

## Executive summary

This report provides sound evidence that urban areas are being exposed increasingly to pests and (through them) to pest-related diseases. This multi-faceted problem of increasing exposure entails environmental, structural, institutional, regulative, managerial, financial, scientific and climatic aspects. Solutions that will better protect public health, by implementing improved pest and pest-related disease management, have been identified. These solutions address the need for legal action, education, institutional capacity building and research at international, national and local levels.

The conclusions drawn are based on the currently available evidence but it is important to understand that there are some major factors, such as the impact that climate change will have on landscapes, ecosystems and the future patterns of vector borne diseases, that are going to be very important in the future.

Climate change is particularly relevant because it is expected to alter not only the natural environment as a result of flooding or drought but also the urban environment as a result of changes in land use.

Only the future will tell to what degree these factors will affect the risk of pest-related diseases. Still, the conclusions drawn by this report will help and support national governments to understand better the public health relevance of urban pests and to be able to prepare the ground for increased technical capacity and ability for action.

The evidence reviewed in this book is based on a review the current status of urban pests and health in Europe and North America, and mostly draws from scientific evidence produced and regulatory approaches developed within these countries. Still, the evidence and regulatory approaches described may be of use for a wide range of countries, depending on their national context.

## Legal requirements

A fundamental requirement for implementing the right (and effective) preventive and control measures is having adequate legal requirements in place that allow appropriate ministries and agencies to take appropriate action and that provide them with the authority to take these actions.

## Planning and construction

By destroying the borders between urban and rural environments, urban sprawl makes urban areas more susceptible to pests and the disease agents they carry. Since many zoonotic pathogens – that is, pathogens that can be transmitted to people from animals – are more likely to be transmitted between vectors and their reservoir hosts in rural environments, the risk of infection increases as rural amenities, such as woodland and recre-

ational areas, are promoted. This increase in the risk of infection is due to the likelihood of inhabitants of inner-city areas coming into contact with such disease-bearing pests as ticks and rodents. Also, city planners and developers often seek to integrate (visually and ecologically) construction projects, such as housing developments, single buildings and recreational areas, with their natural surroundings; however, they often do so without considering the risk of increased pest infestation. This risk could be reduced by:

1. regulations about city planning, landscaping, design of recreational areas and the like taking into account the risks of pest infestation and disease transmission; and
2. construction regulations ensuring that new buildings are pest-proofed and do not create conditions conducive to pest infestation.

### **Responsibilities**

Because pest management involves health, environmental and occupational factors, it is often difficult to decide which government department or agency should be responsible for its activities. At the local level, it is often unclear which body is responsible for pest prevention, surveillance and control. The following approach may help resolve the difficulty in decision-making and the lack of clarity.

3. A single government department should have the ultimate responsibility for supervising monitoring programmes and implementing pest management measures; this should be accompanied by the political will to implement programmes and measures.
4. With regard to pest management, adequate regulations should make clear the liabilities of contractors, building managers, homeowners, apartment occupants and local authorities.

### **Pesticide application**

Potent pesticide products are often not only available to private individuals, but are also often misused by them, due to a lack of knowledge or expertise. In this case, pesticides may be applied when unnecessary, in wrong formulations, at wrong concentrations and in wrong amounts. Even if used correctly, pesticides still hold a risk for both human health and environmental health. They therefore require a technical risk–benefit analysis before being applied. The following measures may help improve this situation.

5. Although regulations that cover the sale and use of pesticides exist throughout Europe and North America, a stricter differentiation between professional and amateur products should be established and enforced, to prevent the general public from having access to products that need to be used only by trained and competent operators.
6. Through scientifically based risk assessments and proper approval processes, pesticide applications and the pesticides used should not pose an unacceptable risk to consumers, operators or the environment. Proper risk assessments should be required and carried out before pesticides are put on the market.

## Notification, approval and public awareness

### Notification

Because of differences among European Union (EU) Member States, the notification system in Europe is inconsistent. For example, Lyme borreliosis, the most frequent arthropod-borne disease in Europe, is reportable in some EU Member States but not in others. It is, therefore, extremely difficult to collate reliable epidemiological data. Also, where diseases are reportable, notification rules often differ from country to country, making it impossible to compare data. Finally, data are generally unavailable to the public, are not presented in easily accessible databases or are not offered in a user-friendly form. The following measures may help improve this situation.

7. At the international level, there should be an agreement on expanded and standardized notification requirements for pest-borne diseases, as well as other adequate mechanisms to collect and analyse data centrally and to make biological and epidemiological data publicly available. Early notification, a clear requirement for developing adequate public health policies, should enable Member States to be properly informed.

### Approvals

In addition to international differences in the requirements for the approval of pesticides, the complexity and cost of pesticide approvals are rising continually, which either currently prevents many companies from putting products on the market that could be more efficient and cheaper than the existing ones or results in acceptable products of minor use from being withdrawn from the market. This makes it likely that future choices of the best available pesticide on the market for a particular application will be severely reduced by the economics of the approvals process. It also means that competition in the market for pesticides will be skewed towards large international companies able to afford to have their pesticides approved. As a result of this, the range of pesticides available will decrease, thereby reducing the options for treatment. Also, treatments of pests that are either of minor or new importance “will not be carried out”, because it will be unprofitable to develop or obtain approval for pesticides for their control. The following is a step towards remedying this situation.

8. The prohibitive costs associated with obtaining pesticide approvals should be reconsidered and, when possible, lessened. This will allow for the competitive possibility of registering more efficient and cheaper pesticides and pesticides that fulfil treatment niches. Approval fees should not be inflated to cover unrelated needs.

### Public awareness

Public information and education are fundamental to efficient and successful pest management, with respect to both preventive and control measures. Most people are unaware how their habits, their behaviour and changes in their homes can attract commensal pests and provide ideal living conditions for these pests to thrive. They are also largely unaware

that pests may carry pathogens and that simple personal measures can be taken to avoid contact with pests. Moreover, they are largely unaware of how to handle pesticides. Thus, public information is not only a basic need, but it is also economically sound, because it contributes considerably to preventing pest infestations through private action. The following measure may help improve this situation.

9. Information should be developed for the public, to raise its awareness of how to protect itself through simple sanitary and behavioural measures. Such information should also familiarize them with how to best store and use pesticides, which would also minimize the risks associated with their storage and use.

### **Institutional capacities**

Up-to-date data on the occurrence and distribution of pests and pest-related diseases are generally scarce (or even non-existent) in the EU. In the past, government departments and agencies dealt with pests and collected data. However, this form of activity has slowly (but substantially) been reduced (or even discontinued) by budget cuts. Although there has been a pest renaissance for several years, pertinent government agencies have not been upgraded or established anew with adequate staff, equipment and funds to act as surveillance units to collect epidemiological data. It is of general concern that in Europe there are neither national nor international institutions responsible for collecting vector-related information and coordinating pest control. The following measures may help improve this situation.

10. WHO Regional Office for Europe Member States, through coordinated efforts of their public health authorities, would benefit from: developing the capacity needed to identify pest-related risks in the urban environment (that is, identify pests and pest-borne diseases that occur at present or have the potential to occur); determining and recording the prevalence of various infections; and keeping track of existing reservoirs of host species and the geographical distribution of various pests and their transmission dynamics. They would also benefit from keeping an updated list of high-risk areas.
11. Governments of the European Region – as well as other countries – would benefit from ensuring that surveillance agencies and suitably educated staff are available. A well-trained public health force, available and prepared for pest and pest-related disease management, is needed to protect the public from the threats to health associated with urban pests. For example, it is needed at vulnerable sites, such as ports and airports. Educated specialists in such disciplines as medical entomology, medical zoology, toxicology, ecotoxicology and public health management are needed to: train pest managers; help develop control programmes, including strategies and pesticide use; reach agreements on action thresholds and defined control goals; and ensure that harmonious cooperation takes place between all the stakeholders involved, including government departments and agencies, local authorities, industry, consumer groups and the public.

## Public Health Significance of Urban Pests

12. At both the national and local levels, authorities in charge of vector-related information should be clearly identified. The role of partners, as well as mechanisms for coordinating partner efforts, should be defined and put in place. While there are European agencies that collect information on disease, there is a need for a similar organization that would collect information on vectors, because most data collection activities in this area are carried out at a local level nationally and no coordination exists.

## Research

The study of the various chapters in this report (such as those that cover ticks, mosquitoes and fleas) generally demonstrates that while the biology and behaviour of the pests has been well studied, the epidemiology of the diseases they transmit, particularly in the case of newly emerging diseases, are poorly understood. Though the need for understanding exists, scientists specialized in the classical disciplines of medical zoology and medical entomology are becoming rare, as governments and universities progressively shift their limited financial resources to other fields. Because of this shift in resources, not only is research in the classical disciplines being neglected, but the knowledge that underpins it is also disappearing, slowly and irreversibly. Moreover, public health professionals and physicians are often overly strained when confronted with pests and emerging pest-borne diseases, and at universities there is rarely a specialist left who can be consulted.

The same is true of pest surveillance and pest control. Private pest management companies are becoming less and less (if at all) involved in research and development, and the pest management industry generally concentrates on products for which there are ready markets.

The following, the last item in this summary, is an important conclusion of this report.

13. Governments, public health programmes and the general public would benefit from encouraging, supporting and promoting pest-related scientific research. This would lead to refined knowledge of the biology, ecology and behaviour of pests and of the epidemiology of pest-borne diseases, which is urgently needed, as are more efficient and specific tools and active ingredients for pest surveillance and control.