of our related-party balances:

	December 31,	
	2019	2018
	in millions	
Assets:		
Related-party receivables (a)	€ 29.3	€ 18.1
Liabilities:		
Accounts payable (b)	€ 93.6	€ 102.5
Accrued and other current liabilities (b)	36.4	2.4
Debt (c):		
Liberty Global Note	700.0	800.0
Vodafone Note	700.0	800.0
Finance lease obligations	—	0.2
Other long-term liabilities (d)	5.0	—
Total liabilities	€ 1,535.0	€ 1,705.1

(a) Represents non-interest bearing receivables from certain Liberty Global and Vodafone subsidiaries.

(b) Represents non-interest bearing payables, accrued capital expenditures and other accrued liabilities related to transactions with certain Liberty Global and Vodafone subsidiaries that are cash settled.

(c) Represents debt obligations, as further described below.

(d) Represents operating lease liabilities, due to Vodafone.

Related-party Debt

Liberty Global Note

The Liberty Global Note is a note payable to a subsidiary of Liberty Global that matures on January 16, 2028 and has a fixed interest rate of 5.55%. Interest is payable in a manner mutually agreed upon by VodafoneZiggo and Liberty Global. During the years ended December 31, 2019 and 2018, interest accrued on the Liberty Global Note was €45.0 million and €50.5 million respectively, all of which was cash settled. The decrease in the principal balance during 2019 and 2018 is the result of €100.0 million of cash payments for each period.

Vodafone Note

The Vodafone Note is a note payable to a subsidiary of Vodafone that matures on January 16, 2028 and has a fixed interest rate of 5.55%. Interest is payable in a manner mutually agreed upon by VodafoneZiggo and Vodafone. During the years ended December 31, 2019 and 2018, interest accrued on the Vodafone Note was €45.0 million and €50.5 million respectively, all of which was cash settled. The decrease in the principal balance during 2019 and 2018 is the result of €100.0 million of cash payments for each period.

Shareholders Agreement

In connection with the JV Transaction, on December 31, 2016, Liberty Global and Vodafone entered into a shareholders agreement (the **Shareholders Agreement**) with VodafoneZiggo Group Holding in respect of the VodafoneZiggo JV. Each Shareholder holds 50% of the issued share capital of VodafoneZiggo Group Holding. The Shareholders Agreement contains customary provisions for the governance of a 50:50 joint venture that result in Liberty Global and Vodafone having joint control over decision making with respect to the VodafoneZiggo JV.

The Shareholders Agreement also provides (i) for a dividend policy that requires the VodafoneZiggo JV to distribute all unrestricted cash to the Shareholders as soon as reasonably practicable following each two month period (subject to the VodafoneZiggo JV maintaining a minimum amount of cash and complying with the terms of financing arrangements of its subsidiaries) and (ii) that the VodafoneZiggo JV will be managed with a leverage ratio of between 4.5 and 5.0 times Covenant EBITDA (as calculated pursuant to existing financing arrangements of its subsidiaries) with the VodafoneZiggo JV undertaking periodic recapitalizations and/or refinancings accordingly.

In accordance with the dividend policy prescribed in the Shareholders Agreement, VodafoneZiggo made total dividend distributions of €295.0 million and €400.0 million during 2019 and 2018, respectively, to VodafoneZiggo Group Holding who ultimately distributed 50% of these amounts to each of Liberty Global and Vodafone. These distributions are reflected as a decrease to owner’s equity in our consolidated statements of owner’s equity.

(12) Restructuring Liabilities

A summary of the changes to our restructuring liability during 2019 is set forth in the table below:

		in millions
Restructuring liability as of January 1, 2019, before effect of accounting change	€	14.1
Accounting change (note 2)		(1.7)
Restructuring liability as of January 1, 2019, as adjusted for accounting change		12.4
Restructuring charges (a)		15.4
Cash paid		(18.8)
Restructuring liability as of December 31, 2019	€	9.0
Current portion	€	8.4
Noncurrent portion		0.6
Total	€	9.0

(a) Restructuring charges primarily relate to certain reorganization and integration activities related to the formation of the VodafoneZiggo JV.

Additional restructuring charges are expected for 2020, due to reorganization activities associated with the closing of the JV Transaction.

A summary of the changes to our restructuring liability during 2018 is set forth in the table below:

		in millions
Restructuring liability as of January 1, 2018	€	16.0
Restructuring charges (a)		36.5
Cash paid		(37.6)
Other		(0.8)
Restructuring liability as of December 31, 2018	€	14.1
Current portion	€	12.7
Noncurrent portion		1.4
Total	€	14.1

(a) Restructuring charges primarily relate to certain reorganization and integration activities related to the formation of the VodafoneZiggo JV.

A summary of the changes to our restructuring liability during 2017 is set forth in the table below:

	in millions
Restructuring liability as of January 1, 2017	€ 31.2
Restructuring charges (a)	10.8
Cash paid	(25.3)
Other	(0.7)
Restructuring liability as of December 31, 2017	€ 16.0
Current portion	€ 15.0
Noncurrent portion	1.0
Total	€ 16.0

(a) Restructuring charges primarily relate to certain reorganization and integration activities related to the formation of the VodafoneZiggo JV.

(13) Commitments and Contingencies

Commitments

As further described in note 11, we have commitments related to the JV Service Agreements. Additionally, in the normal course of business, we have entered into agreements that commit our company to make cash payments in future periods with respect to programming contracts, purchases of customer premises and other equipment and services and other items. The following table sets forth these commitments as of December 31, 2019:

	Payments due during:						
	2020	2021	2022	2023	2024	Thereafter	Total
				in millions			
JV Service Agreements (a)	€ 152.8	€ 111.1	€ 111.1	€ 32.2	€ 30.0	€ 30.0	€ 467.2
Purchase commitments	185.1	132.0	127.7	1.3	1.1	1.6	448.8
Programming commitments	120.0	67.8	15.0	4.5	—	—	207.3
Network and connectivity commitments	18.4	15.4	8.5	0.2	—	—	42.5
Other commitments	23.3	20.8	12.7	4.3	1.8	6.1	69.0
Total (b)	€ 499.6	€ 347.1	€ 275.0	€ 42.5	€ 32.9	€ 37.7	€ 1,234.8

(a) Amounts represent fixed minimum charges from Liberty Global and Vodafone pursuant to the JV Service Agreements. In addition to the fixed minimum charges, the JV Service Agreements provide for certain JV Services to be charged to us based upon usage of the services received. The fixed minimum charges set forth in the table above exclude fees for the usage-based services as these fees will vary from period to period. Accordingly, we expect to incur charges in addition to those set forth in the table above for usage-based services. For additional information regarding fees related to the JV Service Agreements, see note 11.

(b) The commitments included in this table do not reflect any liabilities that are included in our December 31, 2019 consolidated balance sheet.

Programming commitments consist of obligations associated with certain of our programming contracts that are enforceable and legally binding on us as we have agreed to pay minimum fees without regard to (i) the actual number of subscribers to the programming services or (ii) whether we terminate service to a portion of our subscribers or dispose of a portion of our distribution systems. In addition, programming commitments do not include increases in future periods associated with contractual inflation or other price adjustments that are not fixed. Accordingly, the amounts reflected in the above table with respect to these contracts are significantly less than the amounts we expect to pay in these periods under these contracts. Historically, payments to programming vendors have represented a significant portion of our operating costs, and we expect that this will continue to be the case in future periods. In this regard, during 2019, 2018 and 2017 the programming and copyright costs incurred by our operations aggregated €324.0 million, €322.4 million and €333.6 million, respectively.

Purchase commitments include unconditional and legally binding obligations related to the purchase of customer premises and other equipment.

Network and connectivity commitments include commitments associated with certain operating costs associated with our leased networks.

Other commitments primarily include sponsorships, certain fixed minimum contractual commitments.

In addition to the commitments set forth in the table above, we have commitments under (i) derivative instruments and (ii) multiemployer defined benefit plans, pursuant to which we expect to make payments in future periods. For information regarding our derivative instruments, including the net cash paid or received in connection with these instruments during 2019, see note 5.

We have established multiemployer benefit plans for our subsidiaries' employees. The aggregate expense of our matching contributions under the multiemployer benefit plans was €45.7 million, €42.8 million and €42.3 million during 2019, 2018 and 2017, respectively.

Rental expense under non-cancellable operating lease arrangements amounted to €30.4 million and €33.0 million, during 2018 and 2017, respectively. It is expected that in the normal course of business, operating leases that expire generally will be renewed or replaced by similar leases.

Guarantees and Other Credit Enhancements

In the ordinary course of business, we may provide (i) indemnifications to our lenders, our vendors and certain other parties and (ii) performance and/or financial guarantees to local municipalities, our customers and vendors. Historically, these arrangements have not resulted in our company making any material payments and we do not believe that they will result in material payments in the future.

Regulations and Contingencies

Video distribution, broadband internet, fixed-line telephony, mobile and content businesses are subject to significant regulation and supervision by various regulatory bodies in the Netherlands, including Dutch and EU authorities. Adverse regulatory developments could subject our businesses to a number of risks. Regulation, including conditions imposed on us by competition or other authorities as a requirement to close acquisitions or dispositions, could limit growth, revenue, and the number and types of services offered and could lead to increased operating costs and property and equipment additions. In addition, regulation may restrict our operations and subject them to further competitive pressure, including pricing restrictions, interconnect and other access obligations, and restrictions or controls on content, including content provided by third parties. Failure to comply with current or future regulation could expose our businesses to various penalties.

We have contingent liabilities related to matters arising in the ordinary course of business including (i) legal proceedings, (ii) issues involving VAT and wage, property and other tax issues, and (iii) disputes over interconnection, programming, copyright, and channel carriage fees. While we generally expect that the amounts required to satisfy these contingencies will not materially differ from any estimated amounts we have accrued, no assurance can be given that the resolution of one or more of these contingencies will not result in a material impact on our results of operations, cash flows or financial position in any given period. Due to, in general, the complexity of the issues involved and, in certain cases, the lack of a clear basis for predicting outcomes, we cannot provide a meaningful range of potential losses or cash outflows that might result from any unfavorable outcomes.

(14) Segment Reporting

We have one reportable segment that provides video, broadband internet, fixed-line telephony, and mobile services to residential and business customers in the Netherlands.

Our revenue by major category is set forth below:

	Year ended December 31,		
	2019	2018	2017
		in millions	
Consumer cable revenue (a):			
Subscription revenue	€ 2,004.6	€ 1,980.3	€ 2,042.8
Non-subscription revenue	19.3	17.8	26.6
Total consumer cable revenue	2,023.9	1,998.1	2,069.4
Consumer mobile revenue (b):			
Service revenue	627.7	669.5	744.4
Non-service revenue	241.4	215.5	128.9
Total consumer mobile revenue	869.1	885.0	873.3
Total consumer revenue	2,893.0	2,883.1	2,942.7
B2B cable revenue (c):			
Subscription revenue	440.6	407.1	376.9
Non-subscription revenue	25.4	24.3	25.0
Total B2B cable revenue	466.0	431.4	401.9
B2B mobile revenue (d):			
Service revenue	413.3	430.8	526.9
Non-service revenue	112.5	100.0	77.5
Total B2B mobile revenue	525.8	530.8	604.4
Total B2B revenue	991.8	962.2	1,006.3
Other revenue (e)	52.3	50.1	46.3
Total	€ 3,937.1	€ 3,895.4	€ 3,995.3

(a) Consumer cable revenue is classified as either subscription revenue or non-subscription revenue. Consumer cable subscription revenue includes revenue from subscribers for ongoing broadband internet, video, and voice services offered to residential customers and the amortization of installation fee. Consumer cable non-subscription revenue includes, among other items, interconnect, channel carriage fees and late fees.

(b) Consumer mobile revenue is classified as either service revenue or non-service revenue. Consumer mobile service revenue includes revenue from ongoing mobile and data services offered under postpaid and prepaid arrangements to residential customers. Consumer mobile non-service revenue includes, among other items, interconnect revenue, mobile handset and accessories sales and late fees.

(c) B2B cable revenue is classified as either subscription revenue or non-subscription revenue. B2B cable subscription revenue includes revenue from business broadband internet, video, voice, and data services offered to SOHO, small and medium to large enterprises. B2B cable non-subscription revenue includes, among other items, revenue from hosting services, carriage fees, and interconnect.

(d) B2B mobile revenue is classified as either service revenue or non-service revenue. B2B mobile service revenue includes revenue from ongoing mobile and data services offered to SOHO, small, and medium to large enterprise customers. B2B mobile non-service revenue includes, among other items, interconnect revenue, mobile handset and accessories sales and, late fees.

(e) Other revenue includes, among other items, programming and advertising revenue and revenue related to certain personnel services provided to Vodafone and Liberty Global.

(15) Subsequent Events

In January 2020, we entered into a $2.5 billion (€2.3 billion) term loan facility (**Term Loan I**), issued at par. In February 2020, we (i) issued €77.5 million additional principal amount of the 2030 Euro Senior Secured Notes at an issue price of 102.625% of par, (ii) issued $200.0 million (€178.1 million) additional principal amount of the 2030 Dollar Senior Secured Notes at an issue price of 102.0% of par, (iii) issued €900.0 million principal amount of 3.375% senior notes (the **2030 Euro Senior Notes**) at par and (iv) issued $500.0 million (€445.3 million) principal amount of 5.125% senior notes (the **2030 Dollar Senior Notes** and, together with the 2030 Euro Senior Notes, the **2030 Senior Notes**) at par. Term Loan I matures on April 30, 2028, bears interest at a rate of LIBOR plus 2.5% per annum and is subject to a LIBOR floor of 0.0%. The 2030 Senior Notes mature on February 28, 2030.

The net proceeds from these transactions were used to (a) prepay in full the $2.5 billion outstanding principal amount under Facility E, (b) redeem 10% of the original aggregate principal amount of our 2027 Euro Senior Secured Notes at a premium of 3%, (c) redeem 10% of the original aggregate principal amount of our 2027 Dollar Senior Secured Notes at a premium of 3%, (d) redeem in full the outstanding principal amount of our 2025 Euro Senior Notes at a premium of 2.313% and (e) redeem in full the outstanding principal amount of our 2025 Dollar Senior Notes at a premium of 2.938%.

Subject to certain exceptions as specified in the applicable indenture, the 2030 Senior Notes are non-callable prior to February 15, 2025. At any time prior to February 15, 2025, we may redeem some or all of the 2030 Senior Notes by paying a "make-whole" premium, which is the present value of all remaining scheduled interest payments through February 15, 2025 using the discount rate (as specified in the applicable indenture) as of the redemption date plus 50 basis points.

On or after February 15, 2025, we may redeem some or all of the 2030 Senior Notes at the following redemption prices (expressed as a percentage of the principal amount) plus accrued and unpaid interest and additional amounts (as specified in the indenture), if any, to but excluding the redemption date, as set forth below:

	Redemption Price	
	2030 Dollar Senior Notes	**2030 Euro Senior Notes**
12-month period commencing February 15:		
2025	102.563%	101.688%
2026	101.281%	100.844%
2027	100.641%	100.422%
2028 and thereafter	100.000%	100.000%

In February 2020, VZ Vendor Financing issued an additional €100.0 million principal amount of Vendor Financing Notes, at an issue price of 102.1%. The net proceeds from these notes will be used to purchase certain vendor financed receivables of VodafoneZiggo and its subsidiaries from various third parties. To the extent that the proceeds from the Vendor Financing Notes exceed the amount of vendor financed receivables available to be purchased, the excess proceeds will be used to fund VodafoneZiggo's Financing Facility. VZ Vendor Financing can request the Financing Facility to be repaid by VodafoneZiggo, as additional vendor financed receivables become available for purchase.