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Towards Environmental Health Inequality Reporting

Development of a core set of indicators for reporting and assessing environmental health inequalities in the WHO European Region

Report of an expert group meeting Bonn, Germany
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ABSTRACT

International evidence reveals significant sociodemographic inequalities in exposure to and disease resulting from environmental conditions. Despite efforts by various actors, there are still few international data on environmental health inequalities while national data are scattered and often not comparable with those of other countries. With a view to assessing the magnitude of environmental health inequalities in the European Region, the WHO Regional Office for Europe, through its European Centre for Environment and Health (Bonn Office), is implementing a two-year project to develop a reporting tool for environmental health inequalities. To engage Member States in this project, an expert meeting was held on 25–26 October 2010 to review the compilation of available environmental health inequality data and to select indicators of environmental health inequality for common reporting. A core set of 14 indicators was selected by three working groups based on the availability, quality and consistency of data and its public health relevance. The selected indicators relate to inequalities in housing, injuries and environmental exposure. It was proposed that a "WHO European environmental health inequality report", based on the core set of indicators, be developed in 2011 as the main work objective for the second year of the project.

Keywords

ENVIRONMENTAL EXPOSURE
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Executive summary

International evidence reveals significant sociodemographic inequalities in exposure to and disease from environmental conditions. It is known worldwide that the burden of disease is disproportionately borne by poor people. These inequalities exist within and between countries and several initiatives have been undertaken to understand their causes and quantify their magnitude. Despite efforts by various actors, there are still few international data on environmental health inequalities while national data are scattered and often not comparable with those of other countries. WHO has addressed this challenge through the Commission on Social Determinants of Health and – in follow up to the Fifth Ministerial Conference on Environment and Health – specifically focuses on the issue of environmental health inequalities.

Aiming to assess the magnitude of environmental health inequalities in the European Region, the WHO Regional Office for Europe, through its European Centre for Environment and Health (Bonn Office), is implementing a two-year project to develop a reporting tool for environmental health inequalities. To engage Member States in this project, an expert meeting was held on 25–26 October 2010. The objectives of the meeting were to review the compilation of available environmental health inequality data and to select a core set of environmental health inequality indicators for common reporting. In preparation for the meeting, three working papers were developed. These were based on a review of environmental health inequality data from international data sources, and a compilation of national environmental health inequality data based on contributions from 17 countries. The working papers were used by national experts to select a core set of indicators for the reporting of environmental health inequalities.

A core set of 14 indicators was selected by three working groups based on availability, quality and consistency of data and its public health relevance. The selected indicators relate to inequalities in housing (water supply, lack of bath/shower, lack of toilet, crowding, dampness, inability to keeping the house warm); injuries (serious work-related injuries, mortality from transport, falls and poisonings) and environmental exposure (complaints about noise, access to recreational/green areas, smoking in the house, exposure to tobacco smoke at work).

Several constraints were recognized in relation to the core set. These include: lack of data, especially for countries outside the European Union (EU); limited information on several sociodemographic dimensions of exposure; and restricted comparability of national data sources owing to variation in indicator definitions. International survey data are most consistent but tend to be vague or self-reported, while large variations and inconsistencies are found for more detailed or objectively measured national data. Thus, any quantification of European environmental health inequalities will be based on environmental conditions, themselves based in part on perception and self-reporting of exposure.

Since the core set of indicators was predominantly based on international data sources, it was recommended that access to the original data be explored for more flexible computation. Ways to reflect multiple exposures by merging several risk factors should also be considered.

A "WHO European environmental health inequality report" was proposed for development in 2011, based on the core set of indicators. It would contain an international review section coordinated by WHO (comparing inequalities among countries) and annexed national environmental health inequality fact sheets and "good practice" examples of in-depth work on collecting, analysing and reporting environmental health inequalities from a few selected countries. In addition, an "environmental health inequality web portal" was suggested to enhance communication and to publish reports and additional national inequality fact sheets.

Background and introduction

International evidence reveals significant sociodemographic inequalities (social inequalities being related to e.g. income, education and employment; demographic inequalities to e.g. age, sex and nationality or ethnicity) in exposure to and disease from environment conditions. These exist both within and between countries and it is known that worldwide, the burden of disease is disproportionately borne by poor people. Within this context, several initiatives have been undertaken to understand the relationship between the social and demographic determinants of health and the environment.

The WHO Commission on Social Determinants (WHO 2008) identified three overarching recommendations to provide a basis for government action to reduce social inequalities in environmental health risks:

- improve daily living conditions;
- tackle the inequitable distribution of power, money and resources; and
- measure and understand the problem and assess the impact of action.

The improvement of daily living conditions as one key area for action to address social inequalities also highlights the importance of the environment. The other recommendation, to measure and understand the problem, calls for countries and international organizations to set up health equality surveillance systems for routine monitoring of health inequality.

The decision to make social and gender inequalities a major theme of the Fifth Ministerial Conference on Environment and Health in Parma in 2010 (WHO 2010a) triggered a comprehensive review of the evidence, quantifying the magnitude of the issue and identifying vulnerable groups (WHO 2010b). Nevertheless, a WHO expert group meeting on "Environment and health risks: the influence and effects of social inequalities" held in 2009 concluded that the evidence was insufficient owing to the lack of data consistency and comparability, as well as the absence of a common protocol for reporting environmental health inequalities (WHO 2009). This was presented to countries, calling on them to better document environmental health inequalities and take action to protect vulnerable and disadvantaged population groups.

At the EU level, increasing awareness of this important issue has prompted action through COM (2009)567/4 "Solidarity in health: reducing health inequalities", whereby support has developed for the further collection of data on health inequality indicators by age, sex, socioeconomic status and geographical dimension. Health inequality audit approaches are also being developed through the EU's Health programme in joint action with Member States. This has oriented EU research towards closing gaps in knowledge on health inequalities. Furthermore, 2010 has been declared the "European year for combating poverty and social exclusion", a headline target for the Europe 2020 strategy being to have 20 million fewer people at risk of poverty (European Commission 2010).

Meeting objectives and processes

Objectives

Despite the efforts described above, there are still relatively few international data on environmental health inequalities while national data are scattered and often not comparable with those of other countries. The evidence review undertaken by WHO showed that a consistent

assessment of the magnitude of inequality and the most affected subgroups is needed at both the national and the international level. In addition, action against environmental health inequalities has not been systematically collected and analysed. In response to this, the Regional Office, through its European Centre for Environment and Health (Bonn Office), aims at implementing a two-year project assessing the magnitude of environmental health inequalities. The project directly contributes to the implementation of the Parma Declaration adopted by all 53 Member States of the WHO European Region, stating that Member States are committed to act on environmental health risks to vulnerable groups and towards the reduction of social and gender inequalities (WHO 2010c).

The objectives of this project are to:

- compile an inventory of national and international environmental health inequality data in the WHO European Region;
- review the compiled inequality data;
- select a core set of environmental health inequality indicators to develop a common reporting protocol;
- pilot the core set/reporting protocol in various countries; and
- report the results – national and international dimensions of environmental health inequality.

To engage Member States in this project, an expert meeting was held on 25–26 October 2010 to accomplish the second and third of the above-mentioned objectives, i.e. to review the compilation of available environmental health inequality data and to select and define a core set of environmental health inequality indicators for common reporting. The meeting was supported by the Bonn Office funds generously provided by the German Government through its Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

In addition, the working group was given the task of discussing and making recommendations on the work to be done in 2011 by defining timelines, work commitments and a reporting format.

Processes and preparatory work

Prior to the meeting, experts from 17 countries provided information on available national data on selected environmental risk factors and sociodemographic determinants, which was compiled and collated by the WHO secretariat. In parallel, WHO reviewed international databases for environmental risk factors that could be stratified by sociodemographic determinants. These reviews of available data on environmental health inequalities provided the basis for three working papers that were disseminated to the expert group prior to the meeting:

- working paper 1: availability of environmental health inequality data from international data sources (available as Annex 2 to this report);
- working paper 2: summary report on the availability of national environmental health inequality data based on contributions from 17 countries (available as Annex 3 to this report); and
- working paper 3: detailed data sheets on the availability of national environmental health inequality data based on contributions from 17 countries (available on request).

During the meeting, the working papers were used by the national experts as a basis for the selection of a core set of indicators to be used for consistent data collection on and reporting of environmental health inequalities in the WHO European Region.

The meeting was attended by 24 experts from 19 Member States. Annex 1 presents a full list of meeting participants. Jon Fairburn chaired the first day and Denis Zmirou-Navier the second day. Nita Chaudhuri acted as meeting rapporteur.

The meeting began with a series of plenary presentations to provide the context for the work on environmental health inequality reporting. This included presentations on the work of WHO, DG Sanco and Eurostat in this area, as well as the summary presentations of international and national data available on environmental health inequalities, including the constraints identified. Three working groups were then given the task of selecting the most feasible environmental health inequality indicators for the development of a European report on environmental health inequalities. The working groups met on the first and second days and were followed by plenary sessions to present the work of the group and receive feedback from the other meeting participants. At the end of the meeting, the project group recommended a core set of indicators and decided on the next steps for future work.

This meeting report was prepared by the rapporteur and sent out for comments to all meeting participants. The final version presented here includes all comments of the participants.

Plenary presentations

Environmental health inequalities: towards national and international reporting

The opening presentation was made by the WHO secretariat, summarizing the recent developments on environmental health inequalities and especially referring to work done by the European Commission and by WHO in relation to the Fifth Ministerial Conference. It showed that the project was a continuation of the recent expert meeting in 2009 by addressing some of the gaps identified in relation to the lack of consistent and comparable data collection on environmental health inequalities, and identified the expected deliverables to be achieved at the end of the project in 2011:

- compilation of European environmental health inequality data at the national and international levels;
- development of a protocol or template for environmental health inequality reporting based on a core set of indicators to be selected; and
- production of a WHO European report on environmental health inequalities.

The presentation also covered the work of the WHO European Environment and Health Information System (ENHIS), which manages a set of 22 environmental health indicators to monitor health effects of policy actions. Currently, ENHIS is being modified and expanded to monitor the implementation of commitments made at the Fifth Ministerial Conference.

In addressing inequalities ENHIS focuses on protecting vulnerable subpopulations, including children, pregnant and nursing women, the elderly, immunocompromised people and heavily exposed groups such as low socioeconomic and ethnic minorities. Examples of current ENHIS indicators covering some inequality dimensions include: access to improved water sources and sanitation amenities (rural versus urban), unintentional injuries for children, homes with problems of damp (general versus poor households), exposure to tobacco smoke in children and traffic injury mortality in children.

Environmental health inequality data will therefore also enhance ENHIS and improve information in support of decision-making. Furthermore, a high level of reporting and presentation will also improve the visibility and sustainability of efforts to collect environmental health inequality data.

Health inequalities – EU action and indicators

The EU, through COM (2009)567 "Solidarity in health: reducing health inequalities in the EU", is mandated to take action and develop indicators on inequality. The actions undertaken in this strategy include:

- collaboration with Member States, regions and other stakeholders;
- awareness raising;
- measurement, knowledge and indicators;
- health inequality audit;
- integrated policy development;
- health as part of overall social and economic development; and
- targeted action on vulnerable groups, including Roma and migrants.

The European Commission stresses that "poor people should not have to suffer poor health" and therefore wishes to enhance financial security and create an agenda for European and social and economic development. The Europe 2020 strategy focuses on economic growth to reach this target and includes a poverty platform as well as actions on health, active ageing and innovation. However, although the reduction of health inequalities is mentioned it is not an explicit target.

EU health inequality indicators are an important result of these strategies. They aim to monitor progress at the EU level; to monitor and investigate inequalities in determinants of heath; and to support indicator development in Member States (including regions and stakeholders). The health inequality indicators include health outcomes (mortality (cause), morbidity, self-reported, health examination) or health determinants (e.g. environment, income, work, living conditions) with a social or territorial dimension and illustrate absolute or relative gaps between groups. In recent years, especially the Eurostat/EU-SILC data have shown substantial inequalities between social groups in the EU.

Eurostat work on social exclusion and poverty

Eurostat is the implementing agency for the European Union Statistics on Income and Living Conditions (EU-SILC), which is an instrument that aims at collecting timely and comparable cross-sectional and longitudinal multidimensional microdata on income, poverty, social exclusion and living conditions. This instrument is anchored in the European Statistical System (ESS) and provides harmonized data across the 27 EU Member States. Many variables are collected on the physical and social environment, including material deprivation, housing, noise, pollution and violence. In addition, SILC contains a limited amount of health-related variables that could be used to integrate health dimensions when looking at environmental health inequality resulting from social exclusion and poverty.

A specifically dedicated European Health Interview Survey is conducted every five years and is compulsory for every Member State. The next survey will be in 2014. There are three main

modules in this survey: general health (such as disability, health care and visits to doctors); determinants (such as physical activity and alcohol and tobacco consumption); and general socioeconomic variables (such as income and education). However, there is no integration of environmental information so no data on environmental health inequalities can be derived.

A Europe-wide census is planned to be carried out in all Member States, which will provide better detail at the local level. Some information on social status and housing conditions will be collected but there are no compulsory questions on the environment.

Summary review of available data on environmental health inequalities

Member State review of national data

The presentation summarized the results of a survey of national data on sociodemographic differences in exposure to 16 environmental health risk factors, undertaken by the WHO secretariat in 18 countries (responses received from national experts in 16 countries) to enable the development of a consistent and feasible approach to European reporting on environmental health inequality. The results of that review were made available in working papers 2 and 3.

The risk factors most commonly collected by countries that could be socially stratified included traffic noise, water supply, shower/bath and toilet in dwelling, crowding and dampness, as well as home injuries and traffic injuries. Few countries collected data on proximity to busy roads or dangerous areas, ability to keep the home warm or distance to a green space. However, for air pollution, for example, there are almost no national data on individual exposure available that can be broken down into sociodemographic determinants.

Summarizing the data contributed by national experts, a set of criteria was applied to determine consistency in reporting among countries. The criteria used were the risk factor name and definition, frequency of collection, geographical scope, the variable values or answer categories, and the data units. Sociodemographic determinants (such as age, sex, income, education, employment status and nationality/ethnicity) that were available to stratify the exposure data were also identified in order to assess the inequalities that could actually be reported. The main challenges in summarizing the national inequality data included missing data, multiple variables for one risk factor, data quality (accuracy, timeliness, completeness) and the description and definition of the data.

The outcome of the process provided information on the number of countries able to report consistent information on risk factors and to stratify the respective risk factor by selected sociodemographic determinants.

Review of international data

This presentation provided the main results of a review of several international databases that was undertaken by the WHO secretariat in parallel to the country reviews contributed by national experts. The review of international databases aimed at compiling all sources of data relating to environmental health inequalities and the main results were made available in working paper 1. The review covered databases provided by Eurostat, the European Foundation for the Improvement of Living and Working Conditions, WHO, the United Nations Economic Commission for Europe, the European Environment Agency and others.

The review identified a range of data available on housing-related inequalities (water supply, sanitation, crowding, dampness, affordability of thermal comfort) as well as injury-related inequalities (transport, occupational, and other unintentional injuries such as falls or poisonings). Fewer data were available on environment-related inequalities based on noise, air, water and environmental pollution. Important environmental justice indicators such as proximity to busy roads, to industrial and waste sites and to dangerous areas (flooding, landslides, etc.) were not identified.

Sociodemographic determinants such as age, sex and income stratification as well as urban/rural and household composition are regularly provided by international sources, but other determinants such as education, employment and nationality/ethnicity were rarely identified.

The constraints identified for the international data sources include: restrictions for social stratification (often only data on sex and rough age grouping are available); income was covered only by EU surveys; and education and employment data were available only in a Eurobarometer survey on smoking. For some data sources, it remained unclear whether there will be further collections of data. In general, the definitions of parameters used are often unclear or not available. In many cases, access to the original data sets would be required to exploit the full potential for inequality reporting.

Two working papers presenting the results of the national and international review on environmental health inequality data are available as Annexes 2 and 3.

Data availability and constraints

Based on the presentations provided, and especially referring to the summaries of the available inequality data, the meeting participants discussed the strengths and weaknesses of the identified material. The discussion provided a variety of statements describing the current status of environmental health inequalities in the WHO European Region and the main challenges faced.

Identifying inequality trends

A large part of the current debate on environmental as well as health inequalities is to understand whether inequalities are getting worse. This depends on how information was collected in the past. For some indicators, there is a lot of improvement, such as for mortality. More sophisticated indicators, however, such as healthy life years, suggest the situation is getting worse. Measures of "feeling happy" or "negative emotions" as covered by a Eurobarometer survey showed a decline in 2008. However, evidence shows that the economic crisis has had an effect on these inequalities as, according to some key measures, the gaps are getting wider.

Furthermore, several experts indicated that it was important to consider the difference between "social" determinants and "demographic" determinants. It was considered that demographic data such as sex or age should be part of any data compilation trying to describe distributional patterns of risk exposure, and that these demographic data should then be part of the stratification process by social determinants such as income and education.

Data availability

Discussion took place to determine which data sets could possibly be used for assessing the magnitude of environmental health inequalities. For example, several national databases could possibly be integrated through, for example, geographical information systems (GIS). Also, if more time were available for the identification of national data sources, more extensive communication among different disciplines (environment, transport, social, health, demographic) would have helped identify a more exhaustive list of various data sets.

Several alternative sources of environmental health inequality data were suggested. EU directives on air pollution, waste and industrial sites, for example, require countries to collect exposure-related data that should be available. Most countries would have flood plain data, which could be integrated with postal code information to obtain an understanding of inequalities. Countries would also have traffic flow data, from which noise information can be extracted, especially for larger cities that need to develop noise maps as requested by the EU environmental noise directive. Furthermore, a Europe-wide census is planned whereby countries will potentially classify small neighbourhoods in terms of spatial characteristics, which could be useful for examining inequalities. Several local studies may also be available from which one can extrapolate to the national level. In addition, there might exist private sector databases with useful information.

On the other hand, data may not be available because countries do not consider their collection a priority. For example, the Netherlands and Scotland no longer collect data on water supply in dwellings because it assumed that there is 100% coverage. Another example is Finland, where keeping a house warm is not an issue because central heating is always available for those living in social housing and is included in the rent.

In summary, the expert group agreed to base its work on the collection of data as provided by the working papers, but to keep in mind that further work is necessary to increase the quantity and quality of the data used for making inequality assessments. However, it was agreed that – referring to potential database integration using GIS, or planned surveys – those scenarios are of little value for the current project as long as the anticipated data are not publicly accessible.

Cocktail effects

The expert group noted that in the working papers, all risk factors were being examined separately. It was felt important to clarify that the same community, the same household or the same person may experience many risk factors where there is an accumulation of problems leading to multiple exposures. It was thus considered useful to examine these together as a cocktail effect. However, the group predicted that it would be very difficult to consider a consistent approach that could be similarly applied in a range of countries with rather different data and priority challenges.

Similarly, the expert group asked that the parallel influence of sociodemographic determinants by considered. Often, correct understanding of exposure conditions can be achieved only if more than one determinant is looked at (for example, gender differences could be different in urban versus rural areas, and income effects could be confounded by age categories).

Data reporting on a spatial scale

Spatial representation of the data was identified as a relevant way of reporting inequalities. This is often done in the form of GIS using, for example, postal code information. The integration of

data sets using GIS was considered useful and feasible by several national experts but was not considered relevant for the immediate purpose of the WHO project.

Definition of inequality dimensions

In reviewing the list of sociodemographic variables used to stratify environmental exposure, the need to distinguish between social or socioeconomic and demographic factors was stressed once more. Furthermore, gender needs to be distinguished from the term sex, as gender relates to perception and roles in society and thus has different ramifications when understanding inequalities than the statistical consideration of "male" versus "female".

A further point of discussion was the categorization of some environmental risk factors (such as crowding, lack of a toilet or housing costs and housing deprivation), which in several countries would rather be considered a social determinant indicating marginalized population groups. The group agreed that the consideration of social deprivation to be used for assessing environmental health inequalities should consider these elements as well, with decisions to be made case by case in relation to the environmental risk factor concerned.

Finally, the group agreed that, in scientific terms, discussion is necessary regarding the validity and reliability of objective versus subjective or self-reported data. The meeting participants agreed that the validity of self-reported data is much lower than that of objective measurements, as it opens up to substantial bias in reporting and also introduces inconsistencies among countries or regions. Nevertheless, owing to the fact that a wide range of data sources identified by the national and international review were based on subjective or self-reported data, it was decided to accept these data unless more valid data were available in many countries.

Varying national priorities

During the discussion, it became clear that countries have different priorities in relation to environmental health inequalities and that this directly affects the availability and use of data. National experts from some countries (Georgia, Lithuania, Poland, Serbia and Spain) mentioned the importance of collecting information on "ability to keep the home warm" during the winter, a factor that is less relevant in the Nordic countries where adequate heating is a basic standard.

A related issue was indoor air quality, which in Serbia is found to be associated with the type of heating source used in households.

Water quality and availability and sanitation were considered important priorities for Croatia, Georgia, Kyrgyzstan and the Russian Federation but were not considered relevant for some EU Member States.

In addition, for some countries, the rural/urban divide represents a significant indicator of inequality while in other countries such information is considered irrelevant.

Acknowledging the wide range of priorities in environmental risk, the group agreed to carefully review the provided data to identify inequality issues that reflect environmental or health inequality priorities for many countries. However, it was clear that for most inequality indicators, some countries would not consider this as their national priority.

Working groups

The main objective of the meeting – the review of identified data sources for environmental health inequality and the selection of a core set of inequality indicators for common reporting in the WHO European Region – was carried out in three working groups and was based on the three working papers. The working groups were asked to address the following areas.

- Working group 1. Dwelling- and housing-related inequalities.
- Working group 2. Injury- and safety-related inequalities.
- Working group 3. Environment-related inequalities.

The following selection criteria were provided for guidance in the selection process of the core indicators:

- number of countries able to contribute the relevant inequality data;
- data quality and consistency;
- number of sociodemographic dimensions for which stratification is possible;
- perspectives of data availability in the coming years;
- coverage of various environmental dimensions and settings; and
- public health relevance.

The particular challenge in selection was to find a balance between the quality of the data and the number of reporting countries.

Working group 1. Dwelling- and housing-related inequalities

Within the scope of this working group, the following environmental health inequalities had been identified by the national and international review of environmental health inequality data.

Working paper 1 (international review)	**Working paper 2/3 (national review)**
Drinking-water supply	Water supply in dwelling
Lack of bath or shower	Shower/bath in dwelling
Lack of toilet Lack of sanitation facilities	Toilet in dwelling
Lack of hygiene equipment	
Crowding	Crowding/lack of living space
Dampness problems	Damp buildings
Problems with housing costs	Ability to pay for housing costs/expenses
Housing deprivation	
Affordability of thermal comfort	Ability to keep home warm

In most cases, data on "dwelling and housing related inequalities" was available through Eurostat, WHO and other international databases and therefore these data were available in consistent format. For national data, there was a significant problem of comparability owing to a large variation in definitions and parameters. In general terms, few data existed for non-EU countries in relation to many of the housing-related inequalities.

In light of the restricted availability and high variability of data based on national surveys, the group decided to rely on international rather than national data sources. In several cases, however, national databases exist that offer more detail than the international data sets, and in such cases the group recommended considering using these data. For non-EU countries, national data will be the only opportunity for reporting and may, for at least some risk factors, be available from census statistics in several countries.

Regarding the use of water and sanitation data as provided by WHO and UNICEF, there was substantial discussion on the relevance of rural/urban differences among countries. In many non-EU countries, a rural location may be an indicator of poverty whereas in western European countries social disadvantage is not necessarily linked to a rural location. The group was therefore cautious about using data that are stratified by urban versus rural context.

After careful review and consideration of the data in light of the criteria provided, the working group selected the following core indicators on housing-related inequalities, based on consensus that this selection provides the most relevant environmental health inequalities within the residential setting and can be supplied by a large number of countries. Nevertheless, national databases need to be considered for non-EU countries and these will provide more detail and additional sociodemographic stratification.

Risk factor	**Sociodemographic determinants**	**Data source**	**Countries able to report**	**Comments**
Unimproved versus improved drinking-water sources	Rural–urban	WHO / UNICEF	53	Rural–urban differences may not indicate poverty differences in many countries Data collection is irregular, not each year Countries with more detailed national data, especially sociodemographic determinants, could use their national data
Lack of toilet	Income; household type; age; sex	Eurostat	28 (EU only)	Data collected annually Eurostat data provide more social information than the WHO/UNICEF data (urban–rural only) that could be used as a last resort Non-EU countries should use national data where available
Lack of bath or shower	Income; household type; age; sex	Eurostat	28 (EU only)	Data collected annually Non-EU countries should use national data where available
Crowding	Income; household type; age; sex	Eurostat	28 (EU only)	Data collected annually This environmental risk factor could also be used as social determinant Non-EU countries should use national data where available.
Dampness in the home	Income; household type; age; sex	Eurostat and Eurofound	28/31	Data collected annually/all four years EU and EU candidate countries only Non-EU countries should use national data where available
Inability to keep home adequately warm	Income; household type	Eurostat	29 (EU only)	Data collected annually Non-EU countries should use national data where available, but it is not recommended to use “type of heating” as a replacement

Further discussion of the working group on housing-related inequalities led to additional statements and recommendations targeted at the improvement of data availability, analysis and reporting of environmental health inequalities.

Groups, individuals or households can experience multiple or cumulative environmental risks, and inequality monitoring systems should seek to capture these multiple inequalities. In addition, analysis of environmental health inequalities should try to look in more detail at social gradients rather than extremes such as rich and poor.

Owing to the public health relevance, the collection of the following additional indicators was recommended as there were clearly insufficient data on inequalities in exposure to these risk factors:

- indoor air quality (especially combustion of biomass for heating or cooking)
- radon (especially at regional level)
- asbestos in dwellings.

For specific pollutants regulated by EU directives (e.g. noise and air pollution), a systematic analysis of the directive databases in relation to sociodemographic characteristics was suggested. This could especially make use of GIS approaches to examine spatial components.

Working group 2. Injury- and safety-related inequalities

Within the scope of this working group, the following environmental health inequalities had been identified by the national and international review of environmental health inequality data:

Working paper 1 (international review)	**Working paper 2/3 (national review)**
Motor vehicle-related injuries Transport-related injuries Transport-related mortality	Traffic-related injuries/unintentional accidents
Accidental falls Accidental poisoning Drowning	Home-related injuries/unintentional accidents
Serious work injuries	
Work injuries	
Crime and violence at home	

The working group agreed to focus, where possible, on inequality data based on mortality rather than injuries and absence of work due to injuries. The group agreed that, for mortality, the variation among countries is lower than for injuries and other outcomes, for which various national definitions and data collection mechanisms may be in place.

For most indicators, data could be obtained from the WHO Health for All and Mortality databases, where stratification by age and sex was possible. Fairly detailed information was also available for serious injuries at work but restricted to Eurostat data only. Although the WHO Health for All database includes national data on "Number of persons injured due to work-related accidents" and "Number of deaths due to work-related accidents", a detailed review revealed that these data cannot be broken down by any sociodemographic determinant and therefore do not provide any information on their distribution within specific population

subgroups. Despite the limitation of the Eurostat data to 29 countries, the group decided to consider this data source as it was felt important to cover the issue of work-related injury inequalities, especially in relation to gender inequalities.

The data identified on inequalities in relation to accident-related mortality were considered too vague as they permitted no identification of type and cause of the accident and related injury. Similarly, the group did not support the use of data on crime and violence at home or in the neighbourhood as they were based on self-reported perceptions and had little association with environmental conditions per se.

The group did not agree with the "housing-related injuries" term to embrace the extended range of settings other than transport and work. The group therefore recommended defining these as "other injuries", encompassing falls, poisoning and drowning, wherever they occur unless related to transport or work activities. Although the recommendation of the group was to add "burns and scalds" under unintentional injuries, it was decided that the indicators most relevant for public health were falls and poisonings.

After careful review and consideration of the data in light of the criteria provided, the working group selected the following core indicators on injury- and safety-related inequalities. The selection allows for maximum coverage of countries except for the occupational injuries, which are only available for EU Member States. However, the opportunities for stratification are restricted and only possible for age groups and sex. Therefore, national databases including social or economic determinants should be considered in addition if available.

Risk factor	**Sociodemographic determinants**	**Data source**	**Countries able to report**	**Comments**
Standardized death rates associated with transport accidents	Age groups Sex	WHO Mortality database (714x and 716x)	Data for around 45 countries	Large public health relevance Large inequalities among countries WHO database offers largest and most consistent coverage of countries
Standardized death rates associated with accidental falls	Age groups Sex	WHO Mortality database (726x and 728x)	Data for around 40 countries	Large inequalities among countries WHO database offers largest and most consistent coverage of countries
Standardized death rates associated with accidental poisoning	Age groups Sex	WHO Mortality database (744x and 746x)	Data for around 40 countries	Large inequalities among and within countries WHO database offers largest and most consistent coverage of countries
Serious work injuries	Sex	Eurostat	29 countries	Public health priority Eurostat is only source that enables stratification by sex

It was suggested that national surveillance systems on these types of accident and injury could incorporate basic social data on victims, which could provide information on inequality in 5–6 years. An additional future data source could be the European global burden of disease on social determinants project, which is conducting nationwide longitudinal studies. These are strongly comparable and could be useful in providing information on inequalities related to income, education and occupation.

Working group 3. Environment-related inequalities

Within the scope of this working group, the following environment-related inequalities had been identified by the national and international review of environmental health inequality data.

Working paper 1 (international review)	Working paper 2/3 (national review)
Noise exposure	Traffic noise
Drinking-water quality	
Air pollution exposure	Air pollution exposure
Exposure to passive smoking at home Exposure to passive smoking at workplace	
Environmental pollution exposure	Location close to busy roads Location close to industrial sites Location close to waste sites
Lack of access to green spaces	Distance to green spaces (only few countries)
Littered environments	
	Location in dangerous areas (e.g. flood plain)

The group determined that, for a range of environmental indicators, only sporadic and limited national surveys are available for many countries and the association with sociodemographic determinant variables is often insufficient. Therefore, the group preferred to consider international databases that provide rather consistent and comparable data, although these are often available only for EU Member States.

The key issues related to noise in residential areas are noise annoyance and sleep disturbance but information was available only from studies using self-reported data. Therefore, these data should, whenever possible, be supported by actual measurements in decibels (dB) as studies have shown that noise perception is different in various social groups and complaints often come from those disturbed occasionally rather than those exposed continuously. Eurostat data should distinguish between noise from the street (traffic) and that from neighbours but at present the available data merge those two categories of exposure, making it difficult to identify the cause of the problem. The group also noted that main highways and railways should be covered in national databases required by EU's Environmental Noise Directive but to what extent the noise directive data could be used for the identification of inequalities in noise exposure was not clear.

The group remarked that the indicator provided by Eurobarometer's "smoking allowed in house" was formulated very vaguely, as it does not allow one to determine whether residents have actually been exposed to indoor smoke or not. The group felt that more distinction should be made between exposed and non-exposed groups, which, based on current data, is only indicated by breaking down households by smoking status (smoker, ex-smoker and non-smoker households). However, given the public health relevance of the issue of passive smoke exposure and the lack of alternative data sources covering a wide range of countries, the group concluded this data source to be acceptable.

Owing to a lack of adequate and consistent data from both international and national sources, the group concluded that international inequality reporting was not feasible by 2011 for the following indicators:

- air pollution exposure
- location close to busy roads

- location close to industry and waste sites
- location close to dangerous areas.

The main point for the air pollution data was that it is self-reported and the question was very vague ("Reason to complain about air pollution in immediate environment") and thus not considered a reliable basis for inequality reporting.

For both air pollution and location- and distance-related inequality parameters, the group felt that data sources are available that would enable the identification of inequalities if brought together. However, this was considered a research task to be tackled out of the scope and timeline of this WHO project.

After careful review and consideration of the data in light of the criteria provided, the working group selected the following core indicators on environment-related inequalities. Owing to the large variability among countries and the lack of adequate national data sources within many countries, the selection focuses on data provided by international databases. Therefore, national databases should also be considered if available.

Risk factor	Sociodemographic determinants	Data source	Countries able to report	Comments
Complaints about noise from neighbours or from the street	Income groups (below/above relative poverty level)	Eurostat	29	Noise annoyance and sleep disturbance are the key issues Data based on self-reporting so databases with measured data should be used to support this indicator
Lack of access to recreational/green areas in the neighbourhood	Age, sex, income quartiles	European Quality of Life Survey 2007	31	Rather vague indicator but chosen as only few data from national surveys available
Potential smoke exposure at home	Age, sex, income, educational level, employment status	Eurobaro-meter 332	30	Permission to smoke only provides an indication of exposure Data can be broken down into households with smokers, ex-smokers and non-smokers Lack of confirmation whether Eurobarometer will be repeated
Exposure to smoke at work	Age, sex, income, educational level, employment status	Eurobaro-meter 332	30	Only sporadic and rather varying data available from national surveys Lack of confirmation whether Eurobarometer will be repeated

In addition to the selection of the core indicators for environment-related inequalities, the group also developed some suggestions for future reporting and the improvement of data sources currently not considered adequate for inequality reporting.

For the indicator "Location close to industry and waste sites", it was proposed that IPPC (Intergovernmental Panel on Climate Change) definitions for industries be used with local area codes combined with sociodemographic information such as age or years of formal education, and merged into a GIS database. This could possibly be piloted in a few countries in 2011.

Regarding the social distribution of air pollution, the lack of social stratification was considered unacceptable given the relevance of air pollution as a priority in environmental health. However, combined data on sociodemographic stratification and air pollution levels are found only in isolated exposure studies. Therefore, national studies could be conducted that combine sociodemographic and air pollution data. Large variations in area aggregation units (postal codes, etc.) would greatly influence the comparison of ecological data among countries.

Complaints about air pollution are often influenced by sociodemographic status and do not relate to specific pollutant concentrations or health risks. Therefore, studies aiming at the assessment of inequalities in air pollution exposure need to apply measurements and/or modelling to provide objective data on specific pollutants.

It was proposed for the indicator "Location close to busy road" to combine population distribution data with traffic flow data into a GIS database. This could be developed as a broad indicator for traffic pollution as well as noise (and, depending on supportive local information, also social segregation and transport-related injuries).

A common metric is needed for "busy road" and "proximity", which should preferably be continuous rather than categorical. In addition, the group warned that caution is necessary when interpreting data on "location close to busy road" as its impact on individuals is not perceived the same way in all countries: in Helsinki, for example, houses near the busiest streets are often more expensive and in Georgia, houses on central roads are also sought after by high-income groups. The expectation that living close to busy roads is considered a disadvantage, and thus is associated with predominantly poor population groups, is therefore not universal.

The group noted that many environmental data have been collected in Europe, particularly by the European Environment Agency. These data are not, however, stratified by social or demographic determinants. With the increasing relevance of environment-related inequalities and environmental justice, potential exists to integrate sociodemographic determinant data into their work.

Finally, potential also exists for collaboration with the European Human Biomonitoring programme to link environmental data and sociodemographic determinants. Parameters for data collection have not yet been decided but, if biomonitoring would apply a consistent set of such determinants to be collected as a standard routine, this data would provide a new dimension of environmental health inequality assessment regarding exposure to chemicals.

General discussion

After the working groups had finished and presented their recommended indicators for the core set, the expert group discussed – based on the experience from the working groups – adequate ways to deal with the available data on environmental health inequality and how to improve environmental health inequality reporting in the medium term.

Definition of indicators

Clear definition of indicators is necessary in order to create consistency in reporting among countries. The group considered many environmental risk factors selected for the core set of indicators as being rather vague and with definitions that do not identify a specific pollutant. Using one example (in Ireland, microbiological contamination of potable water may not be as much a concern as in other countries while lead exposure in acidic water is a key issue), it was

shown how environmental conditions may be very different but would still be captured under one and the same environmental health inequality. The meeting participants agreed that the attempt to further define and specify the suggested core indicators based on more suitable data than currently available should be a priority in making the project relevant for all Member States.

Use of sociodemographic determinant data

It was noted that several environmental indicators (such as crowding, problems with housing expenses or lack of a toilet) could be considered social indicators as well. The group agreed that the most adequate use of these indicators can best be decided in relation to a given inequality situation in a given country.

There was some discussion of the importance of adjusting for age when considering the impact of other social determinants, especially education, in the reporting and analysis of inequality data. Although it was considered not applicable in the context of this project (which aimed at taking stock of what data were available rather than carrying out research work), the group agreed that the interaction of sociodemographic determinants needed to be dealt with during data analysis to avoid confounding effects.

To increase the collection of environmental health inequality data on the national level, the expert group suggested that the following sociodemographic dimensions be considered for integration into environmental surveys and data collection mechanisms at all spatial levels:

- income and additional poverty
- household composition (national definition)
- education
- rural–urban
- ethnicity
- sex
- deprivation index at national level

Harmonization of national data

It was noted that data collection on both environmental risk factors and sociodemographic variables useful for stratifying risk exposure is not harmonized among countries, making it difficult to compare national data and inequalities. Commonly applied definitions and question formats would help reduce this problem as would the standardized use of social and demographic determinant data.

Furthermore, the level of aggregation of data is highly variable among countries, and evidence shows that those countries that can provide well-defined social aggregation tend to show higher socioeconomic differences; this will drive the result more than those countries that have less aggregation. Similarly the scale of analysis may also differ among countries.

The meeting participants agreed that the WHO project could be the start of a longer process that could influence how data are collected and defined in countries. The improvement of data at national level was considered relevant because (*a*) data collected at the national level present a more convincing picture on environmental health inequality to policy-makers; and (*b*) international comparisons would be more detailed and valid if they could rely on national survey data available in a consistent format.

Multisectoral collaboration and data exchange

Several kinds of data exist in countries that can be combined and used for environmental health inequality reporting. Traditionally, these data are located in different departments and ministries and often their existence is not known to other actors. Very rarely, data sets from different actors are brought together to develop a larger picture, and this was considered the major issue in bringing together the national data that countries do have on environmental exposure on the one hand, and social or demographic conditions on the other. The establishment of an inequality task force in each country could be of invaluable help in identifying any available data sets, making them more accessible to other sectors, and merging them if at all feasible.

Call for exchange of examples of good practice

Based on the review of data and acknowledging the wide differences that exist in collecting and reporting environmental health inequalities, various national experts (especially those representing countries in which the concept of environmental health inequality is not yet well-known or applied, both in scientific work and in policy-making) advocated the establishment of an Internet forum or networking platforms to exchange information and examples of good practice on how to deal with the challenge of inequality information. Suggestions were made regarding the need to provide examples and good practice on how to collect, process, report and follow up on such data in order to better inform environmental, health and/or social policies. In addition, some national experts recommended that WHO organize capacity-building workshops in countries where the concept of environmental health inequality is not yet a priority and data collection or analysis does not include sociodemographic determinants

Parallel work flows on existing versus emerging data

It was suggested that two streams of work be developed in parallel. The first would include the compilation of data and the reporting on existing environmental health inequalities, as in the scope of the WHO project. A second track, combining and collecting new data in this area, was suggested in order to integrate any data that may become available in the near future. However, it was clear that the second track, while considered a relevant undertaking, was an addition to the project work and objectives and thus would need to be dealt with outside the ongoing two-year project. As a means of showing what data could be produced and analysed, existing national sources could be used within this two-year period to provide illustrative examples that would prepare for future studies to be conducted.

Environmental versus health inequalities

National experts noted that, based on available data, it is almost impossible to associate the presence of environmental health inequalities (focusing on exposure differentials) with the health inequalities existing in a particular country. We therefore lack a better understanding of the direct health implications of environmental health inequalities, and the quantification of health inequalities associated with environmental health inequalities has yet to be established. However, this task must be based on datasets that bring together the environmental risk and the health outcome dimension, and merge it with social and demographic data that can be used to stratify the environment–health relationship by specific population subgroups.

Conclusions and recommendations

Selection of environmental health inequality indicator core set

The main objective of the meeting was to identify a core set of environmental health inequality indicators that could be used as a basis for developing consistent European-wide reporting on environmental health inequalities (and possibly, in the long term, environmental health inequality monitoring).

The expert group accomplished this task by approving the indicators suggested by the working groups, thereby adopting the core set of indicators for inequality reporting. The 14 selected indicators, describing inequalities in relation to the respective sociodemographic factors, are as follows.

Environmental dimension	Indicator	Sociodemographic stratification
"Housing"-related inequalities	Inadequate water supply	Urban vs rural
	Lack of bath/shower	Age, Sex, Income, Household type
	Lack of toilet	Age, Sex, Income, Household type
	Crowding	Age, Sex, Income, Household type
	Dampness in home	Age, Sex, Income, Household type
	Problems to keep home warm	Income, Household type
"Injury"-related inequalities	Serious work-related injuries	Sex
	Transport-related mortality	Age, Sex
	Mortality from falls	Age, Sex
	Mortality from poisonings	Age, Sex
"Environment"-related inequalities	Noise exposure at home	Income
	Lack of access to green/recreational areas	Age, Sex, Income
	Potential smoke exposure at home	Age, Sex, Income, Education, Employment
	Exposure to tobacco smoke at work	Age, Sex, Income, Education, Employment

The core indicators have been selected based on the availability, quality and consistency of data and public health relevance. It is clear that there will still be variations among countries and for several indicators; there will not be data for all countries (especially if using EU databases). Nevertheless, this was considered to be the best choice given the existing limitations.

Constraints

Several constraints were recognized in relation to the core set of indicators. Most of the data for the core indicators were drawn from international databases such as Eurostat. Although Eurostat data provide information for many countries, data from non-EU countries is not available. In addition, several social dimensions such as education, employment status and ethnicity are not available for most of the selected indicators. This limits the richness of the inequality information that can be reported.

Although national data sources are able to provide rich data on social and demographic dimensions, their use is often restricted or even impossible owing to the lack of comparability

among countries. Great variability also exists among countries in indicator definitions. This often prevented the group from including national data sources in the core set and thus leads to a disproportional exclusion of data from non-EU countries. Nevertheless, many countries outside the coverage of EU databases will be able to contribute with data sources roughly similar to those provided by the EU datasets, and the variations of data and definitions caused by the addition of these national approaches will have to be accepted and dealt with.

The selection process also showed that the availability of environmental health inequality data is not directly associated with the relevance of public health issues. The most stunning example is the difficulty in documenting the existing inequalities in relation to air pollution exposure:

- international data on air pollution exposure at a personal or household level are very vaguely defined, based on self-reported data and not even collected on an annual basis;
- national statistical data are mostly restricted to the air pollution assessment level and can hardly be related to social or demographic determinants;
- surveys that may bring together both the exposure and the social dimension are often rather sporadic and are not nationally representative; and
- only few nationwide studies on air pollution that included income and deprivation data were known to the working group.

Similarly, no internationally consistent information in relation to the exposure to chemicals was identified. Although some countries have national surveys and respective evidence, there was no common basis for the identification of a chemical exposure inequality indicator that could be shared by several countries. As for air quality, such an indicator would have been of highest relevance but the group decided that at this time the data is not sufficient on international level.

The available data for noise inequalities are based on self-reported information that has many constraints, while for classical "environmental justice" indicators such as distance to waste sites, no data was identified at all. Another issue was the lack of adequate inequality data in relation to water supply; this is either not reported because it is not considered an issue, or – if it is a health issue – is only available through largely inconsistent national statistics. Although water supply is a major risk factor, only one international data source offers data on it for the majority of the WHO European Member States. Even this source is restricted to only one dimension for stratification (urban versus rural) and thus again provides a very vague categorization that is of little relevance in many countries.

Taking into account the various constraints that affect the currently available data on environmental health inequality in the WHO European Region, the meeting concluded that these data do not correspond well with the desire to have scientifically clear and well-documented exposure indicators. Variations and inconsistencies are large when more detailed or objectively measured data are available (most often at national level and for few countries only), while international surveys providing data for half or more of the countries of the European Region tend to be based on self-reported data that are rather vague, describing environmental problems in more general than scientific terms. Therefore, at the present time, it is necessary to understand any attempt to quantify and assess the status of European environmental health inequalities as an undertaking based on environmental conditions under which people live, and as perceived by them.

Finally, the group noted that, despite the limited data availability, there was consensus on the 14 selected inequality indicators. Priorities, however, differ among countries on which indicators

are most relevant in revealing inequalities. The variations relate to level of development and affluence, historical developments and general environmental conditions, but are also affected by, for example, climate. Nevertheless, it is of the utmost importance to also acknowledge that possibly even greater differences exist within countries. Subnational differences are found among counties and regions, as well as among city quarters and neighbourhoods, and sometimes the internal disparities may pose a much larger challenge to the respective authorities than the differences reported among countries. The group was therefore of the opinion that national data – as reported by this project – are useful for international comparison but have little relevance regarding subnational or local inequalities and related challenges of social cohesion. Political action is therefore most likely to be best invested at subnational level.

As an extension to this argument, the participants also noted that one fundamental weakness of the available data is the strong dependency on self-reported information. Acknowledging the vast evidence showing that different national societies as well as different population subgroups within a country experience risk factors differently, the meeting stressed that this dimension of subjective variation was unfortunately not captured in the data.

Recommendations for further work

The expert group decided to base the core set of indicators predominantly on international data sources to benefit from consistent data available for many countries in parallel. However, in most case these international databases are hosted by international agencies such as Eurostat or WHO and access to data is regulated or restricted to specific data components available on web sites or in reports. The main restriction is that, even on interactive web sites as offered by Eurostat, the possible combinations of data variables have been pre-defined. Therefore, access to the original data as contributed to Eurostat by the Member States (or access to the respective national data sets) would enable a significantly higher choice of combinations of environmental data and sociodemographic determinants. The opportunity to access original data hosted by international agencies is therefore to be explored with a view to more flexible computation.

The current collection of data identified single environmental risk factors to be stratified by sociodemographic variables as available. However, groups, individuals or households can experience multiple or cumulative environmental risks, and inequality monitoring systems should therefore seek to capture those multiple inequalities. Beyond dealing with the selected core set of inequality indicators, the project should consider ways to reflect multiple exposure by possibly merging several risk factors. Clearly, access to original data sources as described above will be essential to the development of multiple inequality or deprivation indices and integrating them into the envisaged European reporting on environmental health inequalities.

There is a parallel need to consider the potential overlapping of sociodemographic determinants as they may occur simultaneously. Again, access to original data or the use of pre-defined combinations of social and demographic determinant data would enable a more detailed identification of environmental health inequalities, and thus reduce the risk of confounding in the results obtained.

In addition, the group asked the WHO secretariat to look in more detail at social gradients rather than extremes such as rich and poor. However, given the current data available on the international data web sites, this is often not possible unless, as mentioned above, access to the original data is possible.

The group had mentioned before that, in most cases, self-reported data are being used despite there being various constraints associated with this data. The intense use of this data is due to the fact that there is often no alternative available. Acknowledging the current lack of data options, the expert group recommended using these data for the project but to switch immediately to more valid and reliable data should they become available.

The way forward

The WHO secretariat proposed that a "WHO European environmental health inequality report" should be developed, based on the piloting of the core set of environmental health inequality indicators, for which WHO would make available a reporting protocol to be used for all national participants.

Essential elements of the report were considered to be an international review section coordinated by WHO (comparing inequalities among countries) and a national environmental health inequality section provided by national experts, based on one-page "national environmental health inequality fact sheets" aiming to provide inequality data within countries and thus going into more detail. Each of these sections would be structured according to the selected 14 core indicators.

The expert group agreed to the proposal of piloting the core indicators in 2011 and developing a first European environmental health inequality report presenting the results. Based on discussions on the format of the report and the workload for the national experts, as well as the risk of redundancies in data presentation in the case that national data cannot go into much more detail than the data provided in the international section, the group agreed to consider a modified structure for the European environmental health inequality report, based on three sections.

International report section

This would be coordinated by the WHO secretariat with inputs from experts of selected Member States. The international report would aim to display environmental health inequalities on an international scale, identifying differences among countries. Based on the core set of indicators (and possibly some additional relevant inequality data), the international report section would review the current status of environmental health inequality in the WHO European Region.

The structure of the report could possibly follow that of the working groups of the present meeting (housing-, injury- and environment-related inequalities) but other approaches are also possible. The final decision will be taken by the working group drafting the report.

Annex I with selected national inequality fact sheets

This will be based on one-page templates with at least one example for each inequality indicator (voluntarily contributed by Member States). These national inequality fact sheets will be able to look at the respective inequality indicators in more detail at national and subnational levels only. The objective is to have at least one national example for each of the 14 core inequality indicators; if possible, each of the 14 national examples should be contributed by a different country.

A first proposal for the format and layout of the one-page fact sheet for reporting national environmental health inequalities was proposed for feedback by national experts.

Annex II with selected examples of good practice

This will be compiled from the few countries that have carried out specific, in-depth work on collecting, analysing and reporting environmental health inequalities (voluntarily contributed by interested Member States). This will present an opportunity for interested countries to go beyond the core set of indicators and use a different format than the one-page template used in Annex 1. The examples could also present work linking environmental vulnerability with health inequality outcomes. WHO would screen the potential contributions and select a few national examples that can be considered innovative and good practice.

In addition to the European environmental health inequality report, the WHO secretariat suggested establishing an "environmental health inequality web portal" on WHO/EURO web site, where all national inequality fact sheets that have been contributed would be published.

Approving the proposed way forward, the meeting participants gave the WHO secretariat the task of coordinating further work in 2011 and of providing to the project group with documentation and materials as follows:

- reporting protocol for data collection and templates for national reporting;
- inequality data for the selected core set of indicators (the group considered a central download and dissemination of data to be more secure and efficient than if this was done by individual national experts); and
- terms of reference for the working group in charge of drafting the European report on environmental health inequalities.

It was proposed to develop draft versions of national and international report sections during the first half of 2011 for review at a second project meeting in June 2011.

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Annex 2. Working document 1: International data review

WORLD HEALTH ORGANIZATION
REGIONAL OFFICE FOR EUROPE

WELTGESUNDHEITSORGANISATION
REGIONALBÜRO FÜR EUROPA

ORGANISATION MONDIALE DE LA SANTÉ
BUREAU RÉGIONAL DE L'EUROPE

ВСЕМИРНАЯ ОРГАНИЗАЦИЯ ЗДРАВООХРАНЕНИЯ
ЕВРОПЕЙСКОЕ РЕГИОНАЛЬНОЕ БЮРО

**Towards environmental health inequality reports:
Development & piloting of a national assessment tool**

Bonn, Germany, 25-26 October 2010

Working document 1

Review of data on social inequalities in environmental risk factors in the WHO European Region

International data sources

Compiled by:
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WHO European Centre for Environment and Health
Bonn Office

Table of content

NB www links identified for easy access to data sources need to be copy-pasted into the web browser

1) Noise from neighbours or from the street

Data source / survey	Name / code of variable	Internet site or access info
Eurostat / Income and living conditions	**ilc_mddw01**	http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/dataset?p_product_code=ILC_MDDW01

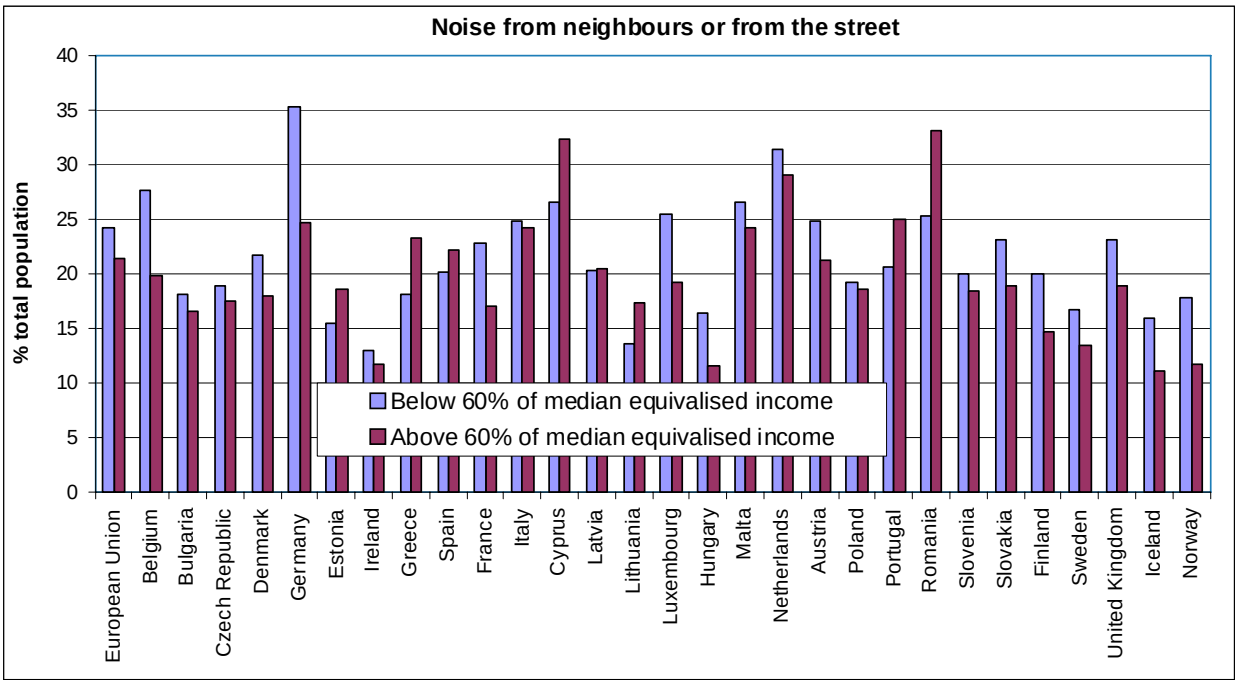
Name of EH risk factor in survey	Definition of parameter	Frequency of collection (first - last year) available	Restrictions / Comments
Noise from neighbours or from the street	None	annual basis (2004 - 2009); 2009 less than half of the countries not available	none

Data overview for original risk factor	Unit (% vs total, hh vs persons)
Noise from neighbours or from the street	% population

Database covers following countries	Total number of countries: 29
Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Ireland, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom, Norway	

SOCIAL DETERMINANTS (in addition: household types)

Age	Sex	Income	Education level	Employment status	Nationality / Ethnicity
		Below 60% of median equivalised income			
		Above 60% of median equivalised income			



2) Unimproved drinking- water source

Data source / survey	Name / code of variable	Internet site or access info
WHO / UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation	**Unimproved drinking water sources**	http://www.wssinfo.org/data-estimates/table/

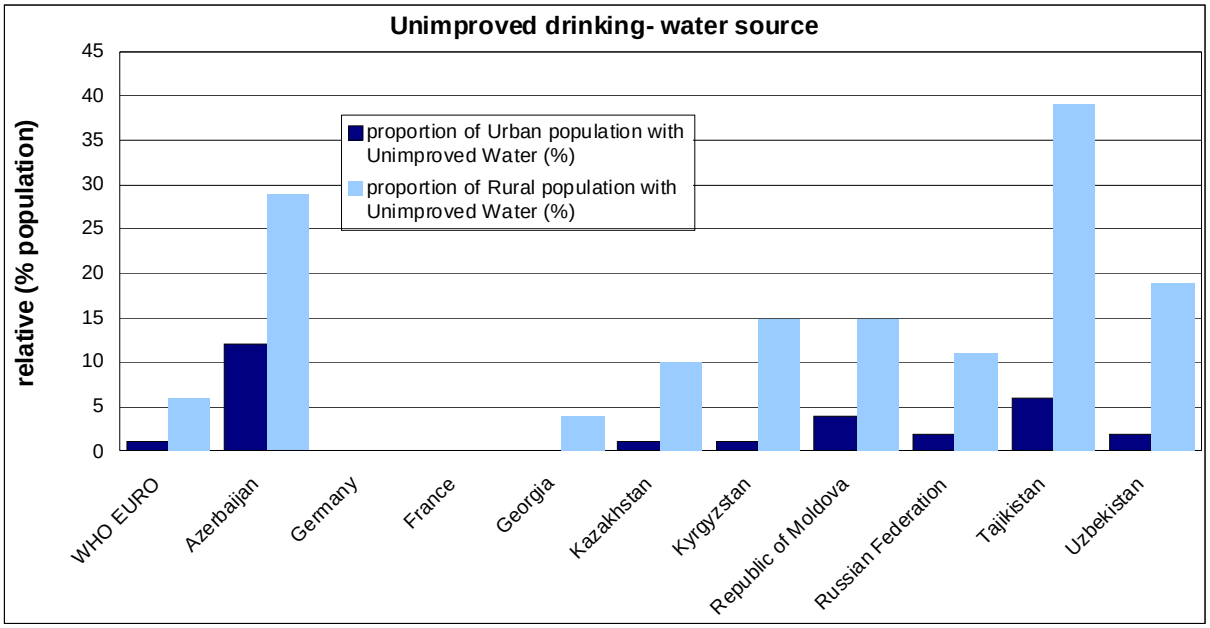
Name of EH risk factor in survey	Definition of parameter	Frequency of collection (first - last year) available	Restrictions / Comments
Improved drinking-water source	An improved drinking- water source is defined as one that, by nature of its construction or through active intervention, is protected from outside contamination, in particular from contamination with faecal matter.	unsteady (1990, 1995, 2000, 2005, 2008)	none

Data overview for original risk factor	Unit (% vs total, hh vs persons)
improved	absolute (x1000 people)
piped	
other improved	relative (% population)
unimproved	

Database covers following countries	Total number of countries: 53
Albania, Andorra, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Malta, Monaco, Montenegro, Netherlands, Norway, Poland, Portugal, Republic of Moldova, Romania, Russian Federation, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tajikistan, The former Yugoslav Rebublic of Macedonia, Turkey, Turkmenistan, Ukraine, United Kingdom, Uzbekistan	

SOCIAL DETERMINANTS: only urban- rural

Age	Sex	Income	Education level	Employment status	Nationality / Ethnicity



3) Reason to complain about quality of tap water

Data source / survey	Name / code of variable	Internet site or access info
Eurofound / EQLS 2007 Survey Results	**Q54_4**	http://www.eurofound.europa.eu/areas/qualityoflife/eqls/eqls2007/2eqls_01_12.htm

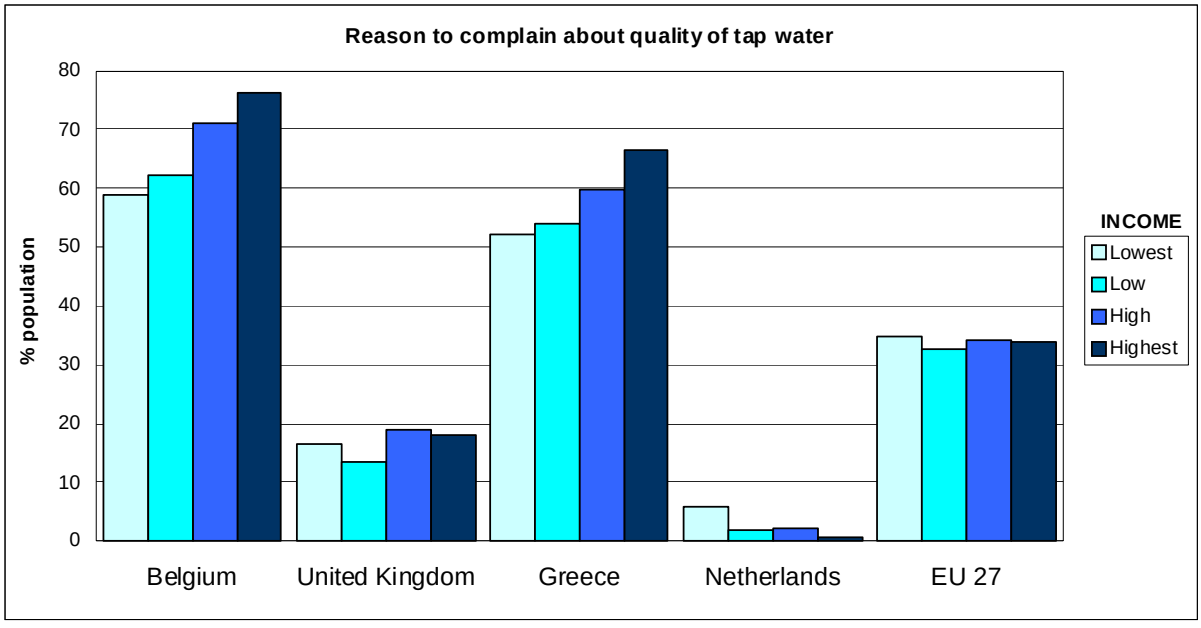
Name of EH risk factor in survey	Definition of parameter	Frequency of collection (first - last year) available	Restrictions / Comments
In the immediate neighbourhood of your home, do you have reason to complain about quality of tap water?	Percentage of people aged 15 and over who have very much reason or quite a lot of reason to complain about the quality of tap water in their local environment.*	Every four years. The European Quality of Life Survey (EQLS) was conducted for the first time in 2003. The second survey was carried out in 2007.	A certain number of new areas were identified for the survey in 2007 (e.g. quality of local environment, mental health, attitudes toward migrants).

Data overview for original risk factor	Unit (% vs total, hh vs persons)
Yes	% population
No	
Don't know	

Database covers following countries	Total number of countries: 31
Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, The fomer Yugoslav Republic of Macedonia, Turkey, United Kingdom	

SOCIAL DETERMINANTS

Age	Sex	Income	Education level	Employment status	Nationality / Ethnicity
18-34	male	Lowest quantile			
35-49	female	Low quantile			
50-64		High quantile			
65+		Highest quantile			



4) Lack of bath or shower in dwelling

Data source / survey	Name / code of variable	Internet site or access info
EUROSTAT / Income and living conditions	**ilc_mdho02**	http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/dataset?p_product_code=ILC_MDHO02

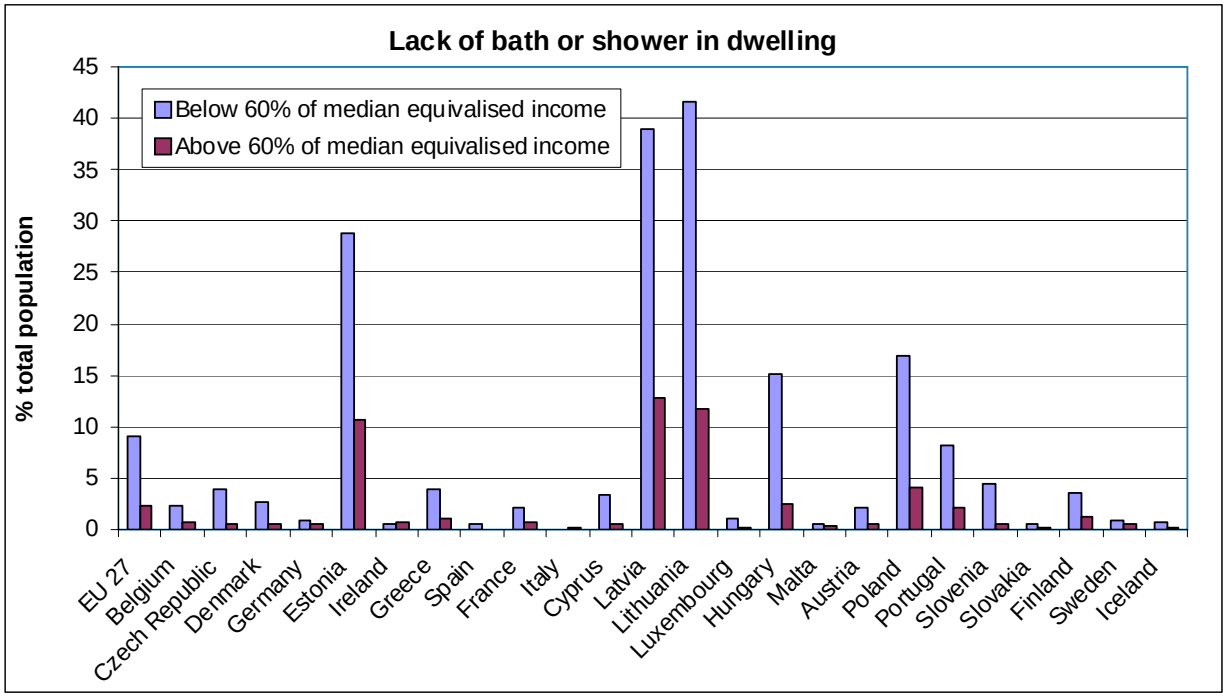
Name of EH risk factor in survey	Definition of parameter	Frequency of collection (first - last year) available	Restrictions / Comments
Lack of bath or shower in dwelling	none	annual basis (2004 - 2009)	none

Data overview for original risk factor	Unit (% vs total, hh vs persons)
Lack of bath or shower in dwelling (Yes - No)	Percentage of total population

Database covers following countries	Total number of countries: 28
Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal , Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom	

SOCIAL DETERMINANTS (in addition: household types)

Age	Sex	Income	Education level	Employment status	Nationality / Ethnicity
Less than 18 years	male	Below 60% of median equivalised income			
Between 18 and 64 years	female	Above 60% of median equivalised income			
65 years and over					



5) Lack of indoor flushing toilet for sole use of household

Data source / survey	Name / code of variable	Internet site or access info
EUROSTAT / Income and living conditions	**ilc_mdho03**	http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/dataset?p_product_code=ILC_MDHO03

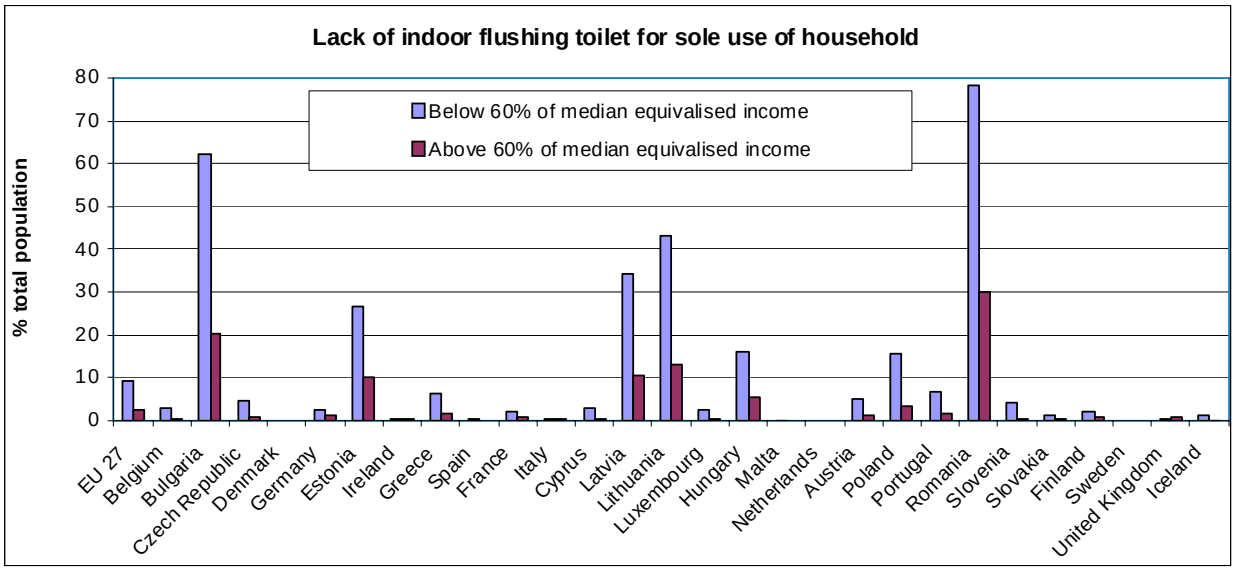
Name of EH risk factor in survey	Definition of parameter	Frequency of collection (first - last year) available	Restrictions / Comments
Lack of indoor flushing toilet for sole use of household	none	annual basis (2004 - 2009)	none

Data overview for original risk factor	Unit (% vs total, hh vs persons)
Lack of indoor flushing toilet for sole use of household (Yes-No)	Percentage of total population

Database covers following countries	Total number of countries: 28
Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Ireland, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom	

SOCIAL DETERMINANTS (in addition: household types)

Age	Sex	Income	Education level	Employment status	Nationality / Ethnicity
Less than 18 years	male	Below 60% of median equivalised income			
Between 18 and 64 years	female				
65 years and over		Above 60% of median equivalised income			



6) Unimproved sanitation facilities

Data source / survey	Name / code of variable	Internet site or access info
WHO / UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation	Unimproved sanitation facilities	http://www.wssinfo.org/data-estimates/table/

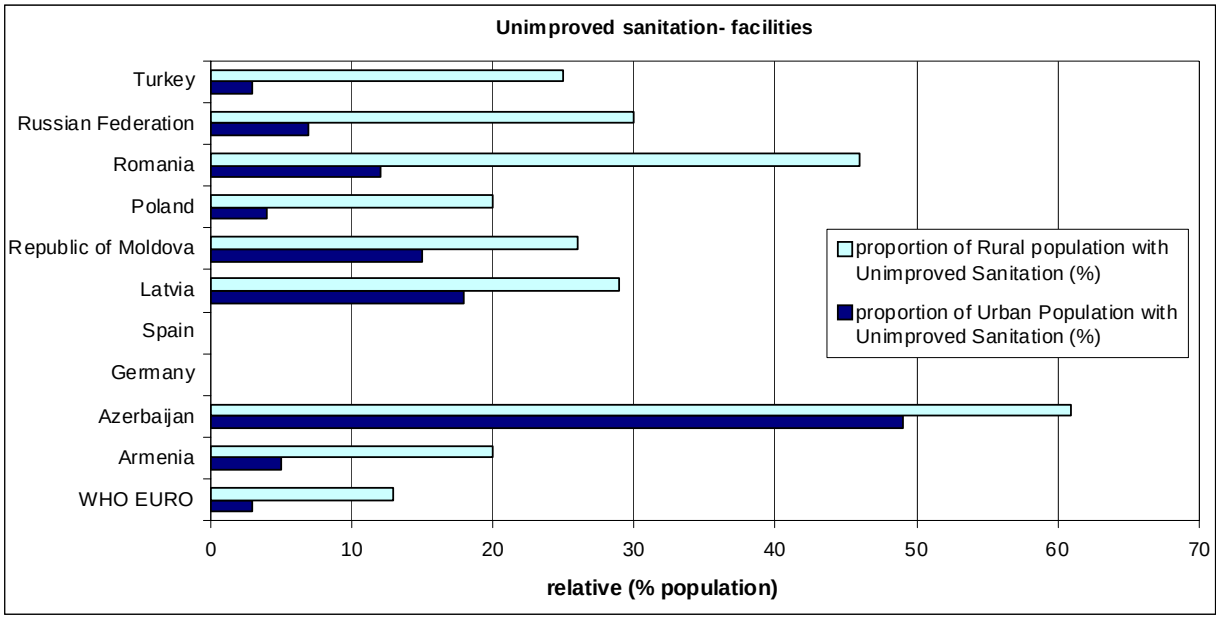
Name of EH risk factor in survey	Definition of parameter	Frequency of collection (first - last year) available	Restrictions / Comments
Improved sanitation facilities	For MDG monitoring, an improved sanitation facility is defined as one that hygienically separates human excreta from human contact.	unsteady (1990, 1995, 2000, 2005, 2008)	none

Data overview for original risk factor	Unit (% vs total, hh vs persons)
improved	absolute (x1000 people)
shared	
open defecation	relative (% population)
other unimproved	
total unimproved	

Database covers following countries	Total number of countries: 53
Albania, Andorra, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Malta, Monaco, Montenegro, Netherlands, Norway, Poland, Portugal, Republic of Moldova, Romania, Russian Federation, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tajikistan, The former Yugoslav Rebublic of Macedonia, Turkey, Turkmenistan, Ukraine, United Kingdom, Uzbekistan	

SOCIAL DETERMINANTS: only urban- rural

Age	Sex	Income	Education level	Employment status	Nationality / Ethnicity



7) Share of population having neither bath, shower nor indoor flushing toilet

Data source / survey	Name / code of variable	Internet site or access info
Eurostat / Income and living conditions	**ilc_mdho05**	http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/dataset?p_product_code=ILC_MDHO05

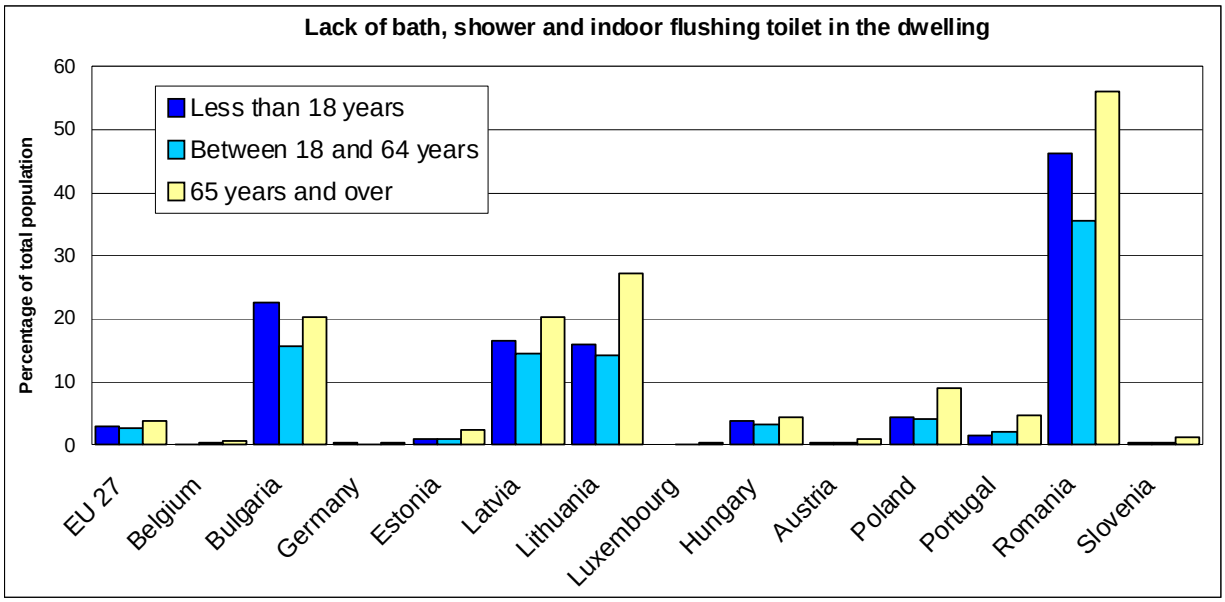
Name of EH risk factor in survey	Definition of parameter	Frequency of collection (first - last year) available	Restrictions / Comments
Lack of bath, shower and indoor flushing toilet in the dwelling	none	annual basis (2004 - 2009); 2009 less than half of the countries not available	none

Data overview for original risk factor	Unit (% vs total, hh vs persons)
Lack of bath, shower and indoor flushing toilet in the dwelling	% population

Database covers following countries	Total number of countries: 28
Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom	

SOCIAL DETERMINANTS (in addition: household types)

Age	Sex	Income	Education level	Employment status	Nationality / Ethnicity
Less than 18 years	male	Below 60% of median equivalised income			
	female				
Between 18 and 64 years					
		Above 60% of median equivalised income			
65 years and over					



8) Crowding

Data source / survey	Name / code of variable	Internet site or access info
Eurostat / Income and living conditions	**1) ilc_lvho05a** **2) ilc_lvho05b** **3) ilc_lvho06**	1) http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/dataset?p_product_code=ILC_LVHO05A

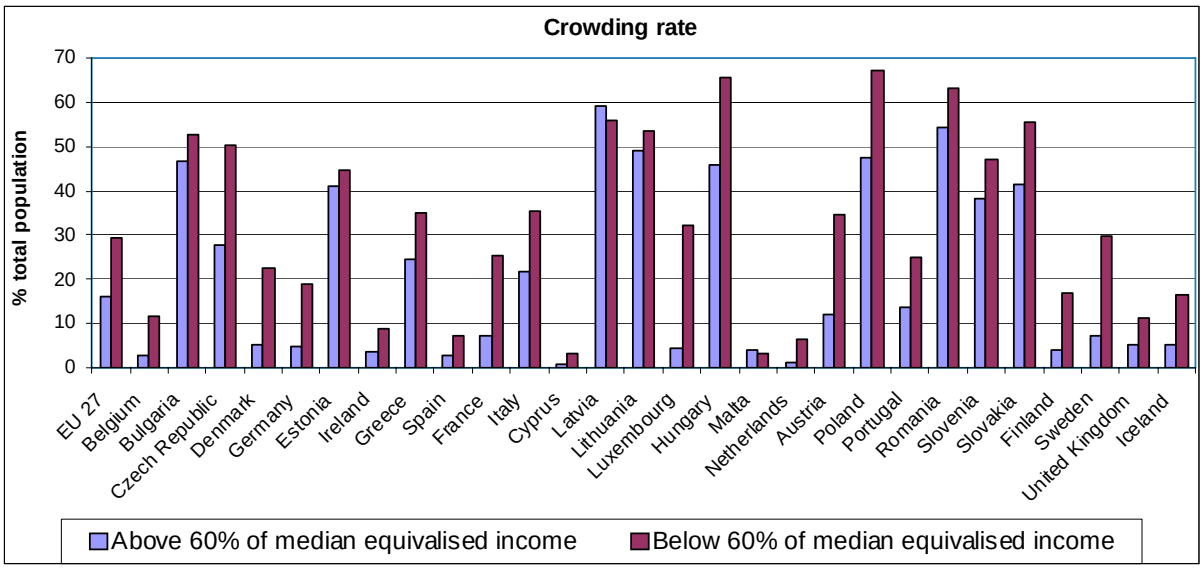
Name of EH risk factor in survey	Definition of parameter	Frequency of collection (first - last year) available	Restrictions / Comments
Crowding rate	The crowding rate is defined as the percentage of the population living in an overcrowded household; a person is considered as living in an crowded household if the household does not have at its disposal a minimum of rooms equal to: - one room for the household; - one room for each couple; - one room for each single person aged 18+; - one room for two single people of the same sex between 12 and 17 years of age; - one room for each single person of different sex between 12 and 17 years of age; - one room for two people under 12 years of age.	annual basis (2004 - 2009)	none

Data overview for original risk factor	Unit (% vs total, hh vs persons)
Crowding rate by 1) age, gender, poverty status, 2) by household type - total population, 3) without single-person households	Percentage of total population 3) without single-person households

Database covers following countries	Total number of countries: 28
Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Ireland, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom	

SOCIAL DETERMINANTS (in addition: household types)

Age 1)	Sex 1)	Income 1)	Education level	Employment status	Nationality / Ethnicity
Less than 18 years	male	Below 60% of median equivalised income			
Between 18 and 64 years	female	Above 60% of median equivalised income			
65 years and over					



9) Dampness or leaking roof

Data source / survey	Name / code of variable	Internet site or access info
1) Eurostat / Income and living conditions 2) Eurofound / EQLS 2007 Survey Results	**1) ilc_mdho01 2) Q17_3**	http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/dataset?p_product_code=ILC_MDHO01 http://www.eurofound.europa.eu/areas/qualityoflife/eqls/eqls2007/2eqls_01_05.htm

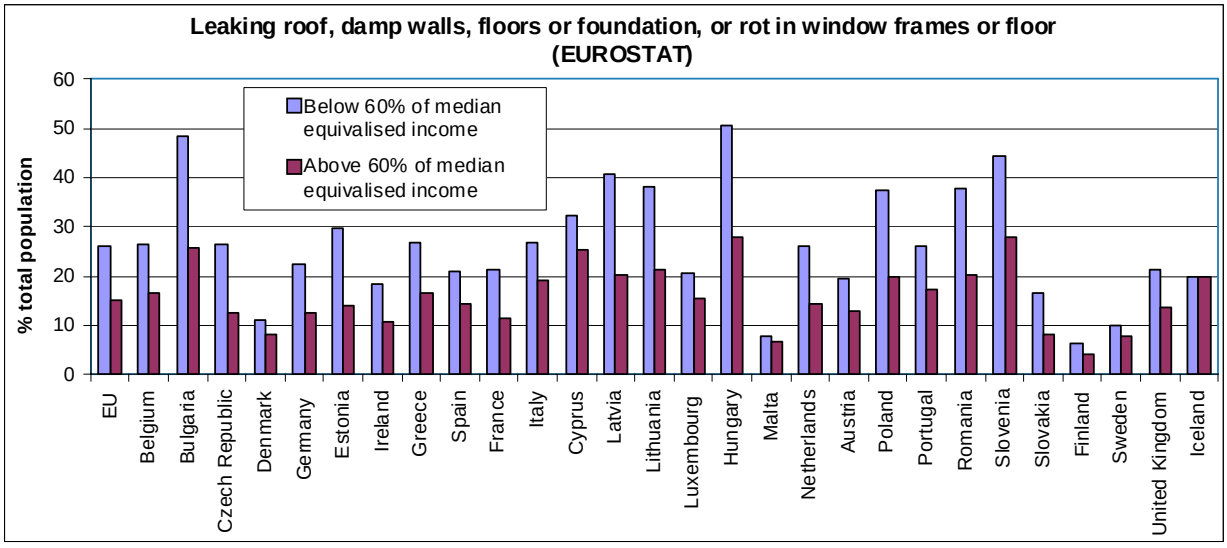
Name of EH risk factor in survey	Definition of parameter	Frequency of collection (first - last year) available	Restrictions / Comments
1) Leaking roof, damp walls/floors/ foundation, or rot in window frames or floor; 2) Problem with damp or leaks in walls or roof	none	1) annual basis (2004 - 2009) 2) all four years EQLS (2003-2007-2011)	none

Data overview for original risk factor	Unit (% vs total, hh vs persons)
Yes	Percentage of total population
No	
Don`t know	

Database covers following countries	Total number of countries: 1) 28 2) 31
Austria, Belgium, Bulgaria, 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, 1) Iceland, 2) Croatia, Norway, The fomer Yugoslav Republic of Macedonia, Turkey	

SOCIAL DETERMINANTS (in addition: household types)

Age	Sex	Income	Education level	Employment status	Nationality / Ethnicity
1) Less than 18 years 2) 18-34	males	1) Below 60% of median income 2) Lowest, Low			
1) Between 18 and 64 years 2) 35-49	females	1) Above 60% of median income 2) High, Highest			
1) above 65 2) 50-64, 65 years and over					



10) Reason to complain about air pollution in the immediate neighbourhood

Data source / survey	Name / code of variable	Internet site or access info
Eurofound / EQLS 2007 Survey Results	Q54_2	http://www.eurofound.europa.eu/areas/qualityoflife/eqls/eqls2007/2eqls_01_10.htm

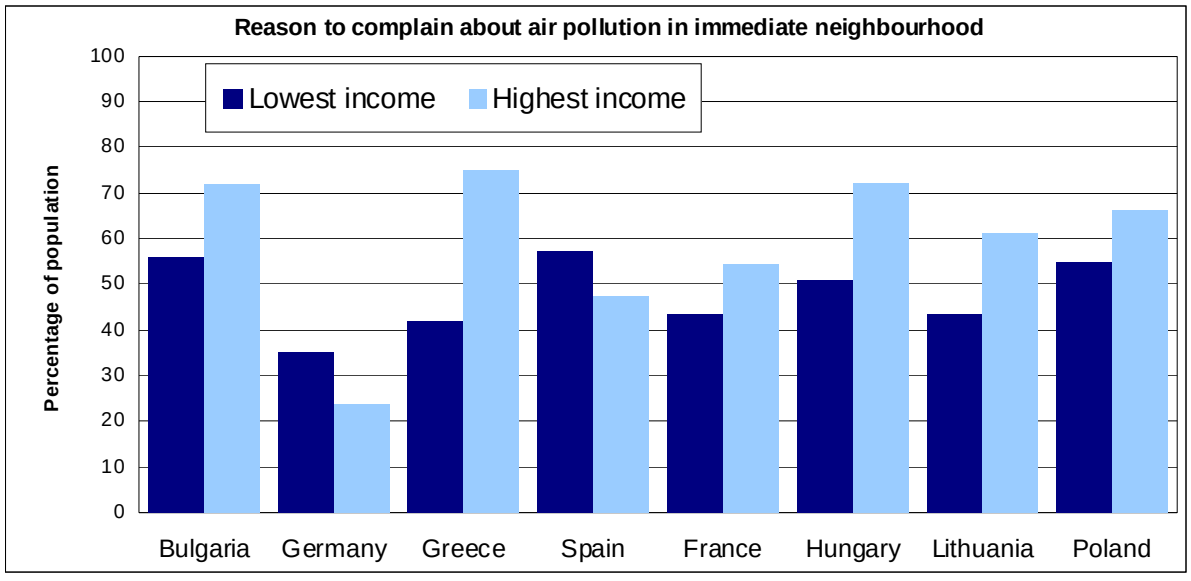
Name of EH risk factor in survey	Definition of parameter	Frequency of collection (first - last year) available	Restrictions / Comments
In the immediate neighbourhood of your home, do you have reason to complain about air pollution?	None	Every four years. The European Quality of Life Survey (EQLS) was conducted for the first time in 2003. The second survey was carried out 2007.	None

Data overview for original risk factor	Unit (% vs total, hh vs persons)
Yes	% population
No	
Don't know	

Database covers following countries	Total number of countries: 31
Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, The fomer Yugoslav Republic of Macedonia, Turkey, United Kingdom	

SOCIAL DETERMINANTS

Age	Sex	Income	Education level	Employment status	Nationality / Ethnicity
18-34	male	Lowest quantile			
35-49	female	Low quantile			
50-64		High quantile			
65+		Highest quantile			



11) Smoking situation in the home

Data source / survey	Name / code of variable	Internet site or access info
European Commission, Special Eurobarometer 332 "Tobacco"	QD6.2	http://ec.europa.eu/public_opinion/archives/ebs/ebs_332_en.pdf

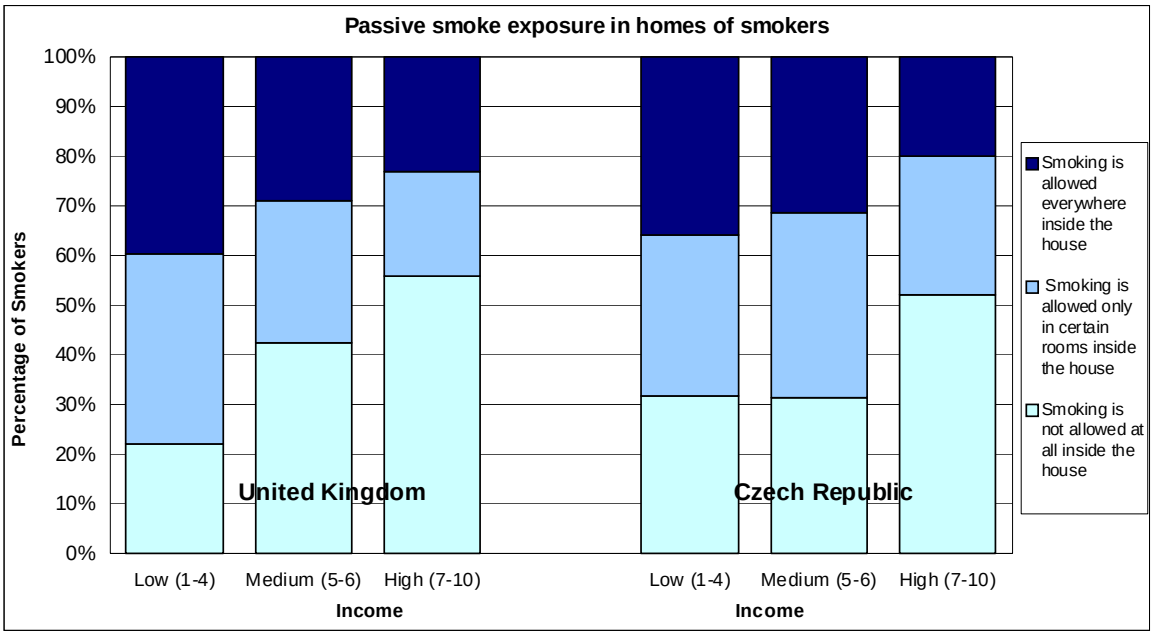
Name of EH risk factor in survey	Definition of parameter	Frequency of collection (first - last year) available	Restrictions / Comments
Which statement best describes smoking situation inside your house?	See comments on back page	2009 and possibly all two years*	Survey in 2009; Income: Selfposi-tioning on social staircase (1-10)

Data overview for original risk factor	Unit (% vs total, hh vs persons)
Smoking is not allowed at all inside the house	% population
Smoking is allowed only in certain rooms inside the house	
Smoking is allowed everywhere inside the house	

Database covers following countries	Total number of countries: 30
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, The fomer Yugoslav Republic of Macedonia, Turkey, United Kingdom	

SOCIAL DETERMINANTS (in addition: number of inhabitants and rural/urban)

Age	Sex	Income	Education level	Employment status	Nationality / Ethnicity
15-24	male	Low (1-4)	1	Self- employed	
25-39	female	Medium (5-6)	2	Managers	
40-54		High (7-10)	3	Other white collars	
55 +			4 +	Manual workers	
				House persons	
				Unemployed	
				Retired	
				Students	



12) Exposure to tobacco smoke indoors at the workplace

Data source / survey	Name / code of variable	Internet site or access info
European Commission, Special Eurobarometer 332 "Tobacco"	QD9	http://ec.europa.eu/public_opinion/archives/ebs/ebs_332_en.pdf

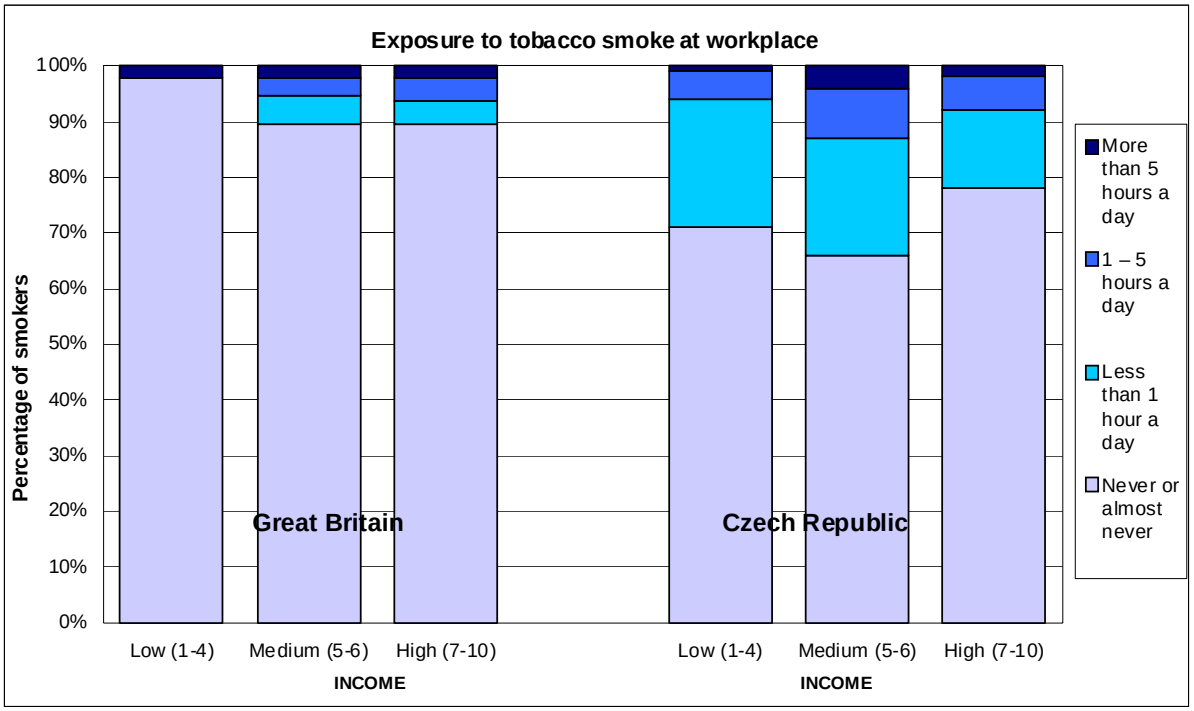
Name of EH risk factor in survey	Definition of parameter	Frequency of collection (first - last year) available	Restrictions / Comments
How often are you exposed to tobacco smoke indoors at your workplace?	none	possibly repeated (so far data only for 2009)*	Survey started in 2009; Income is defined as: Self-positioning on the social staircase (1-10)

Data overview for original risk factor	Unit (% vs total, hh vs persons)
Never or almost never	% population**
Less than 1 hour a day	
1 – 5 hours a day	
More than 5 hours a day	

Database covers following countries	Total number of countries: 30
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, The fomer Yugoslav Republic of Macedonia, Turkey, United Kingdom	

SOCIAL DETERMINANTS

Age	Sex	Income	Education level***	Employment status****	Nationality / Ethnicity
15-24	male	Low (1-4)	15-	Self- employment	
25-39	female	Medium (5-6)	16-19	Managers	
40-54		High (7-10)	20+	Other white collars	
55 +				Manual workers	



13) Housing cost

Data source / survey	Name / code of variable	Internet site or access info
Eurostat / Income and living conditions	1) ILC_LVHO07E 2) ILC_LVHO07B 3) ILC_LVHO07A	http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/dataset?p_product_code=ILC_LVHO07B http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/dataset?p_product_code=ILC_LVHO07A

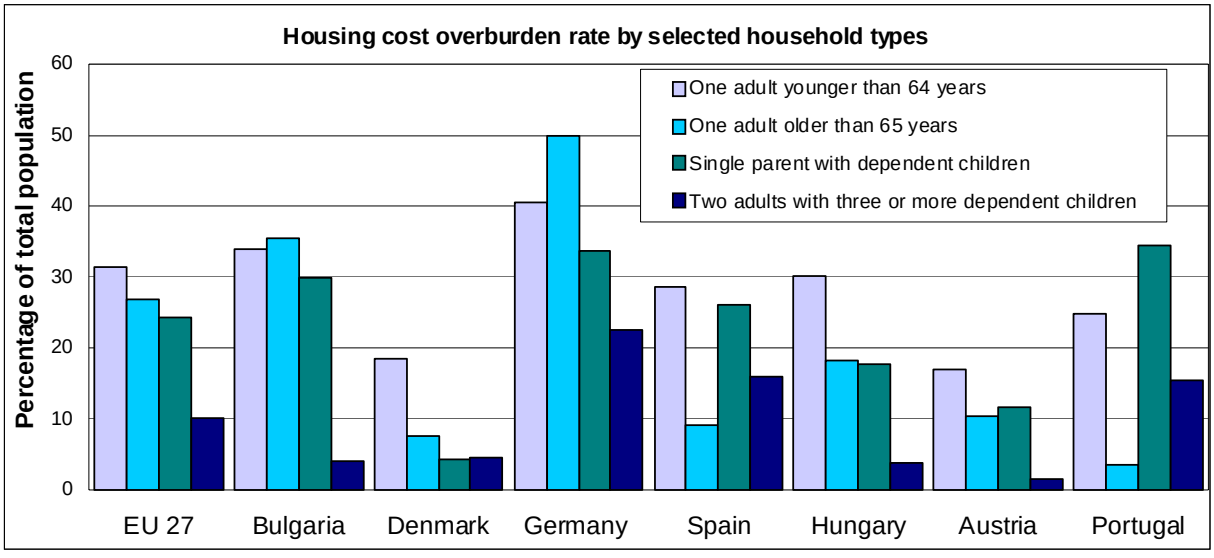
Name of EH risk factor in survey	Definition of parameter	Frequency of collection (first - last year) available	Restrictions / Comments
Housing cost overburden rate by 1) household type, 2) income quintile, 3) age, gender and poverty status	The housing cost overburden rate is the percentage of the population living in households where the total housing costs ('net' of housing allowances) represent more than 40 % of disposable income ('net' of housing allowances).	annual basis (2004 - 2009)	none

Data overview for original risk factor	Unit (% vs total, hh vs persons)
Housing cost overburden rate by 1) household type, 2) income quintile, 3) age, gender and poverty status	Percentage of total population

Database covers following countries	Total number of countries: 28
Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom	

SOCIAL DETERMINANTS (in addition: household types)

Age 3)	Sex 3)	Income 2), 3)	Education level	Employment status	Nationality / Ethnicity
	male	2) First quintile			
Less than 18 years	female	2) Second quintile			
Between 18 and 64 years		2) Third quintile			
		2) Fourth quintile			
65 years and over		2) Fifth quintile			
		3) Below 60% of m.			
		3) Above 60% of m.			



14) Severe housing deprivation

Data source / survey	Name / code of variable	Internet site or access info
Eurostat / Income and living conditions	1) ILC_MDHO06A 2) ilc_mdho06b	http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/dataset?p_product_code=ILC_MDHO06A http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/dataset?p_product_code=ilc_mdho06b

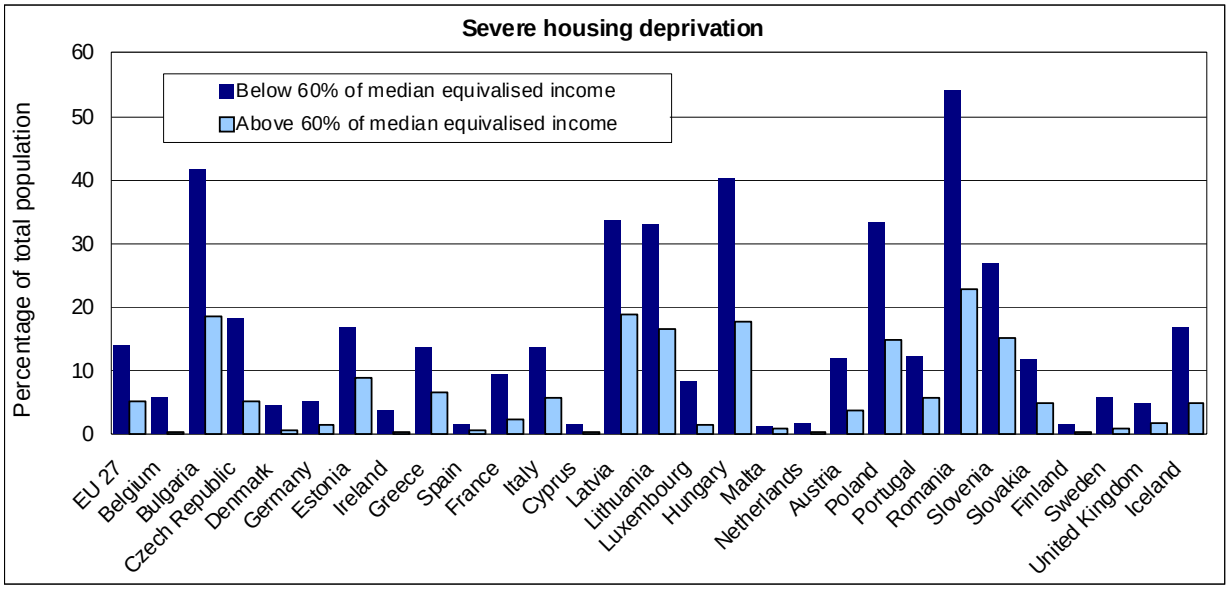
Name of EH risk factor in survey	Definition of parameter	Frequency of collection (first - last year) available	Restrictions / Comments
Severe housing deprivation rate by 1) age, gender, poverty status 2) and household type	Housing deprivation is a measure of poor amenities and is calculated by referring to those households with a leaking roof, no bath/shower and no indoor toilet, or a dwelling that is considered too dark. Severe housing deprivation is defined as households that are overcrowded, while also exhibiting at least one of the housing deprivation measures.	annual basis (2004 - 2009)	none

Data overview for original risk factor	Unit (% vs total, hh vs persons)
Severe housing deprivation rate by 1) age, gender, poverty status 2) and household type	Percentage of total population

Database covers following countries	Total number of countries: 28
Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom	

SOCIAL DETERMINANTS (in addition: household types)

Age	Sex	Income	Education level	Employment status	Nationality / Ethnicity
Less than 18 years	male	Below 60% of median equivalised income			
Between 18 and 64 ye	female				
65 years and over		Above 60% of median equivalised income			



15) Inability to keep home adequately warm

Data source / survey	Name / code of variable	Internet site or access info
Eurostat / Income and living conditions	**ilc_mdes01**	http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/dataset?p_product_code=ILC_MDES01

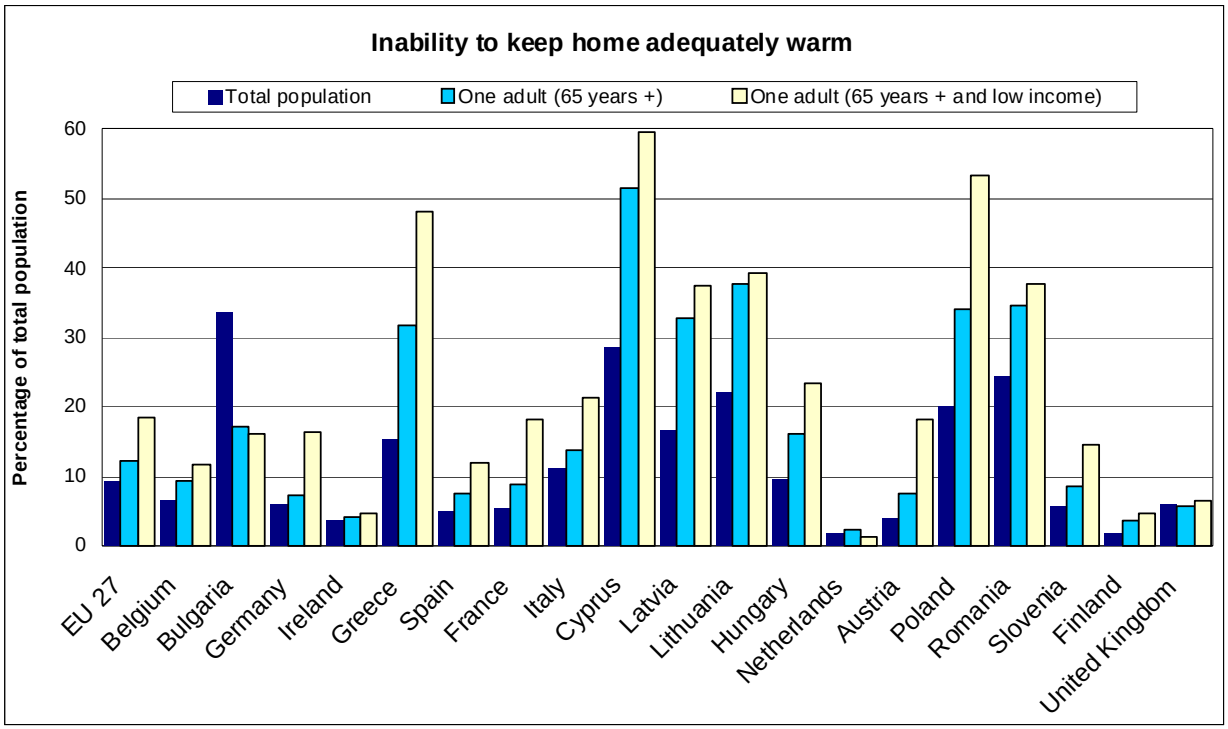
Name of EH risk factor in survey	Definition of parameter	Frequency of collection (first - last year) available	Restrictions / Comments
Inability to keep home adequately warm	none	annual basis (2004 - 2009)	none

Data overview for original risk factor	Unit (% vs total, hh vs persons)
Inability to keep home adequately warm	Percentage of total population

Database covers following countries	Total number of countries: 29
Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom	

SOCIAL DETERMINANTS (in addition: household types)

Age	Sex	Income	Education level	Employment status	Nationality / Ethnicity
		Below 60% of median equivalised income			
		Above 60% of median equivalised income			



16) Lack of access to recreational/green areas in the neighbourhood

Data source / survey	Name / code of variable	Internet site or access info
Eurofound / EQLS 2007 Survey Results	**Q54_3**	http://www.eurofound.europa.eu/areas/qualityoflife/eqls/eqls2007/2eqls_01_11.htm

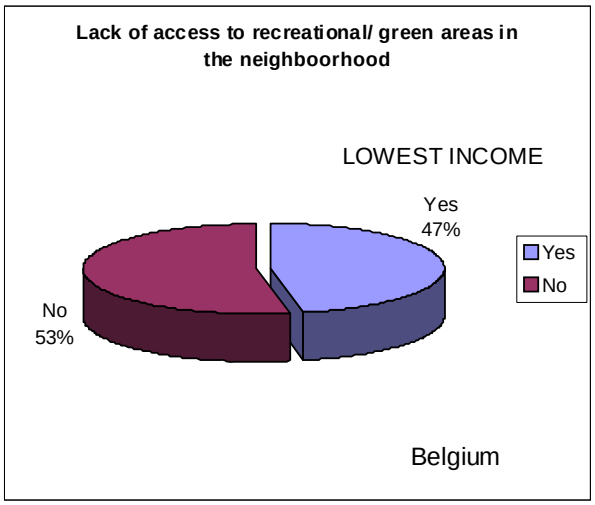
Name of EH risk factor in survey	Definition of parameter	Frequency of collection (first - last year) available	Restrictions / Comments
In your neighbourhood, do you have reason to complain about lack of access to recreational/green areas?	none	Every four years. The European Quality of Life Survey (EQLS) was conducted for the first time in 2003. The second survey was carried out 2007.	none

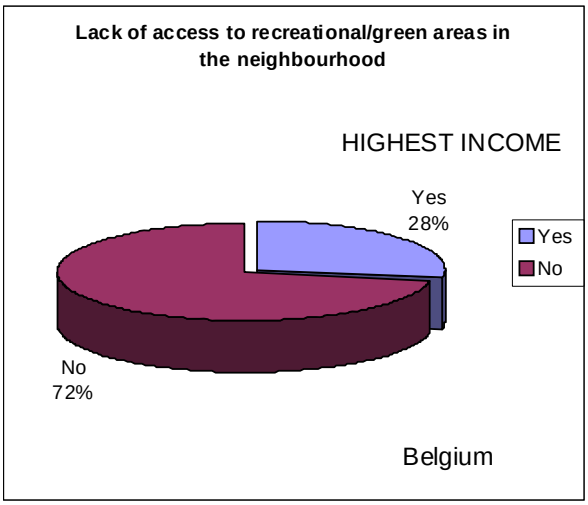
Data overview for original risk factor	Unit (% vs total, hh vs persons)
Yes	% population
No	
Don't know	

Database covers following countries	Total number of countries: 31
Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, The fomer Yugoslav Republic of Macedonia, Turkey, United Kingdom	

SOCIAL DETERMINANTS (in addition: housing tenure)

Age	Sex	Income	Education level	Employment status	Nationality / Ethnicity
18-34	male	Lowest quantile			
35-49	female	Low quantile			
50-64		High quantile			
65+		Highest quantile			





17) Standardized Death Rates (SDR), Transport accidents

Data source / survey	Name / code of variable	Internet site or access info
European mortality database (MDB)	**714x and 716x**	http://data.euro.who.int/hfamdb/

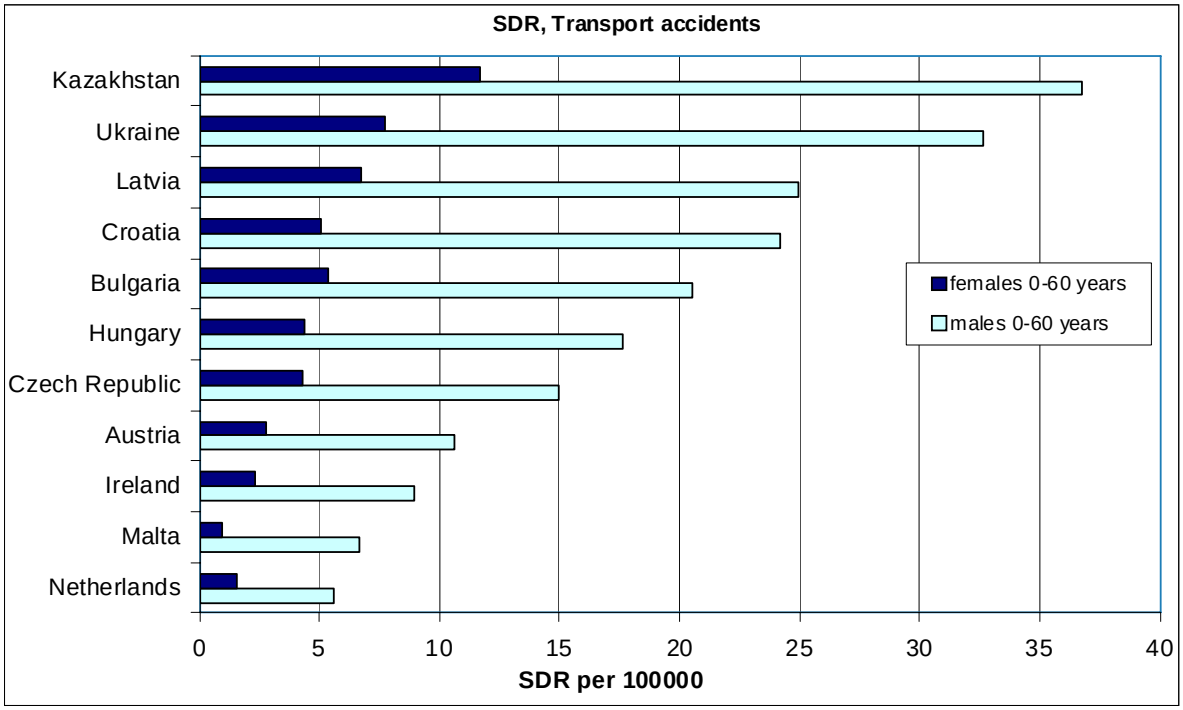
Name of EH risk factor in survey	Definition of parameter	Frequency of collection (first - last year) available	Restrictions / Comments
SDR,Transport accidents	none	annual basis (1980 - 2009); 2009 less than half of the countries available	none

Data overview for original risk factor	Unit (% vs total, hh vs persons)
Standardised death rate by 100000 inhibitants	total, persons

Database covers following countries	Total number of countries: 50
Albania, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Malta, Montenegro, Netherlands, Norway, Poland, Portugal, Republic of Moldova, Romania, Russian Federation, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tajikistan, The former Yugoslav Republic of Macedonia, Turkmenistan, Ukraine, United Kingdom, Uzbekistan	

SOCIAL DETERMINANTS

Age	Sex	Income	Education level	Employment status	Nationality / Ethnicity
0-14, 15-29, 30-44, 45-59, 60-74, 75 +	male				
	female				



18) Standardized Death Rate (SDR), Accidental falls

Data source / survey	Name / code of variable	Internet site or access info
European mortality database (MDB)	1) 7261; 2) 7281 3) 7262; 4) 7282	http://data.euro.who.int/hfamdb/

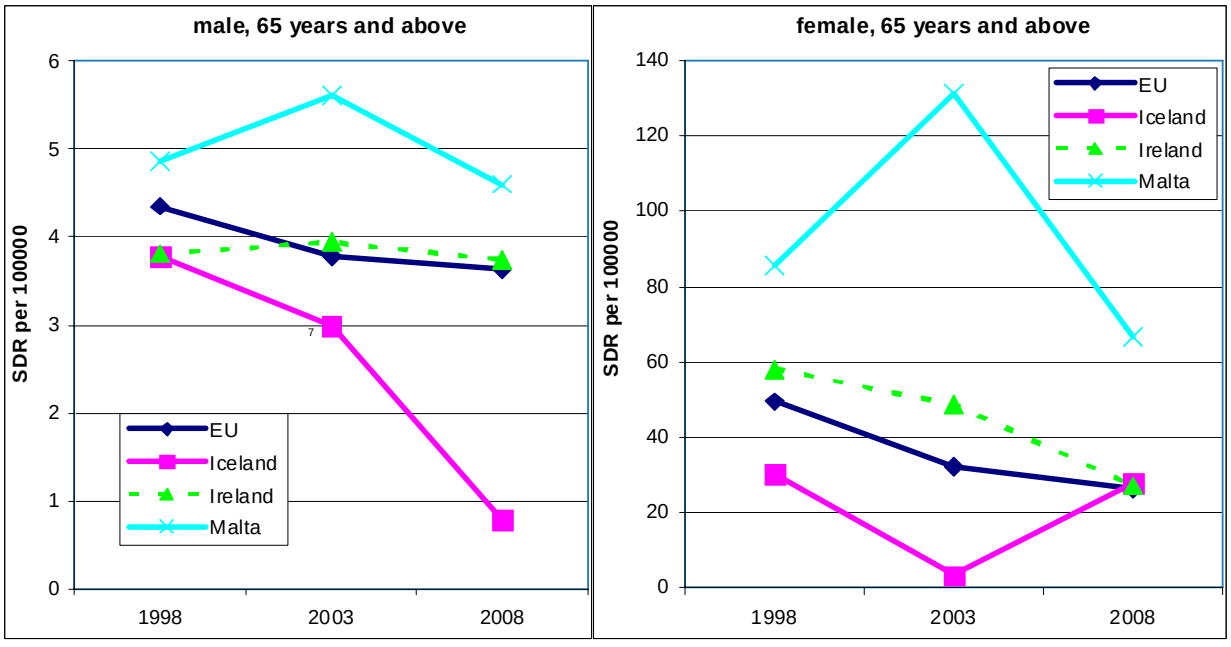
Name of EH risk factor in survey	Definition of parameter	Frequency of collection (first - last year) available	Restrictions / Comments
SDR, Accidental falls	none	annual basis (1980 - 2009); 2009 less than half of the countries available	none

Data overview for original risk factor	Unit (% vs total, hh vs persons)
Standardised death rate by 100000 inhibitants	total, persons

Database covers following countries	Total number of countries: 50
Albania, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Malta, Montenegro, Netherlands, Norway, Poland, Portugal, Republic of Moldova, Romania, Russian Federation, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tajikistan, The former Yugoslav Republic of Macedonia, Turkmenistan, Ukraine, United Kingdom, Uzbekistan	

SOCIAL DETERMINANTS

Age	Sex	Income	Education level	Employment status	Nationality / Ethnicity
0- 64	male				
65+	female				



19) Standardized Death Rates (SDR), Accidental poisoning

Data source / survey	Name / code of variable	Internet site or access info
European mortality database (MDB)	1) 7443; 2) 7463 3) 7442; 4) 7462	http://data.euro.who.int/hfamdb/

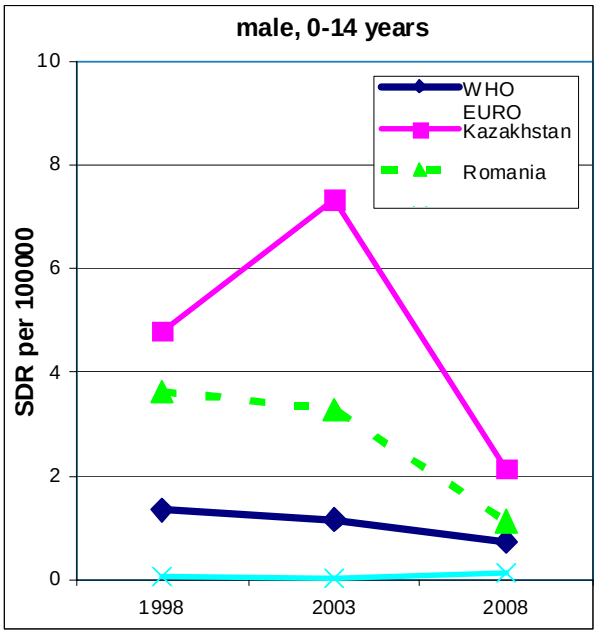
Name of EH risk factor in survey	Definition of parameter	Frequency of collection (first - last year) available	Restrictions / Comments
SDR, Accidental poisoning	none	annual basis (1980 - 2009);1980, 2009 less than half of the countries available	none

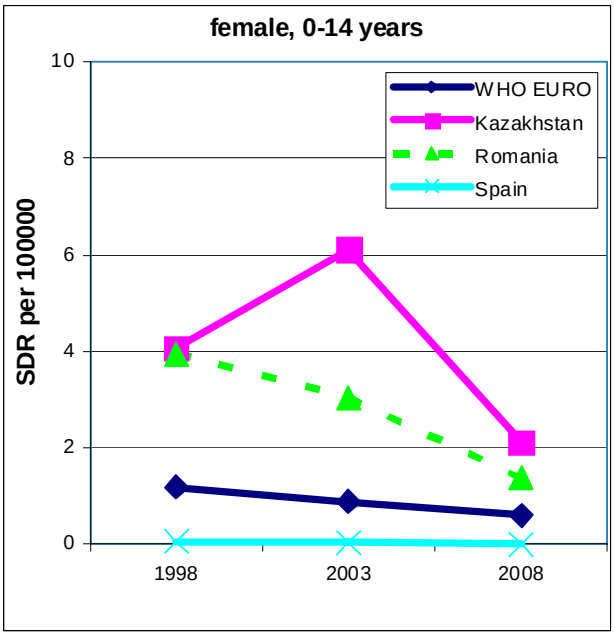
Data overview for original risk factor	Unit (% vs total, hh vs persons)
Standardised death rate by 100000 inhibitants	total, persons

Database covers following countries	Total number of countries: 49
Albania, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Malta, Montenegro, Netherlands, Norway, Poland, Portugal, Republic of Moldova, Romania, Russian Federation, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tajikistan, The former Yugoslav Republic of Macedonia, Turkmenistan, Ukraine, United Kingdom, Uzbekistan	

SOCIAL DETERMINANTS

Age	Sex	Income	Education level	Employment status	Nationality / Ethnicity
0 - 14	male				
65+	female				





20) Drowning and submersion while in bath- tub

Data source / survey	Name / code of variable	Internet site or access info
European Detailed Mortality Database (DMDB)	W65	http://data.euro.who.int/dmdb/ (go to comparison of countries)

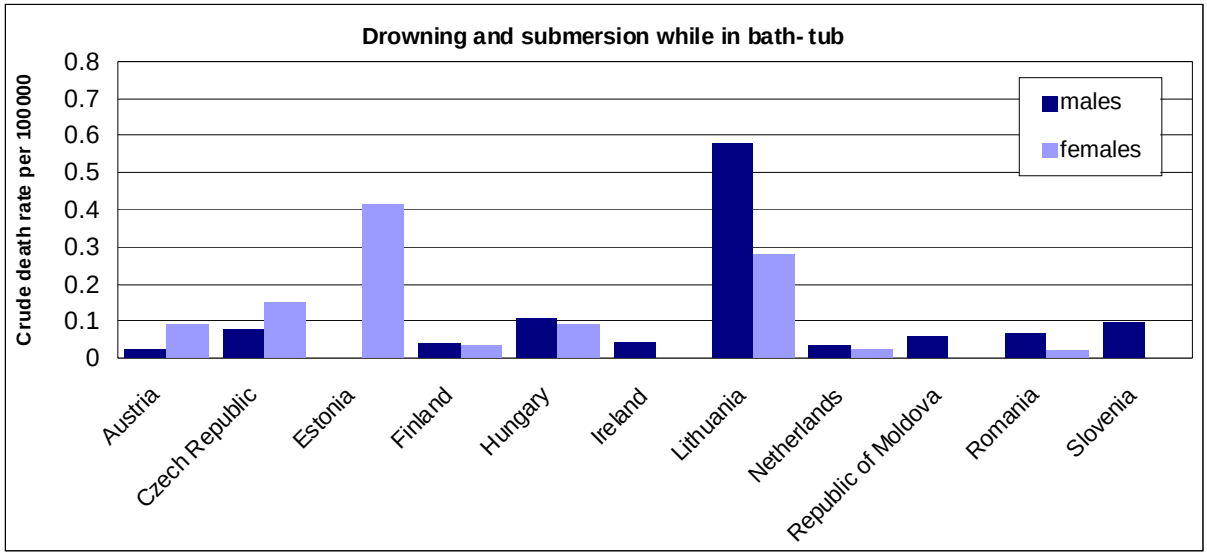
Name of EH risk factor in survey	Definition of parameter	Frequency of collection (first - last year) available	Restrictions / Comments
Drowning and submersion while in bath- tub	Main diagnosis:Drowning and submersion while in bath- tub	annual basis (1990 - 2008); 1990-1996 and 2008	for 2008 only less than half of countries available

Data overview for original risk factor	Unit (% vs total, hh vs persons)
Age- standardized death rate per 100000	total, persons
Crude death rate per 100000	
Number of deaths	
% of all deaths	

Database covers following countries	Total number of countries: 46
Albania, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Malta, Montenegro, Netherlands, Norway, Poland, Portugal, Republic of Moldova, Romania, Russian Federation, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tajikistan, The former Yugoslav Republic of Macedonia, Turkmenistan, Ukraine, United Kingdom, Uzbekistan	

SOCIAL DETERMINANTS

Age	Sex	Income	Education level	Employment status	Nationality / Ethnicity
< 1 year, 1- 4	male				
5- 9, 10- 14, 15- 19,	female				
20- 24, 25- 29, 30- 34,					
35- 39, 40- 44, 45- 49,					
50- 54, 55- 59, 60- 64,					
65- 69, 70- 74, 75- 79,					
80- 84, 85 +					



21) Serious accidents at work

Data source / survey	Name / code of variable	Internet site or access info
Eurostat	**tsiem090**	http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/dataset?p_product_code=TSIEM090

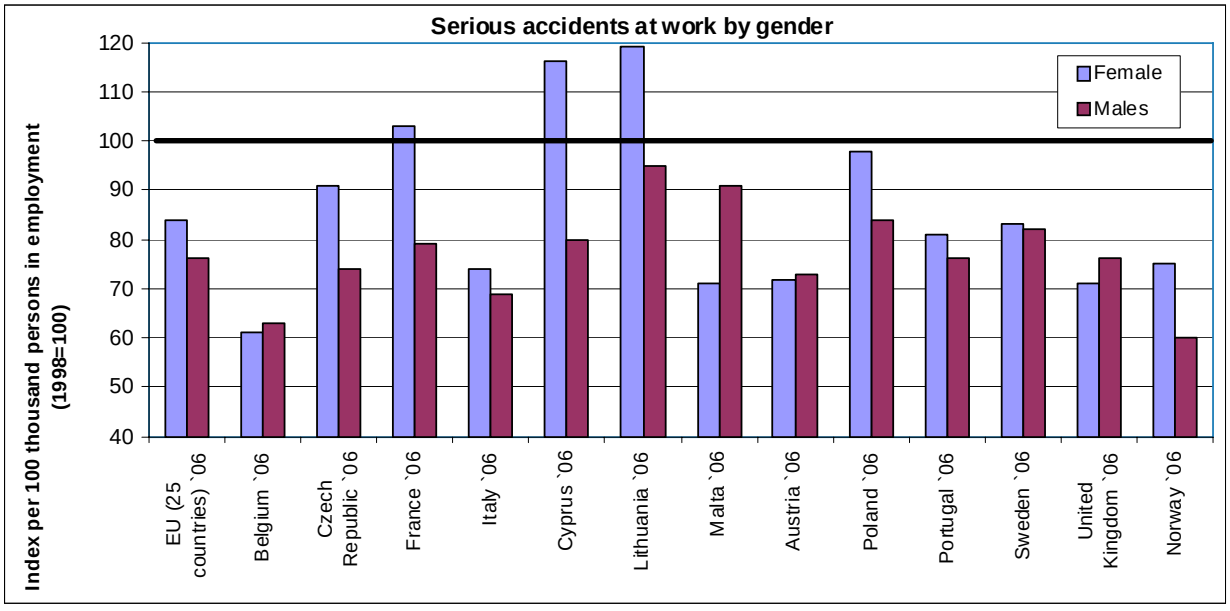
Name of EH risk factor in survey	Definition of parameter	Frequency of collection (first - last year) available	Restrictions / Comments
Serious accidents at work by gender	The index shows the evolution of the incidence rate of serious accidents at work in comparison to 1998 (= 100). The incidence rate = (number of accidents at work with more than 3 days' absence that occurred during the year/number of persons in employment in the reference population) x 100 000. An accident at work includes accidents in the course of work outside the premises of his/her business, even if caused by a third party, and cases of acute poisoning.	annual basis (1995 - 2006)	It excludes accidents on the way to or from work, occurrences having only a medical origin, and occupational diseases. Survey finished in 2006.

Data overview for original risk factor	Unit (% vs total, hh vs persons)
Number of serious accidents at work	Index per 100 thousand persons in employment (1998=100)

Database covers following countries	Total number of countries: 29
Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Ireland, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Turkey, United Kingdom	

SOCIAL DETERMINANTS

Age	Sex	Income	Education level	Employment status	Nationality / Ethnicity
	male				
	female				



22) Number of accidents at work

Data source / survey	Name / code of variable	Internet site or access info
Eurostat / Accidents at work	**1) hsw_aw_nnaag** **2) hsw_aw_nnasx**	http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/dataset?p_product_code=HSW_AW_NNAAG / _NNASX

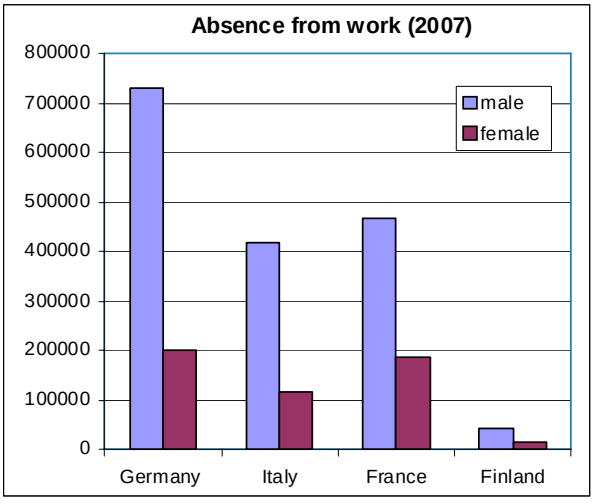
Name of EH risk factor in survey	Definition of parameter	Frequency of collection (first - last year) available	Restrictions / Comments
Number of accidents at work by economic activity, severity, 1) age and 2) sex	An accident at work is a discrete occurrence during the course of work which leads to physical or mental harm.* A fatal accident at work is defined as one that leads to death, generally within one year of the accident.**	1) annual basis (1995-2007) 2) annual basis (1994-2007)	None

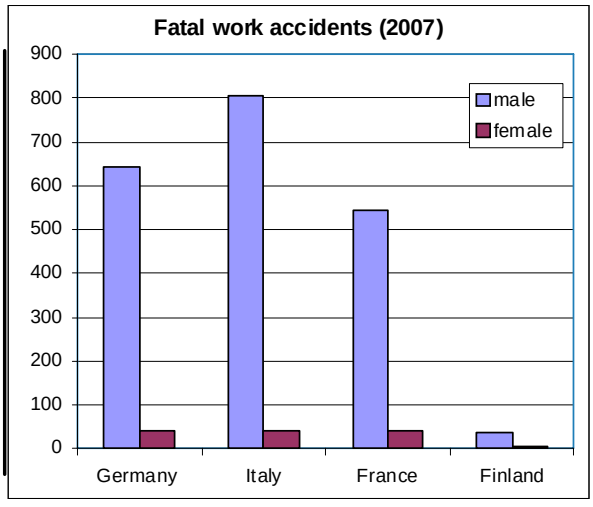
Data overview for original risk factor	Unit (% vs total, hh vs persons)
Fatal accident	total, persons
More than 3 days lost (4 days absence or more)	

Database covers following countries	Total number of countries: 17
Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom (Great Britain)	

SOCIAL DETERMINANTS

Age 1)	Sex 2)	Income	Education level	Employment status	Nationality / Ethnicity
Less than 18 years	male				
18 to 24 years	female				
25 to 34 years	unknown				
35 to 44 years					
45 to 54 years					
55 to 64 years					
65 years and over					





23) Crime, violence or vandalism in the area

Data source / survey	Name / code of variable	Internet site or access info
EUROSTAT / Income and living conditions	**ilc_mddw03**	http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/dataset?p_product_code=ILC_MDDW03

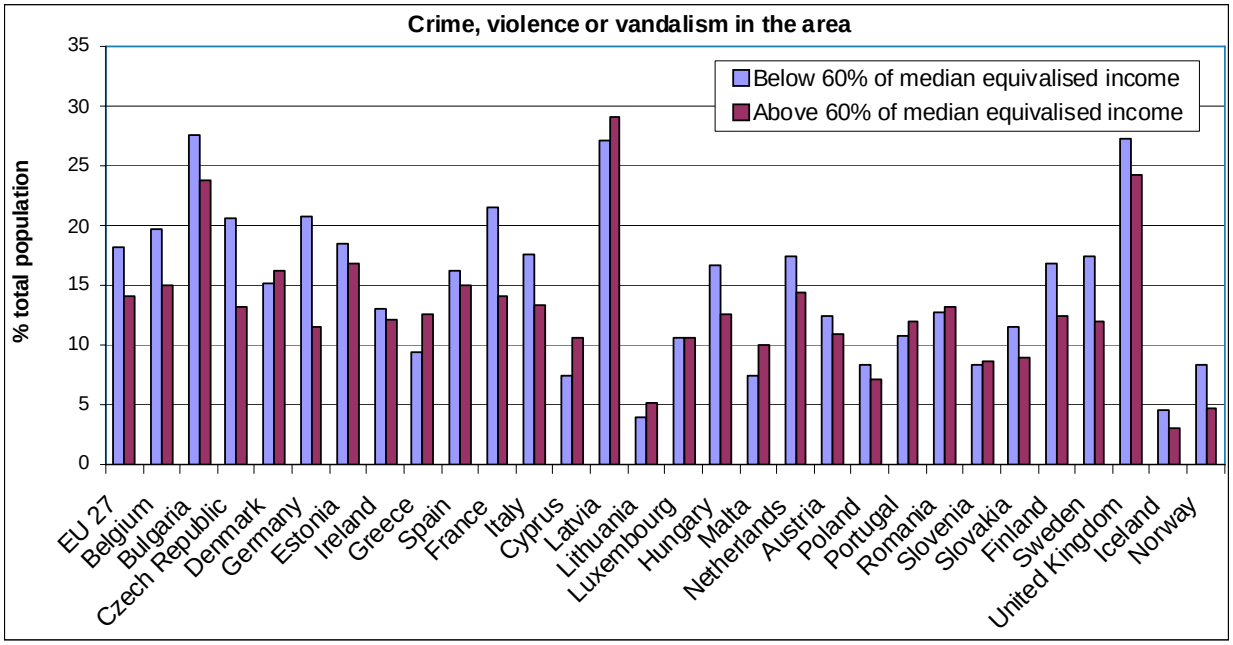
Name of EH risk factor in survey	Definition of parameter	Frequency of collection (first - last year) available	Restrictions / Comments
Crime, violence or vandalism in the area	none	annual basis (2004 - 2009)	none

Data overview for original risk factor	Unit (% vs total, hh vs persons)
Crime, violence or vandalism in the area (Yes - No)	Percentage of total population

Database covers following countries	Total number of countries: 29
Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Ireland, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom	

SOCIAL DETERMINANTS (in addition: household types)

Age	Sex	Income	Education level	Employment status	Nationality / Ethnicity
		Below 60% of median equivalised income			
		Above 60% of median equivalised income			



Annex 3. Working document 2: National data review

WORLD HEALTH ORGANIZATION
REGIONAL OFFICE FOR EUROPE

WELTGESUNDHEITSORGANISATION
REGIONALBÜRO FÜR EUROPA

ORGANISATION MONDIALE DE LA SANTÉ
BUREAU RÉGIONAL DE L'EUROPE

ВСЕМИРНАЯ ОРГАНИЗАЦИЯ ЗДРАВООХРАНЕНИЯ
ЕВРОПЕЙСКОЕ РЕГИОНАЛЬНОЕ БЮРО

**Towards environmental health inequality reports:
Development & piloting of a national assessment tool**

Bonn, Germany, 25-26 October 2010

Working document 2

Review of data on social inequalities in environmental risk factors in the WHO European Region

National data sources (summary)

Compiled by:
Nita Chaudhuri/Matthias Braubach
WHO European Centre for Environment and Health
Bonn Office

National availability of environmental health risk factors and social determinants for developing a protocol on environmental health inequalities

1. Introduction

A survey of selected countries in the WHO European Region was conducted in August/September 2010 to compile an inventory of existing national data on social and age-related differences in exposure to 16 environmental health risk factors. The purpose of this exercise was to identify risk factors that could be stratified by selected social determinants for the subsequent development of a European Environmental Health Inequality Reporting Tool.

In the context of this survey, data have been contributed by national experts from 17 countries (Croatia, England, Finland, France, Georgia, Germany, Hungary, Ireland, Italy, Kyrgyzstan, the Netherlands, Norway, Poland, Romania, Scotland, Serbia and Spain). The original contributions from the countries (including a delayed contribution from Lithuania) are available for your personal information in the share folder for the WHO meeting.

2. Criteria for selection

To summarize the information provided by the countries, the WHO secretariat has created this overview document by reviewing the national data sources and identifying the "common denominator" for the largest number of countries.

Several criteria were used to select the most feasible and consistent data for inequality reporting. The application of these criteria acknowledged that the accumulation of criteria is negatively correlated with the number of countries able to report. However, national data formats were often very diverse, so that the application of some criteria was not practical for some risk factors.

Countries often provided more than one data source for a given environmental risk factor. In such cases, the data source considered most appropriate was selected based on the definition, frequency of collection and geographical scope of the respective risk factor data. This selection was partially subjective and therefore the summary sheets contain comments in some boxes indicating that, for specific countries, additional data may be available for some of the risk factors over and above what is indicated on the summary sheets.

2.1 Environmental risk factors

Countries were asked to report on the availability of up to 16 environmental risk factors:

Traffic noise
Water supply in dwelling
Shower or bath in dwelling
Toilet in dwelling
Crowding and lack of floor space
Dampness in building
Location close to busy roads
Location close to industry
Location close to waste sites
Air pollution exposure
Ability to pay housing expenses
Ability to keep home warm
Distance to green space
Location in dangerous area
Home injuries
Traffic injuries

The criteria used were the definition and format of the environmental risk factors along with frequency and geographical range. Several issues arose in the use of these criteria to compare countries, owing to the extreme variation in national reporting systems. The main criteria considered in the preparation of this summary document are described below, although for many environmental risk factors not all of them have been fully applied for selection.

- **Risk factor name used by country.** The names used for various risk factors varied and were not always descriptive of the data collected. An examination of the name used was essential in order to make a first-level selection of countries.
- **Definitions.** A variety of definitions were provided for different environmental risk factors. These included self-reported subjective measures as well as objective measures for different countries. This made it difficult at times to select on this criteria as the definitions were too diverse. Often, risk factor name and definition were looked at together.
- **Frequency.** Priority was given to the selection of regularly collected data (e.g. on an annual or continual basis). Data collected at regular intervals, such as every five years, were also included to allow for a greater selection of countries.
- **Geographical scope.** Priority was given to data collected at national level to allow for greater comparison among countries. Local and regional data were often available and may be used to increase the quality of the inequality indicator, but were not considered a key requirement for selection. In some cases, NUTS2 divisions were provided for regional data.
- **Standard Indicator.** The "standard indicator" describes the type of data actually measured or asked for (e.g. "measured dB(A)" as an indicator for noise). Often, but not always, this was identical to the name given for the risk factor. Selection for countries was made according to this criterion when a large divergence was seen between the name and definition of the risk factor and the actual data provided.
- **Categorization.** Dichotomous, categorical or continuous variables are considered flexible categories, as many categorical and continuous variables can be reduced to dichotomous variables. This criterion was rarely used for selection, also because it does not affect the "main message" of the inequality information.
- **Units.** The units used for the risk factor (total persons, percentage households, percentage individuals, etc.) vary but this criterion was rarely used for selection.

2.2 Stratification by social determinants

The availability of data on social determinants (used to stratify exposure to the respective risk factors) was made separately. For each country, the availability of this social, age and sex-related data was summarized, irrespective of the quality of the risk factor data.

- **Age.** When three main categories (child, adult, elderly) could be defined, the respective environmental risk factor for a country was considered feasible for stratification by age.
- **Sex.** When the standard options for male/female could be identified, the respective environmental risk factor for a country was considered feasible for stratification by sex.
- **Income.** Several income scales were identified but none was excluded. This also applies to countries for which income data had been collected, with the proviso that detailed work needed to be completed for each to establish a threshold.

- **Education.** Several and sometimes overlapping categories for education were identified among countries but none was excluded.
- **Employment status.** Information on employed versus unemployed as well as various occupations was identified but none was excluded.
- **Nationality/ethnicity.** If available, information was usually provided on nationals or foreign-born residents. More specific data on country of birth was often provided. All options were considered adequate for stratifying the environmental risk factor by nationality.

2.3 Most common barriers and challenges to the selection process

- **Missing data** (=> no data can be provided by a country on a given risk factor or social determinant).
- **Multiple variables for one environmental health risk factor** (=> in such cases only one risk factor data source or social determinant categorization was selected for analysis but the wealth of information is partially lost).
- **Data quality (accuracy, timeliness, completeness, etc.)** (=> data sources are often vague or do not fully match the respective risk factor required. Data are often not available in a frequent manner but sometimes only from national censuses, etc. that are not carried out very often. In several cases, the risk factor information was not complete and no full assessment on the quality was possible).
- **Words used to describe data** (=> some data and comments by national experts have been vague or may have been misinterpreted. Details on data format, etc. are often unclear. More detailed and partially qualitative work is needed to clarify all open issues).

3. Summary of data availability

Among the 16 risk factors that were included in the survey, 12 can be reported on by 6 or more countries (total number of countries: 17).

Table 1 provides a descriptive overview of the availability of environmental risk factor data by country.

Table 1. Summary of data availability for environmental risk factors

	Hungary	Norway	Poland	Germany	Romania	Scotland	Spain	Georgia	Croatia	Finland	France	Kyrgyzstan	Serbia	England	Netherlands	Ireland	Italy	TOTAL
Traffic noise		x	x	x	x	x	x			x	x	x		x	x		x	12
Water supply in dwelling	x		x	x	x		x	x	x	x		x	x			x	x	12
Shower/bath in dwelling	x	x	x	x	x		x		x	x	x	x	x	x		x	x	14
Toilet in dwelling	x	x	x	x	x		x	x	x	x		x	x	x		x	x	14
Crowding/lack of living space	x	x	x	x	x	x	x	x		x	x		x	x	x	x	x	15
Damp buildings	x	x	x	x	x	x	x			x	x		x		x	x		12
Location close to busy roads	x	x	x	x											x			5
Location close to industrial sites	x	x	x	x		x	x				x			x	x		x	10
Location close to waste sites	x		x			x					x			x			x	6
Air pollution exposure			x	x	x	x	x	x	x	x	x	x		x		x	x	13
Ability to pay for housing costs/expenses		x	x	x	x		x				x		x				x	8
Ability to keep home warm		x	x	x	x	x	x		x			x		x		x		10
Distance to green spaces		x		x			x				x				x		x	6
Location in dangerous areas				x		x								x	x		x	5
Home-related injuries		x		x	x	x	x			x	x	x		x		x	x	11
Traffic-related injuries		x	x	x	x	x	x	x	x	x	x	x		x	x	x		14

The risk factor data were then reviewed and the criteria for selecting the countries with the best data were applied. The objective of this process was to identify the largest "common denominator" of the available data and to exclude data and data formats that did not match the requirements or deviated too much from the data provided by most countries. The result of this process was the identification of a group of countries able to provide rather consistent and relevant risk factor data that is considered suitable for systematic inequality reporting.

Table 2 presents – for each respective risk factor – the outcome of this process. The table shows:

- how many countries can provide data for a given risk factor;
- the suggested number of countries that seem to provide sufficiently consistent risk factor data (based on definition, frequency of collection and geographical scope); and
- the number of countries able to stratify the respective risk factor by the selected social determinants or by age and sex.

However, although objective criteria were used to the extent possible, the selection is largely subjective and affected by a degree of variation that sometimes was not manageable.

Please note that the step-by-step process of the selection is shown in more detail in working paper 3, which provides the summary sheets in MS Excel. In these sheets, the individual decisions made can be identified and their effect (including or excluding a country based on its provided data) is directly visible. Thereby, the Excel sheets also help to identify whether more or fewer countries would be excluded if some decisions were modified.

Table 2. Summary of reporting on environmental health risk factor inequality

Risk factor	Comments on risk factor data	Sociodemo-graphic stratification	Countries able to report	Comments on inequality
Traffic noise 12 countries reporting 7 countries suggested to report in consistent format	Great diversity exists in the type of indicator used to measure traffic noise, including objective and self-reported measures, making decision-making difficult.	Age	5 (+ 1 not specifically "traffic noise")	Age is provided in different ways by countries but most would recognize the categorization "child-adult-elderly".
		Sex	5 (+ 1 not specifically "traffic noise")	If reported, reporting is very consistent.
		Income	4 (+ 1 not specifically "traffic noise")	Income groups vary in relation both to format and definition of income categories. Differences among countries will exist and cannot be avoided.
		Education	5 (+ 1 not specifically "traffic noise")	Educational categories differ among countries but most would recognize definition of highest education achieved.
		Employment	5 (+ 1 not specifically "traffic noise")	Employment categories partially overlap. Most countries can provide information on employment or unemployment. Many can provide information on occupation.
		Nationality	4 (+ 1 not specifically "traffic noise"	Countries can identify national versus foreign fairly consistently.
Water supply in dwelling 12 countries reporting 6 countries suggested to report in consistent format	Water supply data provide information on accessibility as well as drinking-water. Diversity exists in the definition making it difficult for decision-making but a consistent inequality indicator could be developed.	Age	4	Two countries able to categorize "child-adult-elderly" age groupings and two countries adult. Choose adult age groupings.
		Sex	3	If reported, reporting is very consistent.
		Income	4	Income groups vary both in relation to format and definition of income categories. Differences among countries will exist and cannot be avoided.
		Education	3	Educational categories differ among countries but most would recognize definition of highest education achieved.
		Employment	3	Employment categories partially overlap. Most countries can provide information on employment or unemployment. Many can provide information on occupation.
		Nationality	2	Countries can identify national vs foreign fairly consistently.

Shower or bath in dwelling 14 countries reporting 8 countries suggested to report in consistent format	Shower and bath in dwelling data are similar in countries and can result in a consistent inequality reporting indicator.	Age	12 (+1 not specifically "shower or bath in dwelling")	Age is provided in different ways by countries but most would recognize the categorization "child-adult-elderly".
		Sex	7 (+1 not specifically "shower or bath in dwelling")	If reported, reporting is very consistent.
		Income	6 (+ 1 not specifically "shower or bath in dwelling")	Income groups vary in relation both to format and definition of income categories. Differences among countries will exist and cannot be avoided.
		Education	6	Educational categories differ among countries but most would recognize definition of highest education achieved
		Employment	7 (+ 1 not specifically "shower or bath in dwelling")	Employment categories partially overlap. Most countries can provide information on employment or unemployment. Many can provide information on occupation.
		Nationality	5	Countries can identify national vs foreign fairly consistently.
Toilet in dwelling 14 countries reporting 8 countries suggested to report in consistent format	Data on lack of toilet are rather similar in most countries and could result in a fairly consistent inequality indicator.	Age	5	Age is provided in different ways by countries but most would recognize the categorization "child-adult-elderly".
		Sex	5	If reported, reporting is very consistent.
		Income	5	Income groups vary in relation both to format and definition of income categories. Differences among countries will exist and cannot be avoided.
		Education	5	Educational categories differ among countries but most would recognize definition of highest education achieved.
		Employment	6	Employment categories partially overlap. Most countries can provide information on employment or unemployment. Many can provide information on occupation.
		Nationality	4	Countries can identify national vs foreign fairly consistently.

Crowding 15 countries reporting 12 countries suggested to report in consistent format	Data on crowding show great diversity in definitions, but all approaches should be accepted as they refer to the same problem (footnotes will be needed to show variations). An inequality indicator can be developed..	Age	11	Age is provided in different ways by countries but most would recognize the categorization "child-adult-elderly".
		Sex	10	If reported, reporting is very consistent.
		Income	9	Format and definition of income categories varies.. Differences among countries exist and cannot be avoided.
		Education	10	Educational categories differ among countries but most would recognize definition of highest education achieved.
		Employment	10	Employment categories partially overlap. Most countries can provide information on employment or unemployment. Many can provide information on occupation.
		Nationality	7	Countries can identify national vs foreign fairly consistently.
Dampness in building 12 countries reporting 9 countries suggested to report in consistent format	Data on dampness in building are similar and include mould in some definitions. It could result in a fairly consistent inequality indicator.	Age	5	Age is provided in different ways by countries but most would recognize the categorization "child-adult-elderly" One country provides data on adults.
		Sex	6	If reported, reporting is very consistent.
		Income	3	Format and definition of income categories varies.. Differences among countries exist and cannot be avoided.
		Education	5	Educational categories differ among countries but most would recognize definition of highest education achieved.
		Employment	5	Employment categories partially overlap. Most countries can provide information on employment or unemployment. Many can provide information on occupation.
		Nationality		Not enough countries for European reporting.
Location close to industry 10 countries reporting 7 countries suggested to report in consistent format	Data on location close to industry are fairly consistent, providing objective measures on distance. It could result in a fairly consistent inequality indicator.	Age	3 (+ 2 subjective measures)	Age is provided differently but categorization "child-adult-elderly" is possible. One country provides adult data only.
		Sex	3 (+ 1 subjective measure)	If reported, reporting is very consistent.
		Income	2 (+ 1 subjective measure)	Format and definition of income categories varies. Differences among countries exist and cannot be avoided.
		Education	4 (+ 1 subjective measure)	Educational categories differ among countries but most would recognize definition of highest education achieved.
		Employment	3 (+ 2 subjective measures)	Employment categories partially overlap. Some countries provide data on employment, some on occupation.
		Nationality	3 (+ 1 subjective measure)	Countries can identify national vs foreign fairly consistently.

Location to waste site 6 countries reporting 5 countries suggested to report in consistent format	Data on location to waste site are fairly consistent with subjective self-reported measures. It could result in a fairly consistent inequality indicator.	Age	0	Not enough countries for European reporting.
		Sex	0	Not enough countries for European reporting.
		Income	0	Not enough countries for European reporting.
		Education	3	Educational categories differ among countries but most would recognize definition of highest education achieved.
		Employment	0	Not enough countries for European reporting.
		Nationality	0	Not enough countries for European reporting.
Air pollution exposure 13 countries reporting 7 countries suggested to report in consistent format	Data on outdoor air pollution exposure are fairly consistent with a number of different indicators, but there is little reporting on social determinants. Indoor air quality data are provided, with some information on social determinants.	Age	0	Not enough countries for European reporting.
		Sex	3 (indoor air) + 1 (outdoor)	If reported, reporting is very consistent.
		Income		Not enough countries for European reporting.
		Education	3 (indoor) + 1 (outdoor)	Educational categories differ among countries but most would recognize definition of highest education achieved.
		Employment	2 (indoor) + 1 (outdoor)	Employment categories partially overlap. Most countries can provide information on employment or unemployment. Many can provide information on occupation.
		Nationality	0	Not enough countries for European reporting.
Ability to pay housing expenses 8 countries reporting 6 countries suggested to report in consistent format	A variety of data exist on ability to pay housing expenses. These include self-reported and objective expenditure data. A consistent inequality indicator could be developed.	Age	4	Age is provided in different ways by countries but most would recognize the categorization “child-adult-elderly”.
		Sex	4	If reported, reporting is very consistent.
		Income	5	Income groups vary both in relation to format and definition of income categories. Differences among countries will exist and cannot be avoided.
		Education	3	Educational categories differ among countries but most would recognize definition of highest education achieved.
		Employment	5	Employment categories partially overlap. Most countries can provide information on employment or unemployment. Many can provide information on occupation.
		Nationality	0	Not enough countries for European reporting.

Home injuries and accidents 11 countries reporting 6 countries suggested to report in consistent format	Data on home injuries and accidents are fairly consistent and could result in a fairly consistent inequality indicator.	Age	7 (+ 4 not specific on home injuries)	Age is provided in different ways by countries but most would recognize the categorization "child-adult-elderly".
		Sex	6 (+ 4 not specific on home injuries)	If reported, reporting is very consistent.
		Income	3 (+ 2 not specific on home injuries)	Income groups vary in relation both to format and definition of income categories. Differences among countries will exist and cannot be avoided.
		Education	3 (+ 1 not specific on home injuries)	Educational categories differ among countries but most would recognize definition of highest education achieved.
		Employment	3 (+1 not specific on home injuries)	Employment categories partially overlap. Most countries can provide information on employment or unemployment. Many can provide information on occupation.
		Nationality	3	Countries can identify national vs foreign fairly consistently.
Traffic injuries and accidents 14 countries reporting 10 countries suggested to report in consistent format	Data on traffic injuries and accidents are fairly consistent and could result in a fairly consistent inequality indicator.	Age	10 (+ 2 not specific on traffic injuries)	Age is provided in different ways by countries but most would recognize the categorization "child-adult-elderly".
		Sex	8 (+ 2 not specific on traffic injuries)	If reported, reporting is very consistent.
		Income	4	Income groups vary in relation to format/definition of income categories. Differences among countries cannot be avoided.
		Education	3	Educational categories differ among countries but most would recognize definition of highest education achieved.
		Employment	3	Employment categories partially overlap. Most countries can provide information on employment or unemployment. Many can provide information on occupation.
		Nationality	0	Not enough countries for European reporting.

Note.

The risk factors "location close to busy road" and "location in dangerous area" were reported by only five countries and were thus not further elaborated upon.

The risk factor "ability to keep home warm" was reported by only five countries (another five countries reported "heating system availability" which was not considered adequate) s and was thus not further elaborated upon.

The risk factor "distance to green space" was reported by only six countries and was thus not further elaborated upon.

4. General recommendations by national experts

Environmental health risk factors to be considered in addition

- Smoking in household
- Water quality
- Soil quality
- Indoor air

Geographical dimension to be added

- Rural/urban

Social determinants to be considered in addition, as they were sometimes used by national data formats

- Housing tenure
- Deprivation indices (although usually very nation-specific and difficult to apply in other settings)
- Social class

5. Most frequent data restrictions identified

The review of data identified the following areas where information lacks most.

- Air pollution data (both ambient and indoor) are collected by fewer countries than expected and only a few countries can link them with social determinant data. More work needs to be done to identify appropriate air pollution indicators that are common to the countries.
- Noise data are rarely available as national representative data and, if available, can rarely be broken down by social determinants.
- There are few data on neighbourhoods and housing location linked to deprivation, environmental pollution (waste sites, industry, etc.) and dangerous areas (floods, landslides, etc.).
- Many countries operate with deprivation indices but the separate risk factors that are part of the index are not available.
- Many countries have data on an aggregated level (districts, postal codes, deprived neighbourhoods) but this does not enable the identification of environmental health inequalities at the household or personal level.
- Some countries identified the use of different sets of data to provide information on environmental risk factors and social determinants such as in GIS applications. The feasibility of this was not certain.
- Several national definitions often exist for many indicators. This included subjective and or objective measures, making it difficult to find consistency in inequality reporting.

- Interpretation of the environmental risk factor "location in dangerous areas" was often interpreted by countries to be social risk factors such as violence.
- Often, general rather than specific data were reported by countries (e.g. injuries in general, which does not specify traffic- or home-related injuries).
- Countries often interpreted "ability to keep warm" as the type of heating or presence of central heating. This does not reflect the social inequality indicator and was therefore excluded.

6. Final comments and word of caution

This summary of the national data on environmental health inequalities is provided by two persons reviewing the data. Given the complexity of the data and the degree of variation, a summary provided by any other team is likely to be different from this one. Therefore, the summary tables given above serve as an indication of how the data could be structured, what criteria could be applied, and what one potential outcome of such work could be.

Acknowledging the restrictions of this approach, the working groups in charge of the selection of the best inequality indicators for international reporting are requested to not only use this working paper but also to base their decisions on an in-depth review of working paper 3, which – per risk factor – provides a more detailed overview of the risk factor data and the application of the described criteria. The Excel sheets in working paper 3 enable one to assess the effects of certain criteria and the working group will thus be able to modify the decisions made in this summary report, potentially coming to different conclusions and including a different number of countries.

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ABSTRACT

International evidence reveals significant sociodemographic inequalities in exposure to and disease resulting from environmental conditions. Despite efforts by various actors, there are still few international data on environmental health inequalities while national data are scattered and often not comparable with those of other countries. With a view to assessing the magnitude of environmental health inequalities in the European Region, the WHO Regional Office for Europe, through its European Centre for Environment and Health (Bonn Office), is implementing a two-year project to develop a reporting tool for environmental health inequalities. To engage Member States in this project, an expert meeting was held on 25–26 October 2010 to review the compilation of available environmental health inequality data and to select indicators of environmental health inequality for common reporting. A core set of 14 indicators was selected by three working groups based on the availability, quality and consistency of data and its public health relevance. The selected indicators relate to inequalities in housing, injuries and environmental exposure. It was proposed that a "WHO European environmental health inequality report", based on the core set of indicators, be developed in 2011 as the main work objective for the second year of the project.

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