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# THE ECONOMIC COST OF IPR INFRINGEMENT IN THE SMARTPHONES SECTOR



February 2017

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## ACKNOWLEDGEMENTS

The authors would like to thank members of the Economics & Statistics Working Group of the Observatory who provided useful comments on the reports in this series and on the methodology used. Valuable support was received from the Telecommunication Development Bureau (BDT) of the International Telecommunication Union (ITU), especially from the Regulatory and Market Environment Division (RME) and the ICT Data and Statistics Division (IDS). In addition, the Mobile & Wireless Forum (MWF) has provided information on the smartphones marketplace in the EU.



## Contents

1. Foreword _____	04
2. Executive Summary _____	06
2.1. Methodology and data _____	06
2.2. Main findings _____	06
2.3. Non-economic impacts of counterfeit smartphones _____	11



# 1. FOREWORD

THE ECONOMIC COST OF IPR INFRINGEMENT IN THE SMARTPHONES SECTOR

The European Observatory on infringements of Intellectual Property Rights (the Observatory) was created to improve the understanding of the role of Intellectual Property and of the negative consequences of Intellectual Property Rights (IPR) infringements. It was transferred from the Commission to EUIPO in 2012 by Regulation 386/2012.

The International Telecommunication Union (ITU) is the United Nations specialised agency for Information and Communication Technologies (ICTs), with responsibilities that include among others the allocation of global radio spectrum and satellite orbits, the development of technical standards that ensure networks and technologies seamlessly interconnect, and efforts to improve access to ICTs to underserved communities worldwide. The goal is to bring the benefits of modern communication technologies to people everywhere in an efficient, safe, easy and affordable manner.

In a study carried out in collaboration with the European Patent Office<sup>1</sup>, the EUIPO, acting through the Observatory, estimated that approximately 42% of total economic activity and 28% of all employment in the EU is directly generated by IPR-intensive industries, with a further 10% of jobs in the EU arising from purchases of goods and services from other industries by IPR-intensive industries.

Another study<sup>2</sup> compared economic performance of European companies that own IPRs with those that do not, finding that IPRs owners' revenue per employee is 28% higher on average than for non-owners, with a particularly strong effect for Small and Medium-Sized Enterprises (SMEs). Although only 9% of SMEs own registered IPRs, those that do have almost 32% more revenue per employee than those that do not.

Perceptions and behaviours of European citizens regarding Intellectual Property and counterfeiting and piracy<sup>3</sup> were also assessed as part of an EU-wide survey. This survey revealed that although citizens recognise the value of IP in principle, they also tend to justify infringements at individual level in certain cases.

The Observatory is seeking to complete the picture by assessing the economic impact of counterfeiting and piracy.

In 2016, EUIPO and ITU signed an agreement to collaborate in the publication of a study on the economic impact of intellectual property rights (IPR) infringement in smartphones. The present report is the result of that agreement.

This exercise is challenging from a methodological point of view, as it attempts to shed light on a phenomenon that by its very nature is not directly observable. To pave the way towards quantification of the scope, scale and impact of IPR infringements, as identified in its mandate, the Observatory has developed a step by step approach to evaluate the negative impact of counterfeiting and its consequences for legitimate businesses, governments and consumers, and ultimately for society as a whole.

Several IPR intensive industries whose products are known or thought to be subject to counterfeiting have been selected. Previous studies have examined the following sectors: cosmetics & personal care; clothing, footwear and accessories; sports goods; toys & games; jewellery & watches; handbags & luggage; recorded music; spirits & wine; medicines; and pesticides.

The sectorial studies published to date estimate the impact of counterfeit goods in the EU marketplace. This eleventh study, covering the smartphone sector, is published in collaboration with ITU, a UN agency with a global focus.

<sup>1</sup> - "Intellectual Property Rights intensive industries and economic performance in the European Union", EUIPO/EPO, October 2016.

<sup>2</sup> - "Intellectual Property Rights and firm performance in Europe: an economic analysis", June 2015.

<sup>3</sup> - "European citizens and intellectual property: perception, awareness and behaviour", November 2013, updated report 2017 (forthcoming).

Therefore, while it uses a similar methodology to that applied in previous sectorial studies it is not limited to EU countries. Due to the need to include a wider set of countries and to the special nature of the sector, different data sources and adjustments of the methodology were required.

## 2. EXECUTIVE SUMMARY

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### 2.1. Methodology and data

The study aims to estimate the scale of the economic impact of counterfeiting in the legitimate sector. The starting point of this analysis is the number of smartphones sold in 86 countries based on point-of-sale tracking of consumers' purchases. Expected sales are estimated based on new smartphones connections and expected replacement of devices. Subsequently, the difference between expected and actual sales estimated for each country is analysed using statistical methods. This difference can be partly explained by socio-economic factors such as per capita GDP or mobile broadband services prices. In addition, factors related to counterfeiting are considered, such as the legal and regulatory environment<sup>4</sup>.

The methodology is explained in detail in section 5.

### 2.2. Main findings

It is estimated that in 2015, 14 million smartphones fewer were sold by the legitimate industry across the EU than would have been the case in the absence of counterfeiting. This translates to approximately 4.2 billion EUR lost due to the presence of counterfeit smartphones in the EU marketplace, corresponding to 8.3% of the sector's sales.

Worldwide, the effect of counterfeiting on smartphone sales is estimated at 184 million units, valued at 45.3 billion EUR or 12.9% of total sales.

Region<sup>5</sup>-level estimates of lost sales expressed both as a percentage of sales and in euros, are shown in the table below along with the confidence intervals.

<sup>4</sup> - The Worldwide Governance Indicator of Government Effectiveness from the World Bank is used in this study. This indicator captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

<sup>5</sup> - The countries included in each region are shown in Table 4.

**TABLE 1: LOST SALES DUE TO COUNTERFEITING OF SMARTPHONES BY REGION AND CONFIDENCE INTERVALS (2015)**

	Lost sales (million EUR)	Lost (%)	Upper	Lower
European Union*	4.212,2	8,3%	9,1%	7,4%
Other European Countries	1.207,0	12,9%	16,1%	9,7%
CIS**	1.122,9	20,3%	25,0%	15,7%
Asia-Pacific***	7.166,6	11,8%	13,7%	10,0%
ASEAN****	2.674,9	16,9%	19,3%	14,6%
Arab States	1.975,7	17,4%	20,2%	14,6%
Africa	1.024,9	21,3%	24,4%	18,2%
Latin America	4.706,5	19,6%	22,9%	16,2%
North America	4.927,2	7,6%	9,9%	5,3%
China	16.335,8	15,6%	20,4%	10,9%
<b>TOTAL</b>	<b>45.353,8</b>	<b>12,9%</b>	<b>13,7%</b>	<b>12,0%</b>

\*EU28 except Malta and Bulgaria

\*\*CIS Commonwealth of Independent States

\*\*\* Asia-Pacific region except China and ASEAN countries

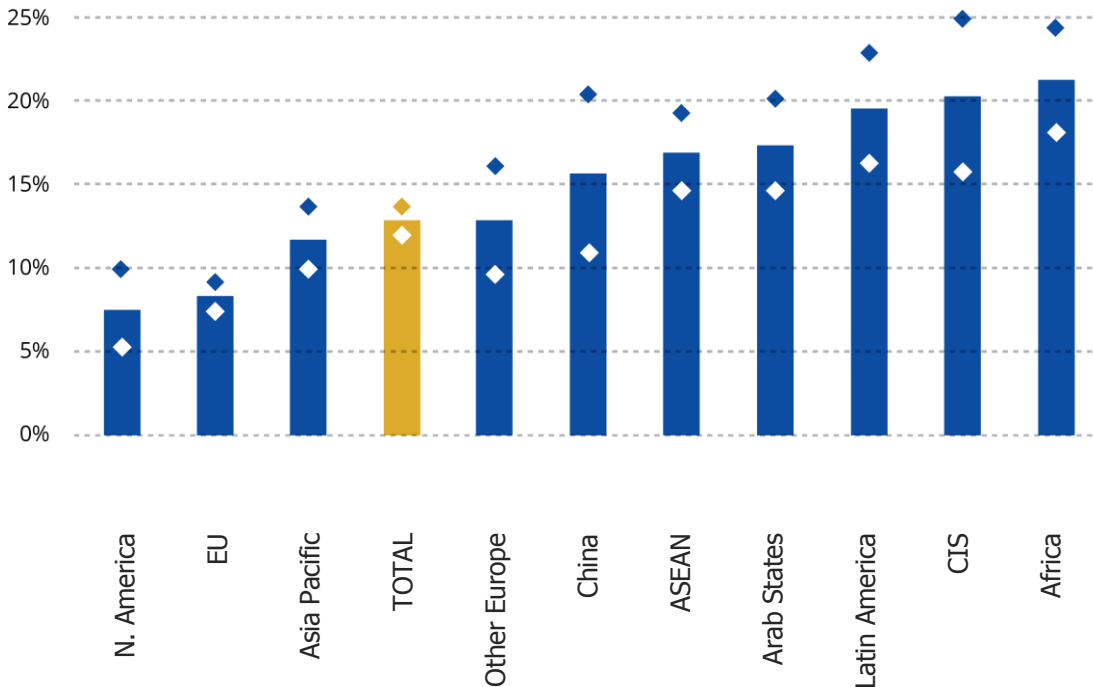
\*\*\*\* ASEAN Association of Southeast Asian Nations

Source: EUIPO calculations

The resulting estimates of lost sales due to counterfeit smartphones in each region are shown in the figure below. The bar indicates the impact of counterfeiting on the legitimate sector's sales, expressed as a percentage of sales, while the diamonds indicate the 95% confidence interval of that estimate<sup>6</sup>.

<sup>6</sup> - The countries included in each region are shown in Table 4.

**FIGURE 1: LOST SALES DUE TO COUNTERFEITING OF SMARTPHONES BY REGION (2015)**



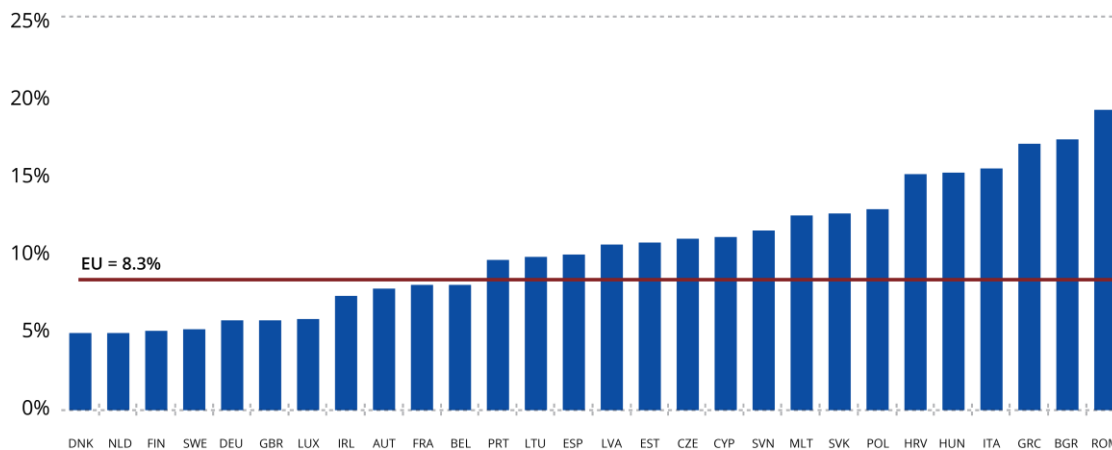
Source: EUIPO calculations

Lost sales in China account for 36% of worldwide lost sales. Lost sales in absolute terms in North America and Latin America are quite similar although in relative terms the losses in Latin America are almost three times higher. North America and the EU are the two regions with the lowest relative impact of counterfeiting on sales, both below 10%.

Among the EU Member States, 11 are below the EU average of 8.3%. The country least affected by counterfeiting in relative terms is Denmark (4.9%), while Romania is the country most affected (19.1%). In absolute terms, the impact is greatest in Italy, with lost sales due to counterfeiting estimated by 885 million EUR; followed by UK at 660 million EUR, Germany (564 million EUR), Spain (386 million EUR) and France (380 million EUR). The five biggest EU Member States account for 2.9 billion EUR lost due to counterfeiting, nearly 70% of total lost sales in the EU.



**FIGURE 2: LOST SALES DUE TO COUNTERFEITING OF SMARTPHONES IN EU MEMBER STATES (2015)<sup>7</sup>**



Source: EUIPO calculations

Country-level estimates of lost sales expressed as a percentage of total sales are shown in the table below.

<sup>7</sup> - International Standards Organizations (ISO) country codes are used throughout this report. See: [http://wits.worldbank.org/wits/wits/witshelp/Content/Codes/Country\\_Codes.htm](http://wits.worldbank.org/wits/wits/witshelp/Content/Codes/Country_Codes.htm)

**TABLE 2: LOST SALES DUE TO COUNTERFEITING OF SMARTPHONES IN EU MEMBER STATES (2015)**

Code	Country	Lost sales (%)
AUT	AUSTRIA	7.7
BEL	BELGIUM	8.0
BGR	BULGARIA	17.2
CYP	CYPRUS	11.0
CZE	CZECH REPUBLIC	10.9
DEU	GERMANY	5.7
DNK	DENMARK	4.9
EST	ESTONIA	10.6
GRC	GREECE	16.9
ESP	SPAIN	10.0
FIN	FINLAND	5.1
FRA	FRANCE	8.0
HRV	CROATIA	15.0
HUN	HUNGARY	15.1
IRL	IRELAND	7.3
ITA	ITALY	15.4
LTU	LITHUANIA	9.8
LUX	LUXEMBOURG	5.8
LVA	LATVIA	10.6
MLT	MALTA	12.4
NLD	NETHERLANDS	5.0
POL	POLAND	12.8
PRT	PORTUGAL	9.5
ROM	ROMANIA	19.1
SWE	SWEDEN	5.2
SVK	SLOVAK REPUBLIC	12.5
SVN	SLOVENIA	11.5
GBR	UNITED KINGDOM	5.7
EU	EUROPEAN UNION	8.3

### 2.3. Non-economic impacts of counterfeit smartphones

This report focuses on the economic consequences of counterfeit smartphones. However, there are a number of other impacts in areas such as health and safety, environmental damage, network quality, cyber-security and privacy. A recent report by the ITU singles out the following *non-economic* effects of counterfeit mobile devices<sup>8</sup>:

- lowering the quality of service of mobile telecommunication services, thus impacting the experience of consumers and businesses;  
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- creating a safety hazard for consumers due to use of defective or inadequate components or materials;  
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- raising cybersecurity-related threats;  
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- jeopardizing consumer privacy;  
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- impairing the safety of digital transactions;  
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- hurting the most financially vulnerable consumers by failing to provide any warranties to the consumer and otherwise violating consumer law requirements;  
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- creating risks to the environment and consumer health due to the use of hazardous substances in the manufacturing of these devices.

Many of these impacts are particularly serious in regions such as Africa where many consumers rely on their smartphones to an even greater extent than consumers in Europe or North America. The smartphone is often the only way to access the internet, and the main source of banking services (the M-PESA mobile banking service in Kenya being a well-known example). Any malware or other security breach that can be found in counterfeit devices has serious consequences in this context.

Counterfeit products, because of their poor assembly and use of poor quality components, contain hazardous substances that are banned in many countries under the restriction of hazardous substances (RoHS) or national equivalent legislation. This poses risks to both health and safety of the users and to the environment.

While the non-economic impacts outlined in this sub-section are beyond the scope of this report, they are clearly of significant societal importance and must be kept in mind when considering the phenomenon of counterfeit smartphones.

<sup>8</sup> - "Counterfeit ICT equipment", ITU Technical Report, December 2015.

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