1. CLIMATE- AND ENVIRONMENTAL PROTECTION

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Taking the purchase of green energy and carbon offset into account, total carbon dioxide emissions was offset by the Magyar Telekom Group. Our Scope 1 emission decreased by 8% due to the significant decrease of the fuel consumption, while the Scope 2 emission decreased by 3% due to network modernisation.

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- Reducing our CO2 emissions (target set below 100 000 tons of CO2 by 2020)
- Energy consumption: saving energy (reduce consumption), increase of energy efficiency levels, using green energy,
- Increase the energy efficiency of our buildings
- Decrease our fleet consumption, promotion travel replacement solutions, and dematerialization solutions,
- Introduction of sustainable and climate friendly products and services
- Waste management: reduction of waste (increased recycling rate)
- Measure the climate footprint of our customers and suppliers

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In order to measure our energy efficiency, in our 4th Sustainability Strategy we continue to use a Gbit/kWh indicator. Our goal is to reach the 100 Gbit/kWh, in 2016 it was 52.4 Gbit/kWh.

We apply three kinds of energy intensity indicators in order to show the changes in three factors that amount to the largest proportion of our CO₂ emissions: the electricity consumption of the network, fuel consumption of the fleet and the ratio of the revenue and the energy consumption. The effectiveness of the energy consumption of Magyar Telekom Plc.’s operation is characterized by the Gbit/kWh (transmitted bits/electricity consumption) energy efficiency indicator. The indicator shows that as the quantity of transmitted information grows the energy consumption proportionally reduces (i.e. we transfer more information with less energy). The fuel consumption efficiency is characterized by car pool average CO₂-emissions in g/km. For the revenue related energy consumption indicator we use the GJ/HUF M. We would like to increase the first and reduce the second and the third indicator.

Average carbon dioxide emissions from vehicles have further decreased from 151.91g to 148.3g CO₂/km, due to the introduced restriction in our bonus-malus system. We limited the emissions of the employee benefit cars and maximized their power. We introduced new financial incentives to make the hybrid and electric cars more favourable.

The revenue related energy consumption was 1494 GJ/HUF M. (GJ/kWh).

PREVIOUSLY THE MAGYAR TELEKOM-RELATED EMISSIONS OF OUR SUPPLIERS HAVE NOT BEEN MONITORED. IN 2015 THE MONITORING OF OUR SUPPLIERS’ Magyar Telekom-related emissions have already been included in the sustainable supply chain management process within their sustainability evaluation on energy use and emissions. So far, only 4 of our suppliers provided their energy consumption data. Their emission was 1394 tons of CO₂ that covered 1.67% of all procurements. Thus as a non reliable estimation the Telekom-related emission of our suppliers was 83 473 tons of CO₂ in 2016. A more precise calculation could be carried out on a larger set of sample elements in 2017.

1.2 RESOURCES MANAGEMENT

1.2.1 ELECTRICITY CONSUMPTION

Magyar Telekom Group In 2016 Magyar Telekom Group continued with its efforts to energy-efficient operations. As a result our electricity consumption continued to decline by a further 3% compared to 2015. We continue to improve our energy efficiency in accordance with our Sustainability Strategy and in compliance with the ISO 50001 standard.

At Magyar Telekom the aggregate of several smaller transformations and development projects may jointly help us to further reduce our energy consumption:

- Our attested building ventilation technology has been upgraded in 2016: we implemented the so-called wardrobe type equipment thus reducing the operation time of air-conditioners and saving electric energy. Currently the main objective is to fine-tune the existing solutions but new solutions are also implemented as a result of the global PSTN (Public Switched Telephone Network) replacement project. With this we take a huge step forward in the field of air conditioning management together with the implementation of lower performance power supply equipment.

- We have replaced our power supply equipment in several huge machine rooms; we continued the merge of fixed line and mobile power supply operation at specific sites. As smart cooling technology evolves, it brings new results in more sustainable cooling strategies.

- The increase of machine room temperatures is managed as a global project concerning operation spaces of all sizes, from minor containers up to the large exchange centres. The use of temperature resistant accumulators and accumulator coating is a preparatory phase of the project.

- The PSTN replacement project was carried out within the CTIO governance area. Launched on April 15, 2015, the three years long network modernization project, had the target for 2016 to cut-over 321 thousand telephone lines onto IP-based (MSAN) exchanges. The switch to modern, low-consumption devices will result in 300 000 000 kWh energy saving within 10 years – this volume is equal to the quantity of the annual electricity consumption of 100 000 households – thus 100 000 tons of CO₂ emission reduction could be achieved. By the end of 2016 the mass customer migration has been completed.

In the last year of the data storage modernization program we have achieved further significant electricity savings, continuing to reduce our harmful impact on the environment. In 2016 we have replaced 25 pieces of high operational cost data storages, representing 1.8 Petabyte capacities. The operation has already resulted in a saving of HUF 12M in the implementation year.

The scope of our energy saving target is global: at the core of our every effort and every development, there is the inherent aim to reduce our energy consumption. This is how we ensure a clean trend of consumption-decrease in the long term.

1.1.3 EQUIPMENT IN CUSTOMERS’ PREMISES

Our customers generate significant energy consumption by operating our CPEs, but that consumption is essential for using our services. We identified three major areas where the energy consumption is significant: the use of mobile phones, TV services, internet services. In 2016 we conducted a precise calculation on the number and performance of CPEs (set-top-boxes, modems, terminals). We have no information about the exact kinds of mobile phones, that our customers use, therefore our calculation is based on an average smartphone’s energy consumption (1 kWh/year). Taking the number of subscriptions in 2016 into account, the energy consumption of our CPE’s was 55 GWh, which is equivalent to 52 510 tons of CO₂ emission. It has increased by 5.5% compared to the estimated data of 2015, due to the increased number of customers.

Previously the Magyar Telekom-related emissions of our suppliers have not been monitored. In 2015 the monitoring of our suppliers’ Magyar Telekom-related emissions have already been included in the sustainable supply chain management process within their sustainability evaluation on energy use and emissions. So far, only 4 of our suppliers provided their energy consumption data. Their emission was 1394 tons of CO₂ that covered 1.67% of all procurements. Thus as a non reliable estimation the Telekom-related emission of our suppliers was 83 473 tons of CO₂ in 2016. A more precise calculation could be carried out on a larger set of sample elements in 2017.

1.2.2 FLEET MANAGEMENT, FUEL CONSUMPTION

The number of vehicles in the fleet on a Group level continued to drop, while the types of usage and distribution of fuel has not changed. The number of hybrid cars decreased slightly, the number of electric cars has increased to 5.
The fuel consumption (-7% ✓), average fuel consumption of vehicles (-3% ✓), has decreased at group level as compared to the previous year.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel</td>
<td>4 061</td>
<td>3 928</td>
<td>3 873</td>
<td>3 783</td>
</tr>
<tr>
<td>Gasoline</td>
<td>2 369</td>
<td>2 261</td>
<td>2 244</td>
<td>2 181</td>
</tr>
<tr>
<td>Hybrid</td>
<td>1 600</td>
<td>1 572</td>
<td>1 541</td>
<td>1 490</td>
</tr>
<tr>
<td>Electric</td>
<td>89</td>
<td>92</td>
<td>82</td>
<td>112</td>
</tr>
<tr>
<td>Total</td>
<td>4 019</td>
<td>3 928</td>
<td>3 873</td>
<td>3 783</td>
</tr>
</tbody>
</table>

Benefit cars: 1 636, 1 428, 1 423, 1 359
Service cars: 2 425, 2 500, 2 450, 2 429

The electric cars’ consumption increased from 2.36 MWh to 3.38 MWh ✓. (Personal use is more significant due to the lack of refill-station capacity of the national network.)

The proportion of travel replacement has increased by a significant 34.7% ✓ compared to year 2015. Video conference and TelePresence systems are now available in Magyar Telekom headquarter, T-Systems Hungary’s Budafoki str. headquarter and in regional offices. In 2016 more than 2 899 940 ✓ flight kilometres and 267 180 ✓ road kilometers of travel have been saved, thereby reducing our CO2 emission with 298 tons ✓.

Travel replacement solutions

Mileage, as the measure of business trips has significantly increased (2015: 6 190 403 km, 2016: 8 361 494 km) due to two large volume European projects, that required personal participation. Share of business travels was the following: 90% by plane, 9% by car, 1% by train.

TelePresence video conferences

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Teleworking

Magyar Telekom has been supporting telework for years as it is beneficial for the employer and the employee alike. In 2017 we strated monitoring the commuting habits of our employees (based on a small sample, but for a large office building in a good location in terms of public transport) approximately 1/3 of the employees choose to come to work by car, driving a daily average of 40 kilometres and 1/3 choose community services commuting a daily average of 30 kilometres. In 2016 there were 87 276 telework days registered, saving 3 million kms of travel and 15 years of traveltime. Considering this result, teleworking has a significant role in replacing travel. For additional information on teleworking see Chapter 5.1 Human rights and equal opportunities.

TeleBike

In the spring of 2016, we re-launched TeleBike, Magyar Telekom’s employee bike rental system with extended working hours. In 2016, TeleBike offered 53 bikes, and six new electric bikes. Employees can commute between the offices of the company and six T-Systems Hungary sites that are located within the city limits of Budapest. Some key figures: 5965 rents, 10 683 kms, saving 2 035 kg of CO2 emission in 2016.

Bicycle courier service

Since 2012 Magyar Telekom has been sending some of its consignments using bicycle courier service. In 2016 we used bike carriers 554 times and saved 2833 km ✓ of car travel.
**1.2.3 FOSSIL FUEL CONSUMPTION**

The Group also continued to decrease its natural gas consumption (by -7%) thanks to initiatives that have been introduced during the strategy period, as described in our previous reports. [https://www.telekom.hu/about_us/society_and_environment/sustainability_reports](https://www.telekom.hu/about_us/society_and_environment/sustainability_reports)

At Makedonski Telekom the use of fuel oil has significantly decreased along the optimization/modification of HVAC systems, meaning that the systems for heating based on heating oil were being closed down and replaced with inverter split system units and panel board for heating.

**PAPER CONSUMPTION**

Magyar Telekom Group’s paper consumption continued to decline with more than 20% maintaining the trend of previous years. The usage rate of recycled paper has not changed.

In the part two years Magyar Telekom has introduced e-signature and e-Terms of Service in its stores thus renewing personal customer service operations. This innovative solution may considerably reduce the amount of printed documents, the working time and costs of printing, filing, and storing. This will also improve the operational efficiency and reduce the environmental impact as well. Telekom’s aim is to set up a full-range electronic customer service in the future where legally binding documents with electronically recorded signatures will replace all paper-based contracts. The introduction of e-signature through tablets marks the first step of this process, as a result of which we were able to reduce the number of printed pages by 62%.

**DISTRICT HEATING**

At Group level, the district consumption continued to decrease (by -12%) compared to the previous years.

**GAS CONSUMPTION (MMH) MAGYAR TELEKOM GROUP**

<table>
<thead>
<tr>
<th>Year</th>
<th>Magyar Telekom Plc.</th>
<th>MakTel</th>
<th>PRO-M</th>
<th>TCG</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>132 153</td>
<td>92 970</td>
<td>32 080</td>
<td>0</td>
<td>257 193</td>
</tr>
<tr>
<td>2012</td>
<td>144 658</td>
<td>98 638</td>
<td>33 080</td>
<td>0</td>
<td>276 376</td>
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<tr>
<td>2013</td>
<td>150 293</td>
<td>104 638</td>
<td>35 080</td>
<td>0</td>
<td>290 000</td>
</tr>
<tr>
<td>2014</td>
<td>149 638</td>
<td>110 638</td>
<td>34 080</td>
<td>0</td>
<td>294 354</td>
</tr>
<tr>
<td>2015</td>
<td>147 354</td>
<td>116 638</td>
<td>35 080</td>
<td>0</td>
<td>298 162</td>
</tr>
<tr>
<td>2016</td>
<td>146 016</td>
<td>122 638</td>
<td>36 080</td>
<td>0</td>
<td>304 734</td>
</tr>
</tbody>
</table>

**TOTAL PAPER CONSUMPTION (KG) MAGYAR TELEKOM GROUP**

<table>
<thead>
<tr>
<th>Year</th>
<th>Magyar Telekom Plc.</th>
<th>MakTel</th>
<th>PRO-M</th>
<th>TCG</th>
<th>KFKI</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>1 549 973</td>
<td>317 913</td>
<td>128 114</td>
<td>544 134</td>
<td>679 542</td>
<td>3 312 909</td>
</tr>
<tr>
<td>2012</td>
<td>2 087 485</td>
<td>346 134</td>
<td>128 114</td>
<td>481 099</td>
<td>679 542</td>
<td>4 552 264</td>
</tr>
<tr>
<td>2013</td>
<td>1 579 542</td>
<td>317 913</td>
<td>128 114</td>
<td>481 099</td>
<td>679 542</td>
<td>3 116 498</td>
</tr>
<tr>
<td>2014</td>
<td>1 428 397</td>
<td>317 913</td>
<td>128 114</td>
<td>481 099</td>
<td>679 542</td>
<td>2 937 171</td>
</tr>
<tr>
<td>2015</td>
<td>1 208 215</td>
<td>317 913</td>
<td>128 114</td>
<td>481 099</td>
<td>679 542</td>
<td>2 136 093</td>
</tr>
<tr>
<td>2016</td>
<td>970 461</td>
<td>317 913</td>
<td>128 114</td>
<td>481 099</td>
<td>679 542</td>
<td>1 887 237</td>
</tr>
</tbody>
</table>

**ELECTRONIC BILLS MAGYAR TELEKOM GROUP**

The decrease in group-wide office paper usage is attributable to the continued improvement and automatization of processes, the spread of paperless office solutions, the consolidation of the printer pool and the maintenance of our achievements in this area.

The amount of paper used for packaging has significantly decreased, but it is this area that we can influence the least because it greatly depends on the projects and the sales portfolio. The clickshop.hu no longer in our portfolio, so the related packaging paper usage was eliminated. Over the past two years the amount of printed promotion material was reduced to a minimum.

**1.2.5 PAPER CONSUMPTION**

**1.2.6 BIODIVERSITY**

Magyar Telekom Plc.’s developments are generally not obliged to prepare impact assessment studies (EA). In 2016 there were six investments that concerned protected areas and/or National Nature 2000 areas. In each case our investments were subject to impact assessments. Along our operations no damage occurred on the natural habitat and biodiversity of the concerned territories. We continue to pay increased attention to the protection of our shared natural heritage, by planning all of our developments in accordance with the agreement and in line with the common roll-out plan Telenor will design and operate the network in areas west from the Danube whereas Telekom will do the same in the eastern part of the country. The joint construction effort will help us to provide the highest quality mobile technology to our customers in the countryside in a quick and cost-effective way, with less use of the land.

**Land use, landscape impact**

It is important to the Group to implement its projects with only the absolutely necessary proportion of landuse, thereby preserving the original biodiversity of the natural environment. Along our property investments we also make sure that our buildings fit in the original landscape.

The composition of the mobile network represents a slight change at group level: the number of base stations grew by 29% (2013: 5173, 2014: 5462, 2015: 6102 and 2016: 7894 on Group level). The number of towers shared with other operators increased significantly by 4.5% (2016: 1827 pieces).

In March, 2015 Magyar Telekom and Telenor Hungary have agreed on joining their forces to develop their 800MHz 4G mobile networks in all parts of Hungary except Budapest. In accordance with the agreement and in line with the common roll-out plan Telenor will design and operate the network in areas west from the Danube whereas Telekom will do the same in the eastern part of the country. The joint construction effort will help us to provide the highest quality mobile technology to our customers in the countryside in a quick and cost-effective way, with less use of the land.

Our colleagues planted 500 trees at the Telekom Volunteer Day.
We contribute to local communities by creating community gardens and taking uncultivated land in use, thereby increasing the diversity of the area. In 2014 Magyar Telekom Plc. started the development of three community gardens, the first of which was opened near the company’s site on Csíraszi Street, where the local gardeners started their work on 28 plots. In 2015 we opened two more community gardens near the company’s site in Soroksári Street and Cegléd Street. The community garden in Soroksári Street is the largest in Budapest, where garden owners can work on almost 100 plots. We continued our cooperation in 2016.

1.3 EMISSIONS

### 1.3.1 WASTE

The quantity and quality of waste generated greatly depends on the current telecommunication projects and developments: on Group level in 2016, compared to 2015, the total amount of waste increased by 6%. Due to the finished projects the Group level recycling rate has doubled to 27.1%.

Within Magyar Telekom Group the largest proportion of generated waste (close to 57.9%) - is still the municipal waste. Second by volume is technological waste (18.9%) - the proportion of hazardous waste is 5.3%; paper waste is 2.3%.

In order to reduce the harmful effects of waste on the environment:

- We make sure that unused equipment gets reused either within the company, or by trading them to employees or external partners, or by renting, leasing or transferring them without compensation (donation).
- We collect waste selectively in more sites.
- We improve their effectiveness through the revision of our existing contracts, the regular revision of collection points and through communication.
- We continue to operate in accordance with the DT group level policy, released in 2015, for the regulation of management contracts.
- We continue our cooperation in accordance with the DT group level policy, released in 2015, for the regulation of management contracts.

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### Noise and vibration protection

In Magyar Telekom Group sites we have to pay increased attention to the following potential noise sources: outdoor air-conditioning equipment and emergency diesel generators. Last year 3 complaints have been issued about the noise level of Magyar Telekom. Two of them were closed to the satisfaction of the complainant while the solution of the last case is extended to 2017.

### Water consumption

The water consumption at Magyar Telekom Group is exclusively for social purposes. Group-level water consumption decreased by more than 11%, in part due to the watersaving solutions (perlators) introduced in the previous year, and in part due to decreasing space and headcount. As for Magyar Telekom Plc.’s water consumption experienced a minor increase of 5%. Magyar Telekom Plc. sites that do not have connection to public sewer system pays environmental charges to the local council. The amount of the environmental charge in 2016 was HUF 152,800 paid after 235 m³ of water used.

### Noise and vibration protection

In Magyar Telekom Group sites we have to pay increased attention to the following potential noise sources: outdoor air-conditioning equipment and emergency diesel generators. Last year 3 complaints have been issued about the noise level of Magyar Telekom. Two of them were closed to the satisfaction of the complainant while the solution of the last case is extended to 2017.

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Other waste

The quantitative increase of other waste at Magyar Telekom Plc. is in part due to building renovations.

At Magyar Telekom Plc. the recycling rate is nearly 27%. In the case of municipal waste, local public services must be used, so only estimated data is available; the waste is disposed into licensed landfill sites. The company does not transfer waste directly to incineration or composting. 15% of our waste falls into the ‘other waste’ category, in the case of which the handler performs prehandling operations. A selection process is part of this process, where the reusable parts of waste are being extracted, and waste is being prepared for final use or disposal.

1.3.2 PRODUCER’S AND DISTRIBUTOR’S RESPONSIBILITY

In cooperation with equipment manufacturers Magyar Telekom is committed to environment friendly equipment manufacturing and recycling processes. For more details on our procurement requirements, please see chapter 3. Suppliers. Sustainable products are elaborated in detail in chapter 2. Responsible Service.

The major aim of the company is to carry out its operations with the least possible impact to the environment; we pay special attention to the revision, repair and re-use of the equipment in our network. The re-use rate of CPE devices is 59%.

Hungarian companies are obliged to comply with producer’s responsibilities as follows:

- In the case of electronic equipment subject to product fee regulations most companies choose the payment of the product fee payment and the use of the national collection system. Magyar Telekom Plc. paid the mandatory product fee for electric and electronic equipment in 2016. The national collection rate requirement was 45% in the IT sector (the national system does not report company-level data.)

- In the case of batteries, in accordance with the provisions of law, Magyar Telekom Plc. partly transferred the obligation to intermediary organizations. Each year, our contracted partner, ReLemm Ltd by Non Profit Corporation fulfills its obligation above the law enforced level. The amount reported by ReLemm and legally admitted by Magyar Telekom Plc. to the General Environmental Inspectorate was 1037.5 kg in the category of ‘portable chargers and batteries’. Magyar Telekom Plc. marketed 10 kg of batteries subject to product fee.

- In compliance with the provisions of law Magyar Telekom Plc. offers special collection points for customers to dispose their used chargers and batteries (in Magyar telekom stores and buildings). The thus recollected amount in 2016 was 919 kg.

In accordance with the legislations in force we inform our customers on our websites about the various waste disposal options for used equipment and batteries. In spite of ensuring the opportunity to exchange returned waste and thus receive a discount from the price of new devices the volume of such waste showed a decreasing trend.

All of our commercially available products are certified with energy efficiency certificates according to the requirements of the European Union and in compliance with the environmental standards set by Hungarian law. Manufacturer’s statements with detailed information about the life-cycle, reuse, the recycling of the product, the used materials and the repairability features are available in all of our stores. All of our procured network equipment should meet our high energy efficiency standards.

1.3.3 EMISSIONS TO AIR

Magyar Telekom pays an air pollution fee in accordance with the national legislations. The amount of pollutants emitted by Magyar Telekom Plc., and the respective fee paid in 2016 was: 649 000 HUF (NOx: 5197.33 kg, OX: 459.71 kg). The decrease of emission is due to reduced hours of operation.

1.4 ENVIRONMENTAL OBJECTIVES, COSTS AND COMPLIANCE

Magyar Telekom Group’s CO₂ emission decreased from 115 358 tons of CO₂ to 110 736 tons of CO₂. Our energy efficiency indicator followed the increasing trend to 52.36 GBit/kWh. Our fleet average emissions are experiencing a stable decrease, while the share of the hybrid and electric cars in the fleet has increased to 9.5% by the end of 2016. The results of the freshly introduced incentive measures will first be monitored in 2017. Thanks to the new paperfree solutions in the stores the amount of printed paper has dropped by 62%.

The management of our stakeholders’ environmental complaints is the responsibility of the Group Environment Protection Manager. Complaints and messages could be directed to: sustainability@telekom.hu (Our Hungarian e-mails addresses are fornet@kft@telekom.hu and kormavezetelelem@telekom.hu).

We are dedicated to respond to all proposals, complaints and enquiries as soon as practicable.

In 2016 Magyar Telekom Plc. received – and successfully closed the case of – four complaints regarding waste management. In four cases, related to electromagnetic fields we have conducted radiation biology tests upon citizens’ requests and found that the measured rate stays under the limit stated in the relevant law No.63/2004. (VII.26.) EStCSM on the healthy limits of electric, magnetic and electromagnetic fields between 0 Hz and 300 GHz relevant to citizens’ health. There was no penalty declared upon these cases as the emission levels were beyond limit. As common sensitivity toward electromagnetic fields is high we continue to conduct the related complaint management cases with utmost care to deliver reassuring solutions for our stakeholders.

We have received 5 citizen notifications about damage claim in the subject of electromagnetic fields. One of the cases was closed due to lack of legal relevance, one of the cases was answered by our Law Department. In relation to one of the cases we have terminated our concerned investment until the satisfactory closure of the case. The resolution of two cases is still in process. See our noise-protection related cases in the Noise and vibration protection section of this chapter.

In 2015 market surveillance examined if the set-top-boxes marketed by Magyar Telekom Plc. comply with the relevant electricity consumption regulations. The controlling process ended in 2016 with a positive result.

T-Systems Hungary Plc. did not receive any environmental complaints in 2016 that required investigation.