Introducing a risk-based approach to regulate businesses

How to build a risk matrix to classify enterprises or activities

IFC International Finance Corporation | THE WORLD BANK | MIGA Multilateral Investment Guarantee Agency

Adopting a risk-based approach can simplify key regulatory processes that govern business activities. This fundamental step involves moving from inspections, licensing, and other regulatory tools that cover all business uniformly to an approach that tailors the instruments used for regulation and control based on the level of risk. The higher the potential risk posed by a specific business activity, the stricter the control and the greater the need for licensing or permitting and more frequent inspections. For low-risk activities, a license or permit should generally not be required, and inspections should be rare. Having a proper methodology and tools to classify enterprises or activities according to risk is thus particularly important. Risk matrices are the primary way used to conduct this sort of classification.

Classification of activities or businesses based on their risk level is at the core of many reforms in the business regulation practice area. Determining which businesses will be required to obtain a prior permit or license before starting operation requires classifying them according to risk. Likewise, reforming business inspections by targeting inspection visits according to the risk level requires such a classification. The usual form this takes is a matrix.

While the format of such a matrix is relatively simple – one axis representing severity, the other probability – there is often some confusion as to how these should be defined.

Understanding and defining "risk" in the right way

Risk should be understood here as the combination of the *likelihood* of an adverse event (hazard, harm) occurring, and of the potential *magnitude* of the damage caused (itself combining number of people affected, and severity of the damage for each).

It is important that risk not be wrongly understood as only the *probability* of some violation or problem taking place – indeed, in some types of establishments, certain violations may be frequent (highly likely), but have very little (if any) adverse effects.

On the other hand, risk is also not identical to the level of hazard, that is, the potential severity of the consequences *only*: if an event is very unlikely, even if potential consequences are dire, the overall risk level may not be considered extremely high.

An adequate understanding and definition of *risk* is to define it, in line with best practice and research findings, as the product of "magnitude" (which itself is the combination of the severity of the effect and of the numbers potentially affected) and "likelihood":

Risk level = Magnitude x Probability

In the next sections of this note, we will present more in detail how such assessment and classification work at the level of a given "establishment", i.e. a given outlet or premise (not necessarily an entire business, as an enterprise may have several physical locations). The examples will focus on technical safety inspections, which is the least covered by existing publications.

FIGURE 1. EXAMPLE OF A RISK-BASED MATRIX

Level of Hazard	Likelihood of Compliance: Very high	High	Medium	Low	Very low
High	LM	UM	UM	H	H
Upper medium	LM	LM	UM	UM	H
Lower medium	L	LM	LM	UM	UM
Low	L	L	LM	LM	UM

Abbreviations: H=high, UM=upper medium, M=medium, L=low

Source: Common Approach to Risk Assessment, United Kingdom Better Regulation Delivery Office

Figure 1 provides an example of a risk matrix from the United Kingdom developed by the Better Regulation Delivery Office for use across all agencies.

In this matrix, "hazard" is the equivalent of "magnitude." In the United Kingdom, the likelihood of compliance is used rather than likelihood of violation or adverse event. Thus, "high likelihood" is positive, and "very low" likelihood of compliance is on the contrary associated with high risk. The two approaches are completely equivalent.

ojo

In terms of risk factors, this definition of risk as likelihood combined with magnitude generally translates in the following aspects of the establishment having a direct bearing on its risk level:

- Type of activity (some are inherently more hazardous than others, as it is more likely that accidents can occur; also, some can lead to particularly severe damage, meaning the seriousness of impact is higher) **=> *affects Magnitude and Probability***
- Size of establishment (a larger establishment will have a proportionally higher negative effect if an accident takes place) **=> *affects Magnitude***
- Location of establishment (isolation means it will have less effects on surroundings; proximity to sensitive natural resources or to densely populated areas will increase effects) **=> *affects Magnitude***
- Compliance history (are violations frequent or repeated, or on the contrary is this a "model establishment," meaning in the first case that an accident is more likely, in the second less so) **=> *affects Probability***

Understanding commonly used risk factors

Because regulation, licensing, and inspections cover many different fields and issues, risk factors vary depending on the type of hazard envisioned. For tax inspections, the hazard would be non-payment of taxes, and thus relevant issues include volume of economic activity of the business, proportion of cash transactions etc. However, a range of factors tend to apply and are relevant across a large number of regulatory fields.

This note focuses specifically on the whole range of technical safety inspections (such as occupational safety and health, construction, fire safety). Tax and food safety inspections are covered in other, in-depth knowledge documents prepared by investment climate teams of the World Bank Group.

Based on best international practice, there is consensus that some of the key factors used to classify establishments according to risk from a technical safety perspective are:

OJO

- Type of activity conducted inside the facility – both in terms of "what people do" (e.g. if people sleep in the facility, they are at greater risk of not being able to escape if there is an accident; or if they perform

specific technical tasks which are high risk for workers) and in terms of "what the activity can provoke" (certain industrial processes can inherently lead to explosions that could destroy the entire neighbourhood, for instance, while many other activities simply cannot have such an effect).

KEY NOTIONS FROM THE UNITED KINGDOM'S BETTER REGULATION DELIVERY OFFICE: "A COMMON APPROACH TO RISK ASSESSMENT"

The term "risk-based targeting" is used to refer to:

- the selection of the most appropriate intervention to drive better regulatory outcomes, which may be education, provision of information, inspection, and so on;
- the allocation of resources against the various interventions;
- the criteria against which businesses are targeted for those interventions.

Risk assessments (or risk "ratings") of businesses should ideally be based not only on what is found at the time of an inspection or other intervention, but should also take account of other relevant, available intelligence to inform the judgment about regulatory response. In such circumstances the resulting assessment may be the determining factor in how that business is regulated. Risk assessment is therefore key to better regulation and plays a crucial part in all of its principles: accountability, transparency, proportionality, targeting, and consistency.

Targeting: Risk assessments based on good intelligence (for example, intelligence that is shared with other regulators) support effective risk-based targeting, which in turn reduces duplication of regulatory activity and nugatory regulatory activity, thus reducing burdens on compliant businesses. At a micro level, targeting is based on intelligence about the compliance status of a business, judgment about the likelihood of its future compliance, and what (if any) intervention is required. That judgment must be intelligence based.

Frequency: In most of the current risk assessment approaches, the concluding stage involves assigning a suitable type of intervention, and its frequency, for the particular level of risk. For example, in the current health and safety risk assessment regime, "Category A" premises are scheduled to receive an inspection at least annually, whereas a change of risk rating from Category A to Category B changes the regime to alternative forms of intervention. For the food standards regime, a change from Category A to Category B generally means a move from annual primary interventions to once every two years.

- General structure of the building – that is, are there underground parts and/or is the building very high-rise, both of which may (a) present specific structural risks, and (b) lead to particular difficulties in case emergency escape is required.
- Location of the building – this is applicable in case of inherently hazardous activities (e.g. possibility of explosion, of chemical pollution etc.); location close to densely populated areas increases risks as does location near important natural resources (such as water, natural reserves, and forests).

Creating a risk matrix

Risk criteria and matrices should be very short, incorporate only a small number of parameters, and include only parameters that are easily known about the business or the establishment. If risk matrices are too long and complex, they become very difficult to use; if there are too many parameters, the essential ones can get "buried" under all the small ones. A typical risk matrix would be less than one page, including at least the following factors (and possibly others that would be country- and regulator-specific):

- Sector of activity Matrix*****
- Type of process (if manufacturing, which products are involved, and whether hazardous substances are used or stored) or type of activity (if non-manufacturing, do people reside permanently and/or sleep in the facility, and/or are disabled or incapacitated people regularly present)
- Number of people present in the establishment in normal operation and/or maximum number that can be present
- Location (surrounded or not by inhabited area or close to sensitive object from an environmental perspective, such as a water source) in the case of hazardous industrial facilities
- Specific aspects of the building, such as underground parts and/or high-rise (difficulties for evacuation)
- Specific hazardous machinery being used in the building (list to be determined based on the regulatory field).

Avoiding frequent mistakes

Even though building a risk matrix sounds relatively straightforward, experience shows that it can frequently be challenging in a number of ways.

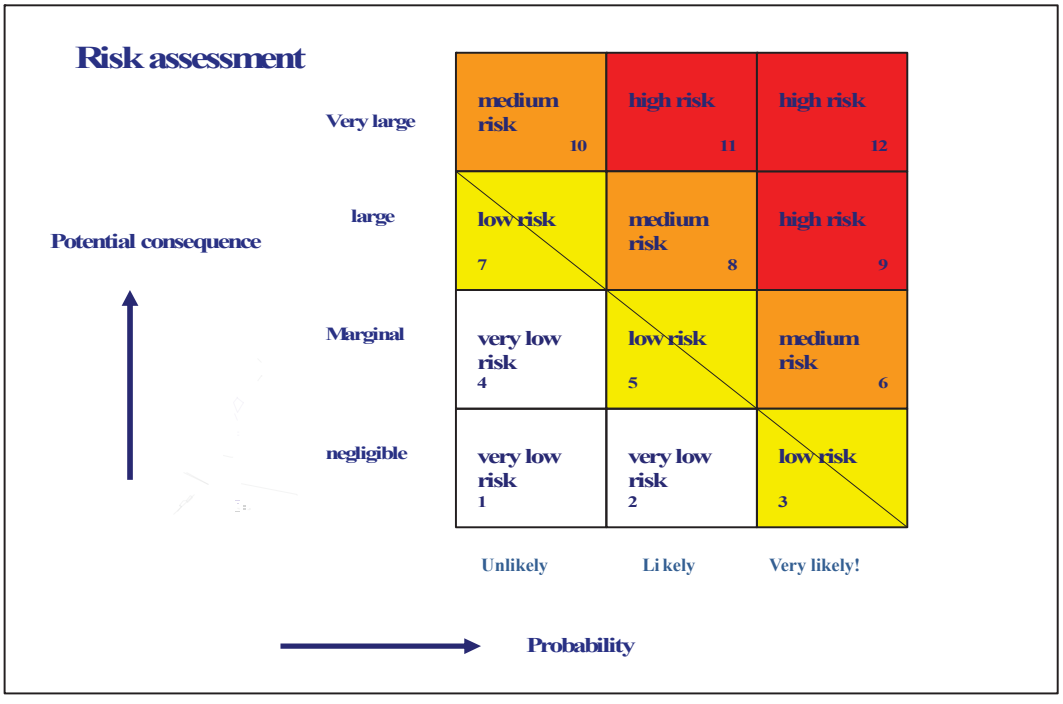
Common mistakes that should be avoided in designing a risk matrix for business inspections include:

- The first task should be to help regulatory agencies that are trying to base their procedures on risk classification to (re)define what their overall goals and objectives are, in order to define the key risks that should be addressed. Often goals are vague or defined merely in terms of "enforcing compliance with legislation." It is essential to define the positive outcome to be achieved (such as decreasing labor-related deaths and injuries, or food- and water-borne fatalities) and from this the risk criteria to be used for inspection planning. In the absence of these steps, risk criteria will not be adequate.
- Often risk criteria are based on two risk factors only: the scope of activities and the prior history of the establishment (compliant or not). However, the most fundamental of risk dimensions is the *type of activity*. It may seem that developing a classification on this basis requires deep technical expertise, statistical data and considerable work. However, examples from other countries and experience from regulators can in most fields allow for a relatively easy determination of which types of activities are most and least hazardous.

Some matrices give insufficient weight to the key factors listed above (e.g. the number of people who can be in the premises) and overly focus on technical issues or formal criteria, resulting in an inaccurate classification:

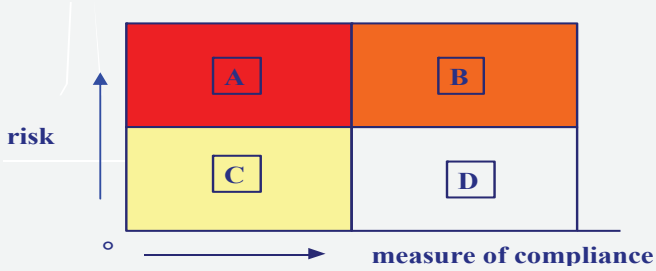
- Most of the points included in the proposed matrices relate to highly specific details (e.g. the condition of the building, and aspects of its electrical installations) that can only be revealed with inspectors on site, possibly requiring a lengthy and detailed inspection. While these risk factors may be relevant and grounded in legislation, many are minor in terms of the level of risk they pose, and cannot be used for planning as they are only revealed after inspection. A questionnaire handed out to businesses prior to inspection would inadequately address this issue as businesses may knowingly or un-knowingly self-report incorrectly. In addition, such questionnaire would create additional administrative burden for business operators. As a rule, such very detailed technical points should be avoided to build a good risk matrix.

FIGURE 2: RISK MATRIX FOR THE NETHERLANDS' STATE SUPERVISION OF MINES



The boxes in the matrix are numbered 1 to 12, whereby 1 = potential consequence very low and unlikely and 12 = very great potential consequence and very likely. After an assessment has been made for each category this result is used in the following matrix.

FIGURE 3: BEYOND RISK CLASSIFICATION: RISK-BASED ENFORCEMENT IN THE NETHERLANDS



The Netherlands' State Supervision of Mines not only classifies establishments according to risks, it adapts its enforcement strategy based on the combination of risk profile and compliance history, according to this matrix:

A – high risk, low compliance: high priority, high inspection pressure with immediate sanctions where possible

B – high risk, good compliance: medium priority, some inspections, involve branch business association to support compliance

C – low risk, low compliance: occasional inspection, focusing on infringers, increase awareness of relevant legislation, including encouraging information activities by branch association, and so on.

D – low risk, good compliance: inspect only in response to specific, substantiated complaints

Source (Figures 2 and 3): The Netherlands' State Supervision of Mines, Strategic Vision.

- Some criteria are difficult to assess or somewhat subjective (such as "condition of the building"). If criteria on the condition of the establishment are included, this should be as part of the compliance history and should preferably be based on a checklist. Thus, the result of the inspection, through the checklist, would result in an overall risk score for the "compliance history" dimension, which allows for updating the establishment's overall risk rating.

Conclusion

Risk matrices are fundamental instruments used to classify establishments depending on their risk level – and adapt the regulatory response (e.g. inspections, licensing) on this basis. This means that resources can be used more effectively and efficiently, and that administrative burden is minimized while positive outcomes are maximized.

Creating a risk matrix in itself is not necessarily a complex exercise, and can be done using international experience and examples, and relying also on the regulators' and experts' experience in the country. The parameters leading to higher or lower hazard are generally easy to identify, provided that the common mistakes listed above are avoided.

The difficulty usually lies in the use of such matrices because in many cases, regulators do not have adequate information systems allowing them to sufficiently assess the likelihood of compliance in each establishment.

As this would have to be based on prior records, such records need to exist and be computerized. Therefore, information systems are a necessary tool to make full use of risk matrices. However, some preliminary division of establishments based on their inherent characteristics (e.g. sector, size, type of activity) is already a considerable improvement in terms of risk management, compared to treating all establishments as identical.

Thus, govenments that do not have such information systems in place can start implementing risk-based approaches to classification and planning.

References

Much has been written on the subject of risk assessment, risk management and related approaches. Specifically on the issue of risk matrices and risk management in regulatory issues, and to see practical examples and guidance on how to use them, readers can refer to the following (referred to in this note):

United Kingdom's Better Regulation Delivery Office, *Common Approach to Risk Assessment* http://www.bis.gov.uk/brdo/resources/risk-based-regulation/risk-assessment - model matrix can be found on page 13

United Kingdom's Food Standards Agency, *Food Law Code of Practice for England* http://www.food.gov.uk/multimedia/pdfs/codeofpracticeeng.pdf - detailed explanation of risk ratings system can be found in Annex 5, pages 125-137

United Kingdom's Health and Safety Executive, *Advice/Guidance to Local Authorities on Targeting Interventions – Annex: Risk Rating* http://www.hse.gov.uk/lau/lacs/67-2/annexe-b-risk-rating-system.pdf (also refer to whole Guidance document for context: http://www.hse.gov.uk/lau/lacs/67-2.htm)

United Kingdom Trading Standards (local authorities regulatory function) – Association of Chief Trading Standards Officers, *Risk Assessment Scheme – 2013* https://knowledgehub.local.gov.uk/c/document_library/get_file?uuid=0edad691-9faa-4d82-b8da-69f645ac5ad0&groupId=6415217

Netherlands' State Supervision of Mines, *2012-2016 Strategy and Programme* http://www.sodm.nl/sites/default/files/redactie/Strategy%20and%20Programme%20for%202012-2016.pdf - risk assessment approach detailed on pages 29-31

Analysis and note prepared by Florentin Blanc and Ernesto Franco-Temple (Investment Climate Department, World Bank Group).

The findings and views published are those of the authors and should not be attributed to IFC, the World Bank, the Multilateral Investment Guarantee Agency (MIGA), or any other affiliated organizations. Nor do any of the conclusions represent official policy of the World Bank or of its Executive Directors or the countries they represent.

The Investment Climate Department of the World Bank Group helps governments implement reforms to improve their business environments and encourage and retain investment, thus fostering competitive markets, growth, and job creation. Funding is provided by the World Bank Group (IFC, the World Bank, and MIGA) and over 15 donor partners working through the multidonor FIAS platform.

Contact

Andrei Mikhnev | Global Product Leader, Business Regulation | Investment Climate

Email: amikhnev@worldbank.org
TEL: 1-202-458-1970
www.wbginvestmentclimate.org