World Health Organization
REGIONAL OFFICE FOR Europe

# WHO/Europe
# Regional Pharmaceutical Situation Report

**Based on the data collected within Pharmaceutical Sector Country Profile Project 2011-2013**

**By:** Mueller T., Bolokhovets G., Bak Pedersen H., Sautenkova N.
Health Technologies and Pharmaceuticals, WHO Regional Office for Europe

## ABSTRACT

This report intends to provide an overview of the WHO European Region's pharmaceutical policies and structures, resources and socioeconomic status based on information provided in the individual Country Profiles.

### Keywords

Data collection
Health policy
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Pharmaceutical services
Public policy
Regulation

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# Contents

# List of Tables



## *Annex 1*

# List of Figures

## *Annex 2*

## Abbreviations

| | |
|---|---|
| ADR | Adverse Drug Reaction |
| API | Active Pharmaceutical Ingredient |
| CVD | Cardio-vascular disease |
| EML | Essential Medicines List |
| EMP | Essential Medicines and Pharmaceutical Policy |
| EPI | Expanded Program on Immunization |
| GCP | Good Clinical Practice |
| GDP | Good Distribution Practice/Gross Domestic Product |
| GGHE | General Government Health Expenditure |
| GHE | Government Health Expenditure |
| GMP | Good Manufacturing Practice |
| GNI | Gross National Income |
| HAI | Health Action International |
| HIC | High Income Country |
| INN | International Nonproprietary Names |
| LIC | Low Income Country |
| LMIC | Low-Middle Income Country |
| MDGs | Millennium Development Goals |
| MoH | Ministry of Health |
| MRA/DRA | Medicines Regulatory Authority/Drugs Regulatory Agency |
| NCD | Noncommunicable disease |
| NCE | New Chemical Entity |
| NCLP | National Clinical Laboratories Policy |
| NIS | Newly Independent States |
| NHA | National Health Accounts |
| NMP | National Medicines Policy |
| NPC | National Pharmacovigilance Centre |
| PHE | Private Health Expenditure |
| R&D | Research & Development |
| STD | Sexually Transmitted Disease |
| STG | Standard Treatment Guideline |
| THE | Total Health Expenditure |
| TPE | Total Pharmaceutical Expenditure |
| TRIPS | Trade-related aspects of intellectual property rights |
| UMIC | Upper-Middle Income Country |
| VAT | Value-added-tax |
| WHA | World Health Assembly |
| WHO | World Health Organization |
| WTO | World Trade Organization |

# Preface

In 1975, the Twentieth World Health Assembly passed resolution WHA28.66 which mandated the World Health Organization (WHO) to assist Member States in formulating national medicine policies and to help countries implement pharmaceutical strategies for the selection of essential drugs, appropriate procurement of quality drugs, and training in various elements of pharmaceutical programmes. The resolution marked the beginning of the evolution of essential drugs programmes in countries towards the development of national drug policies. A decade later, the conference of experts held in Nairobi in 1985 requested WHO to provide information on the pharmaceutical situation at the global and national levels.

These events provided the basis for the development of systems and tools to collect and publish data on a regular basis. The first *World Drug Situation Report* [1] was published in 1988; updates followed in 2004 [2] and 2011 [3]. Meanwhile, indicators and tools for assessing the pharmaceutical situation have been developed and improved. These tools include the Level I monitoring indicators on structures and processes in national pharmaceutical systems used to gather the data for the 2007 Pharmaceutical Situations Fact Book [4]. The 2011 Pharmaceutical Country Profile Project has been performed by the WHO in collaboration with the Ministry of Health in each of its Member States and the Global Fund, intended to serve as an update and elaboration on previous publications. In 2010, the country profiles project was piloted in 13 countries (Armenia and Austria in WHO/European Region).

This report is intended to provide an overview of the WHO European Region's pharmaceutical policies and structures, resources and socioeconomic status. The pharmaceutical sector plays a very important role in all European countries' health sector. In addition the pharmaceutical sector plays a role in terms of employment and manufacturing including R&D. The underlying data has been compiled from a number of international sources (e.g. the World Health Statistics) and backed up with country level information collected in 2011-2013 by the Health Technology and Pharmaceuticals Unit of WHO/Europe, together with the European WHO country offices. The specific sources of data for 24 countries are presented in the individual Pharmaceutical Country Profiles which can be accessed via the WHO website:

http://www.who.int/medicines/areas/coordination/coordination_assessment/en/index1.html

We would appreciate any comments and corrections to the data and information presented to enable us to further improve the process of data gathering and information sharing. Please feel free to contact: Hanne Bak Pedersen, Programme Manager, Health Technologies and Pharmaceutical, WHO/Europe (hba@euro.who.int).

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**Albania** Pellumb Pipero

**Armenia** Lilit Ghazaryan

**Austria** Sabine Vogler, Christine Leopold

**Azerbaijan** Rashida Abdullayeva

**Belgium** Christine Guerin, Els Geeraerts

**Bosnia and Herzegovina** Tatjana Ponorac

**Croatia** Antoinette Kaic-Rak, Sibila Zabica

**Czech Republic** Pavla Kortusova, Alena Steflova, Pavel Březovský, David Přinesdom, Martin Mátl

**Estonia** Girtel Liidemann

**Finland** Ulla Närhi

**Georgia** Zaza Chapichadze

**Iceland** Einar Magnússon

**Kyrgyzstan** Mariam Djankorozova, Baktygul Duysheeva, Aygul Sydykova, Janyl Jusupova Larisa Tsygelskaya, Larisa Murzakarimova Adyl Temirov

**Latvia** Antra Fogele

**Lithuania** Gita Krukiene

**The former Yugoslav Republic of Macedonia** Marija KalkovalievaTrajchuleski

**Malta** Isabelle Zahra Pulis, Bernardette Rossi

**Republic of Moldova** Silviu Ciobanu, Jarno Habicht

**Montenegro** Mina Brajovic

**The Netherlands** Margreet Schreurs

**Norway** Audun Hågå

**Poland** Grzegorz Rychwalski, Paulina Marianna Miskiewitz

**Portugal** Jorge Torgal

**Russian Federation** Roza Yagudina

**Slovakia** Jan Mazag, Darina Sedlakova

**Slovenia** Marijan Ivanusa

**Sweden** Johan Lindberg

**Switzerland** Alexandre von Kessel

**Tajikistan** Salomudin Isupov

**Turkey** Yavuz Mehmet Kontas, Maria Cristina Profili, Pelin Kilic

**Ukraine** Baula Olga

**Uzbekistan** Mukhabbat Ibragimova

# Summary: Key findings

*Demographic data and health services*

The European Region WHO is very diverse with large variations in life expectancy and mortality rates across countries. High income countries have higher life expectancy and lower mortality rates for infants and children < than 5 years old. In general, women have a higher life expectancy than men and noncommunicable diseases are the leading cause of death in the whole region.

Higher income countries tend to have a greater Total Health Expenditure (THE) and Total Pharmaceutical Expenditure (TPE) per capita than middle/low income countries. However, middle/low income countries seem to spend a higher percentage of their THE on pharmaceuticals. Health care and pharmaceuticals are mostly (>60%) publicly funded in high income countries (HIC), while in lower income countries (LIC), health care and pharmaceuticals are funded mainly by out-of-pocket payments.

*Policy issues*

The majority of the countries in the region have a National Health Policy (NHP) and a National Medicines Policy (NMP). Associated implementation plans are in place for almost all the high income and middle/low income countries. Access to essential medicines/technologies, as part of the fulfilment of the right to health, is recognized in most national legislations. In addition several middle/low income countries have a national Good Governance Policy (GGP).

*Medicines trade and production*

Most of the countries in the Region are WTO members and have national legal provisions for the patenting of pharmaceuticals and medical equipment. The majority of the countries in the region implemented the TRIPS agreement.[i] In addition TRIPS flexibilities, in particular the compulsory license option has been implemented in most of the responding countries, while LMIC have limited implementation of Bolar Exemption and parallel import.

The number of licensed manufacturers and the manufacturing capabilities per country vary in the region, with high-income countries being more able to conduct R&D and to produce Active Pharmaceutical Ingredients (APIs). However, in the majority of the European countries production of medicines is focused on finished products with the import of APIs mainly from China and India.

[i] Albania, Azerbaijan, Belarus, Ireland, Turkmenistan and Uzbekistan haven't modified national legislation to implement TRIPS agreement on the moment when the survey was filled

*Medicines regulation*

There are many differences but also similarities in medicines regulation across study countries. Structures for medicines regulation are mostly present in the study countries with comprehensive legal basis and key regulatory functions being addressed, However, in a number of non-EU countries, particularly NIS countries, the measures are often insufficient and do not build up a consistent regulatory system.
Although legal provisions on main regulatory functions widely exist in the study countries, pharmacovigilance and clinical trials are less governed by legislation.

*Medicines financing*

There is a large variety in the ways medicines are financed in the WHO/Europe region. Middle/low income countries (LMIC) more often provide certain medicines for free to certain population groups. The medicines that are on the national EML in LMIC are often supplied for free while high income countries make use of reimbursement systems that might not necessary provide similar products free of cost to the patient. Hence, in LMIC the tendency is to focus public spending on a few life-saving medicines provided free of charge to the patient, while high income countries spread the public funding over a larger range of medicines where there is generally a co-payment share from the patient. There is generally a low share of public expenditure on pharmaceuticals in LMIC. Hence the products that are provided free of cost to the patients are very few. High income countries almost always have a product-specific reimbursement system and not a population-group specific system; they fund medicines expenditures largely through collective financing, as shown by the high share of public expenditure on medicines. High income countries seem to impose VAT on medicines more often.

*Procurement and distribution of medicine*

1/3 of the countries in the region make use of public sector procurement. This may be limited to certain categories of medicines, such as vaccines or medicines for hospital use. Almost all of the high income countries have national guidelines on GDP – in line with EU legislation. In contrast, only two of the low middle/low income countries have these guidelines. [ii]

*Selection and rational use of medicines*

The principles behind the Essential Medicines List (EML) are used in almost all countries of the Region for selecting/ listing the medicines that are considered to present the best

[ii] Kyrgyzstan and Ukraine

value in terms of public health and for which public funding should be provided. Most of the high income countries make use of positive or negative reimbursement lists. In 1/3 of the countries in the region national Standard Treatment Guidelines exist.

Half of the countries have a national strategy to contain antimicrobial resistance but antibiotics are still sold over-the-counter (OTC) in most of non-EU countries as well as certain EU countries. Twice as many middle/low income countries compared with high income countries have the obligation of prescribing by INN name.

Generic substitution at the point of dispensing is allowed in all the middle/low income countries, while a few higher income countries do not allow this.

# 1. Introduction

## *1.1 Background*

The 2001 World Health Assembly resolution on the WHO medicines strategy (WHA 54.11) identified the four main objectives of this strategy, namely: to frame and implement policy; to ensure access; to ensure quality, safety and efficacy; and to promote rational use of medicines [5]. The *WHO Medicines Strategy 2008–2013* [6] covers these objectives and aims to support all health-related Millennium Development Goals (MDGs). The 2011 Pharmaceutical Country Profiles project was conducted as part of the 2008-2013 strategy to undertake an in-depth assessment of the pharmaceutical situation globally [7]. This report presents the overview of data collected in the WHO/European Region.

## *1.2 Methodology*

*Collection instrument development*

The 2011 collection instrument was an extension of the 2003 and 2007 Level I collection instruments, incorporating questions on Level I, II and III data. Expanding on the 2007 survey [4], a comprehensive instruction manual and a glossary were added to the questionnaire. A software tool was developed to generate individual collection instruments for each country to provide Member States with a tailored survey for completion. To facilitate the work of national counterparts, the collection instruments were pre-filled at WHO headquaters and WHO Regional Office for Europe using all publicly-available data before being sent out to each country; resources used include the World Bank [9], National Health Accounts for 2011 [10], the 2013 World Health Statistics published by WHO [11], PPRI Pharmaceutical Pricing and Reimbursement Country Profiles 2007-2010 [12] and the OECD statistical database [13], among others.

*Data collection*

Data collection in the countries was conducted using an electronic collection instrument during the period of February 2011 – July 2013. Country-specific collection instruments were prepared and sent individually to the 53 WHO European Member States via Ministries of Health and/or country offices mainly by email.

*Data quality and data limitations*

Completed instruments were collected at the WHO Regional Office for Europe, where the data were validated by follow-up with national focal points as needed. New data provided

were cross-checked with existing sources to ensure reliability and accuracy. For further analysis, the data from the collection instrument were imported into an Excel file; only aggregate data for binary questions to which the majority of countries responded with a yes/no and other categorical or numerical response (as requested) were included in the analysis. Countries that reported “don’t know” and those with missing data were excluded.

The information that is presented contains both prefilled data and data collected by the countries themselves. Data gathered from the World Health Statistics, the World Bank and the National Health accounts is seen as very high quality data, but might sometimes be outdated or influenced by political conflicts. For some questions in this report the response rate was low or data were reported without a source, possibly creating an inaccurate/incomplete illustration of the situation in the WHO European Region. Not all the data provided by the countries and prefilled by WHO headquarters originates from the same source or year. At the national level, the questionnaire was filled in by various individuals, which may have lead to varied interpretations on the meaning of the questions. Even with the extensive manual and glossary, the questions were not always interpreted in the same manner by different people/countries. Hence the quality assurance process applied at the regional office served to verify data and clarify misunderstandings.

Country profiles endorsed by the respective governments are published on the WHO webpage

www.who.int/medicines/areas/coordination/coordination_assessment/en/index1.html

However, data from other profiles, not endorsed by the government, have been included in this report on a no objection basis from the respective governments/ WHO country offices, as the quality of this data has been assessed and validated by HTP staff and country offices to be acceptable and correctly representing the country situation.

### *1.3 Regional Profile*

The WHO/Europe region spans from the Atlantic coast of western Europe to the Pacific Ocean bordering the Russian Federation, covering 53 very diverse countries in terms of size, socioeconomic conditions and health care delivery models. In this report, countries in the WHO/Europe region have been classified according to income level based on World Bank classification [8]. Within the region, two countries are low-income countries (3.8%) and 20 are middle- income countries (37.7%), of which six are lower middle-income and 14 are upper middle-income; the remaining 31 countries are high income countries (58.5%). (See figure 2.1.1 and tables 1.1.1 and 1.1.2 in the annexes for a more detailed overview of the income groups and each country’s data status.)

In total, 33 out of 53 countries (62.3%) completed their questionnaire before July 15$^{th}$, 2013. Bosnia and Herzegovina only filled in sections 4 and 5, and Turkmenistan filled in a slightly different questionnaire originating from the Global Fund.

# 2. Health and Demographic Data

### *2.1 Overview*

The Member States of the WHO/Europe region vary substantially in demographic and socioeconomic indicators resulting in differences in health-related figures such as life expectancy across the region. To give an overview of the basic background for the WHO/European Region, the most currently available health and demographic data from 2011 is presented in table 2.1 based on the WHO Health Statistic 2013 [11] and World Bank databases [9].

*Table 2.1: Demographic background, mortality and causes of death by income group, 2011*

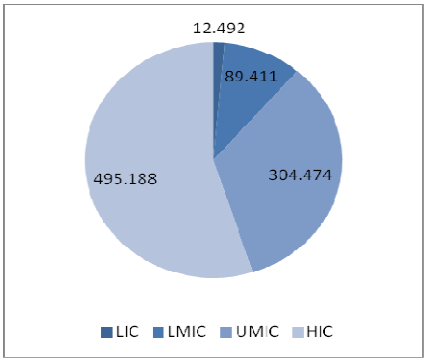
| Income level World Bank (number of countries) | Median life expectancy [years] | | Median mortality rate per 1000 life births | | Median maternal mortality ratio per 100,000 life births | Population aged >60,% of total population | Median age-standardized mortality rate per 100,000 population | |
|---|---|---|---|---|---|---|---|---|
| | Male | Female | Infant | < 5 | | | HIV/ AIDS | NCD |
| Low (2) | 66 | 70.5 | 40 | 47 | 68 | 5.5 | 7.95 | 821.5 |
| Lower middle (6) | 67 | 75 | 15 | 17 | 31 | 15.5 | 19.2 | 827 |
| Upper middle (14) | 69.5 | 77.5 | 9.5 | 11 | 16 | 18.5 | 3.1 | 690.5 |
| High (31) | 79 | 83 | 3 | 4 | 7 | 23 | 0.8 | 377 |
| **WHO Regional Office for Europe region (53)** | **74** | **81** | **4** | **5** | **9** | **21** | **1.3** | **546** |

*Source: World Bank database, 2013; World Health Statistic 2013*

### *2.2 Demographics and Socioeconomic indicators*

In 2011, the population size of the WHO/Europe countries ranged from 32,000 in San Marino to 143 million in the Russian Federation, comprising 901.566 million people in total; the average annual population growth was 0.2% (see figure 2.1).

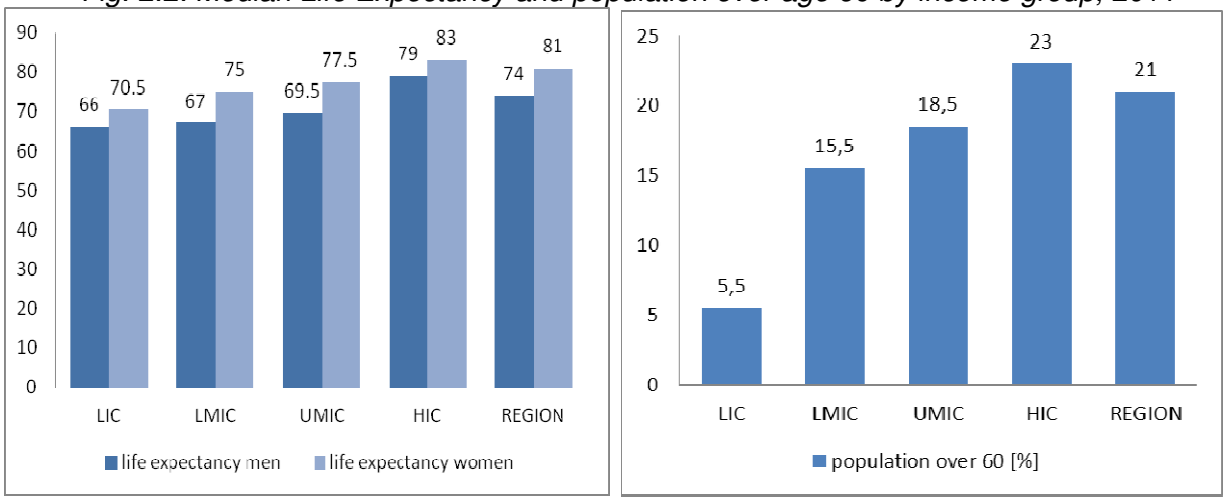
*Fig. 2.1: WHO/Europe regions population [million] by income group, 2011*




Source: World Bank database, 2013

GDP per capita ranged from $ 935 USD (Tajikistan) to $ 171,465 USD (Monaco). Annual national GDP growth rates showed a wide variation as well, ranging from -7.1% to +14.7% in Greece and Turkmenistan respectively [9]. The median life expectancy in the region was 74 and 81 years for men and women respectively; for individual countries the median life expectancy for men ranged from 60 to 82 years (Turkmenistan and San Marino, respectively) and from 67 to 85 years for women (with the lowest in Turkmenistan). Median life expectancy in the region can be associated with income status and life style (e.g. consumption of alcohol, smoking habits etc.) Consequently, the percentage of the population aged 60 years or older grew with increasing income and ranged from 5% in Tajikistan to 27% in Italy (figure 2.2) [11].

*Fig. 2.2: Median Life Expectancy and population over age 60 by income group, 2011*



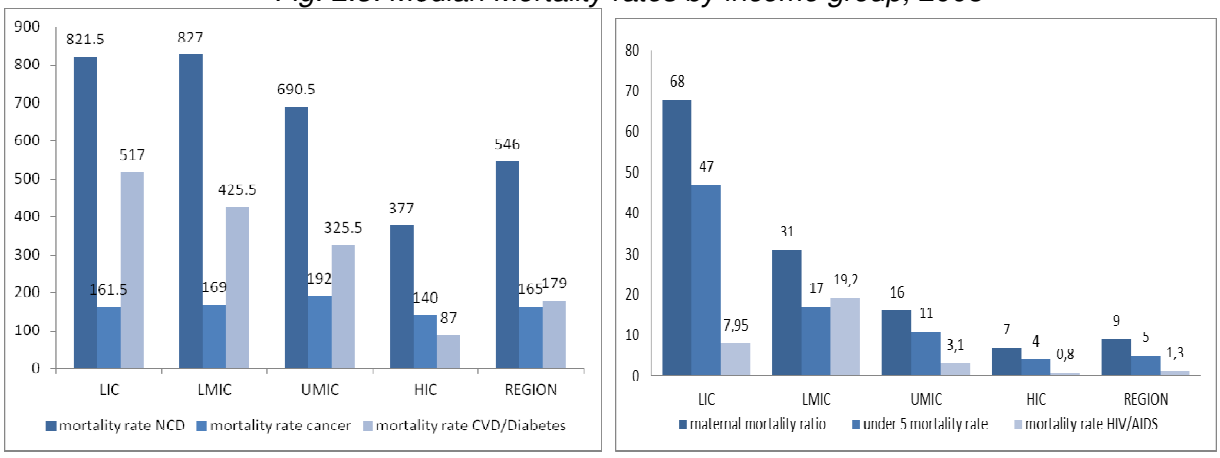

*Source: World Bank database, 2013*

### *2.3 Mortality and causes of death*

Within the WHO/Europe region, mortality rates ranged widely while causes of death were similar, albeit the respective burdens of disease differed. Main causes of death throughout the whole

region were noncommunicable diseases, with diabetes and cardio vascular disease (CVD) responsible for the highest mortality rates in low- and middle-income countries and cancer in high-income ones. Mortality rates due to HIV/AIDS were generally low with a median of 1.3 deaths per 100,000 population, although some exceptions existed – mainly among the NIS countries in eastern Europe and central Asia (response rate 79.2%). Hepatitis B and C is a major health problem in eastern Europe and central Asian countries. However, data on the burden of disease in Europe are scarce, outdated or inconclusive, which indicates that hepatitis C is still a neglected disease in many countries. The median maternal mortality ratio in the region was 9 per 100,000 life births, spanning from 2 in Estonia to 71 in Kyrgyzstan. For this indicator, data were not available from three countries (Andorra, Monaco and San Marino). The under 5 mortality rate showed some variability as well, ranging from 2 to 63 (San Marino and Tajikistan, respectively) per 1000 life births [10]. More detailed data are presented in figure 2.3.

*Fig. 2.3: Median Mortality rates by income group, 2008*




*Source: World Health Statistics 2013*

# 3. Health services

### *3.1 Overview*

The Health services section gives an overview of how health systems are financed in the WHO/Europe region by presenting and analysing data regarding both public and private health expenditure, and by giving a brief description of the usage of different insurance mechanisms in selected countries. This section also provides an overview of existing health infrastructures and available health personnel in the region. Comparisons among different income groups and with the situation globally are shown. Data used throughout this section are based on the National Health Accounts 2013 and the Pharmaceutical Sector Country Profile Database and are the most recent data available,; However, data may not be from the same year for each country. Additional figures regarding the pharmaceutical expenditures are taken from a WHO database.

The following tables 3.1 and 3.2 give an overview of the health and pharmaceuticals expenditures in the WHO Regional Office for Europe region by income group.

*Table 3.1: Health Expenditure by income group, 2011*

| Income level World Bank (number of countries) | Median GDP per capita [US$] | Median THE as% of GDP | Median THE per capita [US$] | Median public HE per capita [US$] | Median public HE as% of THE | Median public HE as% of total budget |
|---|---|---|---|---|---|---|
| Low (2) | 1030 | 6.1 | 62.67 | 28.79 | 45.0 | 9.0 |
| Lower middle (6) | 3255 | 6.8 | 239.11 | 78.34 | 45.5 | 9.5 |
| Upper middle (14) | 7197 | 6.2 | 510.63 | 360.92 | 61.5 | 11.5 |
| High (31) | 42,381 | 9.2 | 3600.18 | 2983.89 | 76.0 | 15.0 |
| WHO/Europe region (53) | **17,783** | **8.0** | **1506.91** | **939.61** | **70.0** | **13.0** |

*Source: National Health Accounts database, 2013*

*Table 3.2: Pharmaceutical expenditure by income group, 2010*

| Income level World Bank (number of countries) | Median TPE as% of GDP | Median TPE as% of THE | Median TPE per capita [US$] | Median public PE per capita [US$] | Median public PE as% of TPE |
|---|---|---|---|---|---|
| Low (2) | 2.0 | 32.5 | 18 | 2.39 | 14.1 |
| Lower middle (6) | 2.5 | 31.5 | 67 | 8.08 | 16.1 |
| Upper middle (14) | 2.0 | 24.5 | 131 | 43.74 | 38.2 |
| High (30)[3] | 2.0 | 18.0 | 578 | 354.64 | 63.5 |
| WHO/Europe region (52) | **2.0** | **21.5** | **309** | **147.93** | **54.5** |

*Source: WHO database, 2013*

### *3.2 Health Financing*

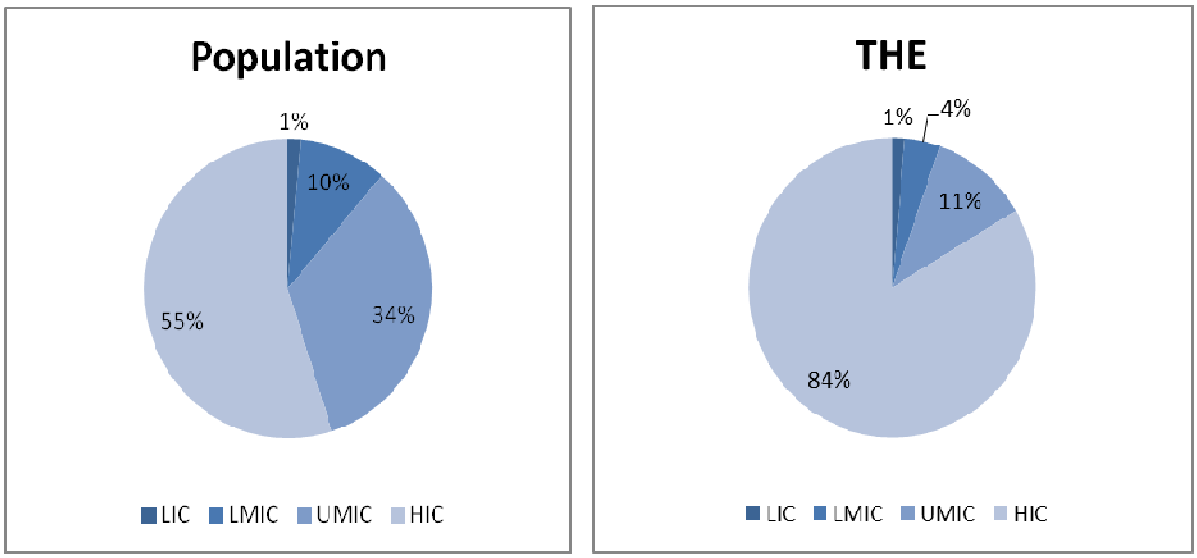
*Total Health Expenditure*

The spending for health sums up to a median of 8.0% of GDP in the WHO/Europe region[4], ranging from 2.4% to 12.0% (Turkmenistan and Netherlands respectively). Although only comprising 55% of the total population, high income countries throughout the region spent 84% of the summed Total Health Expenditure (THE), as highlighted in figure 3.1 below. This was also true on a global scale: high income countries, including only 15.8% of the global population,

[3]Data not available for Monaco
[4] See also figures 2.3.1 and 2.3.2 in the annex.

spent 80.7% of the overall THE, while low income countries, accounting for 11.8% of the global population, accounted for only 0.4% of global THE. The European Region population as a share of the global population is 13.0% and accounts for 30.5% of the global spending for health in 2011 [7].

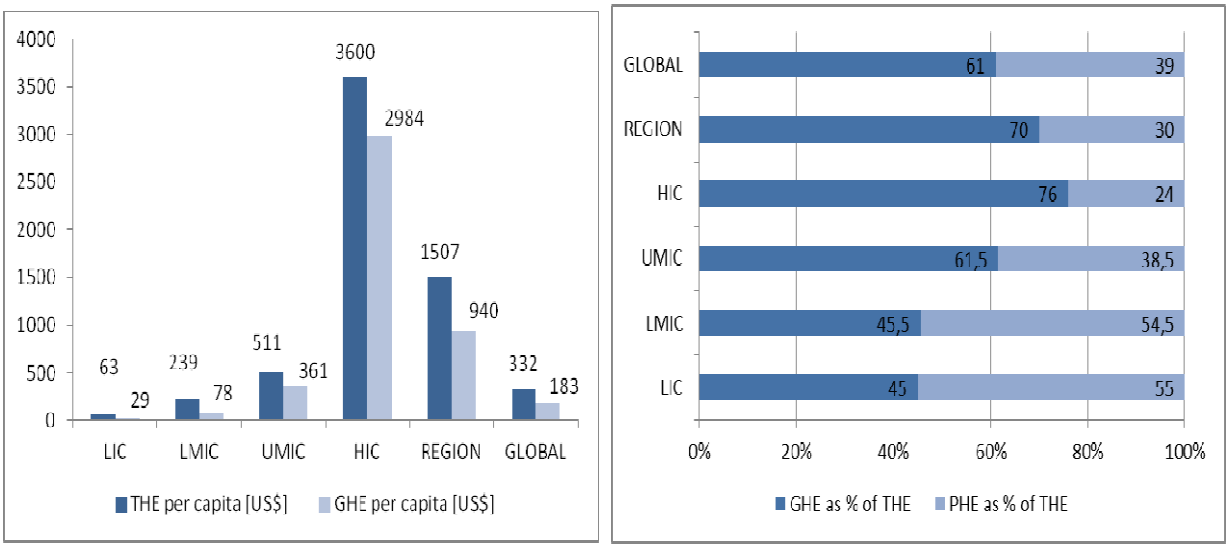
*Fig. 3.1: WHO/Europe region total population and total THE by income group, 2011 [%]*




*Source: World Bank database, 2013; National Health Accounts database, 2013*

The Total Health Expenditure (THE) per capita within the region differed widely, ranging from $54.08 USD per capita in Tajikistan to $9120.81 USD in Switzerland. The proportion of public spending on health also differed substantially, from 18% in Georgia to 89% in Monaco, with a regional median of 70%. Per capita public expenditure on health varied between $15.99 USD and $7696.79 USD (Tajikistan and Norway, respectively). On a global scale, median THE per capita was $331.59 USD, with a minimum of $59.10 USD in the WHO South-East Asia region, and the WHO/Europe region had the highest median per capita THE among the all WHO regions, excluding non-Member States [7]. THE per capita as well as the publicly funded proportion of spending increased with increasing income, as shown in the figure 3.2.

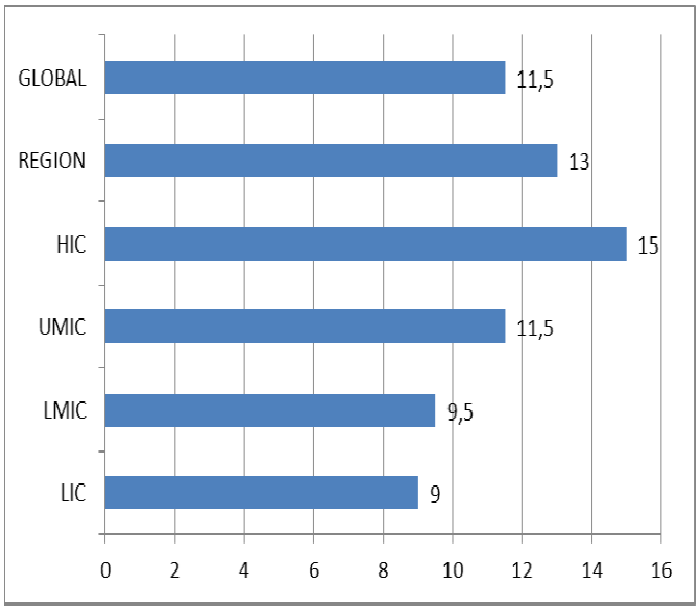
*Fig. 3.2: Public and private THE by income group, 2011*




*Source: National Health Accounts database, 2013*

High income countries throughout the region spent an average of 15% of their total governmental budget on health, while low- and middle-income countries stayed below this target originally set for African Countries with the Abuja Declaration in 2001 [14]. However, the median regional percentage of 13% was slightly higher than the global median of 11.5% [7]. Fig. 3.3 below pictures the median governmental spending on health as a percentage of total governmental budget by income group.

*Fig. 3.3: Government Health Expenditure as% of total budget by income group, 2011*

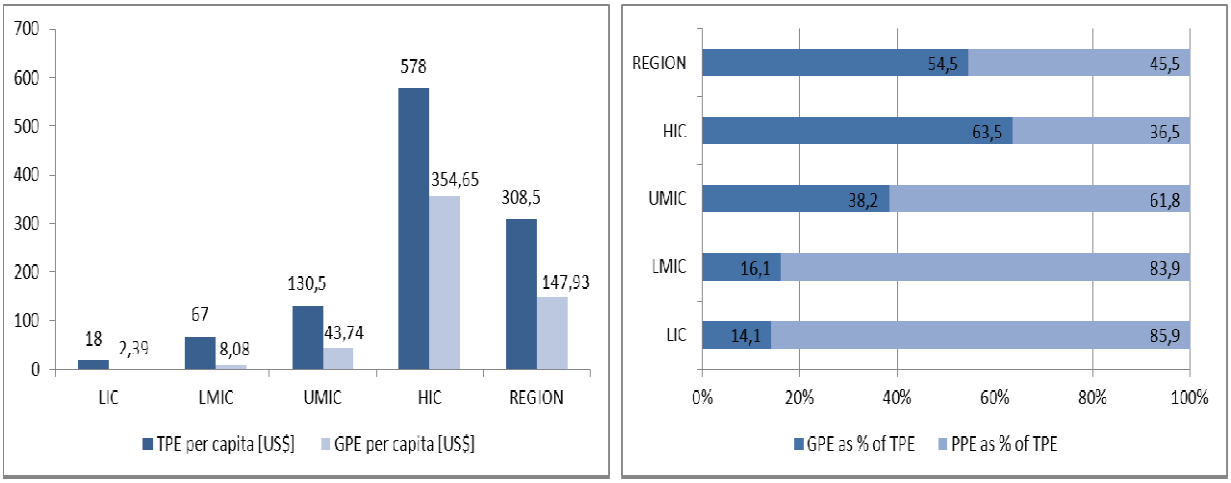



*Source: National Health Accounts database, 2013*

*Total Pharmaceutical Expenditure*

Total Pharmaceutical Expenditure (TPE) in the European Region WHO varied much less than the Total Health Expenditure. Throughout the region, TPE accounted for 1.8% of GDP on average in 2010, with variations between 0.3% in Turkmenistan and 4.5% in Georgia. However, this span covered most of the rates found globally, with a minimum of 0.2% within the WHO Eastern Mediterranean Region, a maximum of 5.2% in the WHO Western Pacific Region, and an overall global average of 1.5% [7]. TPE per capita ranged from $15 USD to $870 USD (Turkmenistan and Switzerland, respectively). Similar to THE, the proportion of publicly financed pharmaceuticals increased with increasing income level as pictured in figure 3.4. The median public share for pharmaceutical expenditure was 54.5% and therefore less than the median public share for general health expenditure (70%); especially in low- and middle-income countries, patients had to pay for most of their medicines themselves. Additionally, the share of TPE as a percentage of THE was highest among the low-income countries and decreased with increasing income (as shown in figure 2.3.3 in the annex); the regional median was 21.5%, varying between 7% in Norway and Denmark up to 46% in Albania. This was in line with global results, showing differences between 4.8% and 52.5% with an overall median of 20.7% [7].

*Fig. 3.4: Public and private TPE by income group (median), 2010*



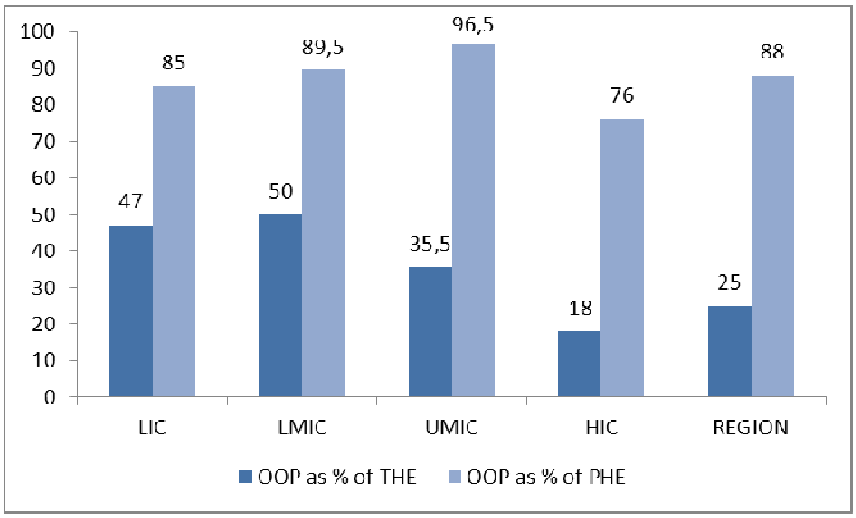

*Source: WHO database, 2013*

*Out-of-pocket payments*

Out-of-pocket payments (OOP) for health services include fees and co-payments directly paid by the patients at the point of service, which can be a substantial burden for patients and therefore pose a potential obstacle to health service access. The amount of OOP per capita varied in the

WHO/Europe region from $24.5USD to $2268.09USD (Kyrgyzstan and Switzerland respectively); the regional median was $287.32USD (2011 data). OOP accounted for 25% of THE in the region and 88% of private health expenditure, with wide variations between countries; figure 3.5 shows the proportion of Total Health Expenditure and Private Health Expenditure by income group. The highest share of OOP of THE was found in Azerbaijan at 70% while the lowest share was found in the Netherlands at 5% [10].

*Fig. 3.5: OOP as% of THE and as% of private health expenditure by income group, 2011*




*Source: National Health Accounts database, 2013*

*Health Insurance Coverage*

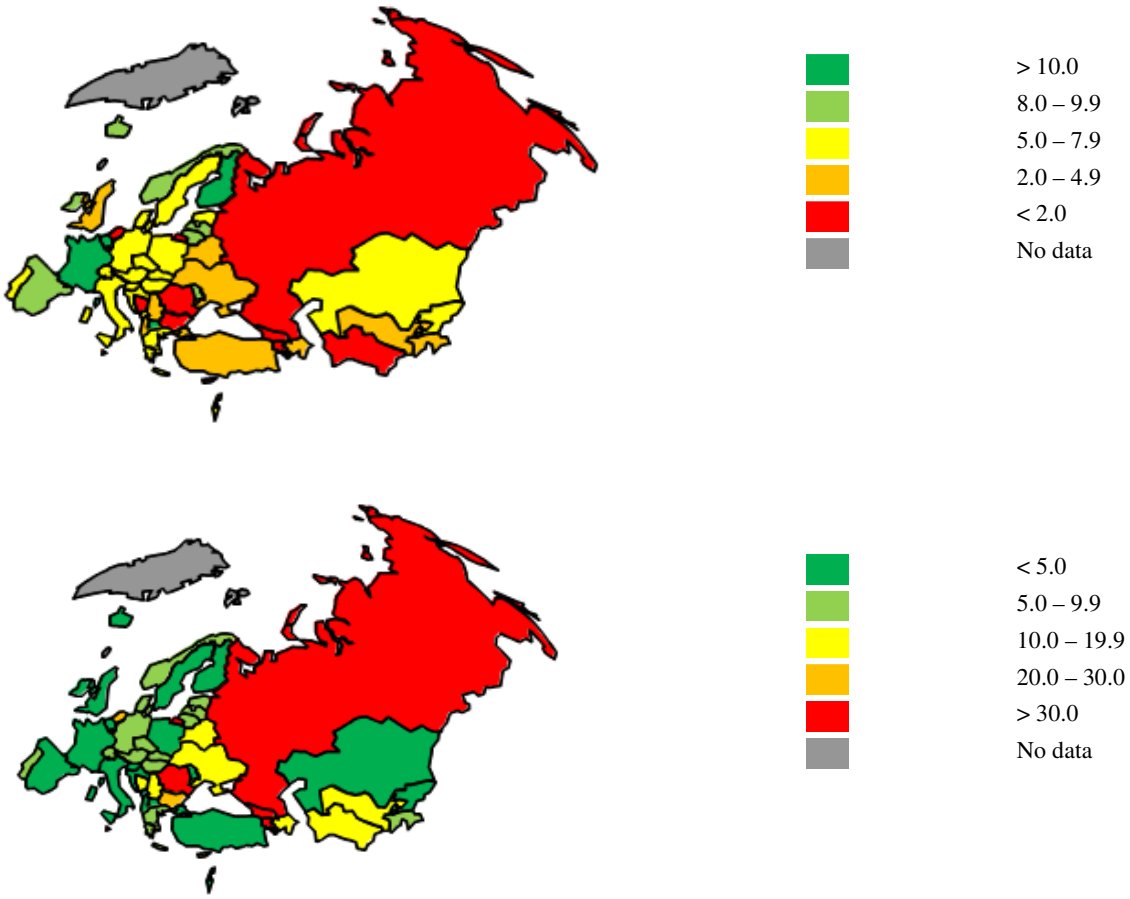
All countries responding to the respective questions in the Pharmaceutical Sector Country Profile questionnaire until July 2013 (response rate 60.4%)[5] provided some sort of public health insurance; coverage ranged from 37.9% to 100% of the population with an average of 93.4%. In most of these countries private insurance schemes are available, providing either additional coverage or replacing public insurance for certain population groups. Coverage of these schemes ranged from 0.4% to 93.0%, with an average of 31.0%. In Czech Republic and Kyrgyzstan, private health insurance was not available. Approximately half of the countries did not give an estimate for the percentage of the population covered by private health insurance. For a more detailed overview of the health insurance coverage in the European Region WHO, see figure 2.3.4 in the annex.

### *3.3 Health Infrastructure*

[5] Figure includes additional data provided by PPRI country profiles [11].

The health infrastructure within the WHO/Europe region varied considerably, based on different health system structures and financial resources. Previous experiences and developments caused a diverse spectrum of available structures and health personnel. The physician density in the region differed from 14.8 per 10,000 population in Bosnia and Herzegovina to 70.6 in Monaco, while the pharmacist density spanned from 0.4 per 10,000 population in Romania up to 22.3 in Malta. Within the entire region, there were 3.18 million physicians in total compared to approximately 470,000 pharmacists; the regional median physician-to-pharmacist ratio was 5.1 with a minimum of 1.5 in Malta and a maximum of 91.0 in Romania (see also annex).

*Fig. 3.6: Pharmacists per 10,000 population and Physician-to-Pharmacist ratio*




*Source: Pharmaceutical Sector Country Profiles database 2010-2013*

The following table 3.3 gives a detailed overview of the existing health infrastructure in the region, including the number of hospital beds per 10,000 population. This varied widely as well, from 13 in Armenia up to 112 in Belarus, with a regional median of 53

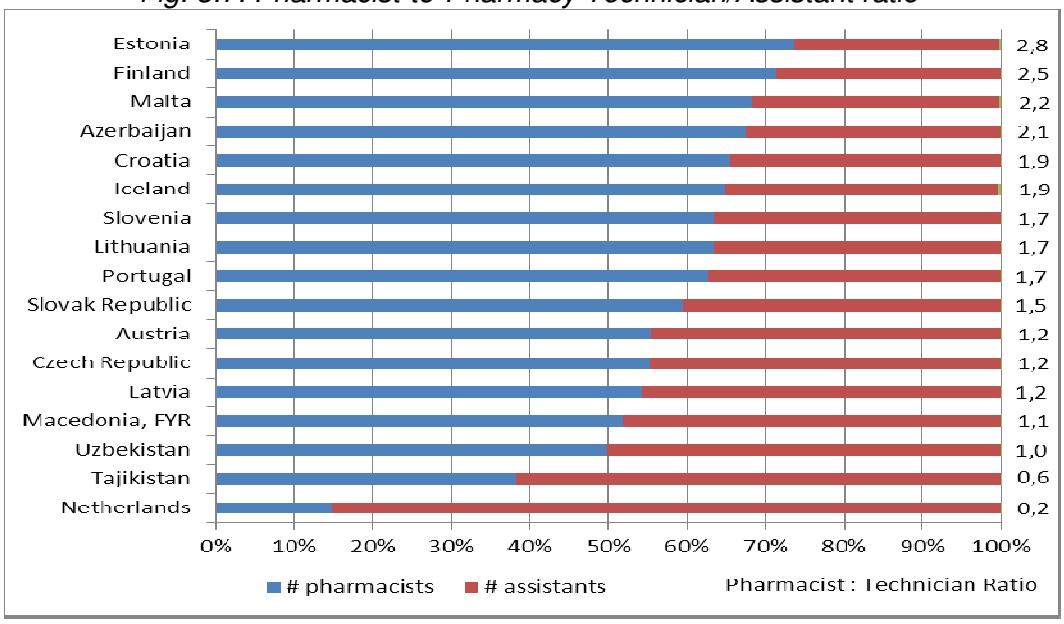
*Table 3.3: Existing Health Infrastructure by income group*

| Income level World Bank (number of countries) | Pharmacist density/10,000 population | Physician density/10,000 population | Physician: Pharmacist ratio | Nursing density/10,000 population | Hospital beds/10,000 population |
|---|---|---|---|---|---|
| Low (2) | 5.5 | 21.9 | 4.4 | 49.7 | 49 |
| Lower middle (6) | 3.4 | 33.6 | 10.2 | 63.0 | 39 |
| Upper middle (14) | 2.9 | 36.7 | 11.5 | 57.2 | 61.5 |
| High (31) | 7.0 | 34.4 | 4.9 | 80.8 | 52.5 |
| WHO/Europe region (53) | **6.5** | **34.6** | **5.1** | **69.0** | 53 |

*Source: Pharmaceutical Sector Country Profiles Database, 2013*

While the pharmacist density and the nursing density were highest in high income countries, the physician density was similar in all but the low income countries. Based on the received data there was no clear correlation between country income level and number of hospital beds per 10,000 population or the number of pharmacies per 10,000 population, spanning from 0.6 pharmacies in Azerbaijan to 8.5 in Georgia. The analysis of 17 country surveys with more detailed pharmacy staff data also did not reveal income related differences in personnel qualification, as shown in figure 3.7.

*Fig. 3.7: Pharmacist-to-Pharmacy Technician/Assistant ratio*




*Source: Pharmaceutical Sector Country Profiles database 2010-2013*

# 4. Policy Issues

### *4.1 Overview*

To give an overview of the current situation in the WHO/Europe region in regard to health policy issues, data collected through the Pharmaceutical Sector Country Profile Questionnaires during the years 2010 – 2013 have been combined with data taken from the PPRI database [12] to provide reliable, up-to date information. Hence, the displayed data covers several years based on to the duration of survey collection and according to the frequency countries changed their respective policies. In addition, the given ratios for existing policies differ based on different numbers of answers given to each question.

### *4.2 Policy Framework*

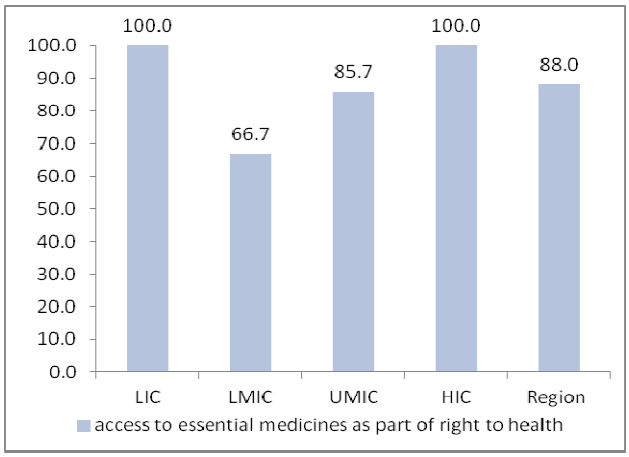
Throughout the WHO/Europe region, a National Health Policy (NHP) existed in 93.5% of the countries (response rate 58.5%). Of those countries with an NHP, 21 also developed an associated National Health Policy implementation plan while six countries did not have such a plan[6]. An official National Medicines Policy (NMP) existed in 81.0% of countries within the region (response rate 79.2%). Out of these countries, 28 also developed an associated NMP implementation plan while 12 countries did not. Ukraine did not answer this subquestion. Official written guidelines on medicines donation were in place in 68.6% of countries (response rate 66.0%), with declining frequency with increasing income. Pharmaceutical policy implementation was regularly monitored and assessed by 16 countries (response rate 47.2%). Table 1.4.1 in the annex gives a more detailed overview of the regional situation regarding pharmaceuticals policies; the ratio gives the number of positive responses out of all answers to that particular question. An official Clinical Laboratories Policy (NCLP) document was found in 42.9% of countries (response rate 39.6%), with an accompanying implementation plan in place in seven out of 19 countries.

Access to essential medicines and technologies was recognized as part of the fulfilment of the right to health in the constitution or national legislation in 88.0% of the countries (response rate 47.2%). This was the case in all low- and high income countries, but only in 10 out of 13 middle income countries[7] as Albania, Georgia and Lithuania did not acknowledge access to essential medicines as a right to health (as depicted in figure 4.1).

[6]Azerbaijan, Finland, Malta, Norway, Russian Federation, Switzerland: no information for Cyprus, Hungary, Montenegro, United Kingdom. Authors comment: In 2011 Hungary embarked on a major health reform process including development of policies and strategies for the sector, including the pharmaceutical sector

[7]LMIC and UMIC combined

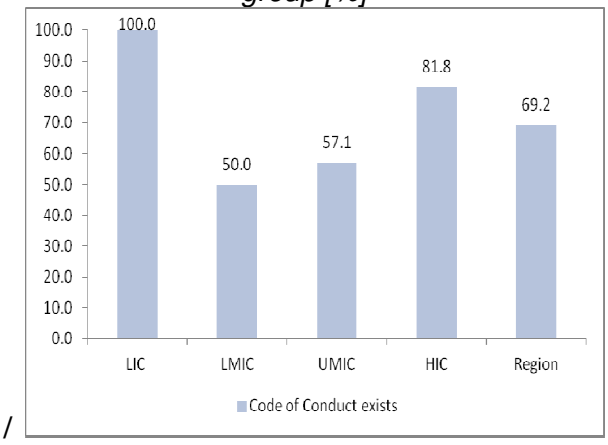
*Fig. 4.1: Existing policies in the WHO Regional Office for Europe region [%]*




*Source: Pharmaceutical Sector Country Profiles database 2010-2013*

Overall, 54.5% of responding countries had national Good Governance Policies (response rate 41.5%); eight of these countries reported having a National Good Governance Policy related to the pharmaceutical sector[8], while four countries had a multisectoral Good Governance Policy instead[9]. However, 66.7% of the countries throughout the region (response rate 45.3%) had a policy in place to manage and sanction conflict of interest issues in pharmaceutical affairs, and in 69.2% (response rate 49.1%) a formal Code of Conduct for public officials existed. While the proportion of countries with a Conflict of Interest Policy was slightly higher in middle income countries than in high income countries, the prevalence of Code of Conducts increased with increasing income group – with the exception of the two low income countries, both of which had a Conflict of Interest Policy as well as a formal Code of Conduct for public officials (see also figure 4.2).

*Fig. 4.2: Existing policies regarding conflict of interest issues in pharmaceutical affairs by income group [%]*




*Source: Pharmaceutical Sector Country Profiles database 2010-2013*

[8] Albania, Austria, Malta, Moldova, Slovakia, Tajikistan, FYR Macedonia, Uzbekistan
[9] Armenia, Azerbaijan, Latvia, Norway

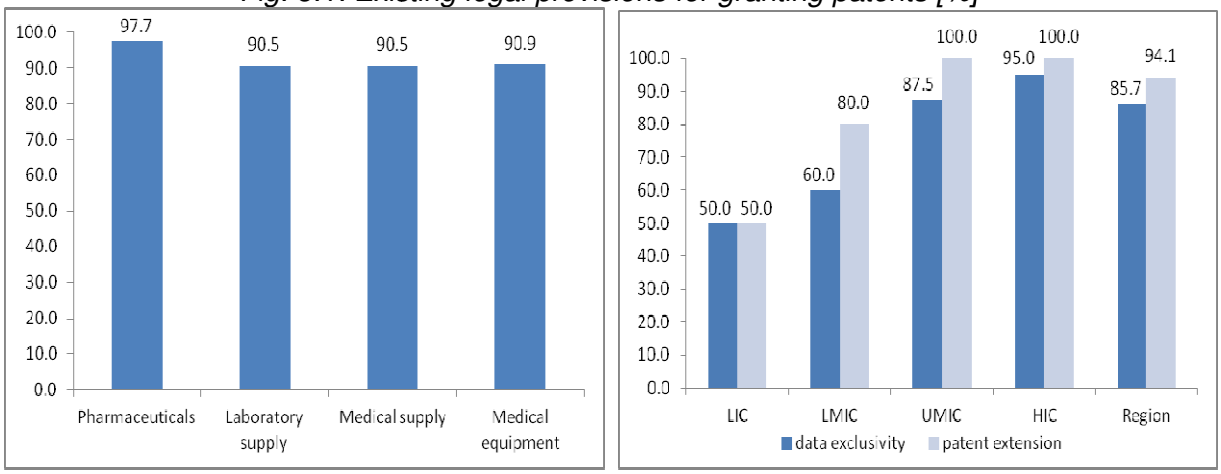
In addition to these policies, a whistle-blowing mechanism – allowing individuals to raise concern about wrongdoing occurring in the pharmaceutical sector – existed in 62.5% of the answering countries (response rate 45.3%). These mechanisms were most prevalent in low- and high income countries (2/2 and 8/11 respectively), and not as common in middle-income countries (LMIC 3/6 and UMIC 2/5).

# 5. Medicines Trade and Production

### *5.1 Intellectual Property Rights and Medicines*

As of July 2013, 43 of the 53 countries in the WHO/Europe region have been members of the World Trade Organization (81.1%) [15]. In almost all countries answering the related questions, patent laws existed: in 42 countries for pharmaceuticals (response rate 81.1%), and in 20 countries for medical equipment (response rate 41.5%). Similar results were found for medical and laboratory supply, with 90.5% of countries granting patents in both categories (response rate 39.6%) – overall, there were little differences among different income groups. Georgia and Malta did not have legal provisions for patenting medical equipment and medical or laboratory supply; additionally, Georgia was the only country without patent laws regarding pharmaceuticals. Furthermore, figure 5.1 pictures the regional situation in regard to data exclusivity for pharmaceuticals which protects a company's clinical test data from being used by other parties for commercial purposes, and in regard to patent extension. In 85.7% of countries (response rate 66.0%), legal provisions existed for data exclusivity of pharmaceuticals while 94.1% (response rate 64.2%) of countries had legal provisions for patent extension. These were both increasingly common with increasing income.

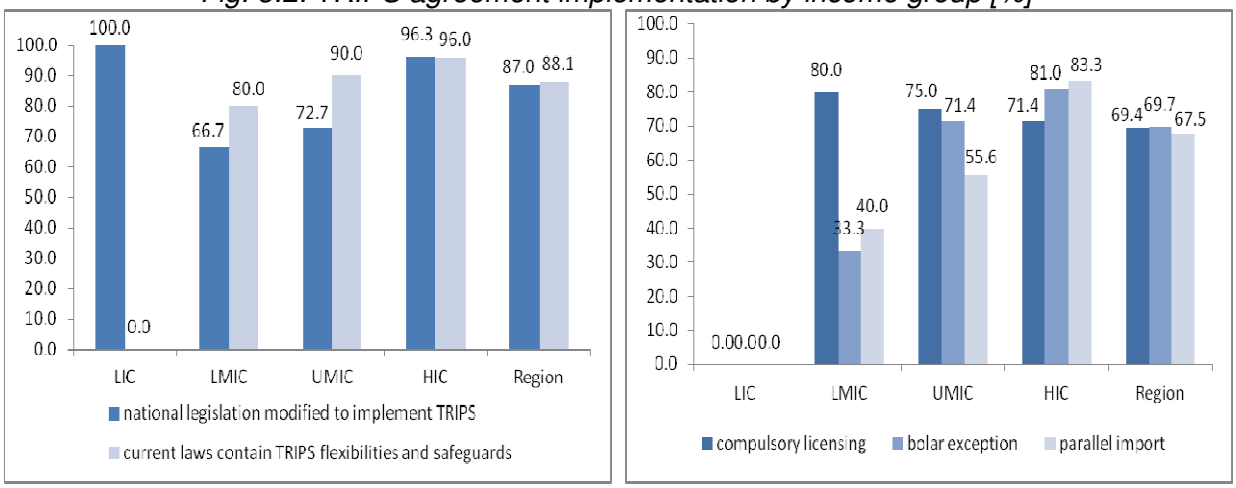
*Fig. 5.1: Existing legal provisions for granting patents [%]*




*Source: Pharmaceutical Sector Country Profiles database 2010-2013; PPRI Pharmaceutical Pricing and Reimbursement Country Profiles database 2007-2010*

The Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreement is part of the binding regulatory framework for WTO members and therefore needs to be implemented into national legislation [16]. Within the WHO/Europe region, 87.0% of the countries (response rate 86.8%) had already implemented the TRIPS agreement. Whilst not compulsory, in most countries current laws also contained TRIPS flexibilities and safeguards as part of the TRIPS agreement: compulsory licensing[10] provisions existed in 25 countries (response rate 67.9%), Bolar exemption[11] provisions in 23 (response rate 62.3%), and parallel importing[12] provisions in 27 (response rate 75.5%). The following figure 5.2 gives an overview of TRIPS related aspects by income group.

*Fig. 5.2: TRIPS agreement implementation by income group [%]*



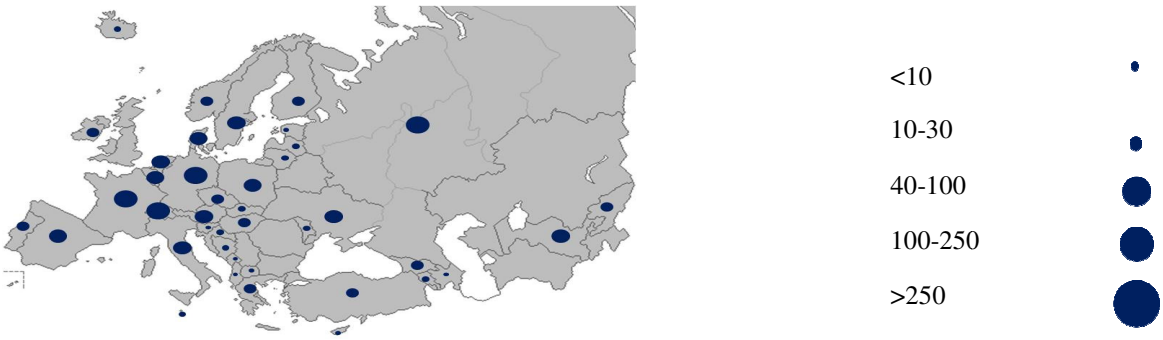

*Source: Pharmaceutical Sector Country Profiles database 2010-2013; PPRI Pharmaceutical Pricing and Reimbursement Country Profiles database 2007-2010*

### *5.2 Manufacturing*

Due to differences in country size and economic development status, the number of licensed pharmaceutical manufacturers per country varied widely, ranging from two in Montenegro and Slovenia to 975 in Germany (response rate 75.5%); details are shown in figure 2.5.1 in the annex.

[10] production of patented products without consent of the patent owner
[11] usage of patented products for research purposes without consent of the patent owner
[12] import of patented products without consent of the patent owner

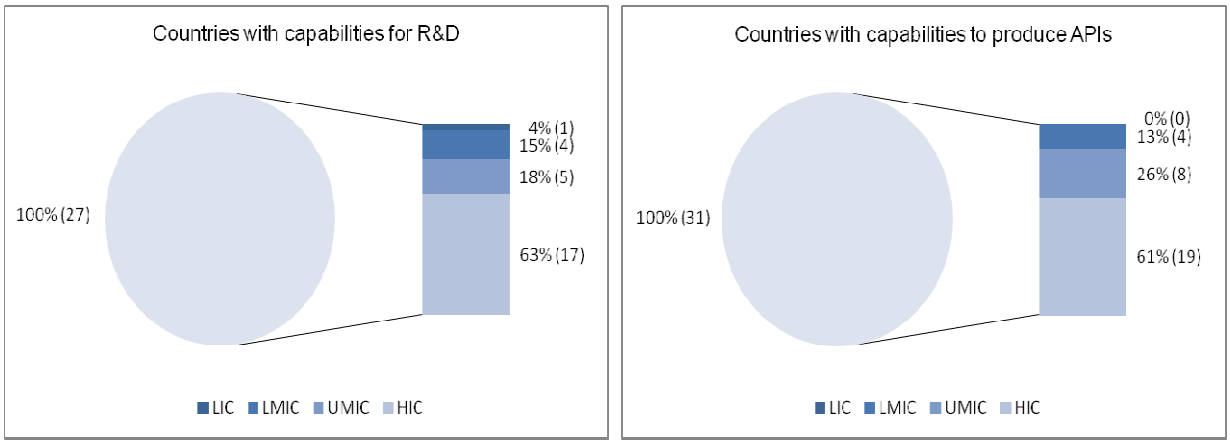
*Fig. 5.3: Manufacturers in the WHO Regional Office for Europe region*




*Source: Pharmaceutical Sector Country Profiles database 2010-2013; PPRI Pharmaceutical Pricing and Reimbursement Country Profiles database 2007-2010*

Furthermore, while most of the countries in the region had the capability to produce formulations from pharmaceutical raw materials (95.1%; response rate 77.4%) and to repack finished dosage forms (94.7%; response rate 71.7%), manufacturing capabilities for the production of active pharmaceutical ingredients (APIs) and resources for research and development (R&D) were usually more common with increasing income, as shown in the following figure 5.4. Throughout the region, the production of APIs was possible in 77.5% of countries (response rate 75.5%), and capabilities for R&D of new substances existed in 71.7% (response rate 71.7%).

*Fig. 5.4: Manufacturing capabilities in the WHO/Europe region*




*Source: Pharmaceutical Sector Country Profiles database 2010-2013; PPRI Pharmaceutical Pricing and Reimbursement Country Profiles database 2007-2010*

The average market share of domestic manufacturers (by value produced) throughout the region was 12.6%. Of all reporting countries (response rate 30.2%), the domestic market share was highest in Ukraine (29.0%) and lowest in Tajikistan (1.2%). (See figure 2.5.2 in the annex for details).

# 6. Medicines Regulation

### *6.1 Regulatory Framework*

A strong regulatory system is necessary to enable access to quality assured procedures and medicines and thus protect patients from harm. Without enforcement of regulation, untoward situations are like to occur either linked to quality of products or services. Medicines not meeting quality requirements may lead to worsening of diseases or in the case of antimicrobials facilitate the development of antimicrobial resistance. Unauthorised over-the-counter sales of antimicrobial medicines occur in several European countries and constitute a risk in terms of inappropriate use of medicines.

The regulatory framework and system should be responsible for establishing rules and controls for processes and infrastructure involved in production, dispensing and sale of pharmaceuticals. A well-developed legislative framework with a designated body responsible for implementation and enforcement of regulatory measures should have administrative instruments and sanctions in place in response to violations.

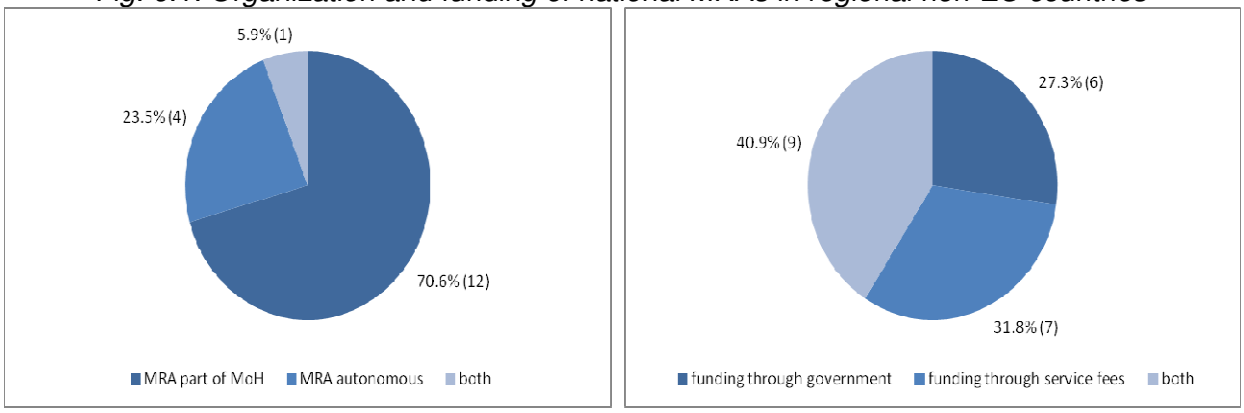
In all responding countries, a national Medicines Regulatory Authority (MRA) existed to provide a regulatory framework for pharmaceuticals. In addition to the respective national MRAs, the European Union (EU)[13] has a central MRA which is responsible for the scientific evaluation of medicines developed by pharmaceutical companies for use in the EU as a whole, the European Medicines Agency (EMA). This agency deals with market authorizations, inspections and pharmacovigilance in EU Member States and provides an extensive scientific network for safety monitoring, telematics and other regulatory issues; however, the EMA does neither establish ethical codes nor interferes with national legislation in regard to medicines advertising and promotion [17]. Although the EMA is solely responsible for medicines marketed throughout the EU and different regulations may apply for pharmaceuticals on a national basis, the regulatory framework for EU member countries is similar due to intensive efforts to harmonize European legislation [18]. The Council of Europe, European Directorate for the Quality of Medicines & health Care (EDQM) is another player in international medicines quality. While EMA only covers EU Member States, the Council has pan-European membership and 47 European countries involved. The EDQM develops guidance and set standards and is responsible for the European Pharmacopoeia and the European biological standardization programme[19]..

In the following section the focus is medicines regulation in the non-EU countries where there is more variability as compared to EU countries.

[13] There are currently 28 member countries: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom; a central marketing authorization by the EMA is also valid in Iceland, Liechtenstein and Norway.

Throughout the non-EU Member States of the WHO/Europe region, all countries had a national MRA (response rate 84.0%); 12 of these MRAs were part of the respective Ministries of Health, 4 were semi-autonomous agencies, and the MRA of Switzerland was both part of the Ministry of Health and semi-autonomous. Funding of the national MRAs differed as well. The majority of MRAs (40.9%) were funded by a combination of government budget and fees for services provided, 6 were fully funded by governments, and 7 only received fees for services provided (response rate 88.0%).

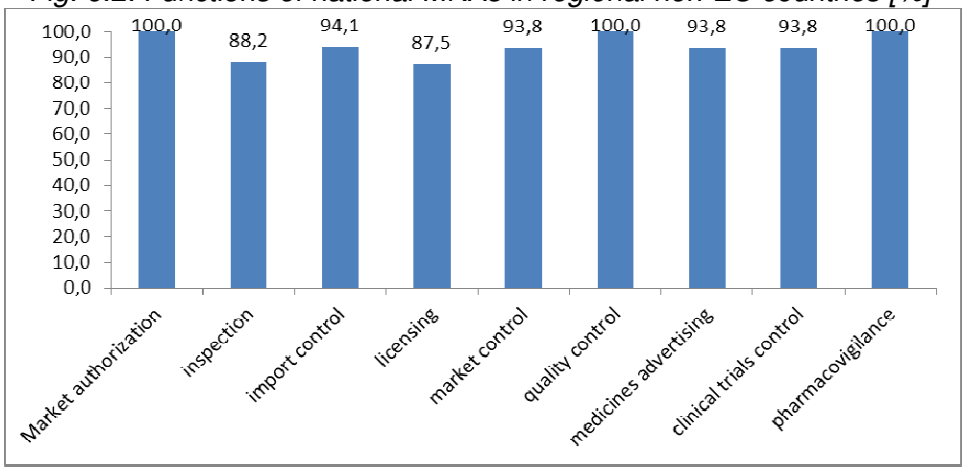
*Fig. 6.1: Organization and funding of national MRAs in regional non-EU countries*




*Source: Pharmaceutical Sector Country Profiles database 2010-2013*

The functions of the MRAs were similar in all of the countries, although in lower- and upper middle income countries the MRAs tended to fulfill less functions than in high income countries – especially in regard to licensing and inspections. However, market authorization/registration of pharmaceuticals, quality control and pharmacovigilance activities were conducted by all 17 national MRAs (response rates 68.0%), medicines advertising and promotion was controlled in 15 countries, and licensing was a function of the MRA in 87.5% of countries (response rates 64.0%); see also figure 6.2. (A detailed overview of the MRA functions of middle income non-EU countries can be found in figure 2.6.1 in the annex.)

*Fig. 6.2: Functions of national MRAs in regional non-EU countries [%]*




*Source: Pharmaceutical Sector Country Profiles database 2010-2013*

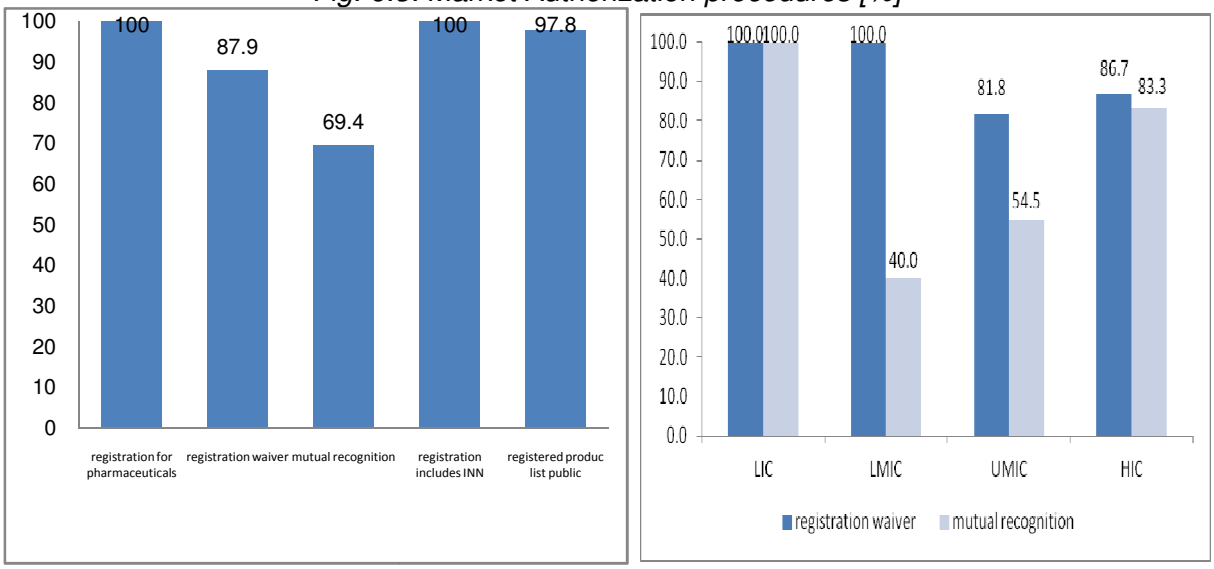
### *6.2 Market Control*

In all countries within the European Region WHO legal provisions for regulating the pharmaceutical market existed, although to a varying degree.

*Marketing Authorization (Registration)*

Legal provisions required a marketing authorization (registration) for all pharmaceutical products in all countries in the region (response rate 90.6%). Of these countries, 29 stated having mechanisms for exception/waivers of marketing authorization, three countries did not have any exceptions for registration of pharmaceutical products[14], and Turkmenistan did not have a mechanism for waiving registration but did not provide information regarding compulsory marketing authorization. In 69.4% of countries (response rate 67.9%), mutual recognition mechanisms were in place to recognize registrations done by other countries. Apart from the low income countries – which both had mutual recognition tools –, the prevalence of these mechanisms increased with increasing income. A list of registered pharmaceutical products was publicly available in all answering countries except from Turkey[15] (response rate 86.8%), and in all 47 countries responding registration included the International Non-proprietary Names (INN). Fig. 6.3 below shows the percentages of countries with the respective market authorization procedure in place as retrieved from the Pharmaceutical Sector Country Profile Questionnaires and the PPRI Pharmaceutical Pricing and Reimbursement Country Profiles [12].

*Fig. 6.3: Market Authorization procedures [%]*



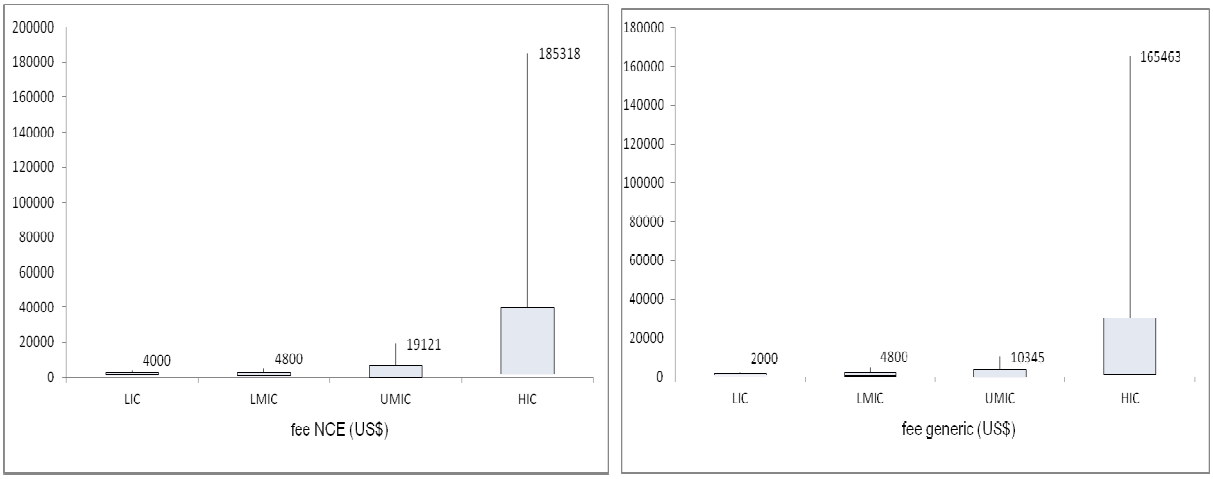

*Source: Pharmaceutical Sector Country Profiles database 2010-2013; PPRI Pharmaceutical Pricing and Reimbursement Country Profiles database 2007-2010*

[14]Bosnia and Herzegovina, Czech Republic, Slovakia

[15] After survey was submitted, Turkey has introduced an electronic medicines list containing about 10,400 medicines. In addition, in Turkey, a list of newly registered pharmaceutical products is published in the Official Gazette every three months regularly

The number of products registered differed widely between countries, ranging from 260 in Montenegro to 93,054 in Germany, with a median of 7309; these figures may not be precise though as countries might have had different approaches to determine the number of products registered, in particular in countries where listing of registered products are not maintained on a continuous basis. Furthermore, the practice regarding what the marketing authorization covers differs – in some countries different strengths and presentations are covered by the same market authorization. In general however, countries with higher income tended to have more products registered, as shown in figure 2.6.2 and 2.6.3 in the annex. In addition, registration fees varied substantially within the region, being overall higher for the registration of New Chemical Entities (NCE) than for generics with medians of $5979USD and $4925USD respectively, and being higher in high income countries than in low- and middle income countries. In seven countries, fees for NCEs and generics were the same, while in 18 countries, fees for generics were lower than for NCEs (response rate 49.1%)[16]. From among the 26 countries providing data for these questions, fees were lowest in Azerbaijan with $ 126USD for both categories, and highest for NCEs in Malta with $ 185,318USD for NCEs and $165,463 USD for generics. For a complete overview, see figures 2.6.4 and 2.6.5 in the annex. The registration fee for the centralized procedure at the EMA is set for all countries and adjusted every year for inflation[17].

*Fig. 6.4 Registration fees in the WHO/Europe region by income group [USD]*




*Source: Pharmaceutical Sector Country Profiles database 2010-2013*

*Regulatory Inspection*

[16] Armenia only provided information regarding fees for NCEs
[17] Currently: fee for NCE 274,400€, fee for generic 177,300€ (available online [www] http://www.emea.europa.eu/docs/en_GB/document_library/Other/2012/03/WC500124904.pdf; accessed July 10th, 2013)

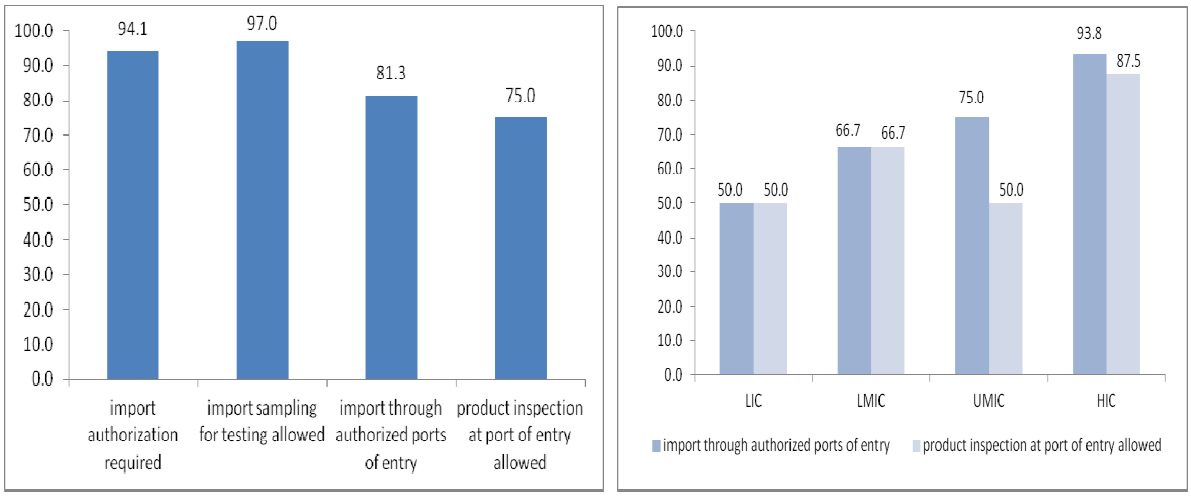
Legal provisions that allow for the appointment of government pharmaceutical inspectors existed in 90.3% of countries (response rate 58.5%). Furthermore, legislation permitted inspectors to inspect premises where pharmaceutical activities are performed in all those countries. This was also allowed in the three countries without legal provisions to appoint governmental inspectors (Kyrgyz Republic, Russian Federation and Sweden) and in 16 other countries where no information about the appointment of governmental inspectors was available (response rate 88.7%). Inspections on premises where pharmaceutical activities are performed were a prerequisite of licensing in all responding countries, without any difference between public and private facilities (response rate 62.3%).

Most countries also provided more detailed information about which stakeholders were subject to regulatory inspections. Inspections were carried out in public pharmacies and stores as well as in dispensing points of health facilities in all responding countries (response rates 54.7% and 56.6%, respectively). Private wholesalers were inspected in all countries except Montenegro (response rate 60.4%), and retail distributors were inspected in all countries except Norway (response rate 56.6%). The compliance of local pharmaceutical manufacturers with Good Manufacturing Practice (GMP) was assessed in 90.6% of all countries – in Georgia, Kyrgyz Republic and Tajikistan this was not the case (response rate 60.4%). Overall, legal provisions regarding inspections were commonly found throughout the region, with slightly lower prevalence in low- and middle-income countries.

*Import Control*

Legal provisions requiring authorization to import medicines existed in 94.1% of the countries (response rate 64.2%) in the region, and regulations allowing the sampling of imported products for testing were in place in 97.0% of countries (response rate 62.3%). In 26 countries, import of pharmaceutical products had to take place through authorized ports of entry (response rate 60.4%); inspection of imported pharmaceutical products already at the port of entry was permitted in 21 countries (response rates 52.8%), as pictured in figure 6.5 below.

*Fig. 6.5: Legal provisions regarding import control [%]*




*Source: Pharmaceutical Sector Country Profiles database 2010-2013*

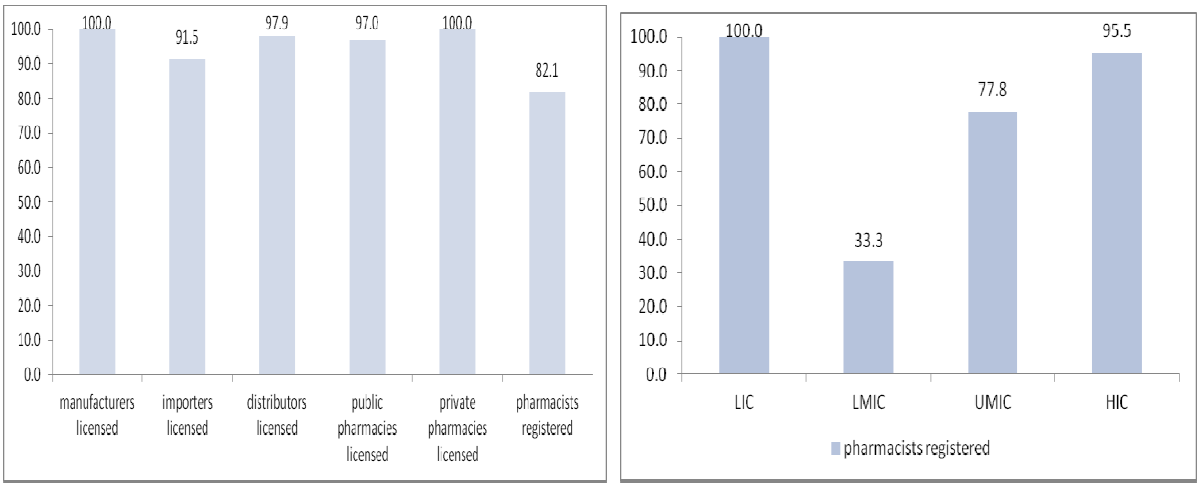
Generally speaking, legal provisions to control import of pharmaceutical products were more common in high-income countries than in low- and middle- income countries, especially in regard to the mandatory use of authorized ports of entry and the permission to inspect imported products at the port of entry. With Georgia and Ukraine[18], two lower-middle income countries were the only ones without the requirement for authorization in order to import pharmaceuticals. In addition, Georgia was the only country not to require sampling of imported products for testing.

*Licensing*

Legal provisions requiring manufacturers to be licensed existed in all countries responding in the region (response rate 90.6%), and in most countries, pharmacies and other distributors such as wholesalers needed to be licensed as well. Out of 48 countries, only in Georgia distributors did not need to be licensed and Azerbaijan was the only country out of 33 to waive compulsory licensing for public pharmacies. Importers needed to be licensed in 44 out of 47 countries, with all exceptions being middle-income countries (Georgia, Romania and Russian Federation); in contrast, legal provisions for mandatory registration of pharmacists existed in 82.1% of countries (response rate 73.6%).

*Fig. 6.6: Legal provisions for licensing within the pharmaceutical sector [%]*

[18] In 2013 Ukraine introduced import licensing with binding of products quality to the importer's authorized person. This happened after submission of the pharmaceutical country profile.



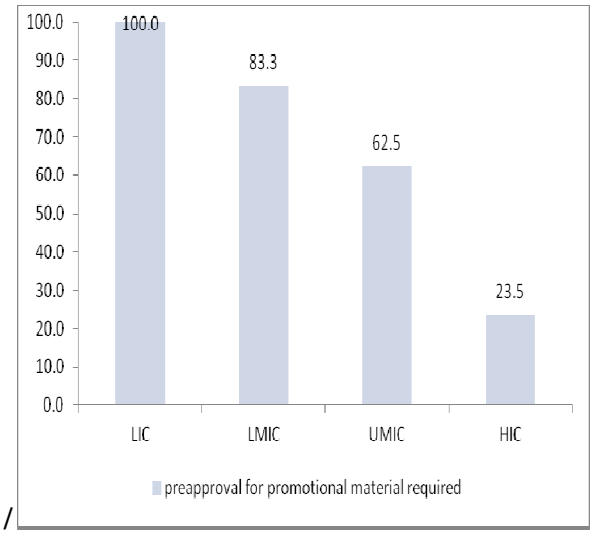

*Source: Pharmaceutical Sector Country Profiles database 2010-2013*

In addition, compliance with Good Manufacturing Practices (GMP) was compulsory for both domestic and international manufacturers in 91.4% of countries (response rate 66.0%), and compliance with Good Distribution Practice for wholesalers and other distributors was required in 83.9% (response rate 58.5%).

*Medicines Advertising and Promotion*

Throughout the WHO/Europe region, legal provisions to control the advertising and/or promotion of prescription medicines existed in all 42 responding countries (response rate 79.2%), with variation across countries as to the entity taking responsibility for regulating advertising/promotion of medicines. All countries prohibited direct-to-public advertising of prescription drugs (response rate 69.8%). In 36 countries (response rate 73.6%) guidelines existed for advertising/promotion of non-prescription medicines and in 16 countries (response rate 62.3%), preapproval for medicines advertisements and promotional material was required (see also figure 6.7 below). In general, the existence of legal provisions to control medicines advertising decreased with increasing income – this was most noticeable for the preapproval of promotional material, as only 4 out of 17 high income countries (23.5%) had this requirement opposed to 83.3% and 62.5% respectively in lower- and upper middle income countries and 100.0% in low income countries.

*Fig. 6.7: Legal provisions for advertising and promotion of medicines [%]*




*Source: Pharmaceutical Sector Country Profiles database 2010-2013*

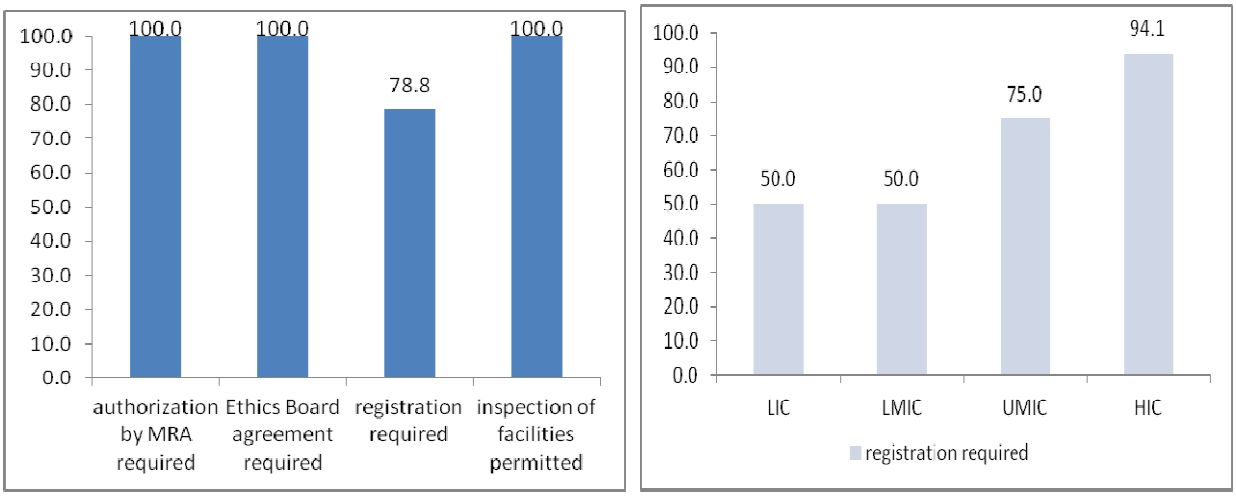
In addition, a national code of conduct concerning advertising and promotion of medicines by marketing authorization holders existed and was publicly available in 29 countries (response rate 60.4%); in 23 countries, this code of conduct applied to both domestic and multinational manufacturers[19]. The code also contained a formal process for complaints and sanctions in 84.0% of all cases (response rate 47.2%); however, adherence to this code was voluntary in 52.2% of the 23 countries responding to this particular subquestion (response rate 43.4%).

*Clinical Trials*

Legal requirements for Clinical Trials were similar throughout the whole region, with the exception of the requirement for registration of trials into a registry (either international, national or regional): in all 39 countries responding, clinical trials needed to be authorized by the MRA, agreement by an ethics committee or an institutional review board was required (response rate 62.3%), and inspection of facilities where trials are performed were permitted (response rate 60.4%). However, a mandatory registration of trials was only necessary in 26 out of the 33 countries; this requirement was increasingly prevalent with increasing income, as shown in figure 6.8 below.

[19]In Estonia, the Code of Conduct only applied to domestic manufacturers while in Bosnia & Herzegovina and Iceland, it applied only to multinational manufacturers; Ireland, Poland and the United Kingdom did not provide any further information.

*Fig. 6.8: Legal provisions regarding Clinical Trials [%]*




*Source: Pharmaceutical Sector Country Profiles database 2010-2013*

*Controlled Medicines*

All 53 countries within the WHO/Europe region have adopted international conventions [20] relating to the control of medicines, and 26 countries stated having additional national laws for the control of narcotic and psychotropic substances. These conventions include narcotic and psychotropic drugs such as morphine, oxycodone and methadone; a more detailed overview of annual consumption of two exemplary controlled substances is given in figures 2.6.6 and 2.6.7 in the annex – morphine, as an important indicator for pain treatment, and methadone, highlighting attitudes towards treatment of drug addiction. There is great variability across the responding countries in terms of legal controls of morphine and other opioids. This means that in some countries it is very difficult to prescribe pain management medicines. In other cases, health professionals may be unfamiliar with optimal management of severe pain. As well, misperceptions around opioids and dependence can limit access for both pain management and treatment of drug dependence.

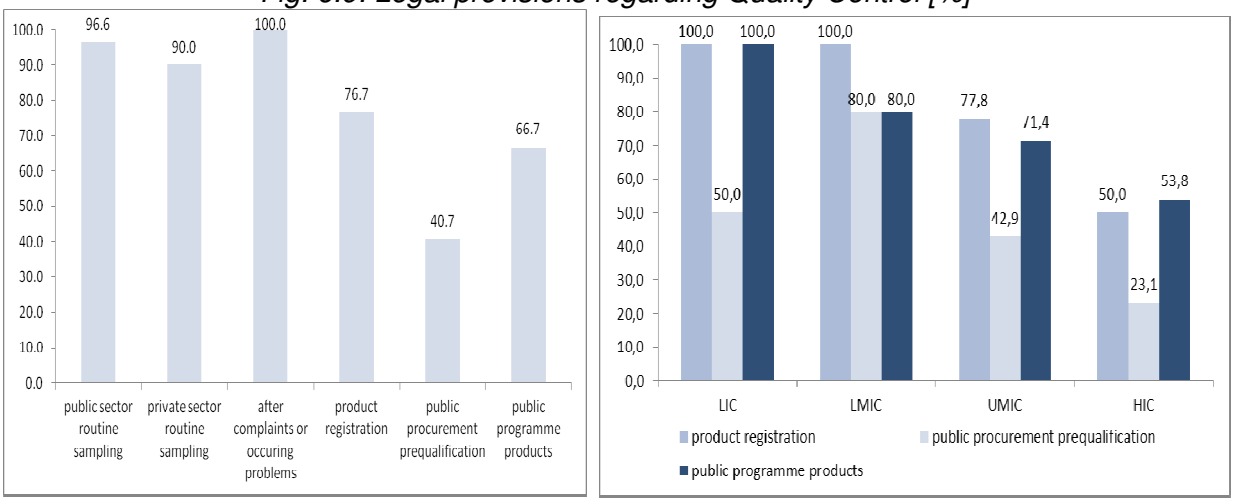
### *6.3 Quality Control*

Throughout the region, 91.9% of the responding countries (response rate 69.8%) had a national laboratory for Quality Control testing, of which 61.8% were a functional part of the respective MRA[20]. It was found that 69.0% of the regulatory authorities (response rate 54.7%) contracted services elsewhere, even though 17 of those countries also had their own testing laboratory. Medicines were tested for different reasons: in all 29 responding countries when complaints or

[20]21 out of 34 - Armenia, Austria, Denmark, France, Germany, Turkmenistan and United Kingdom did not provide further information.

problems occurred, in most countries as part of routine quality monitoring in public and private facilities (response rates 54.7% and 56.6%, respectively), and in 76.7% of countries (response rate 56.6%) as part of the product registration process. Additional testing occurred in some countries as a measure of public procurement prequalification or prior to the acceptance of public programme products (response rates 50.9%), as shown in figure 6.9.

*Fig. 6.9: Legal provisions regarding Quality Control [%]*




*Source: Pharmaceutical Sector Country Profiles database 2010-2013*

To undertake post-marketing surveillance, samples were collected in 85.7% of countries (response rate 79.2%); the number of samples collected in the 24 countries providing complete and consistent data spanned from ten in Iceland to 403,438 in the Russian Federation, with a median of 501. Throughout the region, an average of 4.4% of tested products failed to meet required quality standards, varying from 0.0% in Iceland, Malta and Sweden up to 38.9% in Armenia[21]. In the majority of countries (62.1%), the results of quality testing were publicly available (response rate 54.7%) albeit with wide differences among income groups – from 37.5% (three out of eight) in upper middle income countries up to 100.0% in low income countries.

### *6.4 Pharmacovigilance[22]*

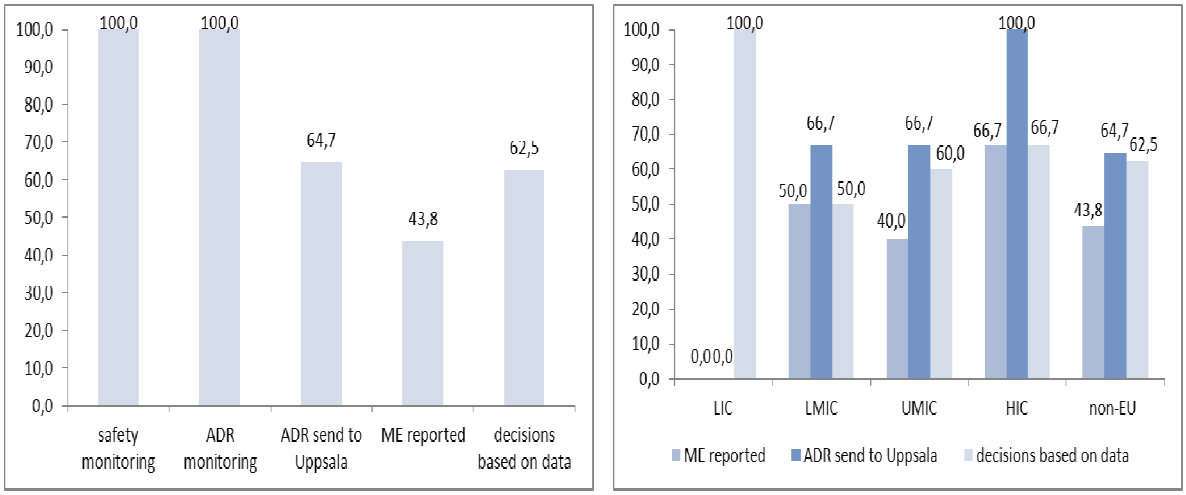
In 87.5% of non-EU countries within the region (response rate 64.0%), legal provisions existed for pharmacovigilance activities as part of the MRA mandate. Marketing authorization holders were required to continuously monitor the safety of their products and report to the MRA in all 16 countries, and laws regarding the monitoring of Adverse Drug Reactions (ADR) had also been

[21] For additional information, see figure 2.6.8 in the annex.
[22] As pharmacovigilance is an important part of the EMA mission, this part only describes non-EU countries within the WHO/Europe region.

instituted in all of those countries. A national pharmacovigilance centre (NPC) linked to the MRA existed in all but two countries (Moldova and Tajikistan), while 82.4% of responding countries (response rate 68.0%) had a national Adverse Drugs Reactions (ADR) database[23]. Of the 14 countries with an NPC, 71.4% had published an analysis report within the last two years, and 23.1% regularly published an ADR bulletin (3/13; no information from Kyrgyz Republic).

In 94.1% of countries (response rate 68.0%), an official standardised form for reporting ADRs was used. Mostly doctors, pharmacists and pharmaceutical companies reported ADRs although several other groups[24] were involved as well (as depicted in figures 2.6.9 and 2.6.10 in the annex). Regulatory decisions based on local pharmacovigilance data were made in 10 out of 16 countries, and eleven countries sent their ADR report to the WHO database in Uppsala which was more common with increasing income. In contrast, only 43.8% of all countries (response rate 64.0%) also report Medication Errors (ME).

*Fig. 6.10: Legal provisions regarding pharmacovigilance in regional non-EU countries [%]*




*Source: Pharmaceutical sector Country Profiles Database, 2010-2013*

Pharmacovigilance training courses were offered in 68.8% of countries (response rate 64.0%), which was seen more often in countries with higher incomes. While all high and upper middle income countries offered these courses, only 50.0% of lower middle income and none of the low income countries did so.

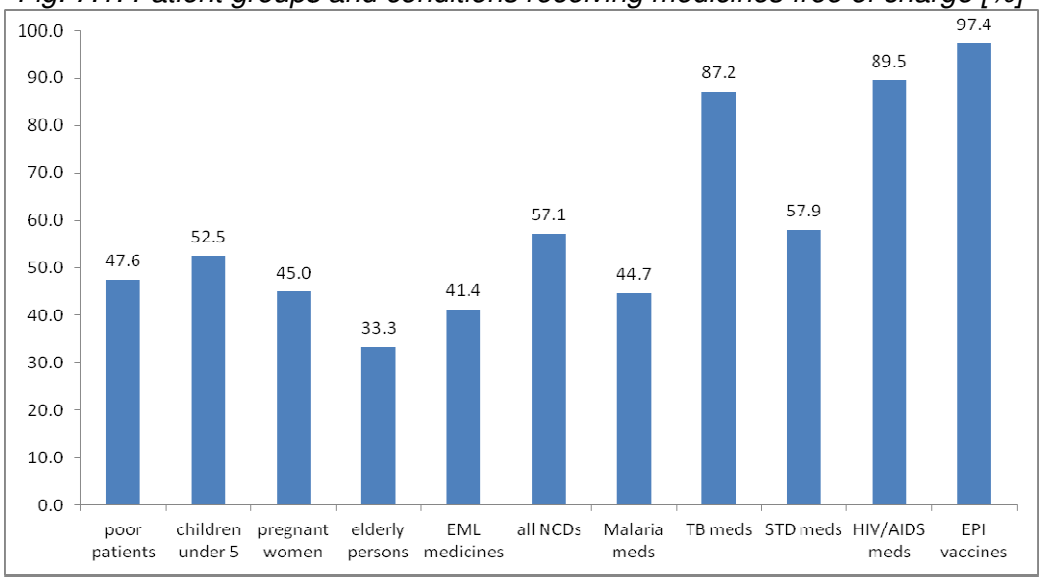
[23] No ADR database existed in Bosnia Herzegovina, Tajikistan and Turkey.
[24] Hospitals, lawyers etc.

# 7. Medicines Financing

### *7.1 Medicines coverage, fees and copayments*

In all responding countries within the WHO/Europe region, at least some medicines were provided free of charge for the patients by means of a public health system, a social insurance scheme or a public programme (response rate 81.1%). These were most likely to be vaccines belonging to the Expanded Programme on Immunization (EPI) [21] (97,4%, response rate 71.7%) and less often included medicines in the EML (41.4%, response rate 54.7%). HIV/AIDS medications were provided free of charge in all low- and middle- income countries. In some countries, concessions were made for certain patient groups to receive medicines free of charge including children under 5, pregnant women, and patients who cannot afford their medication, as highlighted in figure 7.1.

*Fig. 7.1: Patient groups and conditions receiving medicines free of charge [%]*

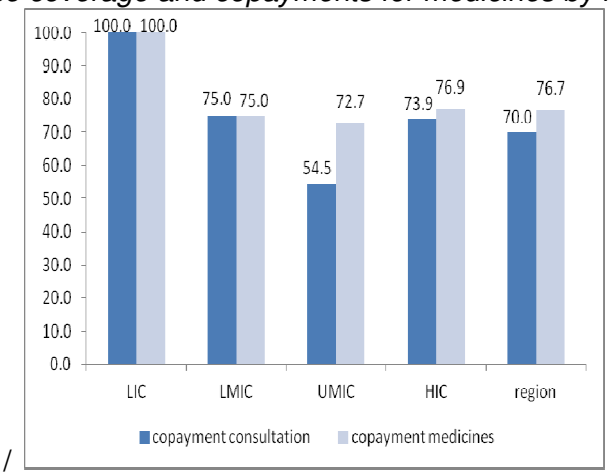



*Source: Pharmaceutical Sector Country Profiles database 2010-2013; PPRI Pharmaceutical Pricing and Reimbursement Country Profiles database 2007-2010*

The likelihood of providing medicines free of charge for selected patient groups usually decreased with increasing income, which is consistent with a high level of insurance found in high- income countries. Throughout the region, 88.9% of countries (response rate 67.9%) had national health insurances or other social insurance systems providing at least partial coverage for medicines, and in 56.0% of countries (response rate 47.2%) private health insurance schemes provided medicines coverage. The distribution of these insurances differed depending on income, as highlighted in figure 7.2 below. Public insurance coverage included medicines on

the EML similarly for in- and outpatients (81.5% and 85.2%, respectively)[25], while private health insurances provided EML medicines coverage only in six out of 15 responding countries. Nevertheless, copayments for medicines were required in 76.7% of countries (response rate 81.1%); in comparison, fees or copayments for consultations were levied at the point of delivery in 70.0% of countries (response rate 75.5%). In seven countries, revenues from fees or sales of medicines were used to pay or supplement the salaries of personnel in a public health facility (response rate 75.5%).

*Fig. 7.2: Insurance coverage and copayments for medicines by income group [%]*



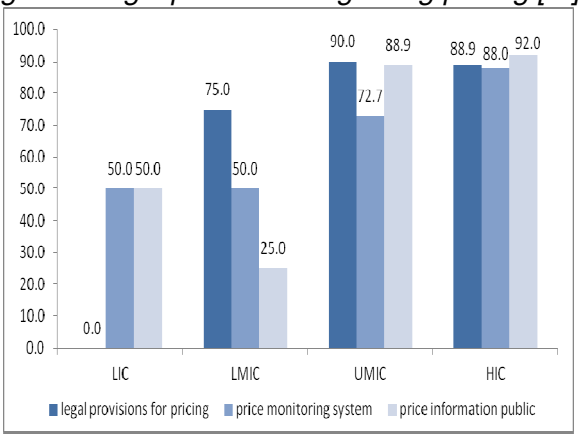

*Source: Pharmaceutical Sector Country Profiles database 2010-2013; PPRI Pharmaceutical Pricing and Reimbursement Country Profiles database 2007-2010*

### *7.2 Pricing, Duties and Taxes*

Legal or regulatory provisions affecting pricing of medicines existed in the majority of countries in the region (response rate 81.1%), as did medicines price monitoring systems run by the government (response rate 79.2%); furthermore, in 82.5% of countries (response rate 75.5%) regulations existed that mandated retail medicines price information to be publicly available. (For details see figure 7.3). Provisions to affect prices were aimed at all stakeholders within the supply chain, although to a differing degree among income groups; overall, provisions to affect prices were mostly aimed at retailers and were common in all income groups – except from the low income countries, which did not have any provisions for that. The existence of governmental price monitoring systems and requirements to make retail medicine prices publicly available differed between income groups, both being more prevalent with increasing income.

[25] 22 out of 27 countries for inpatients, 23 out of 27 countries for outpatients.

*Fig. 7.3: Legal provisions regarding pricing [%]*

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*Source: Pharmaceutical Sector Country Profiles database 2010-2013; PPRI Pharmaceutical Pricing and Reimbursement Country Profiles database 2007-2010*

Throughout the WHO/Europe region, only eleven countries (response rate 62.3%) imposed duties on imported active pharmaceutical ingredients (APIs), and 14 countries imposed duties on imported finished products. While the occurrence of duties on finished products decreased with increasing income, the presence of duties on APIs did not seem to be influenced by income.

Unlike duties, most countries within the region levied value-added-tax (VAT) on finished products (85.0%; response rate 75.5%), and this was increasingly common with increasing income; in addition, the group of high income countries had the lowest rate of tax exceptions or waivers for pharmaceutical products, which existed in nine countries (response rate 45.3%) regionally. Levied VAT on medicines varied widely, ranging from 2.1% in France for reimbursed medication up to 25.5% in Iceland for all pharmaceutical products; while four countries[26] did not charge VAT on medicines at all, in five countries split tax rates existed – in Croatia, France, Lithuania and the United Kingdom these depended on reimbursement status, and in Sweden difference VAT rates were applicable for prescription medication and OTC products [22]. For a list of VAT rates on pharmaceuticals in the region, see figure 2.7.1 in the annex.

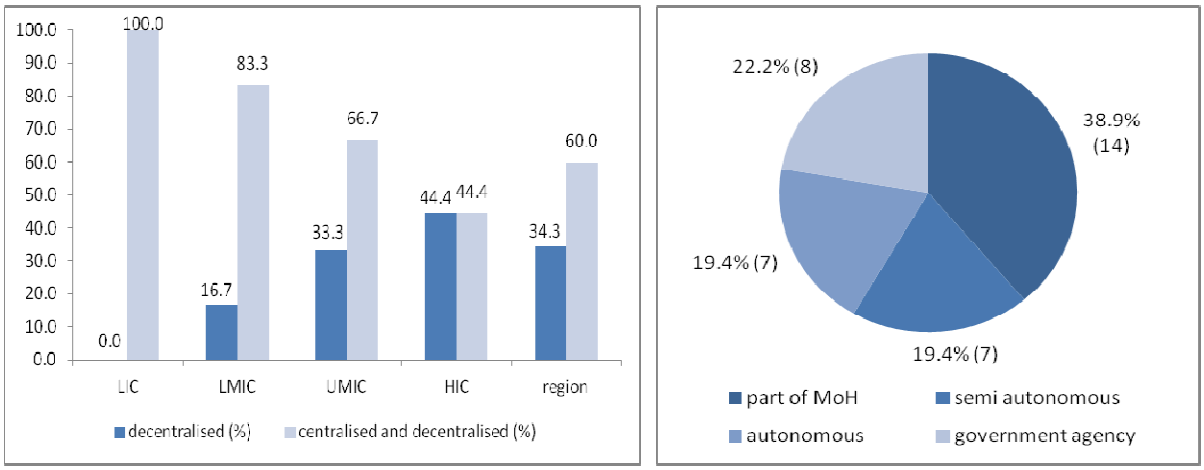
# 8. Pharmaceutical procurement and distribution

### *8.1 Public Sector*

[26] Azerbaijan, Georgia, Kyrgyz Republic, Malta

Within the region, public sector procurement was decentralized in 34.3% of countries, and both centralized and decentralized in 60.0% (response rate 66.0%)[27]; the degree of decentralization increased with increasing income. Where public sector procurement was wholly or partially centralized the structure of the agency responsible differed between countries, as shown in figure 8.1. As some agencies were e.g. part of the Ministry of Health and also semi-autonomous, the numbers in the graph do not add up to the total number of existing agencies.

*Fig. 8.1: Legal provisions regarding Public Sector Procurement by income group*

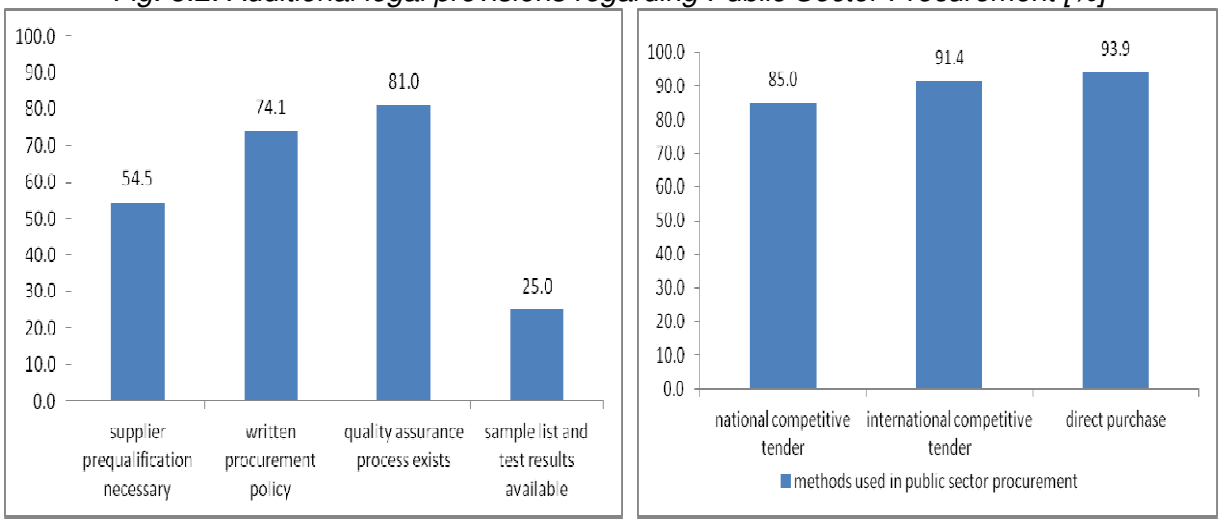



*Source: Pharmaceutical Sector Country Profiles database 2010-2013*

A written procurement policy existed in 74.1% of the countries (response rate 50.9%) where procurement was based on supplier prequalification in 12 countries (response rate 41.5%) and a process to assure quality of procured products was used in 17 countries (response rates 39.6%). Several methods were used to procure products within the public sector, and usually countries relied on more than one of them. Furthermore, public sector requests for tender documents and public sector tender awards were publicly available in most countries responding (95.8% and 91.3%, respectively[28]). Five out of twenty countries test samples during the procurement process and publish corresponding test results, none of which was a high income country (see also figure 8.2).

[27]Malta had a completely centralised system, while in the Netherlands, no public procurement existed.
[28] Tender requests were publicly available in 23 out of 24 countries (not in Czech Republic) and tender awards in 21 out of 23 countries (not in Lithuania and FYR Macedonia).

*Fig. 8.2: Additional legal provisions regarding Public Sector Procurement [%]*




Source: Pharmaceutical Sector Country Profiles database 2010-2013

Nine countries throughout the region (response rate 62.3%) operated a Central Medical Store (CMS) at National Level in order to facilitate public sector distribution. National guidelines for Good Distribution Practices existed in 24 out of 34 countries.

### *8.2 Private Sector*

Legal provisions for licensing wholesalers in the private sector existed in all but one out of 37 responding countries, and for licensing distributors in 31 countries (response rates 66.0%)[29]. A list of GDP certified wholesalers could be found in 66.7% of countries (response rate 62.3%), while 64.7% (response rate 64.2%) had a list of GDP certified private sector distributors. With the exception of lower middle income countries – of which none had either of both –, lists of GDP certified distributors were common in all income groups (for details, see figure 2.8.1 in the annex).

## 9. Selection and rational use of medicines

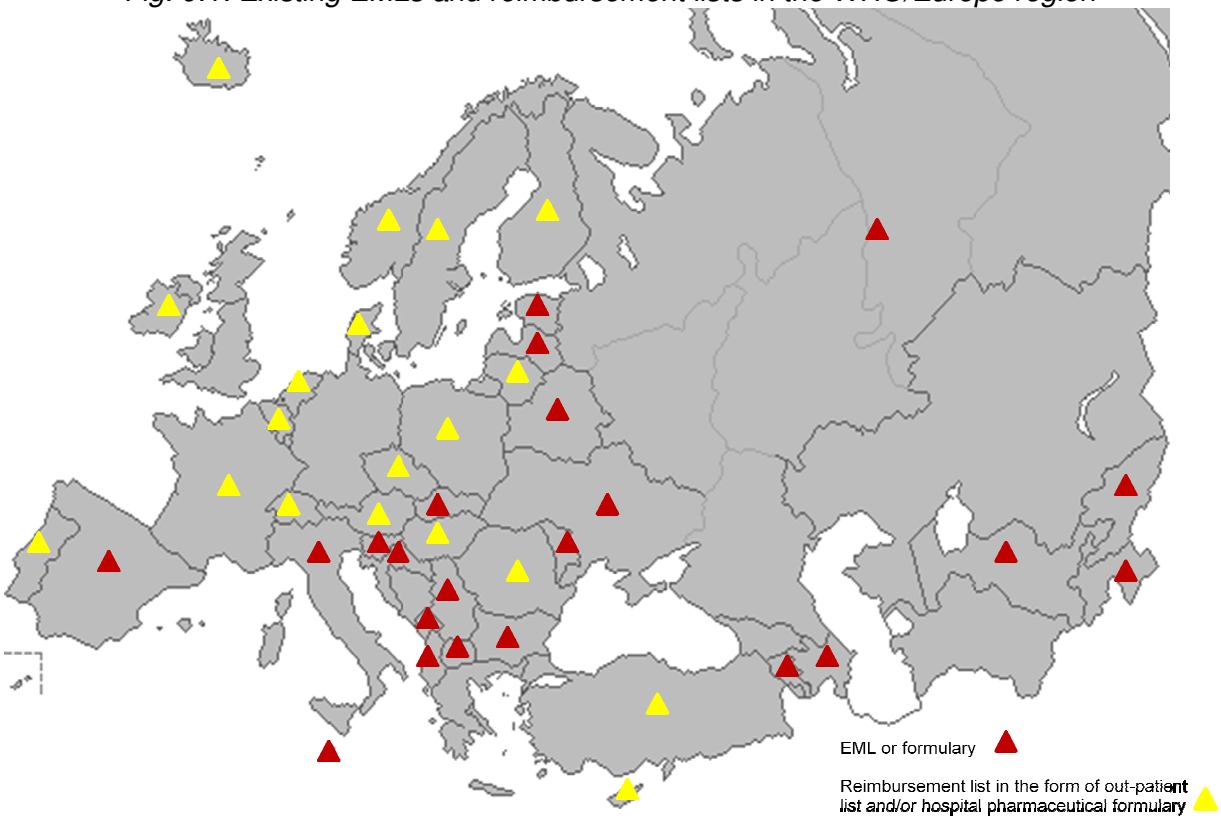
### *9.1 Essential Medicines List and Standard Treatment Guidelines*

Throughout the WHO/Europe region, a national Essential Medicines List (EML) existed in 53.1% of countries (response rate 60.4%), and in 15 out of these 17 countries the list was publicly available. EMLs were less frequently present with increasing income[30], although 17 countries – mostly high income countries – had positive reimbursement lists instead[31]. The number of

[29]No legal provisions for licensing wholesalers existed in Georgia, and for distributors in Estonia, Georgia, Monaco and Netherlands.
[30] For details, see picture 2.9.1 in the annex
[31] Most countries also had a negative list, excluding certain drugs from reimbursement.

medicines on the lists varied between 146 in Azerbaijan and 20,894 in Spain, with a regional median of 784.5 (response rate 49.1%); selection of the pharmaceuticals on the list was based on a written process in 77.8% of countries (response rate 34.0%), and 14 countries had explicitly documented criteria for the selection (response rate 45.3%). In addition, mechanisms to align the EML with Standard Treatment Guidelines (STGs) were in place in eleven responding countries (response rate 34.0%). The following figure 9.1 pictures the existence of either EMLs or national reimbursement lists; no information was available for Bosnia and Herzegovina and Germany[32]. Israel is missing on the map but had an Essential Medicines list.

*Fig. 9.1: Existing EMLs and reimbursement lists in the WHO/Europe region*

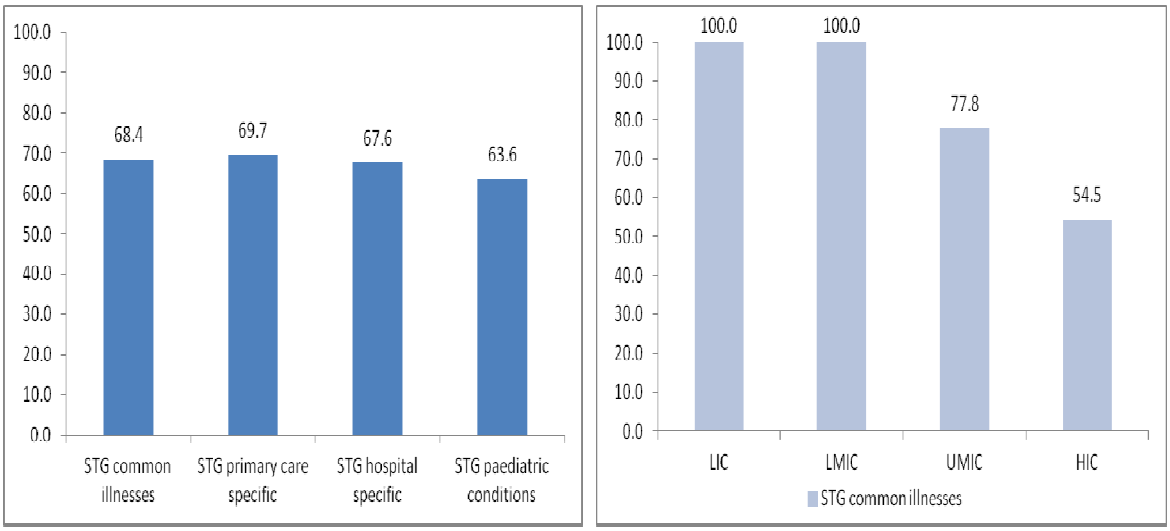



*Source: Pharmaceutical Sector Country Profiles Database, 2010-2013*

National STGs were available in most countries, although the probability of their presence declined with increasing income, as shown in figure 9.2 below; while STGs for most common illnesses existed in 26 countries (response rate 71.7%), STGs for paediatric conditions were present in 21 countries (response rate 62.3%). For more details, see picture 2.9.2 in the annex.

*Fig. 9.2: Existence of Standard Treatment Guidelines [%]*

[32] Germany reformed its system in 2011 imposing maximum reimbursement prices for all new reimbursed products after the assessment of their added therapeutic value.

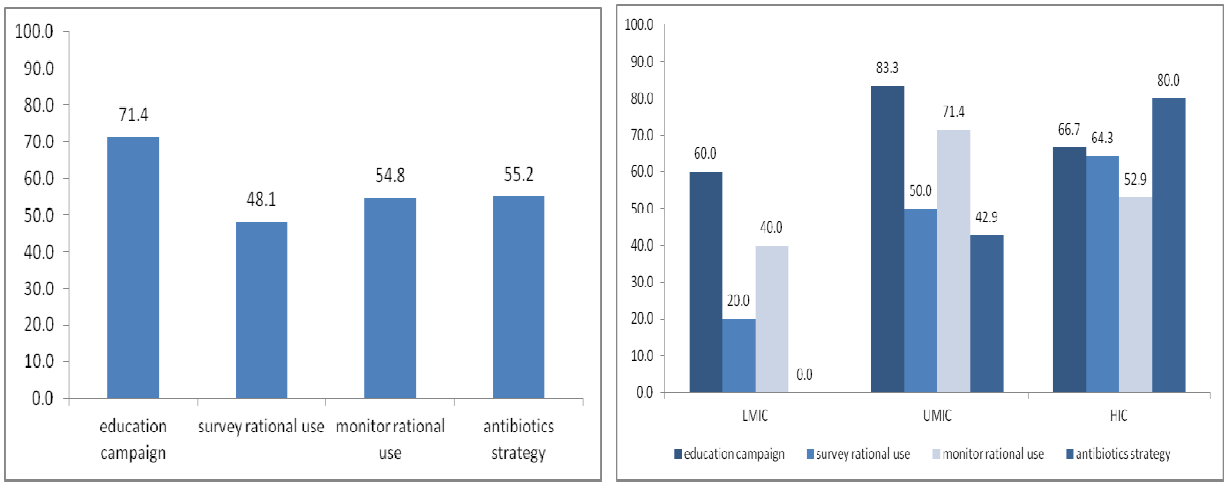



*Source: Pharmaceutical Sector Country Profiles Database, 2010-2013*

On average, 88.4% of public facilities had a copy of the EML and 83.7% had a copy of the STGs although response rates to these questions were low (17.0% and 15.1%, respectively).

In 57.1% of the countries (response rate 66.0%), a publicly or independently funded national medicines information centre provided information to prescribers, dispensers and consumers, and in 71.4% of countries (response rate 52.8%), public education campaigns on rational medicines use have been conducted within the last two years; 13 countries have conducted a survey on rational use previously (response rate 50.9%). In addition, a national programme or committee to monitor and promote rational use of medicines existed in 54.8% of the countries (response rate 58.5%), and 55.2% of countries had a written national strategy to contain antimicrobial resistance, with a response rate of 54.7%. (See also figure 9.3).

*Fig. 9.3: Strategies to assure rational use of medicines [%]*



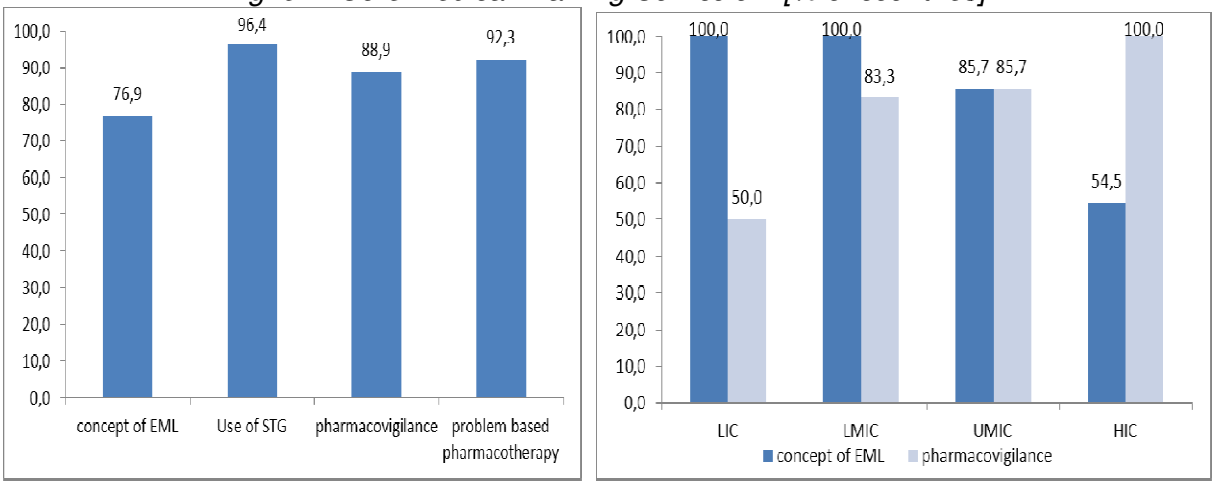

*Source: Pharmaceutical Sector Country Profiles Database, 2010-2013*

### *9.2 Prescribing*

Legal provisions to govern the licensing and prescribing practices of prescribers existed in almost all countries except from Georgia (response rate 79.2%), restricting dispensing by prescribers in 95.1% of countries (response rate 77.4%). Dispensing by prescribers was permitted in 33.3% of countries (response rate 73.6%), usually in exceptional circumstances or rural areas without other dispensing facilities [12].

The core medical training curriculum included the use of STGs and problem based pharmacotherapy in most countries[33], with little variation among income groups (response rates 52.8% and 49.1% respectively). The concept of EMLs was part of the medical training mainly in low- and middle- income countries, only six out of eleven high income countries included this topic in their curriculum (response rate 49.1%) – for details, see figure 9.4 below. Continuing education covering pharmaceutical issues was mandatory for doctors in 66.7% of countries (response rate 50.9%), for nurses in 52.2% (response rate 43.4%) and for paramedical staff in 50.0% (response rate 49.1%).

*Fig. 9.4: Core Medical Training Curriculum [% of countries]*




*Source: Pharmaceutical Sector Country Profile Database, 2010-2013*

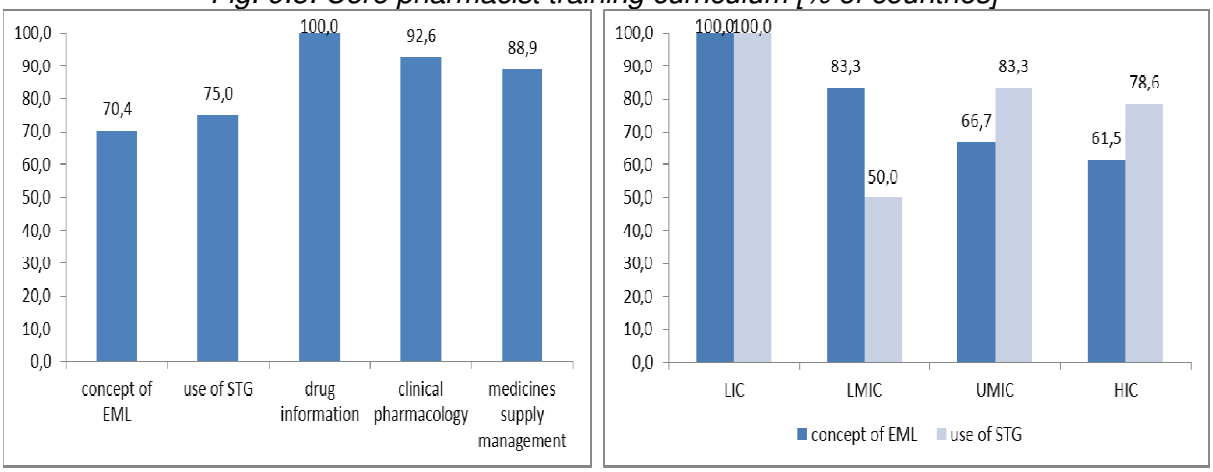
Prescribing by INN name is obligatory in 30.2% of countries, with few differences between the public and the private sector (response rates 81.1% and 58.5% respectively); this was most common in lower middle- income countries, and the frequency of these regulations decreased with increasing income. However, in several countries prescribing by INN is indicative, and only a few countries did not allow this[34].

[33] Use of STGs not included in the medical curriculum in Poland, and problem based pharmacotherapy not included in Kyrgyz Republic and Slovenia.
[34] E.g. Austria, Denmark, Sweden [12]

### *9.3 Dispensing*

Legal provisions to govern dispensing practices of pharmaceutical personnel existed in almost all countries, again with Georgia as the only exception (response rate 50.9%). The basic pharmacist training curriculum included drug information in all 27 responding countries, and clinical pharmacology and medicines supply management was covered in most countries as well (92.6% and 88.9%, respectively)[35]. The concept of EMLs was included mainly in low- and middle-income countries, similar to the medical curricula (see figure 9.5 below). Continuing education that includes rational use of medicines was mandatory for pharmacists in 64.3% of countries (response rate 52.8%), with declining occurrence with increasing income.

*Fig. 9.5: Core pharmacist training curriculum [% of countries]*




*Source: Pharmaceutical Sector Country Profiles Database, 2010-2013*

Substitution of generic equivalents at the point of dispensing was allowed in public sector facilities in 90.3% of countries (response rate 58.5%) and in the private sector in 83.3% of countries (response rate 79.2%). Almost all countries not allowing generic substitution were high income countries[36]. High- income countries were least likely to sell antibiotics or injections over-the-counter (OTC) without a prescription. All low- and lower middle- income countries reported that unauthorized OTC sale of antibiotics was practiced, against four out of five upper middle income countries (80.0%) and only two out of 16 high- income countries (12.5%). At the primary care level in the public sector prescribing authorization was extended to nurses and other staff (for details see figure 2.9.1 in the annex).

[35]Clinical Pharmacology not included in the core pharmacist curriculum in Georgia and Moldova, and Medicines Supply Management not included in Estonia, Iceland and Portugal.
[36]Public sector: Austria, Belgium, Finland; private sector: Austria, Belgium, Bulgaria, Greece, Ireland, Luxembourg, United Kingdom [20]

# 10. Discussion

This chapter will primarily discuss some significant regulatory aspects and differences within the European Region WHO with regard to possible improvements, but will also point out some crucial analytical and interpretational details based on the data gathered.

*Background*

Wide variations in mortality rates and life expectancy throughout the region are caused by substantial differences in socioeconomic and behavioural aspects – facilitated by decades of political and economic separation. In general life expectancy is significantly higher in western European countries than in countries situated in eastern Europe and central Asia. Mortality rates due to NCDs and infectious diseases are highest in NIS countries, and this holds true for maternal mortality and child mortality rates as well [11]. These divergences are correlated with income level, which in turn can be explained at least partly with the previous existence of two diverse economic models within the region: market-based economies in western Europe, and Communism in eastern Europe and central Asia [23]. Closely related to this economic split is the development of differing health systems, featuring distinct focal points. Although all contemporary health systems strive to offer universal access to health care and provide at least partial coverage of medical expenses, certain existing differences can be traced back to infrastructures and policy contexts originating in the past. Tobacco and alcohol control, for example, are more prevalent in western European countries, and thus tobacco and alcohol related diseases such as lung cancer or liver cirrhosis are less prevalent [23]; other social determinants of health (diet, lifestyle, living conditions etc.) based on circumstances can be held accountable for several conditions as well [24]. But inequity does not only exist among countries: even within countries, differences in life expectancy up to several years can be observed, highlighting a crucial aspect of population health all countries within the WHO/Europe region should consider targeting [24].

*Regulation*

Pharmaceutical sector regulations are rather comparable throughout the region, providing a legitimate framework for market access, distribution and financing of medicines in all countries. However, vital differences exist in some aspects, among them the extent to which policies are implemented and the overall degree of market regulation. Especially in low- and middle- income countries within the region, existing policies frequently are not implemented or the implementation remains incomplete, and necessary infrastructures for monitoring and evaluation

of actions taken may not yet been fully established; an indicator for this is the lack of implementation policies and monitoring strategies in many countries. Furthermore, two different approaches towards pharmaceuticals have to be balanced. Europe is a strong base for the pharmaceutical industry, and medicines are traded goods – and this has implications for countries due to economic considerations both in terms of economic development of manufacturing countries as well as in relation to access to medicines. However, medicines not only treat diseases, but also have the potential to harm people. After «Soviet Era» and economic transition, a liberal free-market policy was introduced in many of these countries, and pharmaceuticals were not always excluded from deregulation; political as well as economic instability usually reduced the access to health care initially, and strategies were needed to provide at least the most basic functions [24]. Pharmaceutical policies dealt mainly with availability and affordability, while refined regulatory aspects including quality issues were to be dealt with over time. In addition, neither being a member of the EU, the Pharmaceutical Inspection Convention (PIC) and the Pharmaceutical Inspection Co-operation Scheme (PIC Scheme), WTO etc. nor having considerable pharmaceutical industry significantly minimizes the effort to implement policies dealing with these issues. western European countries, in particular members of the EU, have a more developed regulatory system due not only to their advanced economic development, but also due to previous experiences and networking. Pharmaceutical industries are a sophisticated and highly profitable part of many economies (e.g. Denmark, Germany, Switzerland), and regulation regarding clinical trials, market authorization or post-marketing surveillance are therefore pronounced. Moreover, several scandals involving pharmaceuticals have sensitized the population and had legal consequences, for example the causing of birth defects by thalidomide during the 1960s [26].

In majority of former soviet countries quality assurance (QA) is still replaced by inefficient quality control (QC). Huge resources are spent by countries for the QC at the registration and importation stage, with very low failure detection rate. This leads also to substantial delays of the registration process. There is an insufficient implementation of pharmacovigilance and gaps in legislation, regulating clinical trials. Therefore continued efforts are required to strengthen the national regulatory systems.

New efforts have more recently been focussed on quality issues through the WHO Member State mechanism on Substandard/spurious/falsely-labelled/falsified/counterfeit medical products (SSFFC) medical products and establishment of an Open-ended Working Group to identify the actions, activities and behaviours that result in SSFFC medical products, in line with resolution WHA65.19.

Some other matters of concern not covered in the survey directly are the increasing number of unauthorized products being used in particular small countries. There seems to be a trend that market authorization exemption and named patient based sales are increasing. This has been seen in several countries including Ireland and Hungary. The reasons for this are not verified but consequences include limited pharmacovigilance coverage of these products. Furthermore these products are not monitored in the supply chain and treatment interruption and stock out may more frequently occur. In regards to stock out situations another trend observed is the shortages of medicines particular for certain oncology products, antimicrobials as well as cardiovascular medicines. Reasons for such are several including non-renewal of market authorizations; GMP related issues as well as parallel imports. Solutions may include both demand and supply side actions. More focus on monitoring of market authorization validity periods with the view of engaging in a dialogue with Industry prior to the end of the MA validity period could be initiated to foresee potential issues linked to this.

Unauthorized sales over-the-counter of antimicrobial in several countries were verified in the survey. This present a high risk for increasing antimicrobial resistance as antibiotic use is the main driver of resistance. Use in humans is only one side of the problem as veterinary use also has a high impact. However, policy-makers urgently have to restrict over-the-counter sales of antimicrobial medicines and enhance efforts in educating health providers towards appropriate prescribing and patients/consumers to understand the risks linked to in-appropriate use of these products. Furthermore, awareness should be raised linked to the negative impacts of self-medication with antimicrobials. Regulatory inspection of the pharmacy sector should include a review of practices on over-the-counter sales.

*Health financing*

THE and TPE vary widely between countries and are correlated with income level. High income countries spend more on health than low- and middle- income countries, and they spend more on pharmaceuticals as well. The reasons for this are multifaceted, including a higher demand for health services, higher consumer and health professional demand for pharmaceuticals and a greater supply with high-tech treatment possibilities and innovative, high-cost medicines [26]. The share of public spending for health decreases with decreasing income, leaving the highest private expenditures to those who can afford it, the least; out-of-pocket payments are substantially higher in low- and middle income countries than in high income countries, especially for pharmaceuticals. In almost all high income countries, some sort of public health insurance reimburses at least part of the costs for medication; although in most low- and middle income countries some patient groups or certain conditions are exempt from co-payment, in

practice patient do pay – either because their medication is not available in public health facilities and therefore must be bought privately, or because of frequently observed unofficial co-payments [25]. In addition, overall funding for health is cut down in many countries due to the financial and economic crisis emerging in 2007/2008. Even though not all countries were directly hit in a similar way, almost every country altered its policies regarding health care due to the necessity to contain public spending – although to a different degree. Reducing health care costs frequently lead to changes in medicines pricing and reimbursement, and several other measures, such as forced promotion of generics [28]. In Greece, for example, public expenditure for health was reduced by 13.2% in 2010 and by another approximately 11% in 2011; high decreases could be seen in Ireland and Portugal as well (Ireland -11.5% in 2010 and -6.6% in 2011; Portugal -8.0% in 2011) – primary targets for these spending cuts were pharmaceuticals and public health programmes [13]. In Iceland, with the collapse of the Icelandic Kroner an action group was set up with the main objective to lower the medicine cost in costly ATC-groups in the out-patient sector without decreasing the usage in DDD´s. Price reduction and price revision was introduced, along with a "price-window" or a "price-band" of general reimbursement within each class of certain products. The result of this was the overall pharmaceutical spend was reduced 6% per year in the period 2008-10 measured in EUR and this reduction has continued while DDD usage has increased. Hence, experiences with reducing pharmaceutical expenditure are several and most European countries have aimed at making more use of INN names and generic prescribing and substitution, along with reducing market-entry prices or re-negotiation of exciting prices. This trend of reform will likely continue with even more focus on pharmaco-economic assessment and more formal assessment of the value, added value of new products over existing one already on the market.

Particularly in central and Eastern parts of Europe measures taken implied higher co-payments and higher OOP payments for patients, and therefore might aggravate access to health care; this could possibly be problematic, as universal access is thought of as one of the most important achievements of contemporary health systems in Europe. But the current restructuring of the pharmaceutical sector by means of policy changes poses other potential risks as well. The increasing frequency of policy changes and legislative adoptions thereof imply increasingly complex rules, as is already the case for medicine pricing. Evolving strategies may contradict each other and disadvantage some countries, which is already happening with provisions for parallel import of pharmaceuticals[37]. Measures to cut pharmaceutical spending are most likely not sustainable due to demographic changes, causing more chronic diseases with crucial impact on health systems in the future. Hence, pharmaceutical pricing and spending will to continue to

[37] Parallel imports can lead to decreased availability of products in the country of origin due to price differences.

be an area for interaction and calls for new thinking, potentially new tools in order to keep a balance between access and cost effectiveness while recognized the many and different interests in this area. More focus and attention on market-entry-pricing will be important for all new products as well as more monitoring and follow up on health outcomes linked to use of medicines.

*Rational Use of medicines*

There are EMLs (or formulary lists) in place in all countries of the former Soviet Union which support and encourage the use of generics and at least in theory guide and support the rational use of pharmaceuticals. Western and eastern European countries have a variety of tools in place, e.g. positive, negative lists, medicines formularies, wise lists in place for the selection purposes. However, implementation across the Region varies; selection procedures are not always consistent, evidence-based or transparent. Across the region, not all pharmacies carry the full stock of drugs on the EML and the EML is not always used to inform selection procedures in pharmacies although a wide range of other 'off list' drugs are stocked.

Prescribing policies in Republic of Moldova require doctors to use generic names on prescriptions and in theory a dispensing pharmacist needs to get permission to substitute this with a brand-name product, but in practice this is decided between the pharmacist and patient without the doctor's knowledge [29]. Between 2006 and 2008, the average price of pharmaceuticals increased by 28% in Ukraine, of which 10% was due to inflation and 2% was due to the introduction of expensive new drugs. However 14% of this price increase is related to the substitution of cheaper drugs with more expensive alternatives by a doctor at various stages of treatment [30]. In Georgia, pharmacies are encouraged to dispense brand name drugs in preference to generics (even when the prescription uses the generic name) and doctors are similarly incentivised to use brand names when prescribing because they are paid bonuses by pharmaceutical companies based on the medicines they prescribe [31]. By contrast, prescribing studies in Kyrgyzstan and Tajikistan show a high level of generic prescription, about 70% in both countries [32].

There are strong incentives for doctors in the Region to over-prescribe and there is a strong preference between both doctors and pharmacists for more expensive innovative drugs that are perceived to be safer and more effective rather than well established generics. However, this belief is also often shared by patients. Rational drug use policies have proven challenging to implement and the success of policies is not generally monitored. Across the region the challenge of rational drug use is broadly similar: a high use of injections, the prescription of

multiple drugs with similar therapeutic effects, the irrational use of antibiotics and other drugs. [33].

*Conclusion*

By and large the pharmaceutical sector in the European Region WHO is fairly well organized and regulated, providing a necessary framework to ensure universal access to health care and treatment with appropriate, safe medication. Although regulatory aspects are similarly dealt with throughout the region, potential improvements in regard to medicines trade and safety precautions exist. More importantly, the system to finance health care and pharmaceuticals in particular needs refinement to prevent monetary considerations from hampering access. Clinically meaningful outcomes of medicines treatment need also to further reflected on. Especially in the wake of the financial and economic crisis, many political strategies and economic measures were considered only in regard to their impact on governmental spending but with less focus on real health outcomes. Focus on generic/INN prescribing has brought about reductions in pharmaceutical spending. However, changes in reimbursement level have also in certain countries increased to out-of-pocket spending of patients. More focus is required on monitoring health outcomes of treatment of high-cost medicines and their impact on population health should be the next aspect to consider.

# Annex 1: Additional Tables

*Table 1.1.1: WHO Regional Office for Europe region countries by income group, 2011*

| Income level | Country | Country | Country |
|---|---|---|---|
| **Low (2)** | Kyrgyzstan | Tajikistan | |
| **Lower middle (6)** | Albania | Georgia | Ukraine |
| | Armenia | Republic of Moldova | Uzbekistan |
| **Upper middle (14)** | Azerbaijan | Latvia | Serbia |
| | Belarus | Lithuania | The former Yugoslav Republic of Macedonia |
| | Bosnia and Herzegovina | Montenegro | Turkey |
| | Bulgaria | Romania | Turkmenistan |
| | Kazakhstan | Russian Federation | |
| **High (31)** | Andorra | Greece | Poland |
| | Austria | Hungary | Portugal |
| | Belgium | Iceland | San Marino |
| | Croatia | Ireland | Slovak Republic |
| | Cyprus | Israel | Slovenia |
| | Czech Republic | Italy | Spain |
| | Denmark | Luxembourg | Sweden |
| | Estonia | Malta | Switzerland |
| | Finland | Monaco | United Kingdom |
| | France | Netherlands | |
| | Germany | Norway | |
| **Total (53)** | | | |

*Source: World Bank Database, June 2013*

*Table 1.1.2: Data status WHO Regional Office for Europe region countries (July 15th, 2013)*

| Status | Country | Country | Country |
|---|---|---|---|
| **Pilot countries (2)** | Armenia | Austria | |
| **Survey completed (31)** | Albania | Kyrgyz Republic | Slovak Republic |
| | Azerbaijan | Latvia | Slovenia |
| | Belgium | Lithuania | Sweden |
| | Bosnia and Herzegovina | Malta | Switzerland |
| | Croatia | Montenegro | Tajikistan |
| | Czech Republic | Netherlands | Turkey |
| | Estonia | Norway | Turkmenistan |
| | Finland | Poland | Ukraine |
| | FYR of Macedonia | Portugal | Uzbekistan |
| | Georgia | Republic of Moldova | |
| | Iceland | Russian Federation | |
| **Survey prefilled (20)** | Andorra | Greece | Monaco |
| | Belarus | Hungary | Romania |
| | Bulgaria | Ireland | San Marino |
| | Cyprus | Israel | Serbia |
| | Denmark | Italy | Spain |
| | France | Kazakhstan | United Kingdom |
| | Germany | Luxembourg | |
| Total (53) | | | |

*Source: Pharmaceutical Sector Country Profiles Database 2010-2013*

*Table 1.4.1: National Medicines Policies by income group*

| Income level (number of countries) | | National Medicines Policy (NMP) | | NMP Implementation Plan | | NMP implementation monitored | |
|---|---|---|---|---|---|---|---|
| | | **Count** | **Ratio [%]** | **Count** | **Ratio [%]** | **Count** | Ratio [%] |
| **Low (2)** | Responses | 2 | | 2 | | 2 | |
| | "yes" | 2 | ***100.0*** | 2 | ***100.0*** | 2 | ***100.0*** |
| **Lower middle (6)** | Responses | 5 | | 5 | | 5 | |
| | "yes" | 5 | ***100.0*** | 3 | ***60.0*** | 3 | ***60.0*** |
| **Upper middle (14)** | Responses | 8 | | 8 | | 7 | |
| | "yes" | 4 | ***50.0*** | 3 | ***37.5*** | 3 | ***42.9*** |
| **High (31)** | Responses | 14 | | 14 | | 11 | |
| | "yes" | 13 | ***92.9*** | 11 | ***78.6*** | 8 | ***72.7*** |
| **Region (53)** | Responses | 29 | | 29 | | 25 | |
| | "yes" | 24 | ***82.2*** | 19 | ***65.5*** | 16 | ***64.0*** |

*Source: Pharmaceutical Sector Country Profiles Database, 2010-2013*

*Table 1.5.1: Legal provisions for granting patents by income group*

| Income level (number of countries) | | Pharma-ceuticals | | Medical Equipment | | Medical supply | | Laboratory supply | |
|---|---|---|---|---|---|---|---|---|---|
| | | **Count** | **Ratio [%]** | **Count** | **Ratio [%]** | **Count** | **Ratio [%]** | **Count** | Ratio [%] |
| **Low (2)** | Resp. | 2 | | 2 | | 2 | | 2 | |
| | "yes" | 2 | ***100.0*** | 2 | ***100.0*** | 2 | ***100.0*** | 2 | *100.0* |
| **Lower middle (6)** | Resp. | 6 | | 5 | | 5 | | 5 | |
| | "yes" | 5 | ***83.8*** | 4 | ***80.0*** | 4 | ***80.0*** | 4 | *80.0* |
| **Upper middle (14)** | Resp. | 6 | | 4 | | 3 | | 4 | |
| | "yes" | 6 | ***100.0*** | 4 | ***100.0*** | 3 | ***100.0*** | 4 | *100.0* |
| **High (31)** | Resp. | 15 | | 11 | | 11 | | 10 | |
| | "yes" | 15 | ***100.0*** | 10 | ***90.9*** | 10 | ***90.9*** | 9 | *90.0* |
| **Region (53)** | Resp. | 29 | | 22 | | 21 | | 21 | |
| | "yes" | 28 | ***96.6*** | 20 | ***90.9*** | 19 | ***90.5*** | 19 | *90.5* |

*Source: Pharmaceutical Sector Country Profiles Database, 2010-2013*

*Table 1.5.2: Manufacturing capabilities by income group*

| Income level (number of countries) | | R&D to discover new active substances | | Production of APIs | | Production of formulations using APIs | | Repackaging of finished dosage forms | |
|---|---|---|---|---|---|---|---|---|---|
| | | Count | Ratio [%] | Count | Ratio [%] | Count | Ratio [%] | Count | Ratio [%] |
| **Low (2)** | Resp. | 1 | | 2 | | 2 | | 2 | |
| | "yes" | 1 | ***100.0*** | 0 | ***0.0*** | 1 | ***50.0*** | 2 | *100.0* |
| **Lower middle (6)** | Resp. | 6 | | 6 | | 6 | | 6 | |
| | "yes" | 4 | ***66.7*** | 4 | ***66.7*** | 6 | ***100.0*** | 5 | *83.3* |
| **Upper middle (14)** | Resp. | 7 | | 8 | | 8 | | 8 | |
| | "yes" | 4 | ***57.1*** | 5 | ***62.5*** | 7 | ***87.5*** | 8 | *100.0* |
| **High (31)** | Resp. | 14 | | 15 | | 14 | | 15 | |
| | "yes" | 11 | ***78.6*** | 14 | ***93.3*** | 14 | ***100.0*** | 14 | *93.3* |
| **Region (53)** | Resp. | 28 | | 23 | | 30 | | 31 | |
| | "yes" | 20 | ***71.4*** | 31 | ***74.2*** | 28 | ***93.3*** | 29 | *93.5* |

*Source: Pharmaceutical Sector Country Profiles Database, 2010-2013*

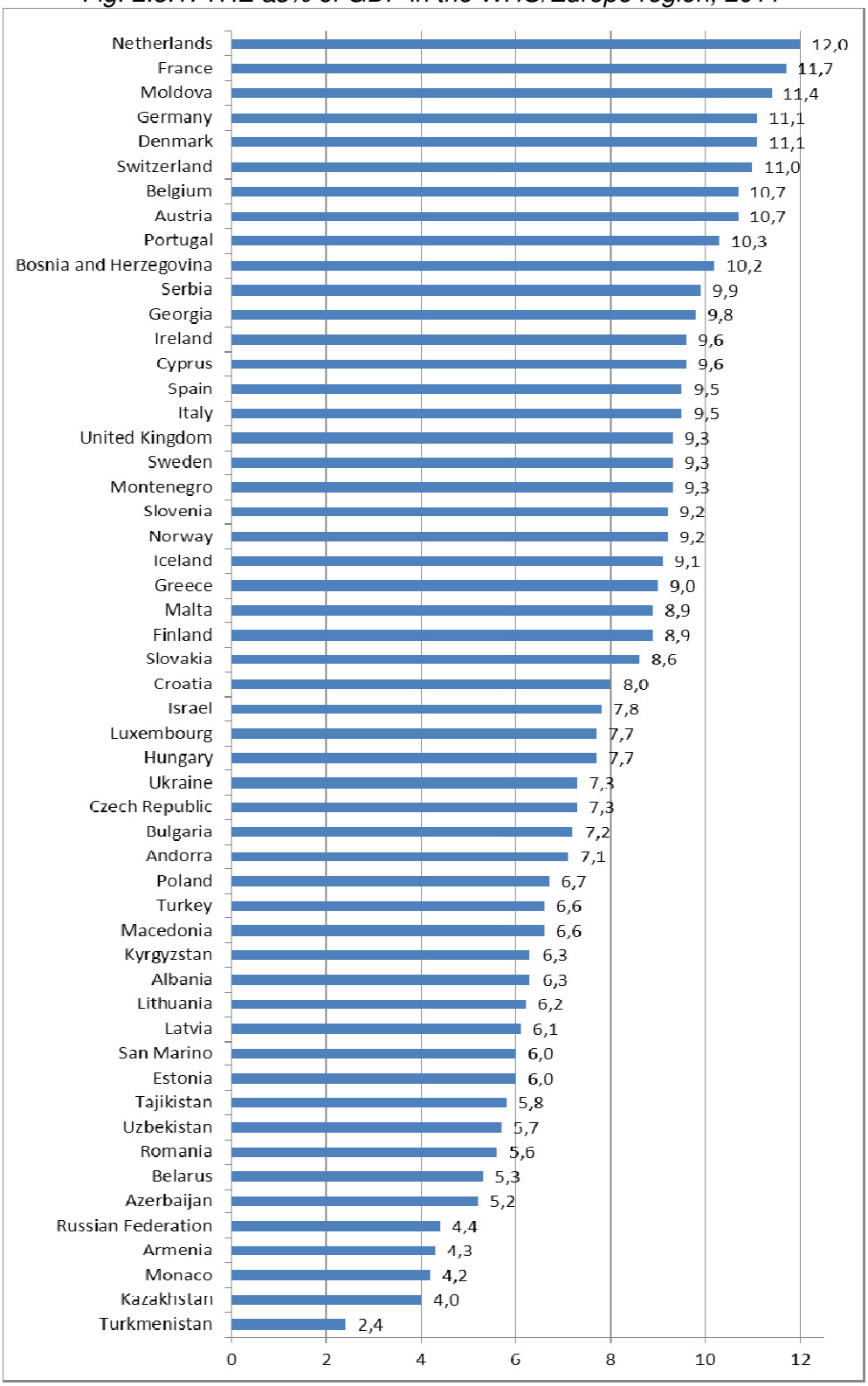
*Table 1.6.1: Legal provisions for regulatory inspections of pharmaceutical premises*

| Income level (number of countries) | | Appointment of government inspectors allowed | | Inspection of premises permitted | | Inspections of premises required for licensing | |
|---|---|---|---|---|---|---|---|
| | | Count | Ratio [%] | Count | Ratio [%] | Count | Ratio [%] |
| **Low (2)** | Responses | 2 | | 2 | | 2 | |
| | "yes" | 1 | ***50.0*** | 2 | ***100.0*** | 2 | *100.0* |
| **Lower middle (6)** | Responses | 6 | | 6 | | 6 | |
| | "yes" | 6 | ***100.0*** | 6 | ***100.0*** | 6 | *100.0* |
| **Upper middle (14)** | Responses | 7 | | 7 | | 7 | |
| | "yes" | 6 | ***85.7*** | 7 | ***100.0*** | 7 | *100.0* |
| **High (31)** | Responses | 16 | | 16 | | 14 | |
| | "yes" | 15 | ***93.8*** | 16 | ***100.0*** | 14 | *100.0* |
| **Region (53)** | Responses | 31 | | 31 | | 29 | |
| | "yes" | 28 | ***90.3*** | 31 | ***100.0*** | 29 | *100.0* |

*Source: Pharmaceutical Sector Country Profiles Database, 2010-2013*

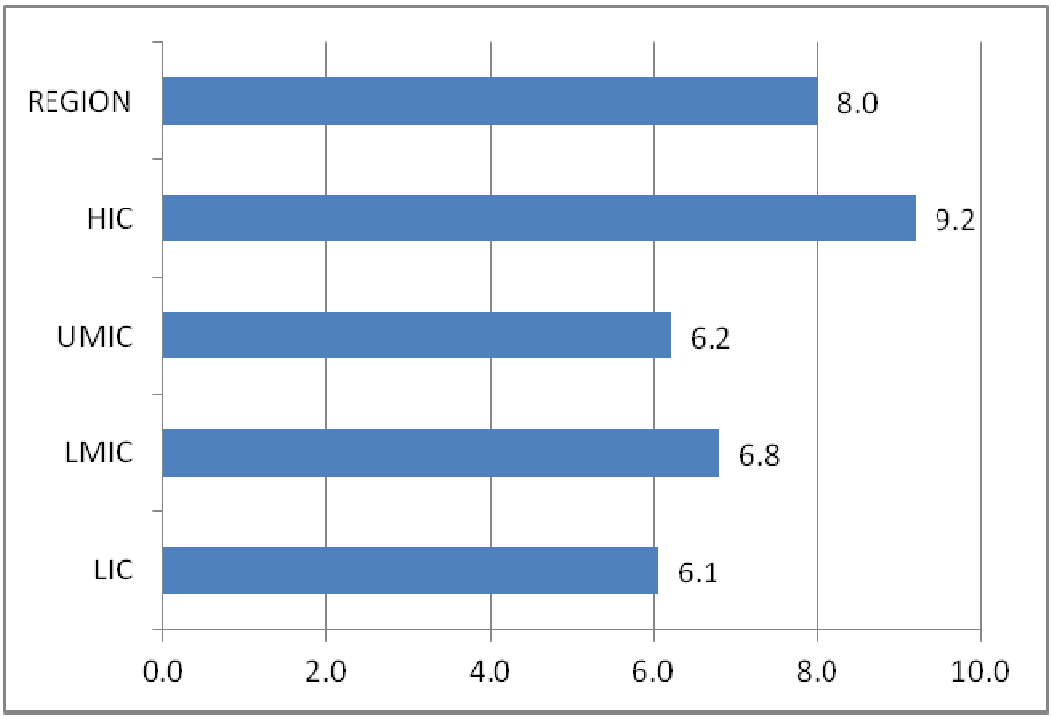
# Annex 2: Additional figures

*Fig. 2.3.1: THE as% of GDP in the WHO/Europe region, 2011*



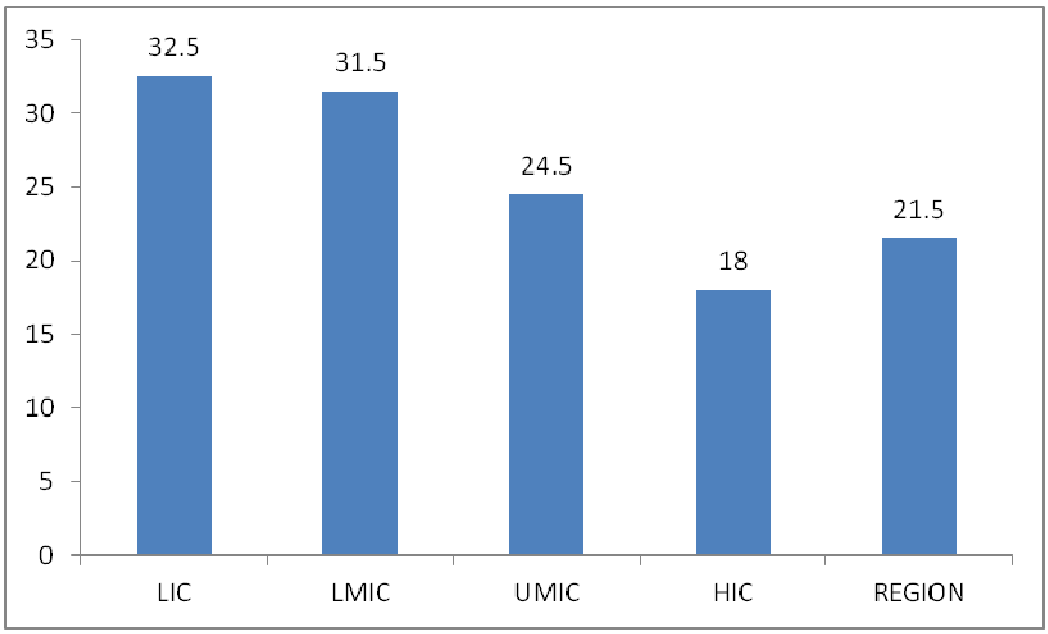

*Source: National Health Accounts Database, 2013*

*Fig. 2.3.2: THE as% of GDP by income group, 2011*



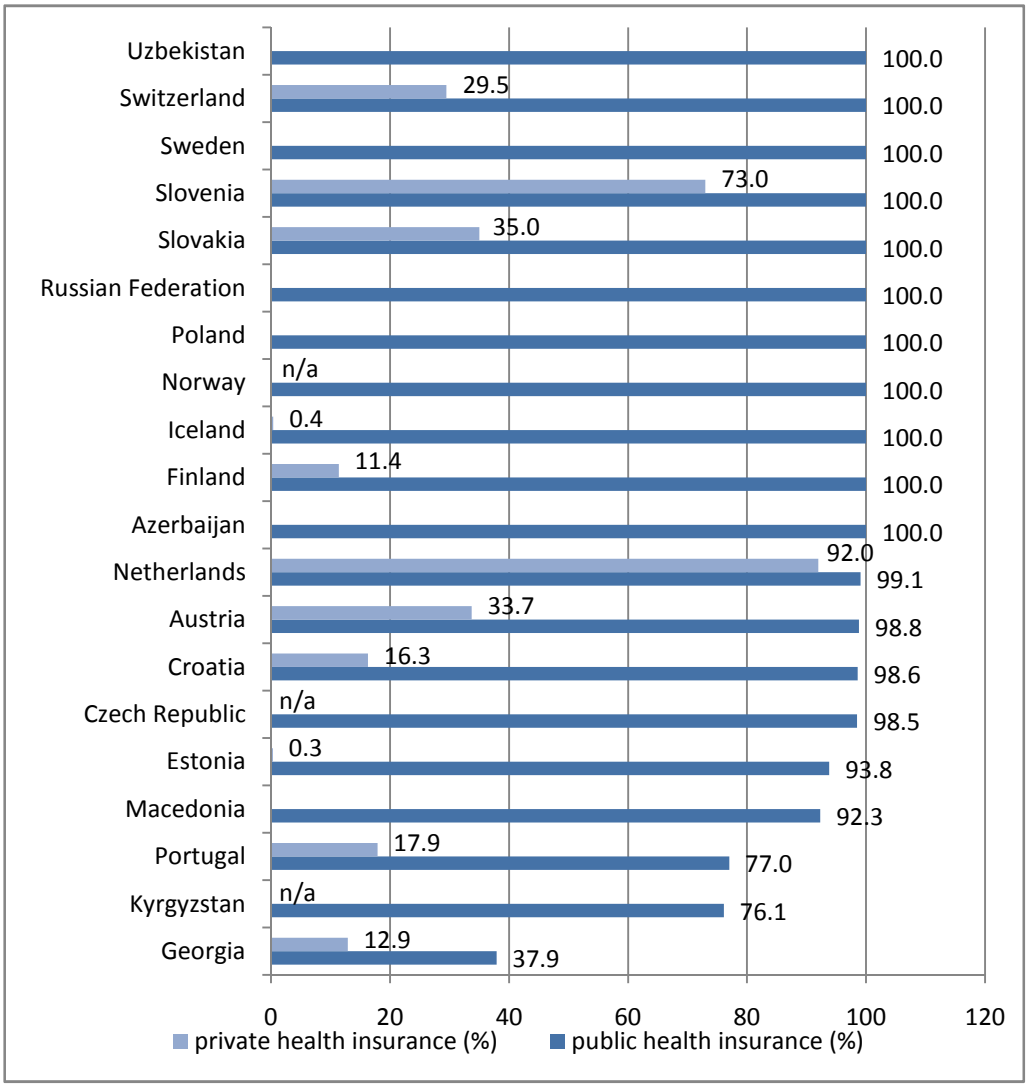

*Source: National Health Accounts Database, 2013*

*Fig. 2.3.3: TPE as% of THE by income group, 2011*



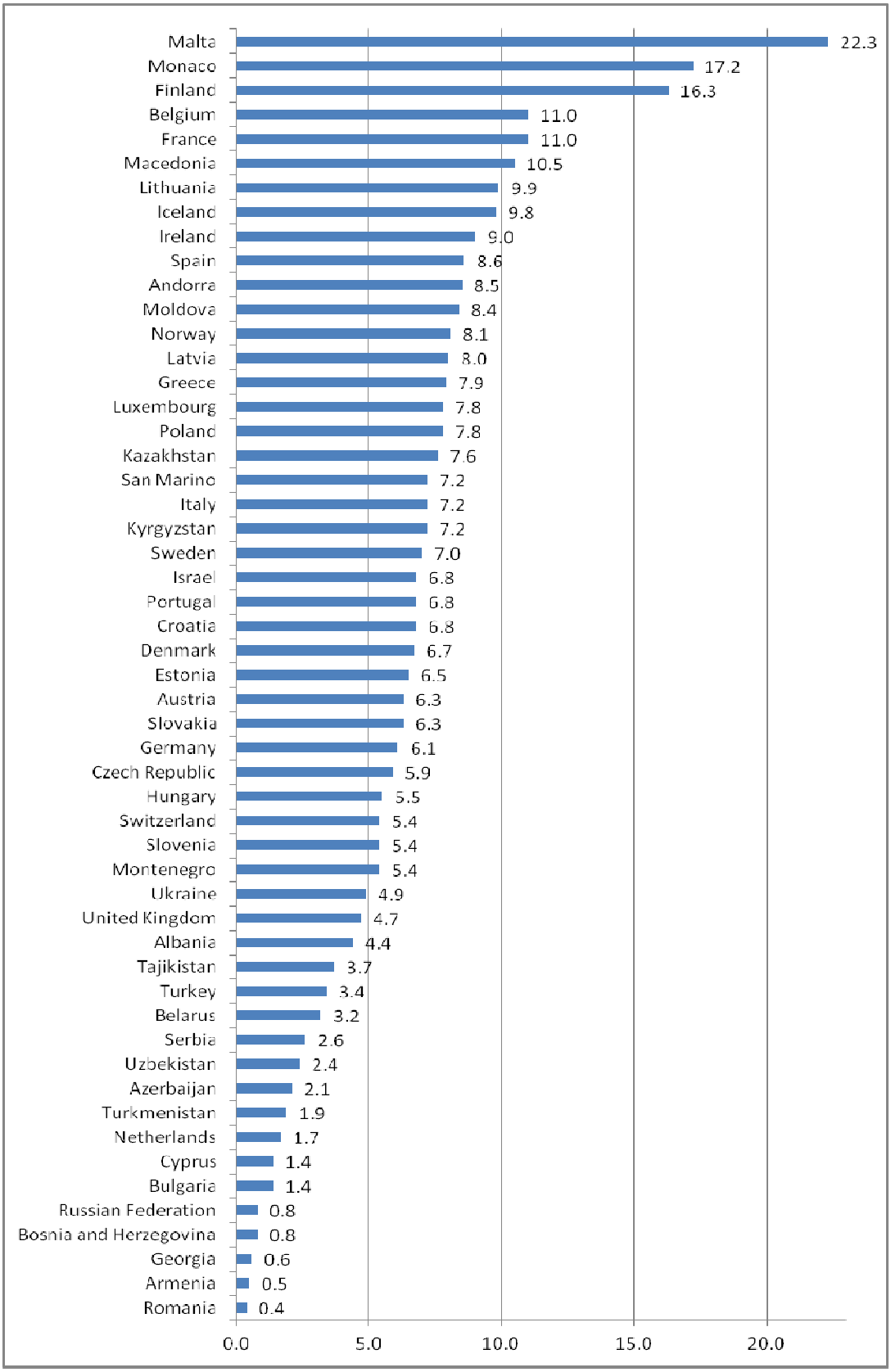

*Source: National Health Accounts Database, 2013*

*Fig. 2.3.4: Health Insurance Coverage in the WHO/Europe region [%]*



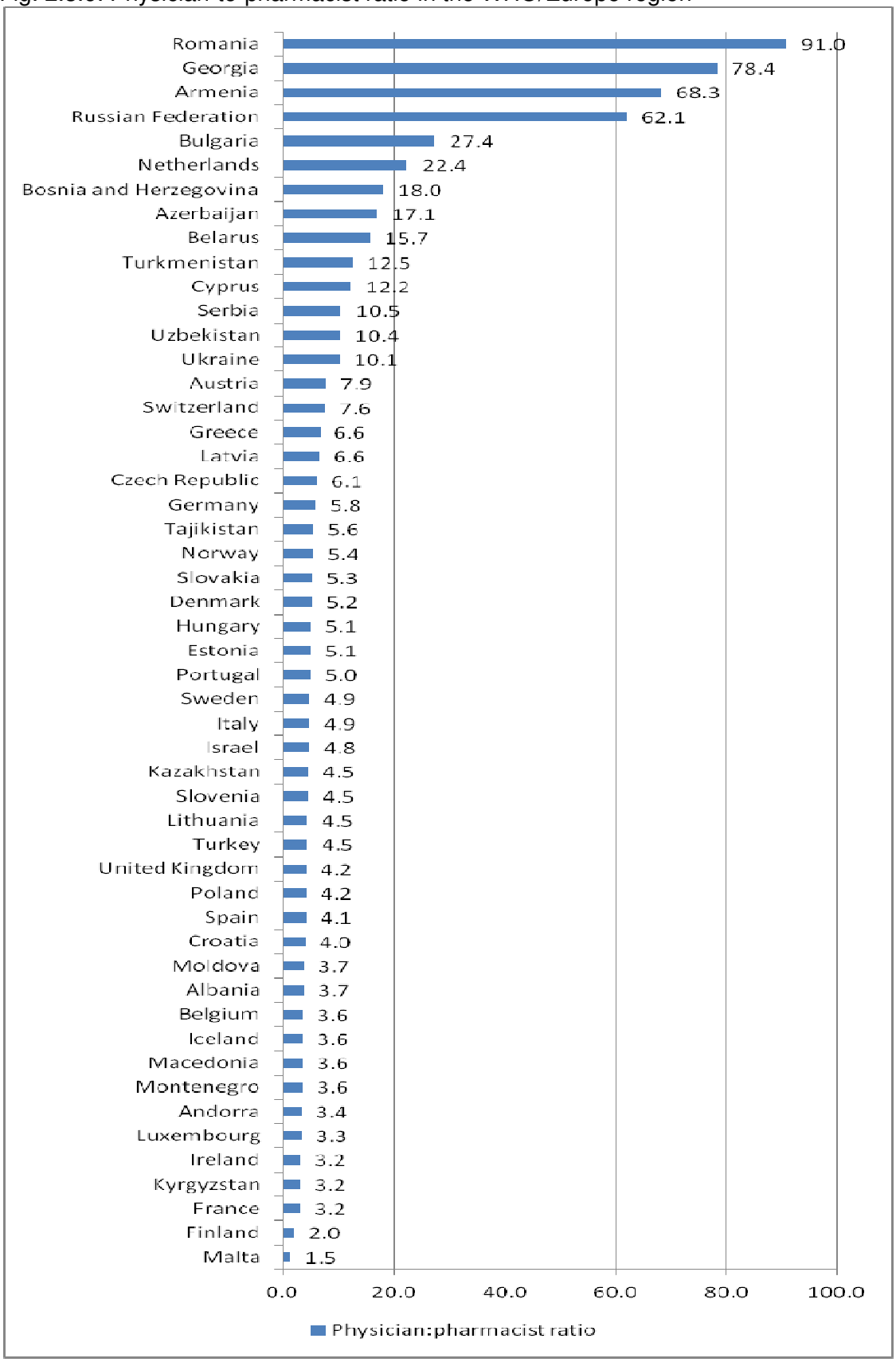

*Source: Pharmaceutical Sector Country Profiles database, 2010-2013*

*Fig. 2.3.5: Pharmacists per 10,000 population in the WHO/Europe region [#]*



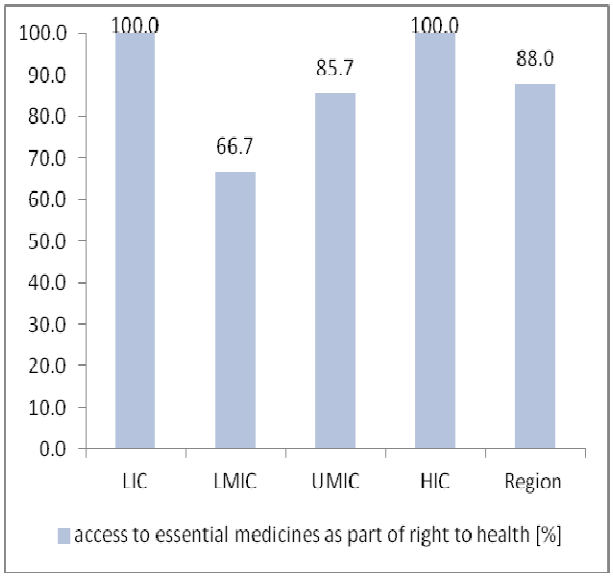

*Source: Pharmaceutical Sector Country Profiles Database, 2010-2013; National Health Accounts Database, 2013*

Fig. 2.3.6: Physician-to-pharmacist ratio in the WHO/Europe region



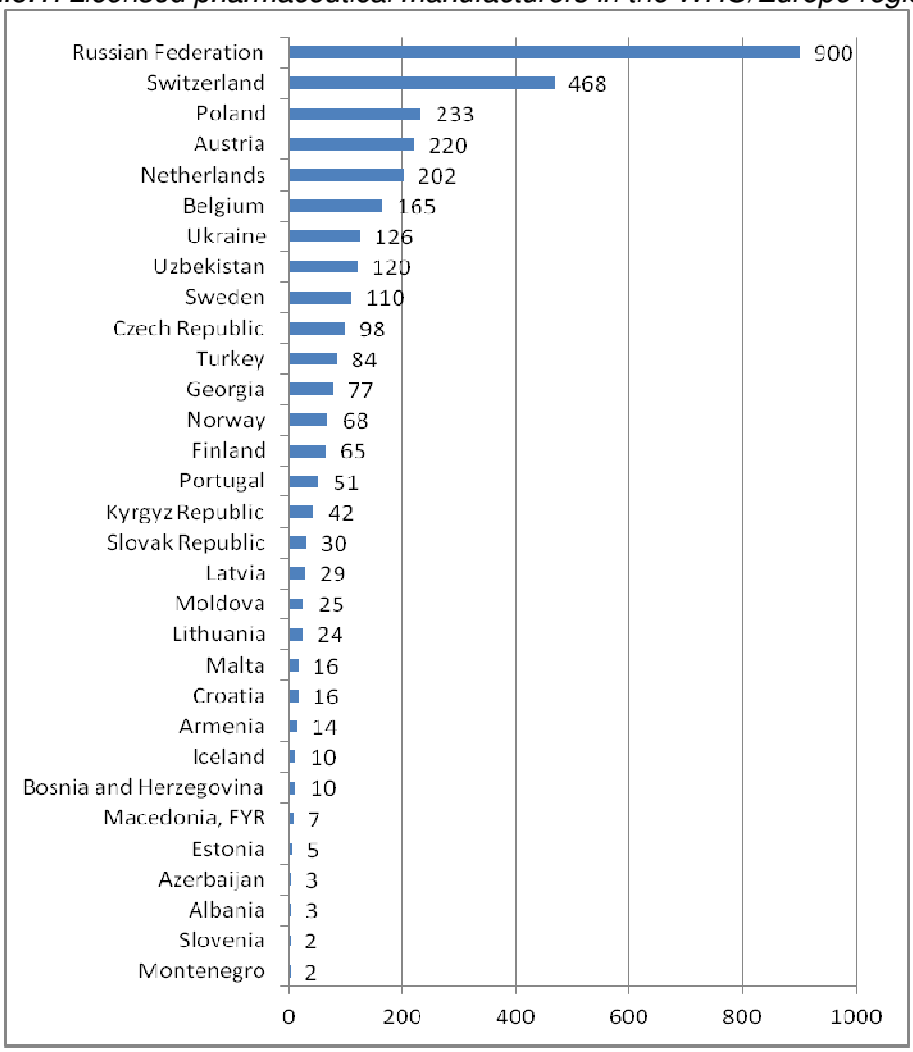

*Source: Pharmaceutical Sector Profiles Database 2010-2013; National Health Accounts Database 2013*

Fig. 2.4.1: Access to essential medicines and technologies in the WHO/Europe region [%]



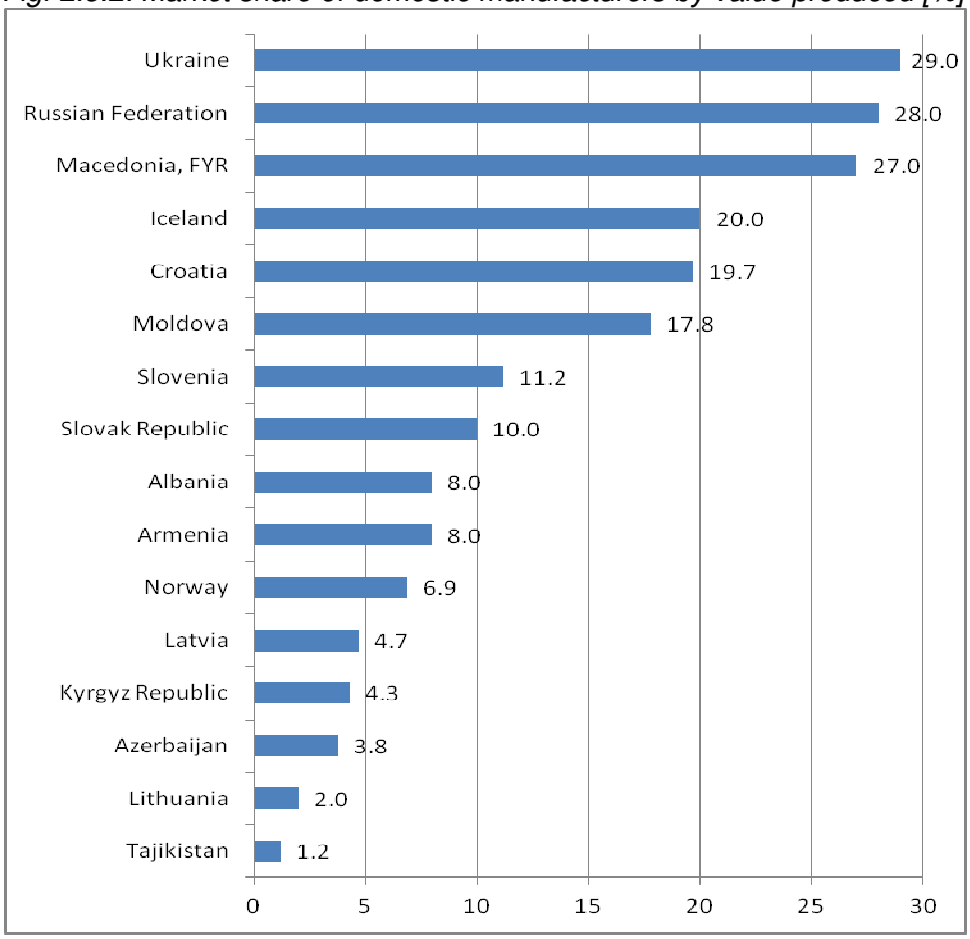

*Source: Pharmaceutical Sector Country Profiles Database, 2010-2013*

*Fig. 2.5.1: Licensed pharmaceutical manufacturers in the WHO/Europe region [#]*



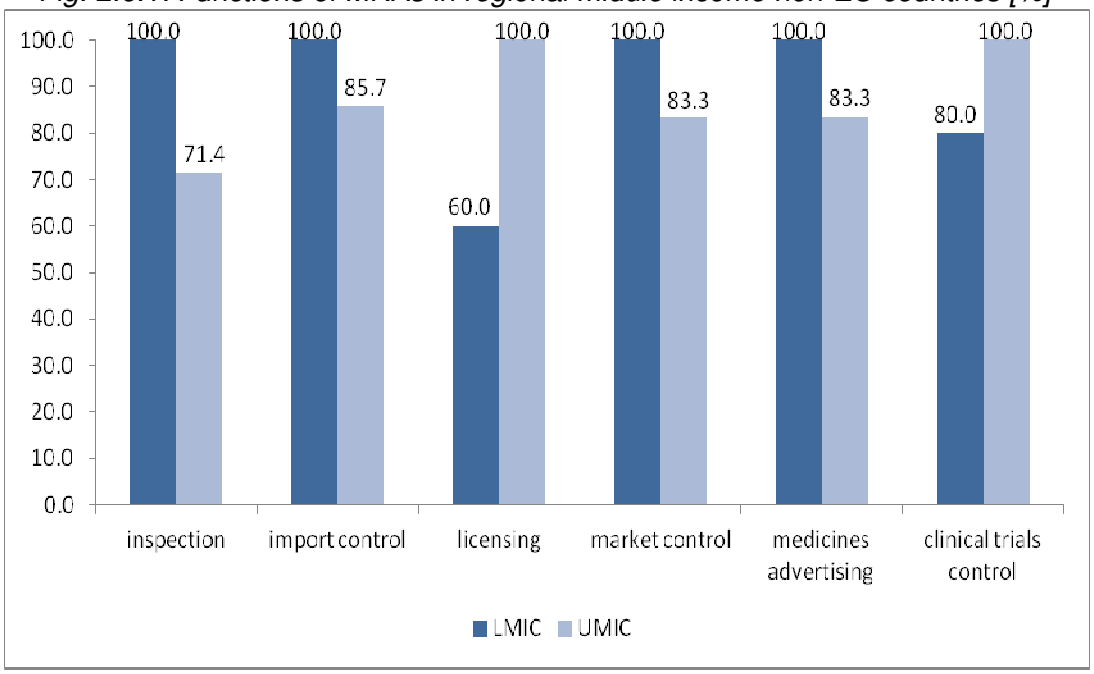

*Source: Pharmaceutical Sector Country Profiles Database, 2010-2013*

*Fig. 2.5.2: Market share of domestic manufacturers by value produced [%]*



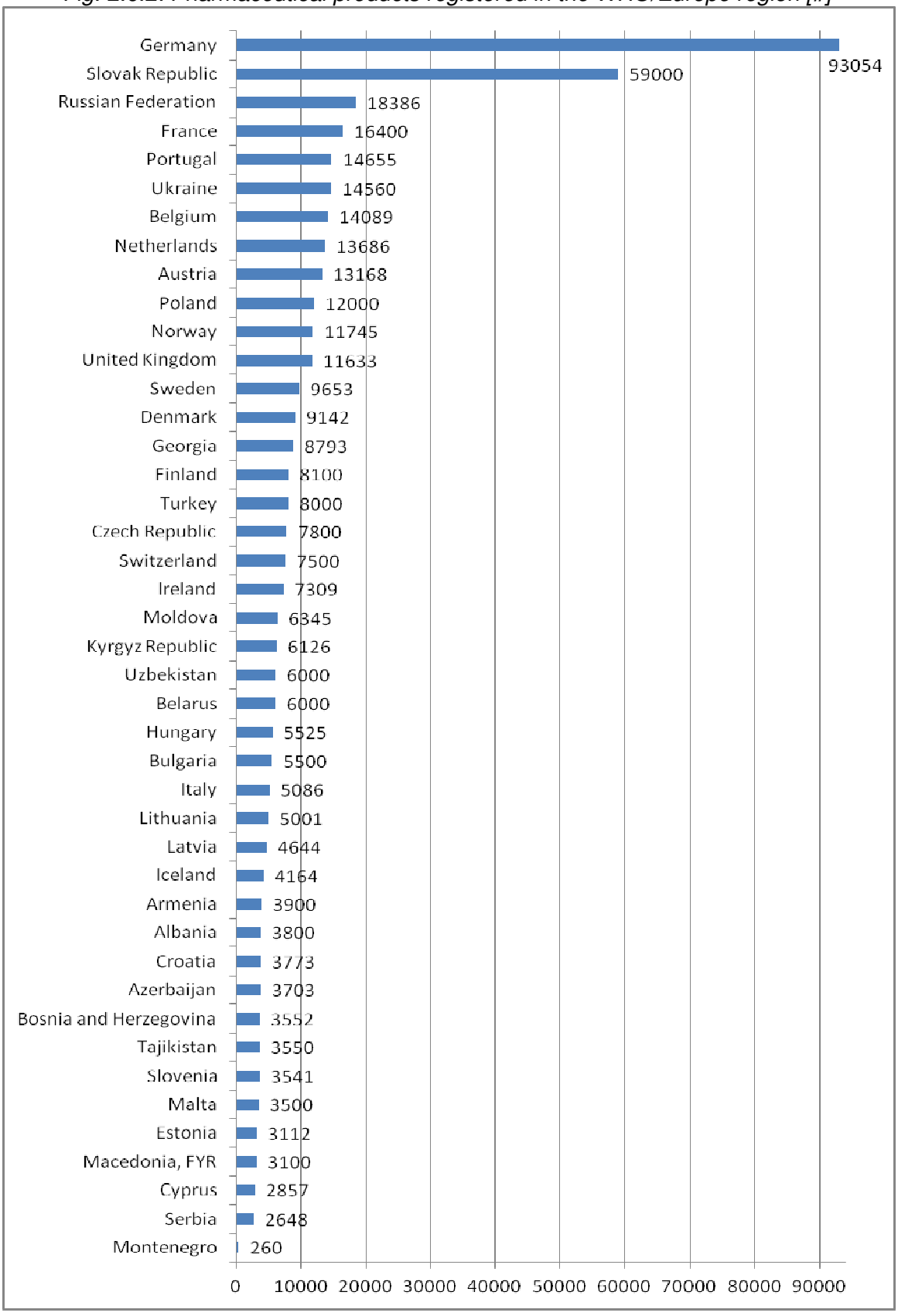

*Source: Pharmaceutical Sector Country Profiles Database, 2010-2013*

*Fig. 2.6.1: Functions of MRAs in regional middle income non-EU countries [%]*



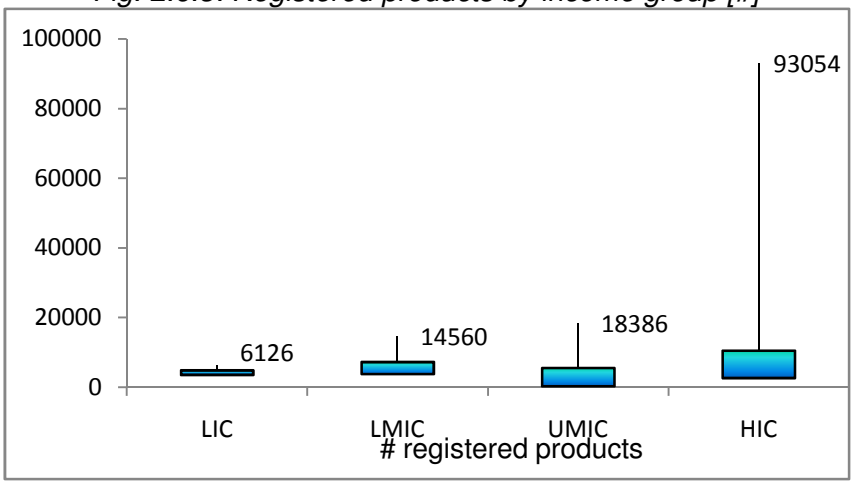

*Source: Pharmaceutical Sector Country Profiles Database, 2010-2013*

*Fig. 2.6.2: Pharmaceutical products registered in the WHO/Europe region [#]*



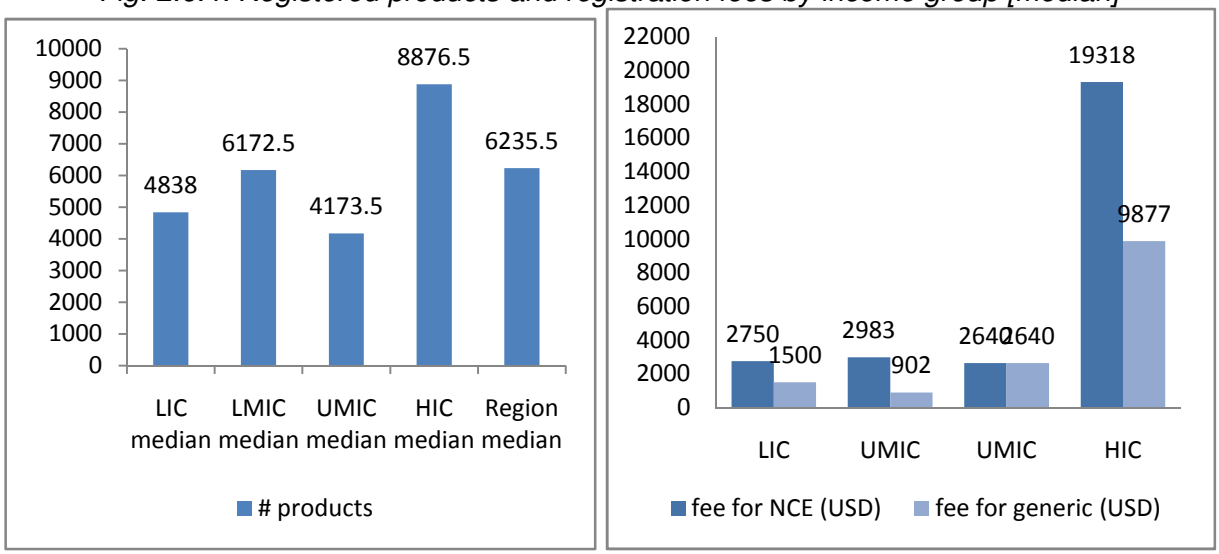

*Source: Pharmaceutical Sector Country Profiles Database, 2010-2013*

*Fig. 2.6.3: Registered products by income group [#]*



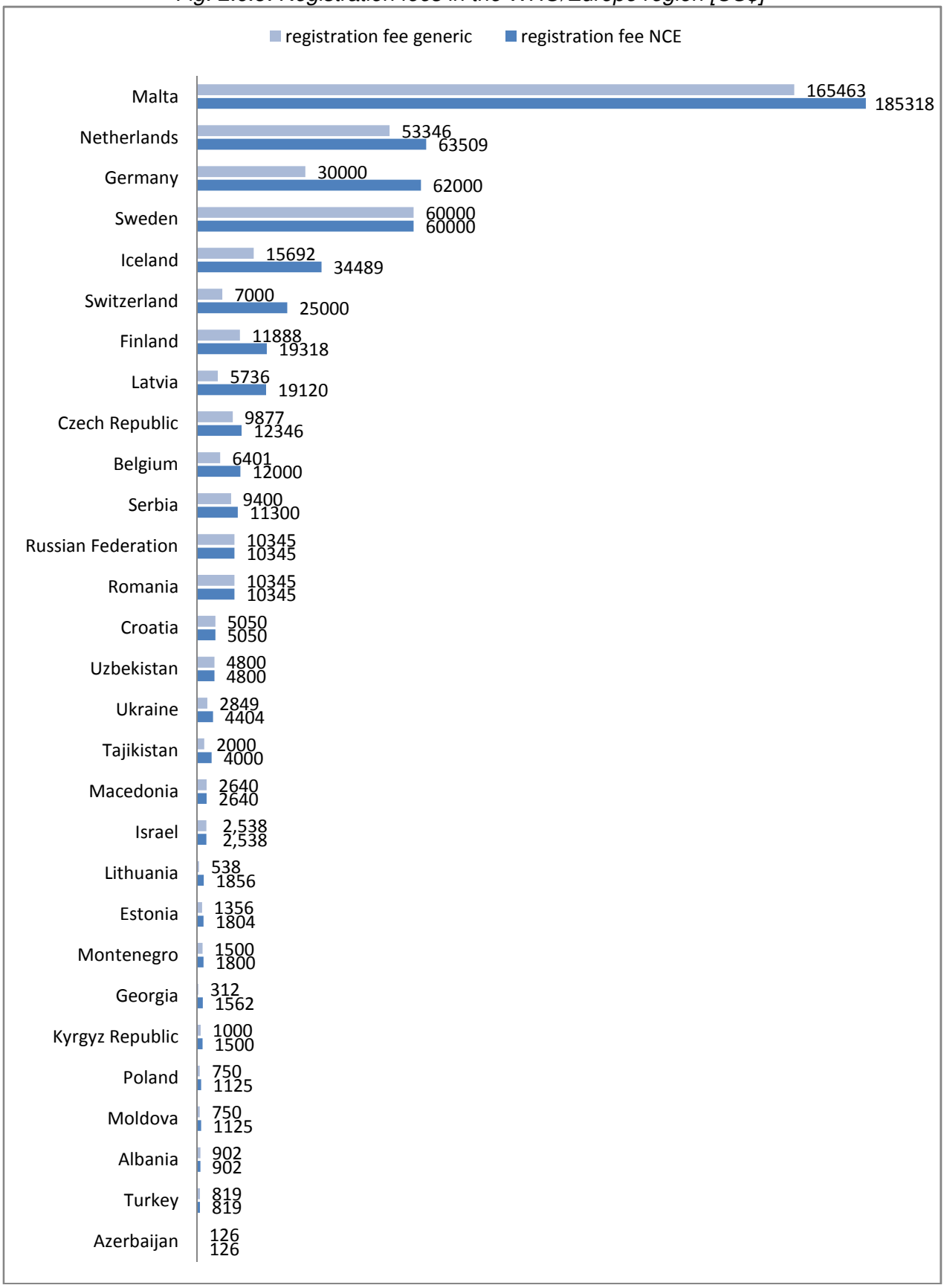

*Source: Pharmaceutical Sector Country Profiles Database 2010-2013*

*Fig. 2.6.4: Registered products and registration fees by income group [median]*



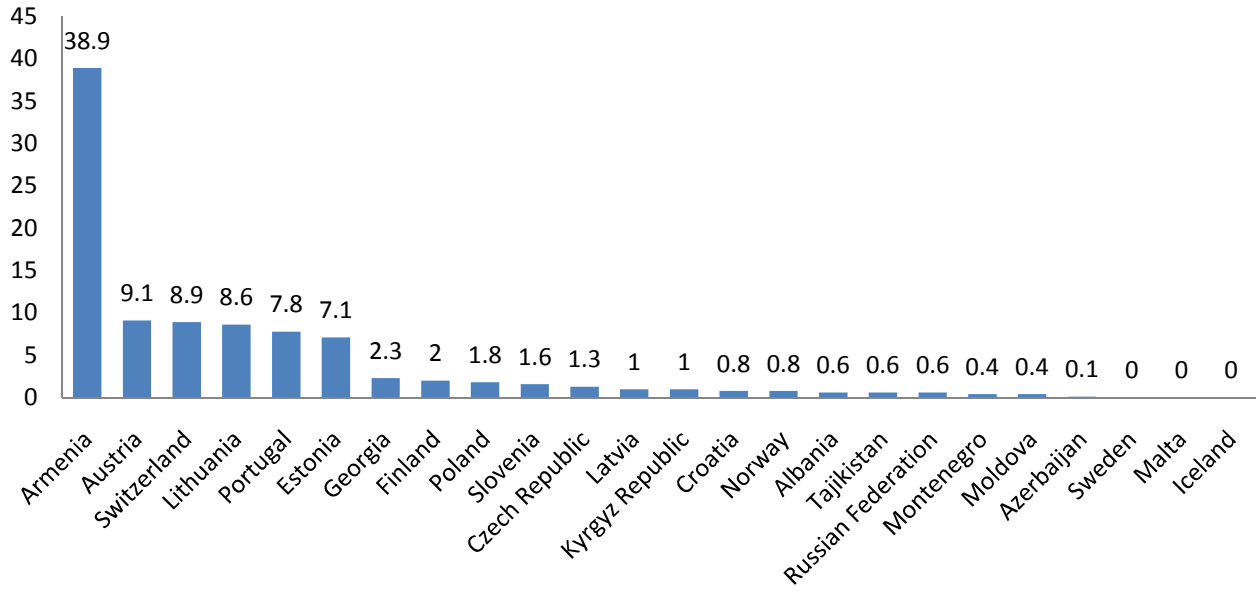

*Source: Pharmaceutical Sector Country Profiles Database, 2010-2013*

*Fig. 2.6.5: Registration fees in the WHO/Europe region [US$]*



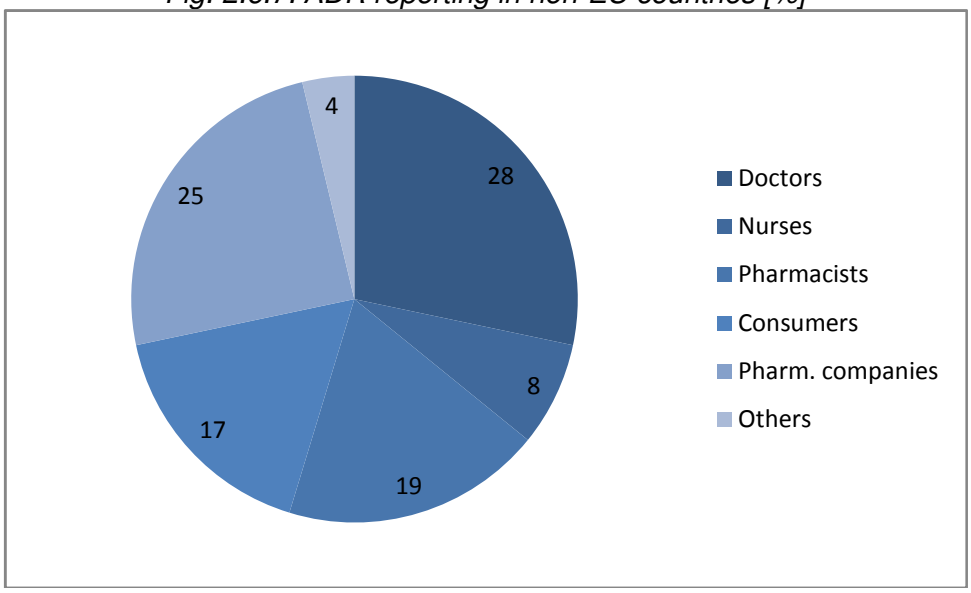

*Source: Pharmaceutical Sector Country Profiles Database, 2010-2013*

*Fig. 2.6.6: Product samples failed to meet quality standards [%]*



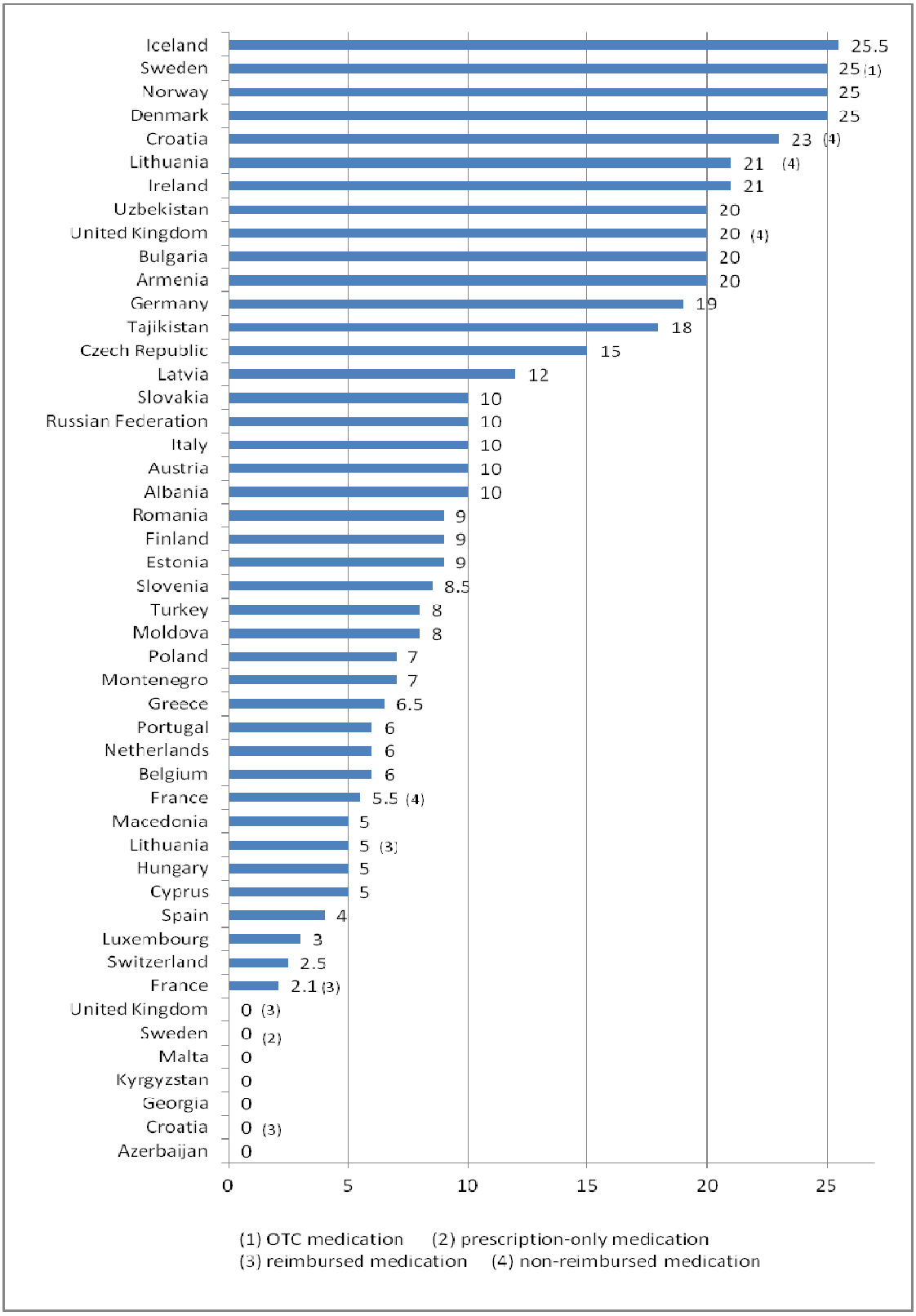

*Source: Pharmaceutical Sector Country Profiles Database, 2010-2013*

*Fig. 2.6.7: ADR reporting in non-EU countries [%]*



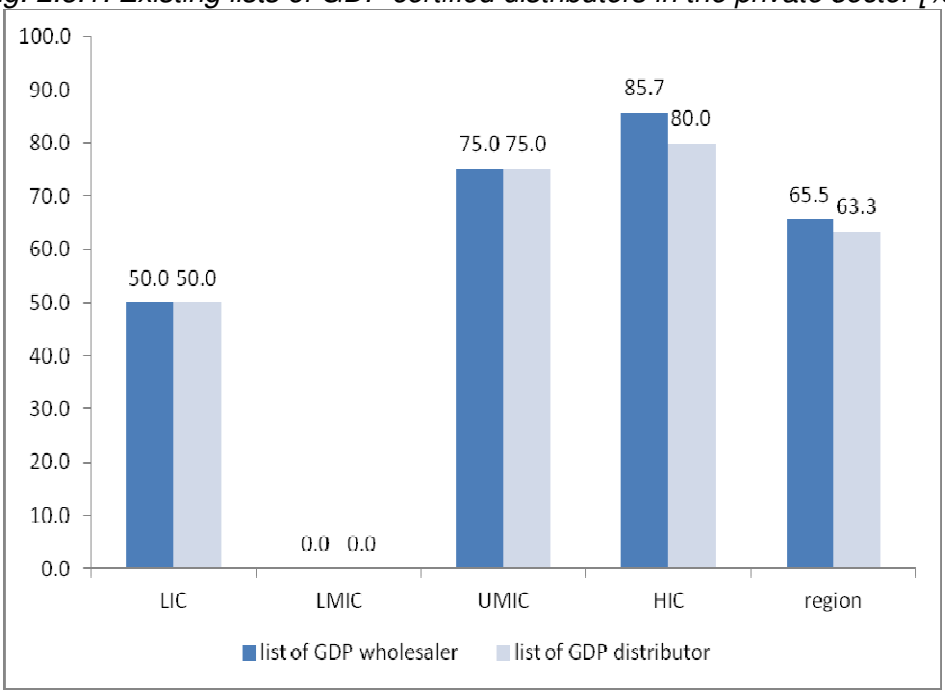

*Source: Pharmaceutical Sector Country Profiles Database, 2010-2013*

*Fig. 2.7.1: VAT rates on pharmaceuticals in the WHO/Europe region [%]*



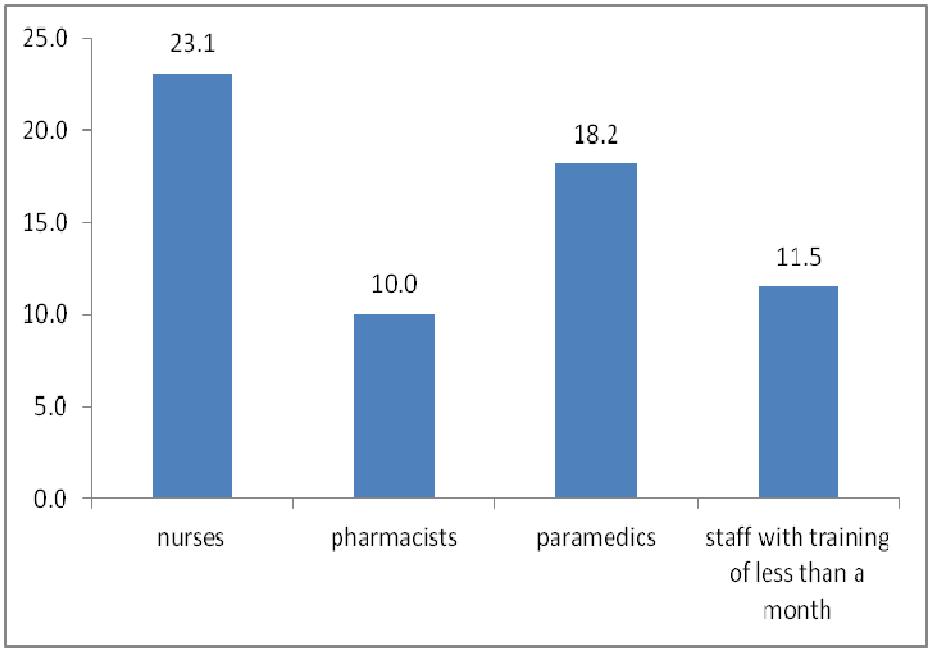

*Source: Pharmaceutical Sector Country Profiles Database 2010-2013; PHIS Database, 2011*

*Fig. 2.8.1: Existing lists of GDP certified distributors in the private sector [%]*




*Source: Pharmaceutical Sector Country Profiles Database, 2010-2013*

*Fig. 2.9.1: Prescription of Rx medication by personnel other than doctors [%]*




*Source: Pharmaceutical Sector Country Profiles Database, 2010-2013*

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