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INTERNATIONAL SOCIAL SECURITY ASSOCIATION

Section for Research on Prevention



Evaluation of Occupational Safety and Health (OSH) Public Policy

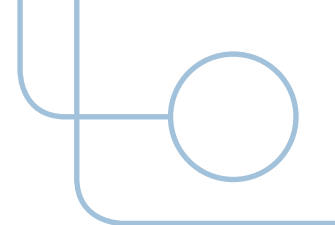
AUVA, DGUV,
INRS, IRSST, IWH, NIOSH

Edited by
Catherine Montagnon, INRS

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Safety and Health (OSH)
Public Policy**

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About Us¹

ISSA (International Social Security Association) is the international organization for social security institutions, government departments and agencies. ISSA provides access to information, expert advice, business standards, practical guidelines and platforms to enable its members to develop dynamic social security systems and policy throughout the world. Founded in 1927 under the auspices of the International Labour Organization, ISSA has more than 320 member organizations in over 150 countries. The Section for Research on Prevention, founded in 1970 by the Permanent Committee for the Prevention of Occupational Risks of the International Social Security Association (ISSA), is one of the eleven International Sections on Prevention of Occupational Risks. It aims to develop a propitious environment for exchanges between prevention practitioners and researchers working in the field of occupational risk prevention. <https://www.issa.int/>

AUVA (Allgemeine Unfallversicherungsanstalt – Austrian Workers' Compensation Board) is the social insurance body for occupational risks for more than 3.3 million employees and 1.4 million pupils and students. It is financed mainly by contributions paid by employers. Its legal duties are: prevention of occupational accidents and diseases, occupational medical care, first aid for occupational accidents, post-traumatic treatment, rehabilitation, financial compensation and research. AUVA is an interest group of employers and employees. To meet the needs of Austrian companies, AUVA offers brochures, training, consultancy, campaigns and assistance to government (laws, regulations, and standards). It also funds research when a need is identified. <http://www.auva.at/>

DGUV (Deutsche Gesetzliche Unfallversicherung – German Social Accident Insurance) is the umbrella association of the statutory accident insurance institutions in Germany; these are the Berufsgenossenschaften for the industrial sector and the accident insurance institutions for the public sector. DGUV is funded by contributions from its members. As an umbrella association DGUV assumes responsibility for the common interests of its member institutions. It represents the statutory accident insurance institutions in their dealings with policymakers at the regional and national level as well as with European and international institutions, and employers' and employees' representative bodies (employees' and employers' associations). <http://www.dguv.de>

INRS (Institut National de Recherche et de Sécurité – France) is an independent, non-profit organization with joint governance. It was founded in 1947. Its statutes prescribe that its goal is to contribute, by using all the appropriate means, to the improvement of safety and health as well as the prevention of occupational accidents and diseases. Almost 600 engineers, doctors, researchers, trainers, lawyers, editors, etc. collaborate in order to fulfil the assigned missions of the Institute: identify OSH risks and highlight hazards; analyse their consequences on the health and safety of workers, develop, disseminate and promote adequate methods and tools to be used by the organizations. <http://www.inrs.fr/>

IRSST (Institut de recherche Robert-Sauvé en santé et en sécurité du travail – Canada) is one of the leading OSH research centres in Canada. It conducts and funds research activities aimed at eliminating risks to worker health and safety and promoting worker rehabilitation. The Institute also disseminates knowledge and serves as a scientific reference centre and expert. Established

1. See Annex I

in Québec in 1980, IRSST is a private, non-profit organization with a Board of Directors made up of an equal number of employer and worker representatives, it is also a parity organization. The « Commission des normes, de l'équité, de la santé et de la sécurité du travail » (CNESST) provides most of the Institute's funding, which comes directly from employer contributions. <http://www.irsst.qc.ca/en/>

IWH (Institute for Work & Health – Ontario) is an independent, non-profit organization. Its mission is to promote, protect and improve the safety and health of working people by conducting actionable research that is valued by employers, workers and policy-makers. Established in 1990 as the Ontario Workers' Compensation Institute, the Institute operates with core funding from the Province of Ontario. The stewardship of this funding lies with the Ontario Ministry of Labour (MOL). IWH conducts actionable research that is transferred to policy-makers, workers and employers, clinicians and health & safety professionals through a transfer process. <http://www.iwh.on.ca/>

NIOSH (National Institute for Occupational Safety and Health – United States) is part of the U.S. Centers for Disease Control and Prevention, in the U.S. Department of Health and Human Services. NIOSH's mission is to develop new knowledge in the field of occupational safety and health and to transfer that knowledge into practice. NIOSH accomplishes this by conducting research to reduce worker illness and injury and to advance worker well-being, and promoting safe and healthy workers through interventions, recommendations and capacity building. NIOSH employees are specialised in a diverse set of fields including epidemiology, medicine, nursing, industrial hygiene, safety, psychology, chemistry, statistics, economics, and many branches of engineering. <https://www.cdc.gov/niosh/>

ACKNOWLEDGMENTS

This document is the result of the contributions of six occupational safety and health institutes to help other OSH organizations that are interested in evaluating their impact on OSH.

The target public of this booklet is:

- Funders, stakeholders and interested parties
- Senior managers of OSH institutes
- Company managers and OSH managers
- Evaluation project leaders in OSH institutes

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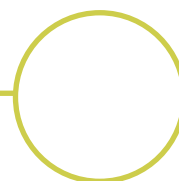
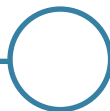
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INTRODUCTION

During the ISSA Research Bureau meeting in Seoul in June 2015, our six member OSH Institutes decided to share their ideas and best practices in order to discover the commonalities in their policy evaluation methods, understand and explain their potential differences and give assistance to other OSH organizations.

This work involved several steps:

1. precise definition of the objectives, outputs and intended outcomes of this work;
2. face-to-face interviews (from 1 to 3 days each), with each institute, its managers and its team in charge of evaluation;
3. an analysis of information collected (research studies, interviews, bibliography and documents provided by each institute) followed by the writing of a first draft; and
4. bilateral exchanges and plenary meetings of the working party.

This document is the result of our work. It presents our institutes, our needs and why we have been involved in evaluation (part II), shows that we are convinced of the soundness of evaluation (part III), and that we have adopted the same methodology to evaluate our policy and programs. It also explains why and how we have come to adopt this methodology (part IV) and illustrates, step by step, how to follow this methodology (part V).

The annexes of this document demonstrate that this methodology, when adopted, has to be adapted to the context, culture and expectations of each institute. It shows examples of how we have adapted ways of following steps of the described methodology.

Occupational health and safety ensured by prevention of occupational risks: a mission

Various OSH organizations have been established around the world. Some of them are part of government such as labour, health or social affairs departments, others are directly linked to labour inspector associations or labour medicine associations, others are independent organizations funded by federations of employers or companies and many of them have a link with their national Social Security Association.

We, AUVA, DGUV, INRS, IRSST, IWH and NIOSH, are six OSH organizations that have endorsed a common mission: ensure better working conditions by improving the prevention of occupational injury and ill-health like many other OSH organizations all over the world. This mission is in many cases described in official texts (see pp. 13-14).

To fulfil this mission, our organizations conduct all or some of the following activities: research studies; legal, juridical and technical surveys; health and injury surveillance; dissemination and provision of information and training; participation in standardisation; assistance to ministries; assistance to occupational health physicians, nurses, health and safety inspectors and other OSH practitioners and companies, including laboratory services; and development and dissemination of tools and communications materials.

OSH Institutes: important actors for the prevention of injuries and ill-health and the improvement of health and safety at work

The added value of our research and associated transfer outputs (brochures, training, assistance, communication, campaigns and/or conferences) relies on their level of **excellence** and the constant updating and **reliability** of supplied data and information. This is possible through the use of in-house multidisciplinary scientific and technical expertise, through the exchange of knowledge and expertise and between researchers, and through direct intervention of researchers in transfer processes. Experts who are directly in contact with the intermediate target audience give the researchers a view of the needs and expectations of managers as expressed by these intermediaries. Experts can also give feedback on adequate transfer activities for research results. This has built, over a long period of time, a tendency for OSH institutes to increasingly become the **central point of reference** on OSH. The “exchange model” of knowledge transfer requires that some kind of relationship exist between those who generate research knowledge and those who might put the knowledge to use.

Such relationships are characterized by regular exchanges of information, ideas and experience.

*Transversality*² is therefore a strength that is encouraged and that relies on scientists and experts from different disciplines who work collaboratively with each other and with knowledge transfer specialists. The institutes' teams are composed of a scientific corps of researchers,

professionals and technicians from various disciplines: ergonomics, industrial hygiene, chemistry, physics, engineering, sociology, anthropology, demography and psychology and experts in industry, building, editing, publishing, training, etc. Figure 1 shows the framework of practice used at IRSST to ensure continuous interactions between researchers and end-users throughout the process from developing projects to applying results.

“It’s useful for anyone involved in knowledge transfer activities to build relationships with various audiences.”

Marie Larue
– IRSST

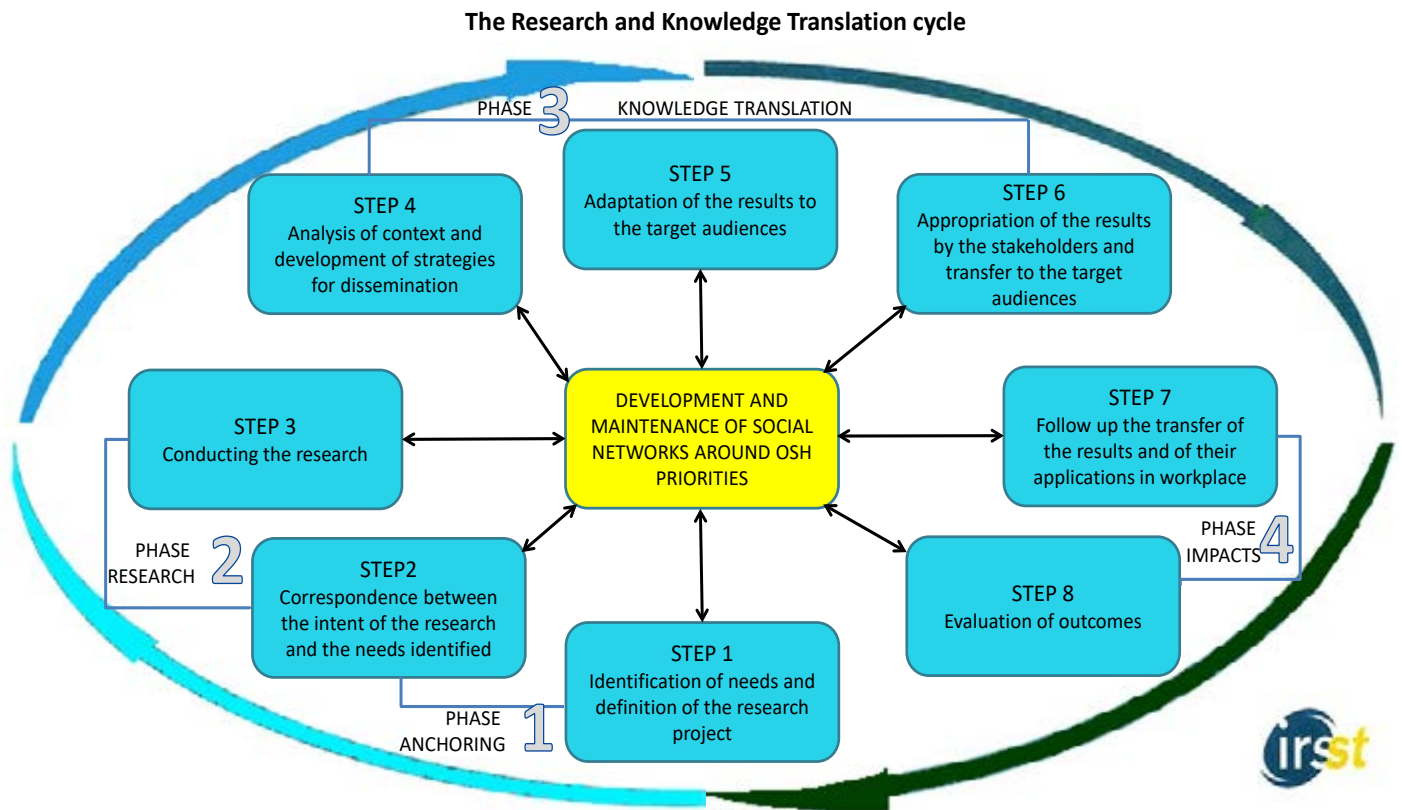


Fig 1. Example of a transfer process

² Transversality is a form of management that promotes dialogue between departments and services and within teams by encouraging synergy and favors working groups incorporating different departments, different services and different specialties.

Feedback is obtained from trainers, social partners, unions and federations and control groups as well as from the results of *studies conducted on the needs and expectations of different target audiences*. Moreover, some evidence is emerging that when researchers have an ongoing relationship with public policy-makers, members of this particular audience are more likely to use research knowledge in their decision-making³.

Excellence, reliability, status as a central point of reference, transversality and good level of knowledge about needs and expectations of different target audiences are our strengths for answering our mission.

Knowledge transfer and exchange refers to an iterative and dynamic process by which relevant research information is created, synthesized, disseminated and exchanged through interactive engagement between researchers and experts. This interactive and dynamic process will improve outcomes, provide more appropriate and effective services and products and strengthen the use of evidence in decision-making, practice, planning and policy-making.

Institutes have a *stable research agenda*, which facilitates relationships. Relationship building is best undertaken when the findings of current research of interest to a specific audience can be transferred over time⁴.

Most OSH institutes conduct *surveys and prospective studies* that help them to choose the right new research and topics to be developed.

Finally, using these combined competences, OSH institutes are able to *alert, support and assist* the national OSH network of professionals and labour, health and social departments and ministries which in turn develop, propose and adopt regulations.

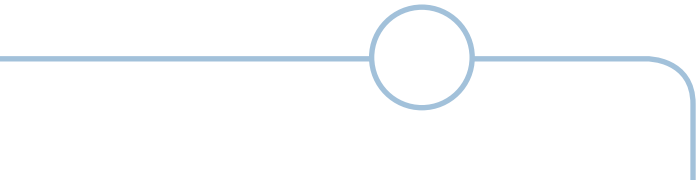
Reasons and purpose of this document

Our six OSH institutes, overseen by their senior management, decided to communicate more broadly on the added value of their organizations and on the positive societal impact of their actions by delineating their best practices in policy, strategy and program evaluation.

For a long period of time, these institutes have been continuously conducting investigations and enquiries to prove the quality and efficacy of specific research, training programs, brochures, communication programs, etc. But while good levels of efficacy and quality are important and necessary to obtain the intended outcomes, they are not sufficient to prove the real contribution to better health and safety at work.

3. Van Eerd et al. Report on Knowledge Transfer and Exchange Practices: A systematic review of the quality and types of instruments used to assess KTE implementation and impact –IWH - 2011

4. Reardon et al. From Research to Practice: A Knowledge Transfer Planning Guide – IWH -2006



Therefore, these institutions looked into how to introduce a methodology that could be shared and supported by the whole organization as a strategic decision to continuously evaluate and improve the impact of their policy, strategy and programs on health and safety at work.

Each institute developed its own approach for evaluating its policy and its societal impact, with, for five of them^{5,6}, the support of external expertise^{7, 8, 9}. None of them had any obligation to conduct such an evaluation, but they all felt strongly accountable for the resources their institute received and desired to assess the efficacy and efficiency of their policies in improving occupational health and safety. Each institute now uses the methodology it has developed for all evaluations of policy, strategy and preventive measures.

This document aims to explain that conducting evaluation of a policy, strategy, program or campaign is different from conducting investigations and enquiries to prove the quality and the efficacy of research, a service or a product. It aims to demonstrate that evaluation is an overall process that relies on analysis of data and a set of enquiries to write a complete report answering questions according to selected criteria, analysing expected and unexpected impact and proposing a path to improve impact.

This document demonstrates that the OSH institutes have developed substantially similar methodologies to enable them to collect convincing and conclusive information and conduct an overall assessment that demonstrates the relevance and the impact of their activities toward reducing hazardous exposures and work-related ill-health, injuries and fatalities. This methodology is used on a regular basis and serves to refine strategic, tactical and operational objectives. The uniqueness and differences of each institute are not barriers to the implementation of a common methodology and do not invalidate or negate their commonalities. Nevertheless, a common approach requires a careful analysis of the mission, the culture and the context of the organization in order to conduct an adequate evaluation which examines its performance from the right perspective.

5. IWH conducted a research on how to evaluate transfer tools (training, brochures, etc.) and concluded that there were only a few well-developed instruments available. Thus, they decided to devote a specific step in the evaluation process to tracking and documenting case studies that could complete their collection of convincing and conclusive information.

6. DGUV set up a special department which conducts evaluation for the entire DGUV and their member institutions or supports them in conducting evaluations.

7. AUVA with the support of University of Vienna; INRS with the support of a private company, member of the French Evaluation association.

8. IRSST used the following document as a reference: Enhancing Organizational Performance – A Toolbox for Self-assessment (C. Lusthaus et al. 1999).

9. NIOSH with the support of RAND Corporation adapted an existing process.



EVALUATION: WHY AND FOR WHAT PURPOSE?

This section explains why our organizations have decided to evaluate. These decisions have been taken and highly supported by our general managers and then developed and spread into our institutes to become a real culture.

This top-level decision was based on reasons and purposes such as: ensuring legitimacy, reinforcing position as a leader built on excellence, transversality and reliability and proving accountability. It also describes benefits and challenges of such an approach.

Why should OSH organizations evaluate?

Turn vision into reality

Our general managers decided to conduct evaluations but they were not compelled to make such a decision. Taking into account the mission of their institute, how expectations of society were evolving about public expenditures and how governmental bodies or international foundations and charities were evaluating their policies in order to explain to society how and why they spent money, they decided to explore how to evaluate their own policies.

OSH institutes' mission, enshrined or not in regulation, is to contribute to the improvement of safety and health at work through prevention of injury and ill-health. It is therefore important to show, prove and explain how they achieve their mission.

“Plato quoted Socrates in the speech he gave at his trial: 'An unexamined life is not worth living'. The same thought might be said of OSH institutes: 'An unexamined program is not worth funding'.”

John Howard
– CEO - NIOSH

Understanding and translating the mission into strategic objectives and plans is the role of the executive committee and must be overseen by general managers. Demonstrating that strategic and operational plans comply with the mission is important to showing the adequacy of OSH institutes' activities.

Ensure credibility and legitimacy amongst one's constituencies

When they were founded, these institutes were designated as references for government, national health insurance actors and OSH practitioners. Their boards of directors, along with the general managers, decided on the competencies and organizational structure needed to fulfil the intended purpose and, over time, the institutes have **increasingly developed transversality**, which is now seen as a strength. **Evaluation can enable OSH institutes to demonstrate that transversality and transfer have improved the impact of their actions on OSH performance.**

Meet and prove accountability and responsibility for resources

OSH institutes receive funding from government or from company taxes and contributions. Therefore, they must demonstrate their achievements and the effectiveness, relevance and efficacy of their activities. They must explain why certain research topics have been selected, demonstrate research effectiveness and explain how results are being transferred correctly to the right target in order to ultimately fulfil their mission.

OUR MISSIONS

NIOSH's mission is to develop new knowledge in the field of occupational safety and health and to transfer that knowledge into practice. The OSHAct¹⁰ also gives related responsibilities to NIOSH, including the development of criteria to guide prevention of work-related injury and illness; development of regulations for reporting on employee exposures to harmful agents; establishment of medical examinations, programs or tests to determine illness incidence and susceptibility; publication of a list of all known toxic substances; and conduct of education programs for relevant professionals, assisting the secretary of labour regarding education programs for employees and employers in hazard recognition and control.

INRS's purpose is to contribute to improving safety and health at work, by all appropriate means, as well as to preventing work-related accidents and ill-health. The Institute's aims are to develop a health and safety culture, to conduct research, to serve as an OSH reference centre and expert, to develop and disseminate documentation, and design, adjust, encourage and provide effective training programs and modes; and to assist the labour ministry, Social Security, Health and Safety Committees and all prevention organizations and cooperate internationally with similar organizations in order to improve safety and health conditions.¹¹

IRSST – In the spirit of the “Occupational Health and Safety Law”, which aims to identify OSH risks and eliminate hazards at their source, IRSST's mission is to contribute, through research, to the prevention of industrial accidents and occupational diseases and to the rehabilitation of affected workers; to disseminate knowledge and serve as a scientific reference centre and expert; and to provide the laboratory services and expertise required to support the public occupational health and safety prevention network³. IRSST has set itself the goal of conducting and financing research that meets the needs of CNESST, the OSH network¹², and the working community, in order for research results to be put into practice.

AUVA – The Austrian General Social Insurance Act¹³ entrusts AUVA with the prevention of occupational accidents and diseases including provision for first aid; therapy after accidents using appropriate methods; timely unlimited medical, occupational and social rehabilitation; and financial compensation after occupational accidents and diseases. In addition, AUVA was assigned by parliament to provide a special service (safety experts and occupational medical experts) to enable small and medium-sized enterprises to fulfil their obligations to the Health and Safety at Work Act¹⁴ as well as allowance for continued remuneration in the event of accident or disease¹⁵ for SMEs¹⁶. To achieve this mission, the Department of Prevention cooperates with ministries and authorities, collaborates on standardization, provides testing in accredited laboratories and consulting in companies, develops and disseminates training and information tools, runs awareness raising campaigns and leads projects aimed at investigating health and safety issues and providing a solution.



10. The Occupational Safety and Health Act is the primary federal law which governs occupational health and safety in the private sector and federal government in the United States. It was enacted by Congress in 1970 and created the Occupational Safety and Health Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH).

11. INRS statutes – Non-profit organization created in 1947 by French workers unions and employer confederations.

12. Passed in 1979, the “Loi sur la santé et la sécurité du travail” (LSST) (L.R.Q., c.S-2.1) primarily focuses on prevention of work-related accidents and ill health.

13. General Social Security Act 1955 (ASVG) (BGBl. No. 189/1955).

14. Since 1999.

15. Since 2002.

16. Small and medium-sized enterprises.

DGUV - The objective of the German occupational safety and health act (ArbSchG) is to ensure and improve the safety and health of all employees at work by means of suitable OSH measures. Volume 7 of the German Social Code (SGB VII) specifies the statutory mandate for the work of the German Social Accident Insurance Institutions in Germany. In accordance with these provisions, the task of the German Social Accident Insurance is: to use all suitable means to prevent occupational accidents, occupational diseases and work-related health hazards and to use all suitable means to restore the health and performance of the affected insured individual, and to provide the individual or their surviving dependents with financial benefits. This mandate is fulfilled by DGUV through IFA (Institute for Occupational Safety and Health of the German Social Accident Insurance). It carries out consulting, monitoring and research activities, initial and further training and information dissemination, all of which provide a strong foundation for safety and health in companies. It also has educational facilities and is active in the field of road safety.

IWH - The mission of the Institute for Work & Health is to promote, protect and improve the safety and health of working people by conducting actionable research that is valued by employers, workers and policy-makers. Since 1990, IWH has been providing research results and producing evidence-based products to inform those involved in preventing, treating and managing work-related injury and illness. IWH also trains and mentors the next generation of work and health researchers. Knowledge transfer is managed through an exchange of information and on-going dialogue with their audiences.

Demonstrate social and economic value and meet social demand

In a world with ever increasing demands for greater economic returns on investment, effectiveness, relevance and efficiency are requested from publicly-funded organizations. Because levels of funding are more and more directly linked to these three criteria, being able to demonstrate the social impact of actions has become a major and overarching issue as well as an ethically desirable goal.

The OSH institutes that have participated in creating this document receive money from companies, through public insurance premiums or directly from governments. Regardless of the source of money, management of funds must be beyond reproach. Moreover, new fiscal and accounting pressure is exerted on governments and funded organizations, requiring financial rigour and performance to be proved and subjected to public opinion. Governments and funders have begun to view all amounts disbursed as investments and thus choose to invest in institutes depending on their performance¹⁷. OSH institutes are living in an environment where resources are tight and therefore more closely scrutinized¹⁸.

This is why institutes want to demonstrate that when deciding on a policy (strategy, research, campaign, output), not only is it because they think it is the right policy, etc., but also because

17. Typically, the performance is focused on three key issues: effectiveness (how well the organization is performing in achieving its mission), efficiency (how well it is using its resources to reach its mission), and relevance (how well the organization's mission continues to serve the purpose of the various stakeholders). The financial viability (whether there is adequate funding to ensure that the organization can continue to perform in the short and long terms) could be also considered.

18. In the USA, for example, the 1993 Government Performance and Result Act (GPRA) (Pub.L.No. 103-62) and the 2002 Program Assessment Rating Tool (PART) are manifestations of the public's concern about the payoff of federally funded research. See Williams et al. "Demonstrating and communicating research impact – Preparing NIOSH programs for external review" – Valerie L. Williams, Elisa Eiseman, Eric Landree, David M. Adamson. – 2009 – RAND CORPORATION

they have studied the needs and expectations of interested parties and the needs in prevention, and because they have anticipated the intermediate and final outcomes of this policy (strategy, research, campaigns, output). They wish to prove that the underlying logic of their policy (strategy, research, campaign, output) has been adhered to strictly, and continued, and that anticipated intermediate outcomes have been reached. They want to evaluate whether their contribution to improvement of health and safety at work is a reality.

Evaluation also helps to discover and understand the unintended consequences of prevention strategies (e.g. training for driving on snow, which increased younger people's self confidence, increasing their risk-taking and thus increasing the number of accidents). Evaluation helps to make sure that working conditions remain relevant to worker safety and the health community at large.

Provide reports, answer to legitimate demands and serve short-term requirements

Most OSH activities need to be conducted over extended periods because the effects of actions on human health and safety are often delayed and may not be observed during the course of a plan. Improvement in health and safety at work requires time and goes through several stages: awareness, understanding and adoption, action and impact.

There is a contradiction between, on the one hand, legitimate and short-term expectations of society and of funders and, on the other hand, the long-term effects of policies. Therefore, using an adapted methodology is essential to provide convincing, reliable and conclusive responses.

Demonstrating program outputs effectiveness, intermediate program outcomes and that these results are on the path to final impact will help boards of directors and decision-makers to follow the accomplishment of the mission. Evaluation help institutes to fulfil reporting responsibilities and demonstrate organizational effectiveness.

Evaluation reports will also ***highlight important worker safety and health problems*** related to shortage of resources and will help OSH institute managers to justify requests for funds.

Setting up an evaluation process will help to ***prevent waste, fraud and misuse*** by ensuring that funds are appropriately spent ***during checks to make sure that*** these funds reach their intended targets and match stakeholder interests.

Internally, evaluation will assist the institute in ***conducting investigations and enquiries to:***

- ***prove the quality and the efficacy of the institute's policy*** (strategy, research, campaigns, outputs),
- effectively allocate agency resources and assess organizational effectiveness,
- focus on the most effective measures; and
- improve strategic and organizational management.

Communicate

Evaluation helps OSH institutes to broadly communicate their mission and the ways in which they contribute to improving health and safety at work. It also increases their visibility and their leadership position. Communication with interested parties strengthens understanding and participation of interested parties in the spread of prevention.

Establish continual improvement and enhance pride of belonging

Using the evaluation report to discover new avenues for improvement is one of the best internal benefits for any organization.

Reports not only provide answers to questions based on multiple criteria, they also reveal the good paths to impact, show possible gaps and give options for continual improvement (see annex VIII). Therefore, reports help OSH Institutes to maintain and improve *excellence* and *reliability* of the data and information they supply, reinforce their reference position and give them important feedback on the needs and expectations still to be covered.

Reports also highlight all the good results obtained. Internal communication on these achievements is a good recognition of all the work carried out by the teams and the added value of transdisciplinarity. Communicating on the results and new decisions made based on the reports is a starting point for setting new objectives and challenges for personnel.

Sharing paradigm shifts

Funders and decision-makers usually look at statistics, such as the number of occupational accidents or diseases, as unique indicators of the effectiveness and impact of actions. They would also like to be sure that the observed results can be attributed to these actions.

Each of our six institutes have worked on the question of how to make a link between actions and statistics. After literature research and/or assistance by universities and experts, they all came to the same conclusion: **changes in paradigms were necessary in order to allow consideration of contribution over attribution, emphasize influence over control, and use more qualitative and quantitative indicators rather than only occupational accidents and diseases statistics (see III. Occupational accident and disease statistics and other qualitative and quantitative data).**

Benefits of evaluation

Use made of reports and results for continuous improvement

The evaluation process and results help institutes to improve the performance of their portfolios, reconsider the relevance of current policies (strategies, researches, campaigns, outputs), and then discontinue ineffective ones and decide on new ones.

Direct uses of results include specific modifications through actions, such as identification of effective prevention policy, design of new measures or optimization of existing measures, increasing or reducing budgets, redefining program objectives, steering future policy or tying work done to that done by sister programs. Our institutes have reoriented part of their policy

(strategy, research, campaigns, outputs) and changed the management of their activities based on the results of reports while defining and implementing the methodology step by step.

USE MADE OF EVALUATION REPORTS – EXAMPLES

DGUV has compiled the effects, success factors and obstacles associated with their OSH campaigns and now uses a nine-step process when evaluating its own campaigns. Results are used when a new campaign is to be prepared to ensure better and more efficient impact.

INRS has decided that one of the target audiences it was not reaching most efficiently will be one of its primary target audiences and that it will develop new outputs for this target audience.

IWH, after having led a research study on the best way to evaluate transfer activities, has decided to concentrate on collecting conclusive and convincing information.

IRSST has modified the process of research activities by systematically integrating transfer activity and dissemination of research results to improve the impact of OSH research. By doing so, IRSST is not only focusing on the production of peer-reviewed publications but also on outcomes aimed at end-users in the work environment.

NIOSH has changed the process to better balance research activities and transfer/translation activity and use results of previous reports to improve efficiency, effectiveness and impact. IRSST and NIOSH have shifted their focus from mainly producing outputs like peer-reviewed publications to largely promoting the use of their research findings, tools and resources ("Research to Practice").

AUVA is reinforcing the focus on fidelity of programs and campaigns with its impact logic and the associated intermediate objectives.

See annex VIII.

Increasing internal and external awareness

Evaluation reports can be used by experts or researchers to call attention to problems or needs, thus raising the importance of an issue within the agency.

Results of evaluation can also be used by stakeholders or advocacy groups to draw attention to needed policies.

As an example of highlighting an issue to external interested parties, INRS conducted an evaluation of engineers and engineering students to assist with a governmental decision on engineers' OSH training. In 2001, INRS activities had given rise to a competency framework adapted to engineering schools along with assistance to schools on how to use the framework. In 2007, several studies were conducted on behalf of INRS that showed that:

- engineers had an insufficient level of prevention culture;
- there was a substantial difference in OSH knowledge between those who were trained using this competency framework and others; and
- the difference was still visible after five years in terms of competencies and use of competencies and knowledge when these engineers were working in companies.

Currently, this competency framework is compulsory for engineering schools.

Starting evaluation at the design and planning phase of policy (strategy, research, campaigns, outputs)

Evaluation concepts can and should be taken into account at the time that policy (strategy, research, campaigns, outputs) is proposed. Our institutes evaluate the burden, target needs and intended outcomes of proposed policies (strategy, research, campaigns and/or outputs) before commissioning it. The benefit is that management, interested experts and researchers ask the best questions and therefore are more likely to reflect the institute's priorities, avoid duplication of efforts and achieve desired results.

Such an approach facilitates exchanges with the policy and strategy designers, leading to better success. In addition, a report can shed light on the external factors that have shaped a policy (strategy, research, campaigns, and outputs), or unveil any pitfalls common to several evaluations and therefore identify the need for new strategic objectives. The evaluation process also reminds us that, regardless of the source of funding, OSH institutes' mission is still to conduct actions for the benefit of society.

Competently done, external evaluations can overcome the unconscious bias of managers with regard to their programs. It also takes any organizational competition out of the assessment and often provides new insights. It also reinforces some of what managers already knew and brings to light previously unknown or unused leverage actions.

The tools described in this document have uses beyond evaluation as such. Because these tools bring managers to think about how to impact outcomes, they can be used by an organization to monitor the effects of their programs. Over time, these tools and the work they involve can be the foundation of a database that tracks different global data with up-to-date and easily accessible information on outputs and traceable outcomes.

Evaluation culture

A well-thought-out evaluation process leads to the development of an evaluation culture within the organization. It also shows the underlying logic of planned actions and thus improves public targeting and content. In demonstrating the role and importance of the interaction between all activities and of the necessary exchanges between researchers and experts, such an approach reinforces internal transversality and improves the transfer process.

All OSH institutes develop complementary actions designed to meet similar needs. While an individual research or transfer project most likely leads to outputs and intermediate outcomes, it will seldom, on its own, result in a visible end outcome. However, collectively, a set of actions or a campaign conducted during a specific time frame is likely to lead to significant expected outcomes. OSH organizations are set up to be able to efficiently combine different activities and lead policy that will achieve their mission: contribute to improve health and safety at work. The logic model is a good depiction of this phenomenon and a good basis for argumentation during evaluation.

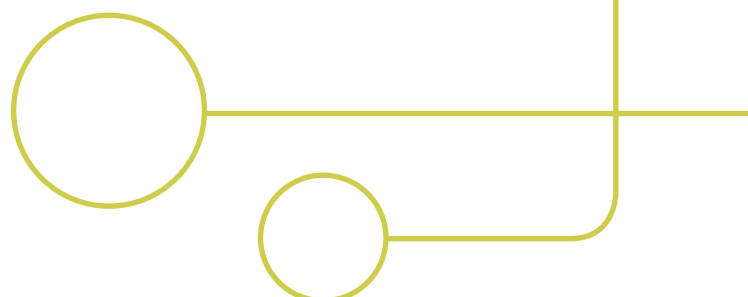
“For us, evaluation culture is indispensable for a culture of prevention. We can learn from the results and better steer and design our prevention measures.”

Dr Walter Eichendorf
– Deputy Director General of the DGUV
and Head of the Prevention Executive Division

Challenges with Evaluation

Some difficulties may arise during an evaluation. For example:

- Evaluation can be a time-consuming and expensive process. It is important to have a clear idea of the resources required and available for the evaluation process and to adapt either the evaluation scope or the resources accordingly while meeting the needs and expectations of stakeholders and decision-makers. Annually, our institutes do not spend more than 3-10% of the total budget allocated to the policy (strategy, research, campaigns, outputs) that is evaluated.
- Interested parties who are not necessarily aware of the different methods of judging a policy (strategy, research, campaign, output) may tend to refer to the easily accessible indicators of occupational accidents and diseases. The external evaluation committee may then be asked to use evaluation to demonstrate an impact on occupational injury and disease rates or to justify research efforts based on accident statistics. It is therefore crucial to understand the evaluation process and be able to explain the paradigm shifts it involves to interested parties.
- Often, reports are produced but the recommendations are never actually studied or used. Given the cost of an evaluation and the richness of these reports, evaluating for the sake of evaluating would be a complete waste. Evaluation reports and results should be reviewed carefully and action plans should be made to avoid evaluating just for the sake of evaluating.
- Based on the number of questionnaires sent by companies and non-profit organizations, some target groups could be suffering from survey fatigue. Moreover, target groups may not participate because they are unavailable, and because the lack of a database makes it impossible to reach them. A lot of enquiries (including quality enquiries) are conducted using questionnaires. Although this is a tried and proven method which produces reliable results, it has limited applicability. These problems can be avoided by using a diverse range of methods, including qualitative interviews, focus groups, case studies, mouse tracking, web statistics, and many more. Sharing the results of surveys with target groups may also motivate them to participate.





HOW TO ASSESS OSH INSTITUTES' POLICIES: CHANGING PARADIGMS

It is a real challenge to answer the frequent questions addressed to our institutes about the usefulness of their actions and why occupational diseases continue to increase despite all of the funding invested in these problems.

This section discusses the different approaches to answering these questions, the different aspects of the issues to be addressed and the paradigm shifts required in order to make these answers conclusive and robust.

In order to assess OSH institutes' policies, it is important to define the word "evaluation" as it relates to public policy. Policy differs between business sectors and non-profits or governmental organizations aiming at transforming society.

In addition, evaluation techniques and methods have been studied by researchers for years and have produced some conclusions that are worth taking into account.

The improvement of health and safety at work is too often measured only with "easily" reachable indicators: occupational accident and disease numbers. However, this is a narrow-minded perspective that can limit investigations and thinking. Other indicators are proposed here.

Private business sector versus public policy

For centuries, actions have been evaluated based on their results. Doctors, for example, were evaluated based on the accuracy of their prognosis. Afterwards, when recovery seemed possible, they were evaluated based on whether recovery occurred. The fight against epidemics was evaluated based on whether their spread was halted.

In capitalist societies, people who invest in companies want to get their money back with some profits to cover the risks taken. They evaluate their investment based on this return.

In the private sector, evaluations are still commonly based on results. Commercial establishments, operating for customers, offer products and services. These companies have one objective: sell their products with the highest possible benefit, and one direct target audience: customers and potential customers. Results are easy to evaluate based on the level of benefits over which they have control. Therefore, these companies can assess their actions using market feedback. **Assessment is directly driven by the market.**

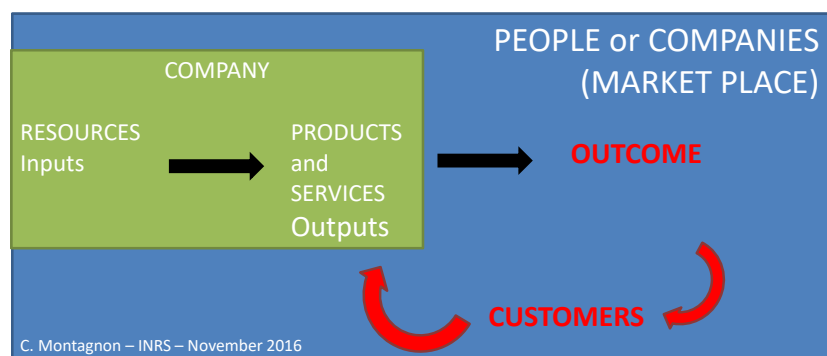


Fig 2. Return on investment

However, OSH institutes, and most organizations involved in public policy, have a different mission: make a difference in society, in the case of OSH through improvements to workers' safety and health. To fulfil their mission, they use policies and strategic plans and they must be able to justify their funding and demonstrate that their policies are in line with their mission (adequacy). There is limited direct evidence of their impact on society. It is very difficult to prove a direct link between OSH institutes' activities and results that support their mission. Moreover, actions may have hidden potential negative impacts¹⁹ that can be very difficult to distinguish.

Control versus influence

Public policies can be directly addressed to members of society or to intermediaries. Our OSH institutes address company managers and workers about health and safety but most of the time, they do so indirectly. These institutes were developed to facilitate OSH practitioners and other OSH actors, which should in turn, in a more effective and efficient way, improve health and safety by directly linking with companies and workers. With the emergence of new technologies, direct contact with end target audiences is more readily achieved; therefore, OSH

¹⁹. A study conducted in Iceland, for example, proved that teaching young people how to drive on ice and snow in order to avoid accidents had the opposite effect because young people became more confident in their driving skills and were therefore less cautious.

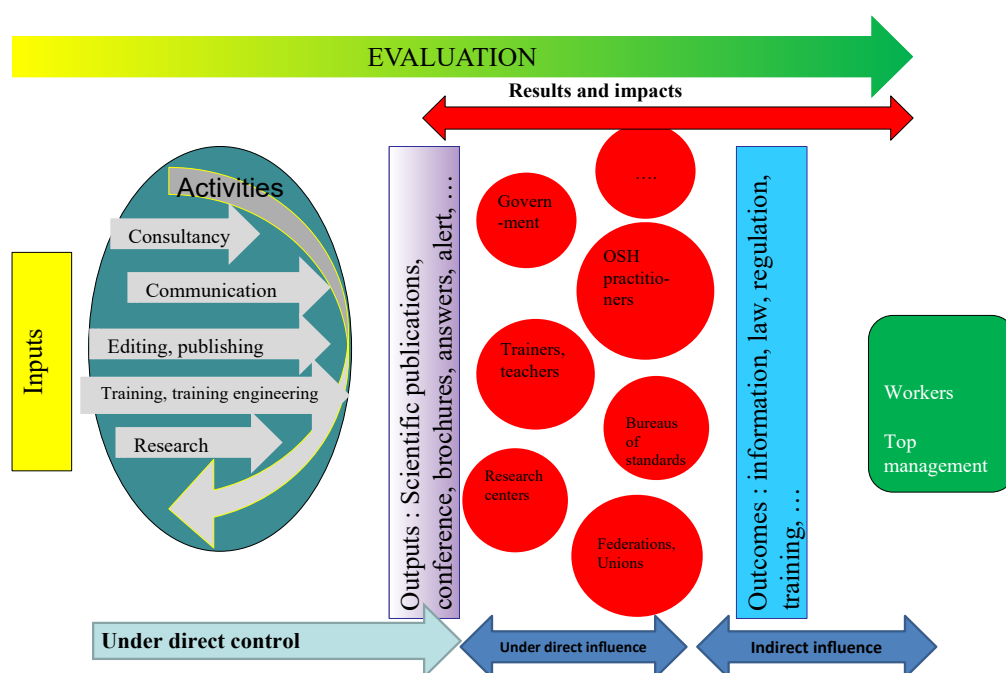
institutes are now more likely to use direct contact while continuing to develop products and services for their traditional audiences.

OSH institutes use inputs to develop their activities. These activities then lead to outputs which are supposed to be spread to OSH practitioners or other interested parties such as governments, professional branches, federations, unions, trainers, teachers, etc. These intermediate public audiences must then act and improve health and safety in the workplace by deciding on laws and regulations, publishing new standards, communicating and distributing information on tools and brochures, training current workers and future workers, visiting and assisting companies, etc. Therefore, there are two steps in the process: during the first step, policies and outputs are under the control of the OSH institutes until the output has reached the intermediate target audience; the second step is to reach the end target audience.

The directors of OSH institutes are responsible for defining strategies, conducting actions and ensuring the quality of outputs. However, once these outputs are disseminated, other intermediate players have a role in the final impact.

OSH institutes have direct control over their outputs. They manage inputs and decide how to use them: this is their management role. Then they define strategic, tactical and operational goals for their teams and follow the achievement of these objectives through the organizational pattern they have chosen with their managers: they have direct control over their outputs²⁰.

Their intent is for their intermediate target audience (OSH practitioners or other interested parties such as governments, professional branches, federations, unions, trainers, teachers, etc.) to adapt, transform, use, distribute and spread good practices, good messages, good tools, etc., to company managers and workers. OSH institutes do not have the means to force this intermediate target audience to do anything, but they can convince them to act: involve them in the design process, investigate their needs and expectations, build partnerships, etc.



C. Montagnon – INRS – November 2016

Fig 3. Activities, outputs, results and outcomes

20. This can be followed and managed through a quality management system, through human resources management and through financial audits.

They can also work with intermediate targets or assist them when adapting messages to end target audiences. As such, they will influence the outcomes.

Evaluation aims to produce knowledge on the effects of the actions conducted, in particular, on the end target audience: employees and companies. Evaluation has the two-fold objective of enabling funders to appreciate OSH institute's value and helping responsible parties to improve the relevance, efficiency, consistency and impact of outputs.

Evaluation has been introduced all over the world because of the need for rationalization and optimization of actions sought by executives in administration, politics and economics. An evaluation aims to set up a judgment on actions taken, as compared to the associated objectives, and to assess whether the expected results and benefits have been attained.

Occupational health and safety is based on mass strategies to reach all managers and employees; therefore intermediaries are used. **Choosing relevant intermediaries, effectively reaching them, and ensuring the consistency of actions aimed at these intermediaries are therefore essential intermediate steps which can prove impact.**

Attribution and contribution

It is every public organization's dream to be able to prove that a positive societal change is directly attributable to its policy, program or action. A dream because it would be an easy and controversy-free way to prove their usefulness.

But societal changes are usually a multifactorial result of different policies and programs conducted by multiple actors.

Most of the time, improving occupational health and safety means offering technical solutions, along with fundamentally transforming ideas on risks and changing the way managers and workers participate in creating a safe and healthy workplace.

OECD's Development Assistance Committee defines impact as: "Positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended"²¹.

In this definition, "effects produced by a development intervention" strongly suggests a link between interventions and effects, between a cause and its effect, and so specifically addresses the issue of attribution. Yet, attribution involves firmly establishing causal links between specific interventions and observed changes.

Of course, the effects that our institutes are supposed to produce are prevention of occupational injury and diseases and improvement of health and safety at work.

21. Development Assistance Committee, Organisation of Economic Cooperation and Development. Glossary of Key Terms in Evaluation and Results Based Management. Paris, 2001

Three different situations

When intended outcomes are described, they can generally be attributed in three ways: one existing actor caused the outcome, there are two (or more) necessary and interdependent actors or there are multiple actors whose contributions could be complementary, opposing or redundant.

Unique actor

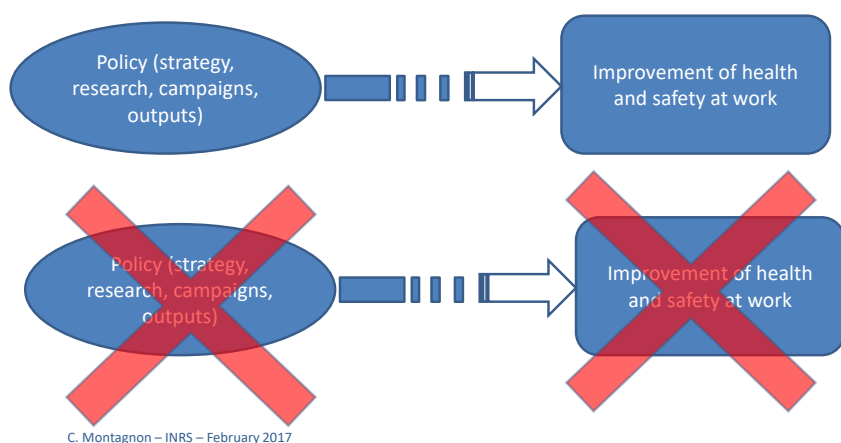
If a policy, regulation, training program or campaign is necessary and suffices to produce the intended outcome, independently of other interventions, this policy or output is solely responsible for the result. This implies that if the policy or output is not conducted, the result will not be achieved.

As an example of a unique actor, a government could decide to prohibit the use of a product by forbidding its production and import in line with the principle of precaution or prevention.

This has occurred with asbestos, aromatic amines and GMOs in France and other countries.

Another example of a unique actor is the experiment led by the state of Victoria in 1990, which introduced compulsory helmet legislation. All other Australian states and territories adopted this legislation in the following two years²². The intended outcome was to decrease the number of head injuries in cyclists.

A result can then be attributed to this unique actor.



C. Montagnon – INRS – February 2017

Fig 4. Unique causal attribution model

Two (or more) interdependent actors

If a policy, regulation, training program or campaign needs to be conducted in conjunction with another policy, regulation, training program, or campaign of another organization to produce the intended outcomes, all the necessary actors are “interdependent”. Where one of these contributing actors is either absent or negative, the impacts will not be achieved or will be achieved to a much lesser extent.

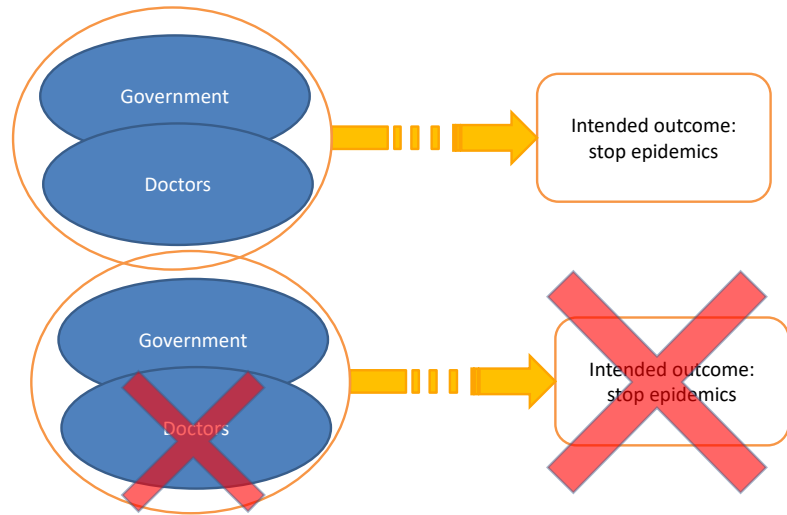
An example of two complementary and interdependent actors is the case of human epidemics. These are tackled by government with laws and regulations regarding preventive vaccination campaigns when immunization is possible. But the government requires doctors and nurses to take care of people and to administer the actual vaccinations. Without laws or regulations, doctors could not convince the population to get vaccinated.

Therefore, results can only be attributed to both actors working together.

22. The impact of compulsory cycle helmet legislation on cyclist head injuries in New South Wales, Australia. Scott R. Walter, Jake Olivier, Tim Churches, Raphael Grzebieta, Accident analysis and prevention, 2011, pp2064-2071

Two or more independent actors

But most often, in the case of societal change, actors are complementary and independent and each of them has different levels and various types of influence on the final result. Governments, institutes, researchers, non-profit associations, media, people committed to working in the field and unions will have an effect on the final outcomes.



C. Montagnon – INRS – February 2017

Fig 5. Attribution to multiple interdependent actors

For instance, a French study conducted in 2011 on MSD prevention practices in poultry enterprises and establishments²³ showed that the hypothesis that MSD prevention was directly linked to financial incentives was erroneous. The researchers concluded that only a multifactor approach implemented by different identified actors could lead to the intended outcomes: *“In short, (the study did not) find any simple and unambiguous causality that would constitute the incentive lever, relevant to all situations. It is therefore not one but several levers of action [...] that it would be possible to operate together without thinking that they will play a priori the same role in all situations”*. The study proposed an awareness-raising campaign launched by federations, the provision of "standardized" tools and solutions (produced by INRS), and direct assistance to companies provided by CARSATs (French regional social insurance institutes) (see Fig 6).

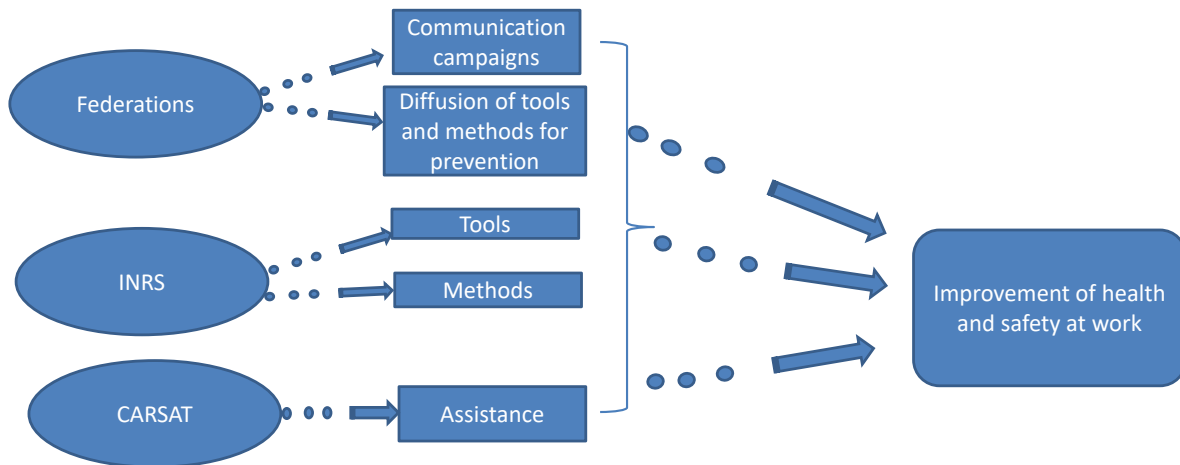


Fig 6. Contribution of multiple independent actors - poultry sector activities

C. Montagnon – INRS – March 2017

Our institutes have observed the contribution of multiple independent actors to intended outcomes: changes in occupational safety and health are the result of the contributions and interactions of a multitude of public and private players. While they are central actors within the national organization of OSH, most of the time, our institutes are not the only ones taking

23. Pratiques de prévention des risques professionnels - Thomas Amossé, Sylvie Célérier, Anne Fretel - CEE – Centre d'études de l'emploi - January 2011

action to improve occupational safety and health, and actions conducted by others such as governments, federations, OSH services, etc. are complementary and necessary to achieve the intended outcomes. Most of these multiple actors, not under the control of OSH institutes, will then enhance health and safety in the workplace, while multiple external factors could negatively or positively impact working conditions.

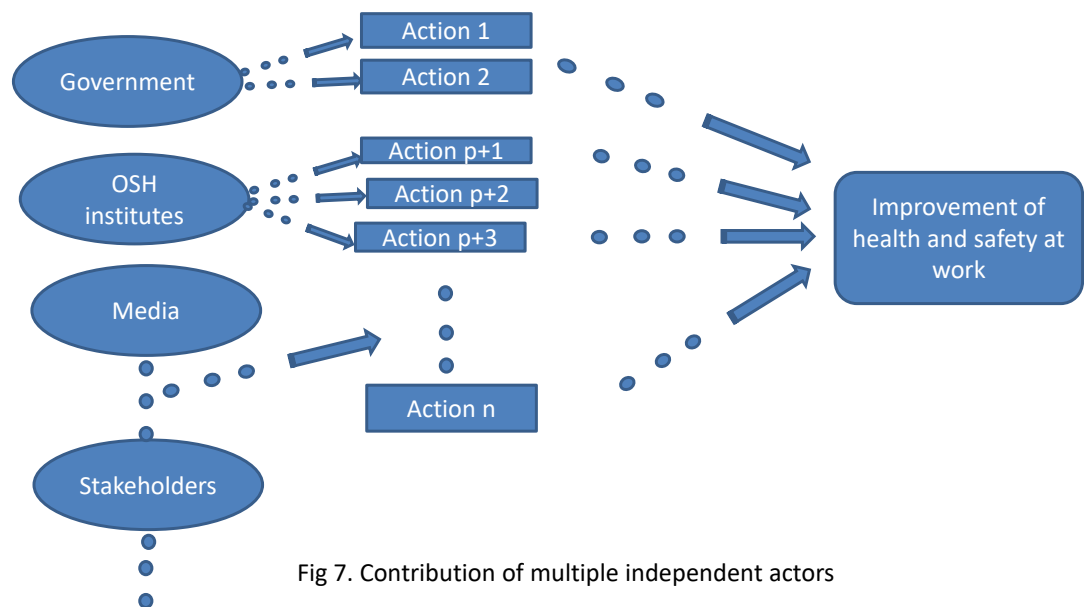


Fig 7. Contribution of multiple independent actors

C. Montagnon – INRS – March 2017

The notion of “contribution” can therefore be essential in the case of multiple actors (3rd situation). It takes into account synergies among the different players as well as interactions between the different policies and strategies that are being implemented. These interactions form a type of system. This is why, most of the time, the concept of “unique attribution” is not appropriate: it suggests that the different actions of the different participants are simply cumulative, which is tempting, since in this case, it can be the result of a purely quantitative, statistical and/or economic analysis.

Instead of "attribution", focus should be on the notion of “contribution”, which is more qualitative and is related to the positions and roles of the different players. The reconstitution of the different rationales and their sequences, as well as of events and roles played by the different actors, will thus highlight the impact of each contribution to the observed outcomes.

This is why our institutes have developed a **methodology based on the evaluation of contribution**; that is also how our mission is stated (see Annex IV. Sociogram).

How to prove contribution or attribution

There are three different situations but there are also three different ways to look for attribution or contribution: prove attribution to a unique cause with a counterfactual analysis, collect convincing and conclusive information to prove the link between activities and an observed change, or look at a result and prove that all the other explanations leading to that result are not valid.

Three different ways to prove contribution

Counterfactual analysis

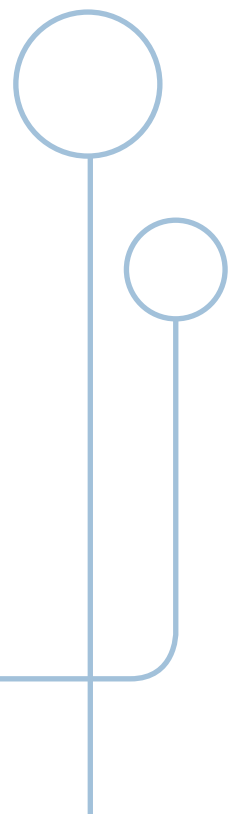
A counterfactual analysis is a comparison between what has happened following an intervention and what would have happened in the absence of the intervention. A counterfactual analysis proves unique causal attribution of an intervention, an actor or a set of interdependent actors. It means that you are able to prove that the intervention was necessary and sufficient to produce the predictable or observed result, regardless of external factors or other internal or external interventions. It means that if the intervention were not accomplished, the result would not have been attained (see Fig 8).

Attribution is often used to determine which marketing campaign has increased sales, to establish the effectiveness of medical treatment, etc.

It could also be used for special OSH programs.

Analysis of a causal effect means that you know the effect of your action and that you are able to predict what the situation would have been without action or that you are able to predict future situations with and without this action. This relies on three conditions:

- You are effectively able to predict or observe an effect without bias.
- You focus on a single outcome of importance and trace back through the developments that were critical in reaching this expected or observed outcome. This causal model is often used to prove the effectiveness of a drug. You know the effect, you are able to select individuals to form a comparison group and you can then build and verify the causal links. The important outcome could be recovery, remission, or stabilization. This attribution model highlights activities that lead to anticipated outcomes and may not capture a broader range of outcomes.
- There are people not affected by your action to act as a control group, which could be controversial as regards public policy.



EXAMPLE

For decades, young people at work have been the focus of attention: their injury rate was significantly higher than average. Preventive training programs were provided during their apprenticeship programs throughout this period. Unfortunately, no change in the number of injured young people was reported. Therefore, the prevention network and INRS decided to evaluate the impact of this training on the occurrence of accidents when young people started their working life²⁴. The intended outcome was a reduction of accidents, and this outcome was not attained.

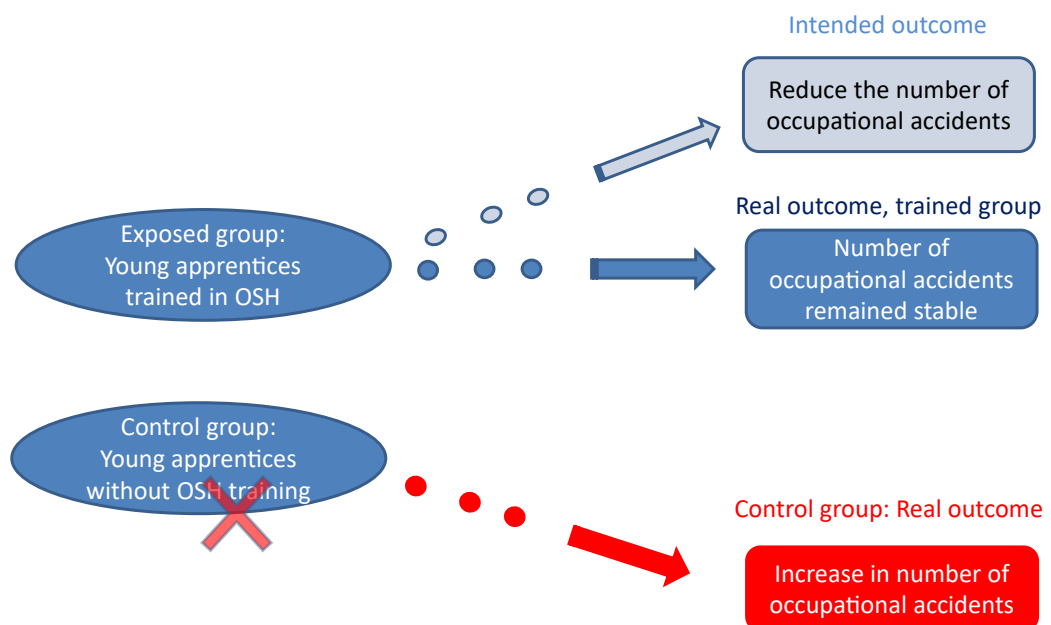
The observed outcome was a stabilization of accident occurrence for this population.

It was then decided to follow two comparison groups with the same characteristics (young people who had been trained and other young people who had not been trained, since these training courses were not mandatory).

This study proves that young people who reported having received OSH education during their schooling had 50% fewer occupational accidents than those who did not receive the training. This result takes into account the major characteristics of school careers, the induction conditions at the time of arrival and the potential risk factors for occupational accidents; data was analysed using a multiple Poisson regression.

Finally, the findings of this observational study indicate a 50% reduction in the rate of occupational accidents for young people who received OSH education during their schooling compared to those without training. The results suggest that this policy should be maintained or even strengthened.

24. Study A.1/1036 – S. Boini-Herrmann, R. Colin, M. Grzebyk – INRS - France - 2017



C. Montagnon – INRS – February 2017

Fig 8. Counterfactual study

Collection of convincing and conclusive information

While counterfactual analysis focuses on a single action, actor or set of interdependent actors (training in the example above) and traces the developments that were critical in reaching the identified or observed outcome, collecting convincing and conclusive information begins with an explanation of the set of underlying hypotheses along the path from the output to the outcome. Explaining **the theory of change underlying outputs** can provide a comprehensive view of a program's multiple incentives and their effects. Because the path is based on the activities, the connection to the activities is ensured, as long as the path is robust.

EXAMPLE

DGUV uses a multi-phase model (based on McGuire, 1989²⁵; Rogers, 1995²⁶; Singhal & Rogers, 1999²⁷) to evaluate their training programs and their campaigns. The intended outcome of their training and campaigns is to change working conditions in organizations as well as managers' and workers' behaviour. The theory used claims that there are different steps leading from knowledge to behaviour change. More precisely, the multi-phase model for assessing campaign effects describes a five-phase process from awareness of the information to adoption of the desired safe behaviour or change in the conditions at the workplace. In each phase, cognitive, emotional, and behavioural factors are presented in a linear sequence which determines the occurrence of the safe conditions and behaviour being recommended. DGUV has adapted the theoretical model to their own evaluation model for campaigns and collects conclusive information at each step of this process. In this model, the criteria and indicators to measure effectiveness are derived from the goals defined for the campaign. It assumes that the effect of a campaign occurs in tiers (phases), where the impact of each tier sets the course for the next tier. Figure 9 shows these models for the example of the campaign "Fight the risk", which is aimed at improving prevention of occupational transportation and road risk.

25. McGuire, W.J. (1989): Theoretical foundations of campaigns, In: Rice, R.E., Atkin, C.K. (Eds.): Public Communication Campaigns. 2nd ed., pp. 43-65, Newbury Park, CA: Sage Publications

26. Rogers, E.M. (1995): Diffusion of innovations, 4th edition, New York: The Free Press

27. Singhal, A.; Rogers, E.M. (1999): Entertainment Education. A Communication Strategy for Social Change. New Jersey: Lawrence Erlbaum Associates, Inc.

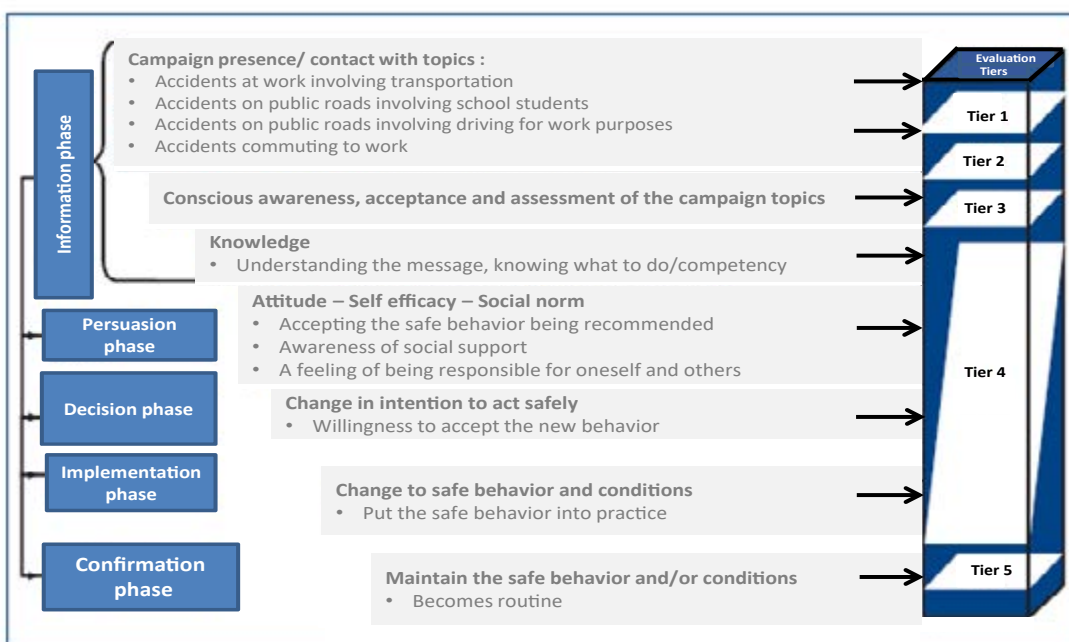
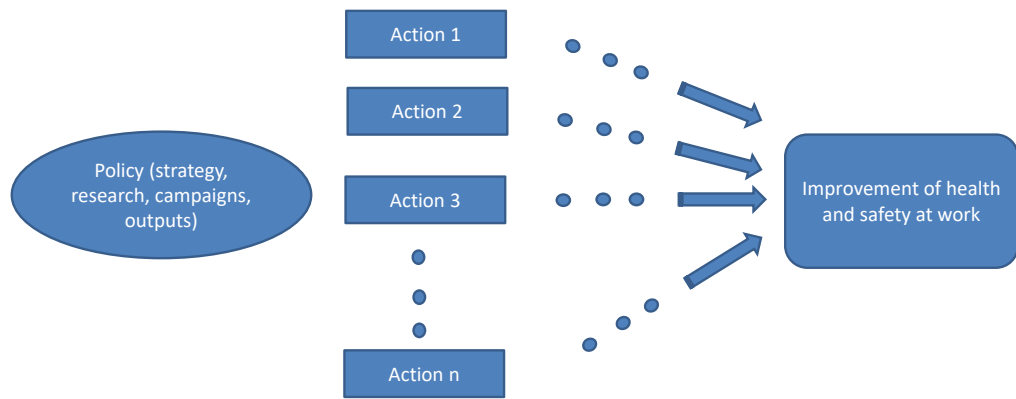


Fig 9. Theory of change - Phase model of campaign effect based on McGuire and Rogers

Globally, the theory of change in our institutes is that managers and workers should be convinced that OSH is obviously a priority topic, and that they know how to prevent injury and ill-health or know where to find information and who to ask for assistance if needed. The theory of change also includes the important contribution of federations, OSH services and practitioners and other interested parties.

As for other public policies, expected final outcomes are not obtained through a single action. Policies that aim to change a company's OSH-related decisions or workers' perception and acceptance of risk at work are based on a theory about how to make them change and are a combination of multifactorial rather than summative incentives.



C. Montagnon – INRS – February 2017

Fig 10. A multi-incentive policy

Convincing and conclusive information can thus include quantitative and qualitative data showing the strength and robustness of paths, the consistency between paths, etc.

This methodology is largely explained with examples in part IV of this document and the Annexes.

Exclusion of other probable causes

In order to prove the link between an output and an observed outcome, it is also possible to demonstrate that there is not any other cause that could explain the outcome. Therefore, after identifying possible alternative explanations for the achievement of the outcome, evidence is collected to prove that these explanations are not valid.

The study referred to above²⁸, assessing the effect of compulsory cycle helmet legislation on cyclist head injuries, was conducted following an ongoing debate in Australia about the effectiveness of this measure at the population level. Because the decline in the number of cyclist head injuries following the introduction of the law was not in itself evidence of a causal relationship, other possible explanations were sought. Many studies were conducted all over the world to explore the effectiveness of such legislation and some of them proposed other explanations:

- A decrease in cyclist injury numbers among those under 16 years old, predominantly among teenagers, observed in the years immediately following the legislation, could be because the compulsory wearing of helmets discouraged cycling. The cause would not be the compulsory wearing of helmets but the drop in the number of young bikers.
- General improvements in road safety, such as the introduction of speed limits, have an effect on the biomechanics of cyclist traffic accidents, potentially resulting in a differential change to the risk of head and limb injuries, and therefore having no connection with helmet legislation.

The main strategy for causal attribution was to identify and investigate these alternative explanations found in literature. The next step was to prove that these hypotheses were not valid by using hospital admission data, by modelling the ratio of head to limb injuries and by proving that cyclist head injuries decreased more than limb injuries after the entry into effect of the legislation. Based on these analyses, researchers found stronger evidence attributing the decrease of head injuries to the helmet legislation.

Conclusion

Our OSH institutes concluded that absolute attribution is rarely possible because of the multi-disciplinary nature of approaches and transversality.

28. The impact of compulsory cycle helmet legislation on cyclist head injuries in New South Wales, Australia. Scott R. Walter, Jake Olivier, Tim Churches, Raphael Grzebieta, Accident analysis and prevention, 2011, pp2064-2071

Moreover, taking into account the multi-factorial aspects of occupational health and safety and the technical and ethical problems raised by randomized controlled trials, our OSH institutes have developed a common methodology, based on a variety of tools, to build a systematic approach for explaining theories of change and illustrating them using the logic model. Their methodologies have the same objectives: assess their contribution by collecting conclusive and convincing information even if other approaches such as counterfactual analysis or exclusion of other explanations may also be used.

Nevertheless, proving a level of attribution is helpful in building strong evidence of contribution.

Impact and effectiveness

Coming back to the Development Assistance Committee's definition of impact: "Positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended"²⁹, it is important to note that impact is not only about effectiveness, but also long-term effect and covers direct or indirect, intended or unintended effects.

Effectiveness relates to the level to which the activities carried out based on a policy (strategy, research, campaign, output) meet their objectives.

For example, the use of distance learning/training programs for an OSH institute could have different and complementary objectives:

- Reach more workers and/or managers
- Keep control and ensure high quality of content
- Make sure that every trained person attains a sufficient level of knowledge before continuing the lesson.

If these objectives are met, the strategy of introducing distance learning programs will be effective.

Impact is about long-term and sustained intended and unintended changes in the target population. Therefore, it is not only the answers to questions about objectives that should be stable over time; other issues should also be examined to determine the impact level.

In the distance learning strategy example, questions about impact could be:

- Is the level of updating as good as it is in face-to-face training? How does this level of quality impact the quality of OSH in companies?
- Are workers trained during working hours or during their personal free time? Does this situation have any effect on their health and safety?
- What is the level of exchanges between students and with trainers? How does this impact OSH knowledge and OSH capabilities within companies?
- How does the use of the digital environment exclude some of our target audiences (culturally, technically)?
- Is the level of knowledge obtained during face-to-face training and distance learning training maintained over time?

29. Development Assistance Committee, Organisation of Economic Cooperation and Development. Glossary of Key Terms in Evaluation and Results Based Management. Paris, 2001.

Occupational accident and disease statistics and other qualitative and quantitative data

An impact evaluation should enable an OSH institute or an external evaluator to answer evaluative questions on quality, adequacy, effectiveness, efficiency and impact of a policy (strategy, research, campaign, output) and establish a conclusive report. Adequate data should therefore be qualitative and quantitative (see IV. Collection of convincing and conclusive information).

Accident and occupational disease figures are often used as indicators for assessing effectiveness of nationwide outputs. While it is generally accepted that these figures are useful and should be analysed, they have several limitations.

Indeed, impact assessment is different and broader than only examining occupational accident and disease statistics, which would assume that there is a direct and unique link between a given policy (strategy, research, campaign, output) and those statistics.

Occupational accident and disease statistics

Occupational accidents and diseases

Statistics proposed by insurance companies reflect accounting of occupational accidents and diseases. To be taken into account, accidents must have occurred during work and, in some countries, during commuting, and, depending on the country, they must result in a cessation of work for one or more days^{30,31,32}.

To be classified as an occupational disease, a disease must be **identified** by a government body as occurring as a result of work. Over time, and with the support of ILO, more and more diseases have been recognized as being due to work and are covered in regulations.

There are special “tables” in each country specifying which diseases could be considered as occupational diseases. Every occupational disease table, for every illness, includes a list of symptoms, the time limit for compensation and the list of associated tasks. All conditions must be met by the victim to obtain compensation. Any disease which meets the medical, occupational and administrative criteria given in the tables is systematically presumed to be occupational in origin, without it having to be proven. Therefore, to be taken into account in statistics, a disease must be declared as being due to work. Then, if the disease meets all the criteria, it is recognised as such; otherwise, the compensation board could issue a specific opinion for each case, on the worker’s demand.

If a disease or illness is **“recognised” as such by compensation regulation, and only in this case, it will be taken into account in statistics**. In many jurisdictions and in accordance with local workers' compensation law, there is a presumption that specific diseases are occupational

30. Four days are necessary in France for an accident to be documented.

31. In Austria, occupational accident statistics are generally based on reportable occupational accidents. These are accidents that result in inability to work for more than three days.

32. In Germany, three days are necessary.

diseases. It is important to remember that many countries do not offer compensation for certain diseases like musculoskeletal disorders caused by work (e.g. in Norway), stress, burn out, some cancers, etc. Therefore, some diseases are not included in occupational disease figures.

In addition, due to the differing levels and scopes of recognition, it is difficult to benchmark figures between different countries and assert that they reflect work-related illnesses.

The first work-related statistics that were used were only those related to accidents. Today, both occupational accident and disease statistics are generally³³ used and have similar characteristics all over the world.

As shown in Figures 11 and 12, occupational accident statistics (when injury to worker is severe enough based on national regulation) are given per 1,000 workers. We will see that the rate of events observed (a few per cent) impacts the confidence interval and therefore the conclusions that can be drawn from changes in such rates.

By nature, injuries happen during or just after accidents; therefore, the time lag between accidents and their inclusion in statistics is short.

An occupational disease is taken into account when the disease has been declared and recognised as caused by work for compensation. As a result, there may be delayed statistical reporting due to the time between exposure and effect.

Reliability and relevance of statistics

The previous paragraph identified some causes of discrepancies between the figures for occupational accidents and recognized occupational diseases and the actual figures for work-related injuries and illnesses. The consensus is that these statistics are rather exhaustive with regard to work-related accidents, perhaps less so for commuting accidents, and much less so for occupational ill-health.

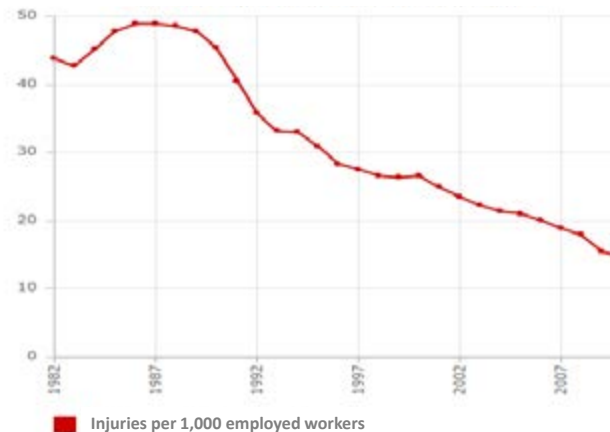
It is also recognized that reporting and recognition of injury and illnesses are incomplete, first, because not all of them are recognized and, second, because few practitioners (and workers) are adequately trained to assess the link between work and disease. In France, for example, a special committee, set up by regulation, estimated the cost of under-declaration of ill-health at up to 1 billion euros.

Fig 11. Incidence rate for the total number of accidents covering all sectors of activity from 1955 to 2008



General Social Security Regime.
Source - CNAMTS – SGE TAPR

Fig 12. Work-related injuries, Canada, 1982-2010



Source : HRSDC calculations based on data from Association of Workers Compensation Boards of Canada

33. Not true in some African and Asian countries

A LITTLE BIT OF HISTORY

The topic of industrial accident statistics was placed on the agenda of the First International Conference of Labour Statisticians in 1923, which adopted a resolution covering the classification of accidents and the form of calculation of frequency and severity rates. The Conference also considered the topic of occupational disease statistics, requesting that they be compiled in separate tables. The resolution was later revised by the Sixth International Conference of Labour Statisticians in 1947, to improve international comparability, particularly in respect of the methods used to calculate industrial injury rates, and made detailed recommendations on the methods to be followed in calculating frequency and severity rates.

Some years later, the Eighth International Conference of Labour Statisticians considered the standardization of occupational disease statistics, and adopted a resolution indicating in particular the sources of data to be used, the disease to be recorded and the classifications to be established.

Taken from the ILO website : <http://www.ilo.org/global/statistics-and-databases/statistics-overview-and-topics/safety-and-health/lang--en/index.htm>

It is also widely recognized that occupational illnesses are poorly documented in most national or international organizations because they mostly take into account incidents occurring among active workers and moreover because most work-related illnesses have long latencies.

It is therefore important to specify the amount, quality and reliability of the injury and illness data and to take into account the levels of exposure targeted by a policy (strategy, research, campaign, output).

Quantitative accidents, injury, illness and employment data and databases are certainly subject to error and bias but could still be used for showing trends.

EXAMPLE

A study conducted in 2016 showed an important difference between European countries concerning musculoskeletal disorders (MSDs)³⁴. According to the results of the Sixth European Survey on Working Conditions (Eurofound 2015), 61% of European workers claim to be exposed to repetitive hand and arm movements, 43% to painful and tiring positions, 33% to carrying or moving heavy loads and 20% to vibrations caused by machines. Each of these conditions is likely to cause MSDs. The researchers compared the lists of recognized diseases and patterns of recognition in different national countries. According to this comparison, most MSDs should be covered by all systems, and exposure criteria, when formalized, are not subject to differences between countries. However, spine diseases are not recognized as occupational diseases in Austria, Finland and Switzerland. Similarly, canal carpal tunnel syndromes are not recognized in Austria. Moreover, the MSD recognition rate, which results from the comparison between reporting and recognition levels, ranges from 69% in France to 8% in Denmark and 30% to 50% in Belgium, Finland, Italy, Sweden and Switzerland. Therefore, while occupational diseases lists are roughly similar in terms of MSD, there are significant differences in statistics between European countries. It is not so much the working conditions that explain the difference but the way in which cases are handled by insurance agencies.

34. Study report – October 2016 – Réf. Eurogip – 120/F

Occupational diseases are under-declared and under-recognised and therefore some of the data on diseases do not have the same level of accuracy as accident statistics. Neither do they have the same level of representativeness of working conditions in all countries.

Time lag of occupational disease statistics

Using only statistics might suggest that a drop in the number of workplace accidents or occupational diseases reflects improvements in workplace safety and health. This also assumes that changes should be visible in the medium term using statistics relevant to the policy (strategy, research, campaigns, outputs). However, most of the time, there is a time lag or latency period between exposure and onset of a disease, which can vary depending on a variety of factors, including level of exposure and duration of exposure, for example.

Some examples:

- A study on the development of ethmoidal adenocarcinoma in woodworkers showed that the risk of developing such a cancer was significant from the first year of exposure. The latency period, for which it was impossible to determine the influencing factors, is most often greater than 30 years and only 10% of the affected population is under 50 years of age³⁵.
- Initially, when workers are exposed to noise exceeding 85 decibels (harmfulness of noise depending on its purity, its intensity, its rhythm, its association with vibrations, the duration of worker exposure), they may not be bothered by this noise, but they also do not necessarily know its consequences. The latency period before the onset of deafness can be several months or even several years. First, workers begin little by little to no longer hear certain sounds, especially if they are acute. Recovery of hearing when the source of the noise is no longer present might lead them to think they are suffering from transient fatigue. Mild disturbances, such as whistling and the feeling of having clogged ears may appear. Several months or years afterwards, deafness will be overt and irreversible.
- Clinical history is a major component of occupational asthma investigations. In addition to symptoms suggestive of asthma (chest tightness, sibilant dyspnea, dry cough), finding associated clinical manifestations can be a long and complex process. The chronology of the symptoms may be atypical: symptoms might appear after a few days of repeated exposure, loss of rhythmicity and perpetuation of symptoms during the holidays. The delay between the start of exposure and the first symptoms varies from a few weeks to several years³⁶.
- Etc.

In fact, statistics do provide a view of the effects (sometimes old) of working conditions on health and safety (e.g. cancers, deafness, musculoskeletal disorders and a range of ill-health, including allergies, respiratory diseases, impaired fertility, neuromuscular and dermatological disorders, etc.) and should be used carefully when assessing impact. Moreover, it seems difficult to wait for years to establish the effectiveness and impact of actions and reorient a strategy or build a new one. While statistics are important, most of the time they arrive too late to be useful.

It is also important to be able to investigate the future impact of emerging risks and to implement prevention before the risk is proven, which is not possible with statistics.

Statistics might also be used to illuminate similar processes and help build strategies, for example to address epidemics and infectious diseases.

35. De Gabory L, Conso F, Barry B, Stoll D - La carcinogenèse de l'adénocarcinome de l'ethmoïde aux poussières de bois - : Rev Laryngol Otol Rhinol. 2009;130,2:93-104.

36. M.-C. Kopferschmitt-Kubler, E. Popin, G. Pauli, pneumologia department, University Hospital of Strasbourg, France. Diagnosis and management of work-related asthma. Revue des Maladies Respiratoires Vol 25, N° 8 - octobre 2008 pp. 999-1012

Data influenced by different factors

Injuries and ill-health usually have multiple causes. In addition, statistics can be influenced by many different factors.

EXAMPLE

Traffic accidents are influenced just as much by the weather, other drivers' behaviour or the road quality as they are by the insured driver's own behaviour.

Other contributing factors outside the sphere of preventive measures include: economic conditions, legal regulations, other preventive measures and other road safety measures at the federal, state and local levels, quality of the accident data, and natural statistical fluctuations. It is not always known how these other factors interact and how they influence the occurrence of traffic accidents.

In principle, this example can be applied to statistics in other situations.

The number of occupational accidents and diseases may vary from year to year due to various causes. The interrelation of these variables (causes) is difficult to identify; they cannot be controlled or all be systematically included in data collection.

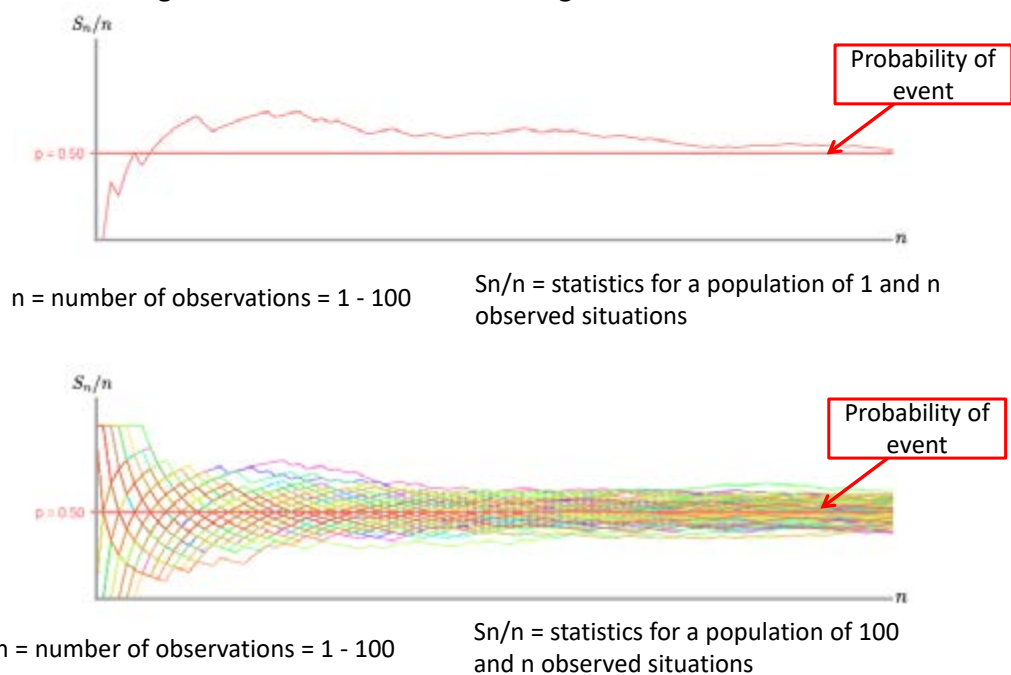
Statistics and probability

Statistics are not probabilities.

Occupational accidents are, by their nature, random phenomena: The number of occurrences of a given type of accident will depend on various factors included hazard, type of exposure, number of persons exposed.

However, the results of observed situations will approach the same stable limit when the number of observations tends to infinity. The law of large numbers tells us that these results converge towards the probability of the event.

Fig 13. Illustration of the law of large numbers



C. Montagnon (INRS). February 2017
Realized with the Experimentarium Digitale proposed by Jean-René Chazottes, Marc Monticelli - CNRS

A drop in the number of occupational accidents does not always mathematically prove that this number could not have increased. What we want to be sure of is that the probability of accident occurrence has dropped.

Let us assume, for example, that the probability of a slaughterhouse employee being cut over one year is 13%, and that this slaughterhouse has 20 employees. Mathematically, the probability for such an injury during a given year is only 6.17% (0.87^{20}). However, we can imagine that this company did not detect any accidents for three consecutive years and therefore is not encouraged to take preventive measures. The use of statistical observations at this company's scale is not relevant, whereas the use of national statistics should encourage this company to act.

Indeed, the law of large numbers tells us that on a national scale, the number of cutting accidents observed should be close to the probability. A conclusion based on the statistical analysis of a population and the study of the evolution of these statistical figures cannot be obtained with complete certainty but there may be reasonable degree of confidence when based on a large scale.

Similarly, any weak and non-stable variation over time should not be the subject of hasty conclusion and should be interpreted with great care. Indeed, small changes in the figure could be misinterpreted due to the large uncertainty range.

Statistics must be considered over a long period of time to really be readable, while requests for impact statistics from funders are for shorter periods of time.

Other possible data sources: national and international surveys on working and OSH conditions

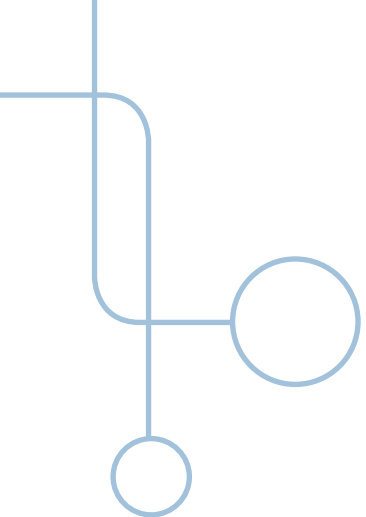
Occupational injury and disease statistics can give information about the effectiveness of policy (strategy, research, campaigns, outputs) at the national or international level. Other data on working conditions and risks can give useful information on effectiveness.

Information that can be used to answer adequacy questions will be different. Adequacy means that the chosen objectives and goals are an appropriate response to the needs and expectations of workers and funders and are in line with the institute's mission. Therefore, other conclusive information should be provided or sought. The same conclusion applies to consistency and efficiency (see IV. Evaluation questions and criteria).

Enquiries are conducted by different worldwide organizations such as EU-OHSA (ESENER enquiries), the European Commission (Eurostat), the European Foundation for the Improvement of Living and Working Conditions (Sixth European working conditions survey on health and well-being at work, working time and work-life balance in a life course perspective, etc.), ILO (which proposes annual worldwide statistics on population and labour force, employment, unemployment and labour underutilization, working time, earnings and labour cost, social protection, safety and health at work, industrial relations, youth, labour migration, etc.), the European Agency for Safety and Health at Work (Risk Observatory) and governments' labour departments. These organizations use a variety of interesting and useful data.

ESENER for example, gives information on psychosocial risk factors which have increased in service sectors, such as external violence, repetitive movements, and strenuous working postures.

EU-OSHA has decided that while "data have been available for many years on work-related accidents and ill-health through surveys directed at workers and through reporting systems,



little was known about the way in which health and safety risks are managed in practice, particularly those that are growing and/or emerging, such as musculoskeletal disorders (MSDs), work-related stress, violence and harassment³⁷”.

ESENER thus directly explored the views of European establishments on how health and safety risks are managed at their workplace. The survey, which involved over 49,000 interviews and covered 36 countries, asked respondents about the measures taken at their workplace, the main drivers for taking OSH action and the most significant barriers. The answers to such questions represent other possible data.

Both the Labour Force Survey and the European Working Conditions Survey (EWCS) used questionnaires on exposure to risk factors at work that can adversely affect health or well-being. Both surveys distinguished between physical and psychosocial risk factors.

The European Foundation for the Improvement of Living and Working Conditions interviewed from 1,000 to 3,300 workers per country, depending on the size of the country and national arrangements. Face-to-face interviews were carried out in peoples’ homes and covered a comprehensive list of questions regarding their working conditions³⁸. The survey questionnaire covered a wide-ranging set of topics: worker characteristics (including household situation), job design, employment conditions, working time, exposure to physical risks, work organization, skills use and autonomy, work-life balance, worker participation and representation, the social environment at work, and health and well-being.

As regards psychosocial risks, researchers created 36 different questionnaires to assess psychosocial working conditions and level of psychosocial risks. Many different tools also exist to assess different types of physical, chemical and biological risks on a large scale.

Conclusion



National and international statistics based on a large number of workers can give a very good idea of the probability of the occurrence of an event, as long as one takes into account the time lag between exposure and the event and the type of event. Those statistics cannot be the only source of information used to establish a strategy, but they do have an influence as they are one good way to detect a need for prevention.

Other elements of context are necessary to build a policy (strategy, research, campaign, output). Finally, even if statistics are useful for reducing the risk of accidents, from a statistical point of view, accidents rarely happen. And changes in numbers could be difficult to explain.

Another important reason not to focus only on statistics is that they may conceal potential and new risks. Statistics do not encourage prospective thinking and proactive rather than reactive approaches. This is why surveys and prospective research are necessary along with need and expectation studies. Upstream proactive preventive measures, which are not only recommended but also financially beneficial, can be integrated when designing policy (strategy, research, campaigns, outputs).

37. Second European Survey of Enterprises on New and Emerging Risks (ESENER-2) Overview Report: Managing Safety and Health at Work European Risk Observatory – EU-OSHA– 2015

38. Sixth European Working Conditions Survey: 2015– European Foundation for the Improvement of Living and Working Conditions

IV

STEPS FOR AN EVALUATION

It is important to be aware that an evaluation is different from a single study or enquiry. An evaluation approach examines the logic of the policy (strategy, research, campaign, output) and presents a set of questions to be addressed for judging its legitimacy. Then the data must be compiled, including financial and production information and results of previous surveys and enquiries among other available conclusive and convincing information.

Looking at available data, one must decide what gaps still exist and choose the best way to find the answers to remaining questions (e.g. bibliographic review, questionnaires, focus groups and case studies).

Then, all the available information must be analysed to produce a report³⁹ by crossing the different viewpoints. This report must provide an impact assessment, which guides the steps forward.

³⁹. This report could be a self-assessment report or could be conducted by an external organization (see Annex V.5)



Scope

Why define a scope?

As previously mentioned, an evaluation can be time-consuming (over a year) and may be expensive, depending on the questions to be answered. However, evaluation can be scalable depending on available resources; therefore, institutes should not be intimidated by the process. It is just important to carefully define the scope of the evaluation.

Elements of a scope

Scope specifies the topic chosen, the period to be examined and the prior aspects to be assessed.

Best practices and examples

The scope of the evaluation is chosen taking into account a large number of parameters, such as available resources, available data and results of studies and enquiries, needs and expectations of interested parties about this evaluation, importance of topics, etc. One can decide to evaluate on a very large scale (all the institute's activities) or specific aspects or issues, or even on a much narrower scale such as a single output.

See Annex II.

Sociogram

Why a sociogram?

Sociograms are used to identify all interested parties and their role: who decides, who gives the funding, who contributes to the policy (strategy, research, campaign, output), and who it will benefit. Sociograms have different goals:

- Sociograms presented as drawings make it easy and simple to identify all different interested parties and their roles when identifying all interested parties that contribute to achieving the goals of a policy, strategy, research program, campaign or output. These internal and external interested parties have their own ideas about their role, their needs and expectations and could be associated in evaluation committee (see section "Who should prepare for evaluation").
- A sociogram helps to identify all people that should be consulted for enquiries.
- It helps contributors to the evaluation process to clearly identify the target audience when building the logic model as well as afterwards when designing a new policy (strategy, research, campaign, output).

Elements of a sociogram

Depending on the scope, a sociogram could have different levels of complexity. The level of detail will depend on the topic chosen and whether it is a policy, strategy, research, campaign, output, etc.

It is built by answering the following questions: Who funds? Who decides? Who acts? Who is part of the intermediate and final target audience? Who are the partners, etc., for this policy (strategy, research, campaign, output)?

Best practices and examples

In order to better visualise contributors, actors and targets, it could be useful to use drawings showing geometric shapes and their intersections.

See Annex III.

Logic model

Why a logic model?

A central challenge in demonstrating an institute's impact is to describe the path by which the activities and the ensuing outputs achieve their intended outcomes. Logic models, as a tool used in the methodology, can help with this demonstration. It is a visual depiction of the stages across which activities are translated into outcomes and how interested parties use them. Such depictions are helpful for reviewers to understand how activities achieve societal objectives or impacts.

A logic model lays out the program's plan for how resources, activities and outputs lead to outcomes. Logic models do not claim to provide attribution of outcomes to activities but they show how the different outputs have complementary effects which help to achieve a desired final outcome. By showing that multiple different activities and multiple different contributors lead to the same final outcome, they help to define the program's sphere of influence.

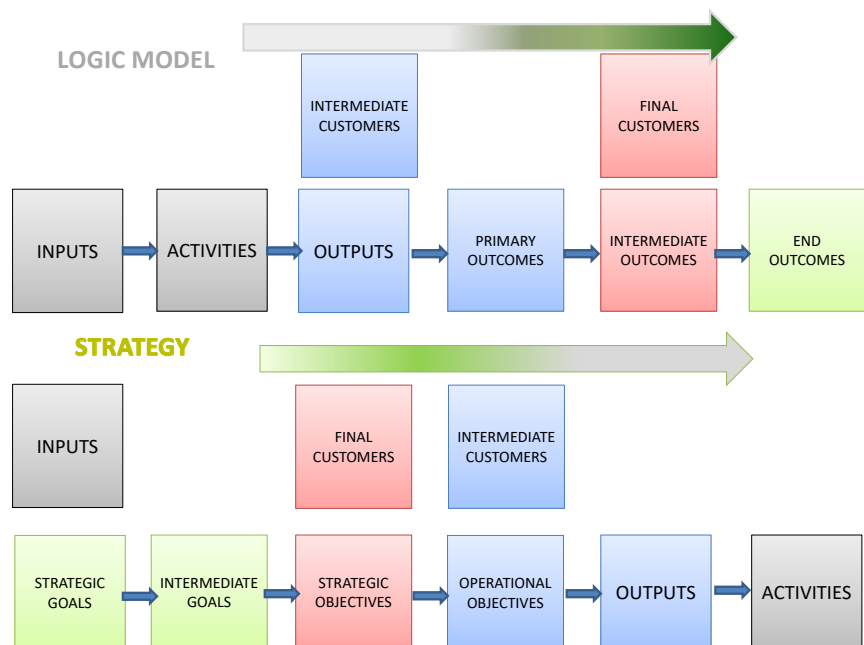


Fig 14. Adapted from our six OSH Institutes' Logic Model

C. Montagnon – INRS – March 2017

Measurable end outcomes are often difficult to assess; this is one of the major reasons for using the logic model and showing the contribution of intermediate outcomes to end outcomes.

Logic models provide better understanding and representation of different pathways and steps that designers of policy (strategy, research, campaigns, outputs) had in mind for outputs.

It could be quite interesting and enlightening to compare a logic model that follows a top-down path with the strategy used upstream by managers and designers (this approach is generally based on the expected results established on the basis of identified needs in order to establish an action strategy that is set out in strategic and operational objectives). A comparison of the two paths will lead to questions about internal consistency with other strategies, research, campaigns and outputs in the same institute.

While the logic model shows the designer's intentions, bringing together information from the logic model and written strategic and operational plans helps to raise questions about the fidelity of the policy.

Therefore, logic models strengthen management and control of strategy and enable follow-up of research and transfer activities.

Logic models can serve as communication devices because they can provide reviewers with a clear image or map of the strategy (or research or campaign), its outputs and its intended outcomes. They prove and show that the policy (strategy, research, campaigns, outputs) is on track and in line with the mission and the goals of the organization.

They can clearly identify the boundaries and responsibilities of the policy (strategy, research, campaigns, outputs).

Logic models are also a good tool for identifying and structuring existing and necessary conclusive and convincing information as shown below. Logic models can show what data are available or easy to obtain in order to complete the collection of convincing and conclusive information and what data could be necessary to improve this collection of convincing and conclusive information.

Elements of a logic model

A logic model should include all or some of the following, depending on the scope:

- Inputs (resources)
- Activities
- Outputs
- Intermediate target audience and intermediate outcomes (cascading levels could be useful)
- End target audience and end outcomes

The standard structure of a logic model is a representation of the pathway from activities to final outcomes through different levels of target audiences. There are a number of ways to draw and customize one's logic models, and each of our institutes has its own way of depicting this representation, balancing between the simplicity of the basic flow and the inclusion of important information, given that more explanations will be given in the collection of convincing and conclusive information (see below).

Best practices and examples

Filling in the logic models requires information and a way of thinking that is unusual for many researchers and experts. This information is often not readily available and is best generated through open discussions with personnel involved in the activities relevant to the defined scope.

While it is sometimes a long and difficult process, building the logic model with those involved is nevertheless important and provides incentive. From a pedagogical point of view, it helps them to understand and appropriate the evaluation process, making it easier and more fluent and helping the establishment to develop a real evaluation culture.

It is important to be rigorous and pay particular attention to three specific points:

- a common and consistently used language during all evaluation processes;
- connections between boxes that should be understood and consensually accepted; and
- a general consensus on the completed logic model and its representation.

Questions that could be asked during open discussions:

- What is (was) the major OSH problem your program was addressing?
- What were the internal and external contexts?
- What does your activity on this topic generate as outputs?
- What are the outputs in the scope?
- Who is the target audience of each of your outputs?

See Annex IV.

Collection of convincing and conclusive information

Why a process for the collection of convincing and conclusive information?

The central purpose of the evaluation is to communicate to reviewers which activities have contributed to societal OSH outcomes. Therefore, the collection of convincing and conclusive information is designed to convey and support claims of impact.

Structured on the basis of the list of outputs, the list of interested parties or sociogram and the logic model, this collection of convincing and conclusive information contains all the known elements that give initial evidence of a policy's contribution.

A key component of the outcome narrative is that it serves as an initial tool to communicate the impact of actions conducted. Another key component is the logic model, which shows the interaction between research and transfer activities and how all the linked outputs contribute to the same final outcomes: health and safety of workers.

A collection of such information helps an organization to have a clear view of what is known about intermediate and, more rarely, end outcomes, decide what needs to be built to have permanent knowledge about chosen outcomes and what should be investigated as new knowledge.

The results of building and analysing the evidence package and explaining the content and aim of each output provides useful information to the designer and/or managers on how to improve the policy (strategy, research, campaign, output) even before having conducted any evaluation.

It also helps to reveal the additional enquiries, researches, studies and/or reports that are needed before evaluation is conducted.

Elements of the collection of convincing and conclusive information process

The collection of convincing and conclusive information contains the description of outputs, the description of all interested parties and their needs and expectations as already known.

It also contains all or some of the following:

- Overview of the outputs that fall within the scope
- Narrative section on each output
 - Issue – what are the reasons this output was selected? This includes statistics, analysis of needs and expectations, analysis of the context
 - Approach – which strategy? For which target audience?
 - Expected results
- Information on resources which identifies intramural budget, staff, facilities and management involved in the program and external resources
- Qualitative and quantitative data and available reports on enquiries
- Evidence may take the form of anecdotal narratives, potentially supplemented by customer surveys or other forms of customer feedback. Simply handing over volumes of information to external reviewers without explanation is not considered sufficient to build a real analysis and a good report. It also describes all the knowledge about outcomes, existing enquiries and reports, data, etc.
- External factors, independent from the institute, that could have some influence on intermediate or end outcomes.

It can be useful to have it completed with the following:

- Presentation of the institute and its mission, organization and activities.
- Scope

This collection of convincing and conclusive information will be analyzed by those responsible for the evaluation report.

Best practices and examples

Outputs are most easily described when the description is based on the historical tracing method and exchanges with the designers(s) of the policy (strategy, research, campaigns, outputs). The historical tracing method traces in chronological order a series of interrelated events that

have led to the project being selected and how it is structured as well as external or internal events that could have affected the outcomes.

Questions that could be asked:

- Explain the context of your policy (strategy, research, campaigns, outputs).
- How are the outputs disseminated or how will they be disseminated?
- Who are the partners and other stakeholders?
- Have you identified external factors that could affect your efforts?
- What were the declared goals of your work?

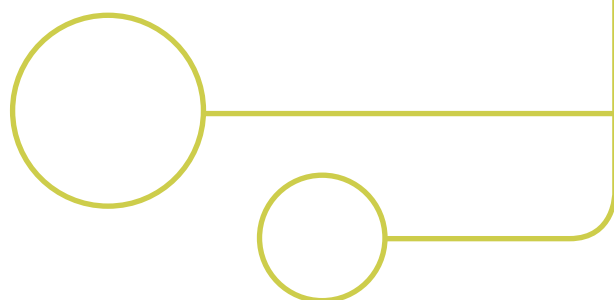
The collection of convincing and conclusive information should be clear, complete but concise and accessible by external bodies that are not necessarily experts on the field being evaluated. One should be kept in mind that evaluators tend to approach information from another viewpoint, looking for relevance, efficacy, effectiveness and consistency. Therefore, they will focus on the causal links as shown in the logic model and will test the robustness of these links. But, it is not enough to just collect information; the content has to be rewritten for the public. It is preferable to have a common presentation for each output and to use the same structure from one evaluation to the next, with the aim being to reinforce an internal evaluation culture and to offer the evaluation project leader the opportunity to propose examples to new participants.

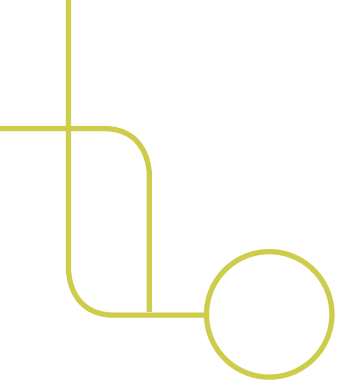
Evidence should be objective and verifiable data or justified qualitative viewpoints (enquiries done by external auditor, stakeholders, target groups).

External factors could include work legislation, major incidents and disasters, political environment, technological developments, market forces, new access to databases and surveys, etc. The commitment of industry, labour organizations and government is another critical external factor: these might be affected by changes in government and changes in law, obstacles to regulation or different priorities of the regulatory agencies. For example, recommendations for improved respiratory protection programs have been stopped or implemented on a longer than expected period (allowing more time to improve applicability to affiliated undertakings). External factors could be cost of solutions or current economic incentives inhibiting implementation of outputs; new products impacting health and safety; reduction of funds or human resources decided by external decision-makers; changes in technologies.

One of the most difficult aspects of an assessment is data interpretation and taking into account the scope and limitations of the data. It is therefore important to collect qualitative and quantitative data because they do not provide the same information. Quantitative data most often show trends while qualitative data are used to qualify trends, identify potential causes, more finely analyse the terms used, etc. Qualitative and quantitative data on end outcomes could also be extracted from exposure data collected by national and international bodies (investigations conducted by labour departments or national and international public bodies).

See Annex V.





Evaluation questions and criteria

Why define evaluation questions and criteria?

The formulation of evaluative questions is a key step which makes it possible to define the scope of application. Along with the associated criteria, they help to explain priorities when interviewing participants and to communicate with the reviewer on the points requiring clarification according to the institute, and the criteria for success. As reviewers may not be experts in the technical field covered (health and safety at work), evaluative questions and criteria are a good tool for exchanges and discussion.

These questions and criteria have to be provided to internal or external auditors to explain the main questions that need to be answered.

Working on evaluative questions will therefore help managers and designers of policy and strategy to take into account new ways of thinking through these evaluative questions and criteria and then build and propose better projects.

Elements of the evaluation questions and criteria

Finding out and expressing a set of evaluation questions and criteria is generally the result of a careful study of the logic model and of the questions specified in the scope and emerges from open and broad discussions with interested parties and the evaluation committee (see below).

Best practices and examples

To help nourish and structure the collective consideration of these potential questions and criteria, two approaches are generally considered that could be helpful to set up a judgment: the first is the question register (what should be questioned), and the other is the different ways of asking questions (dimensions).

Six common registers (see VI. Glossary)

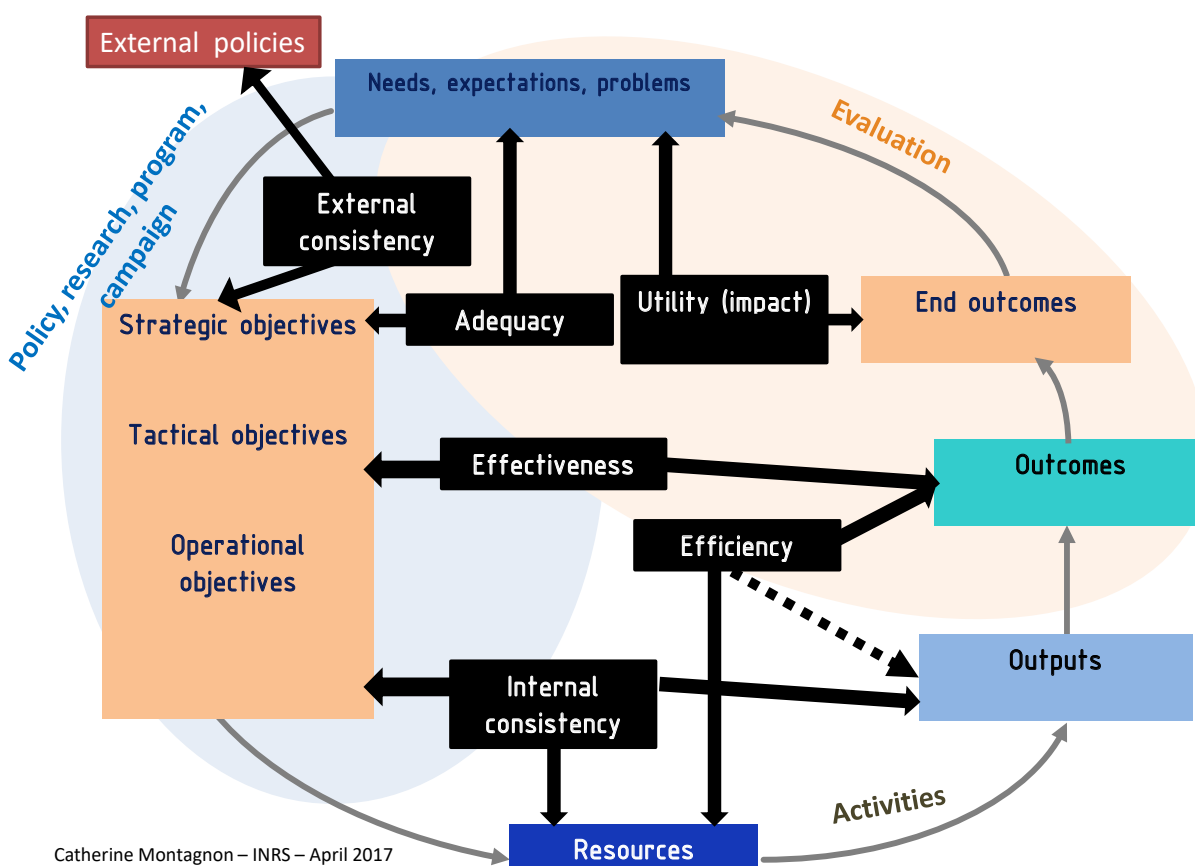
- Adequacy (relevance)
- Internal consistency (including fidelity)
- External consistency
- Effectiveness
- Efficiency
- Impact or usefulness

Once the scope of evaluation has been defined, the logic model gives an overall view of the intents and goals pursued by the implementation of the different outputs. The logic model and sociogram serve to question the validity and value of the policy (strategy, research, campaigns, outputs):

- Were the objectives of this program in line with the real needs and expectations of interested parties? What are the links between prevention needs, problems and issues identified by the institute, real problems and challenges in the field and the expected results and effects? This is questioning adequacy.

- Was the breakdown of the desired outcome into strategic and operational objectives faithfully implemented when the policy was translated into outputs? This is questioning fidelity.
- Have intermediate objectives been achieved? This is questioning effectiveness of the actions taken.
- Could they have been better achieved with the same or less financial or human resources? This is questioning efficiency.
- Are objectives and outputs complementary or in line with those of other operators? This is questioning the external consistency.
- Are the resources allocated to the project (human, financial, material) sufficient or too great in relation to the objectives? Are the type of planned outputs and targets appropriate for the intended outcomes? Do the different messages conveyed by outputs complement each other or compete with each other? This is questioning internal consistency.
- Are the observed effects stable over time? Has the adopted policy been unfavorable to any sectors of activity, to any public or to the prevention of any risks? This is questioning impact.

Fig 15. Implementation of OSH policy and registers for evaluation



Three different types of questions (dimensions)

- Cognitive questions help to clarify what has happened and the contribution to intended outcomes. Cognitive questions help to judge the what and the how.
Example: How does distance learning facilitate learning and skills development?
- Normative questions help with judgment and are based on criteria. They investigate whether the policy (strategy, research, campaigns, outputs) or the step in the policy (strategy, research, campaigns, outputs) was enough, fair, suitable, consistent with objectives, etc.
Example: To what extent does self-training satisfy the need for the required number of OSH practitioners to be trained?
- Instrumental questions help with action. They are based on comparisons and explanations relating to differences.
Example: After which type of training have the trainees best implemented preventive measures in the organization?

Evaluation questions and criteria should be consistent with the OSH institute's mission, its external context and its culture. This process is aimed at choosing, amongst all the possible questions, those that are necessary and sufficient to answer the overall question specified in the scope.

Criteria

Criteria help to better identify the issues that evaluation questions should answer and to formulate the quantitative indicators or the qualitative descriptors to be collected. Establishing these criteria is based on an in-depth understanding of the issues. The criteria represent shared values on the qualitative and quantitative levels with regard to the expected results. This is why they are generally expressed in a positive way.

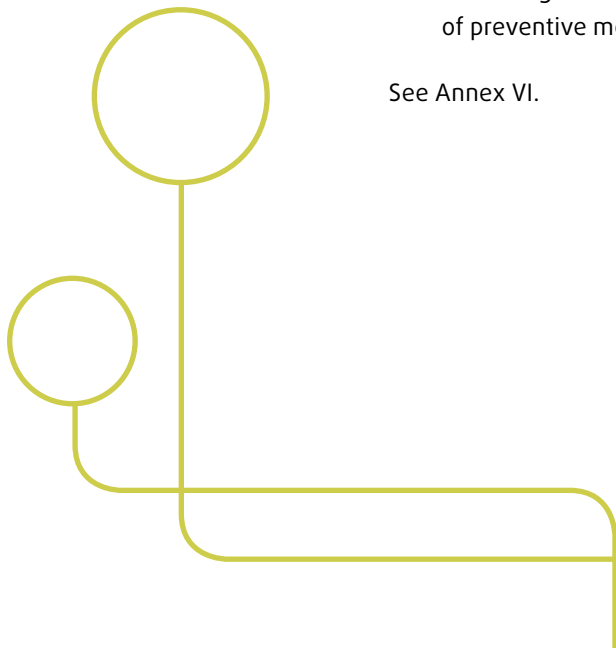
Example:

Question: How does distance learning facilitate learning and skills development?

Criteria: The institute considers that the trainees have had facilitated learning and good development of their skills if:

- Criterion 1: the modalities take into account their professional and personal constraints.
- Criterion 2: the modalities take into account their different learning rhythms.
- Criterion 3: learners feel more able to act in business.
- Criterion 4: the use of digital tools in training seems intuitive and effective.
- Criterion 5: a concrete approach to the professional situation facilitates their appropriation of preventive methods and tools.

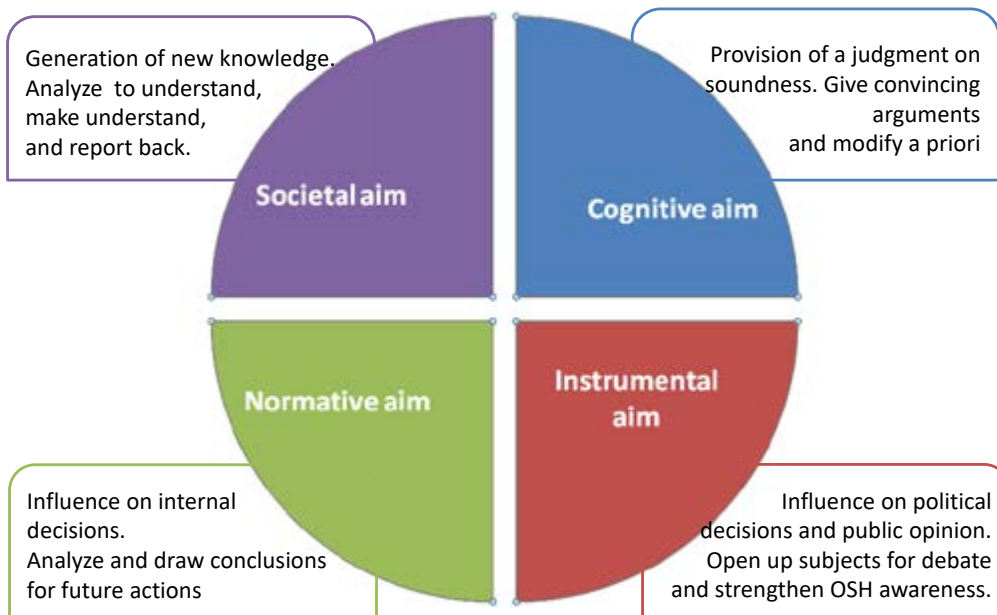
See Annex VI.



Analysis and report

The aim of the analysis and report is to establish an overall, internal and external, assessment in order to facilitate improvement of policy and strategies.

Fig 16. Cross analysis and evaluation registers



C. Montagnon - INRS – March 2017 – Inspired from « Manuel de l'évaluation des politiques publiques »- Dominique Vollet, Farid Hadjab

In order to be able to make a judgment about the value and the legitimacy of the policy (strategy, research, campaigns, outputs) implemented and answer the evaluation questions, the sociogram, the logic model, the collection of convincing and conclusive data and other existing materials must be analysed. Then, the need for additional materials must be evaluated.

This wide-ranging information is collected from the various stakeholders and optimized by exploiting the complementarity of quantitative and qualitative approaches and the different modes of collection.

After analyzing the results of each of the complementary data collections previously identified, cross analysis may be used to consider the different methodologies used, the possible limitations, the major results, the convergent or divergent elements, the difficulties and good practices identified, the lessons learned, the proposals made by the actors, etc.

See Annex VII.

Action planning

In order for an evaluation to have real added value for managers, decision-makers, partners and teams, it is necessary for its findings to be properly disseminated and receive favorable feedback from potential users. Particular attention must therefore be paid to the choices made when communicating the results of the evaluation.

“Evaluation is becoming increasingly important and prevalent. It should be planned for in all projects, at best from the very outset.”

Dr Frauke Jahn
– Head of the Research and
Consulting Department at the Institute
for Work and Health of the DGUV

Planning of improvement actions is one of the most important stages of evaluation: How will the reports be used? While a good evaluation report always brings new knowledge, it does not necessarily lead to decision-making. Often, achieving buy-in of the recommendations of the evaluation is one of the most difficult challenges in the evaluation process. Indeed, the decision-making processes often involve several actors and many factors. Actively involving all internal and external interested parties at this stage of the evaluation has the advantage of giving

the recommendations a more realistic dimension and of taking into account the concerns of the various stakeholders, who can subsequently adopt them more easily.

Lessons learned from the evaluation should feed into a set of knowledge (monitoring system and the various evaluations carried out) so that a report can be produced at the end of the planned evaluation period about the institute’s contribution to improving safety and health at work.

See Annex VIII.

See Annex IX.

V

CONDITIONS FOR A SUCCESSFUL PROCESS

In order to ensure the success of the evaluation effort, it has to migrate through multiple levels within the organization from the director of the organization, to frontline teams. This requires a culture of evaluation to be established, and such a culture will take time to mature.

Key success factors for an effective evaluation process overtime include support from top management, a clearly identified evaluation project leader and a clearly structured, free-flowing and easily understandable project chart.

The overall assessment approach: a culture-based methodology

Each institute that has engaged in an evaluation process has come to the same conclusion:

After years of surveys carried out in attempts to improve some of the outcomes of the institutes, each of them, through the vision of their Director General, has been involved in a genuine overall assessment process.

Implementing an evaluation methodology allows senior management to go beyond multiplicity of one-off enquiries and develop a comprehensive approach by measuring the full impact of an organization's policy, programs, products and services. The adoption of a true evaluation culture initiates a process of reflection on how to strengthen the institute and to make it progress. It is no longer just a question of observing, collecting data and drawing immediate lessons but rather a question of learning while determining how to best influence the implemented strategies and fulfil the institute's mission.

Each institute has put in place a somewhat similar organizational structure:

- An approach supported by the general manager
- An internal communication plan explaining why to evaluate, how to begin the evaluation process and what the expected results are.
- One person identified as the primary contact on the subject who will be the identified pilot in charge of properly implementing the methodology used and compiling the convincing and conclusive information
- A formal and communicated organization of the process

“Evaluation is crucial. I have decided that INRS will evaluate policy, relying on a common and shared methodology, and will demonstrate its contribution to health and safety in the workplace. This approach is intended to be a long-term process with two topics being evaluated every year.”

Stéphane Pimbert
– General Manager- INRS

Over time, these elements of an evaluation culture can be scaled up to reach all participants in the evaluation process.

Therefore it is important to give the process time, have dedicated resources on the topic and let the culture infuse.

Management must be convinced of the value of the evaluation, since it must be willing and able to support the process by integrating it into the day-to-day activities of the organization. Most organizations have trained their pool of managers in these evaluative practices

Changing an organization's culture and integrating evaluation into it is a long and time-consuming process. But everyone can follow this road at his/her own pace. Each step provides information, evidence and routes for improvement of the organization's policies and strategies.

The true benefit of an evaluation can only be achieved if it is planned, assigned, implemented and supported without any preconceived views regarding its outcome. Those responsible should not only agree to carry out an evaluation but they must also want to implement the results. Managers should be prepared to take advantage of the opportunities for change.

Adequate resources need to be available to carry out evaluations. In order to ensure there are enough resources for the method chosen for each individual evaluation, it is vital to prioritise which measures are to be evaluated.

A LITTLE BIT OF HISTORY

NIOSH: Partly in response to the Government Performance and Results Act (GPRA), but mostly because of a genuine belief that program evaluation was an important tool to determine whether a program was effective and could be improved to meet goals, NIOSH Director John Howard decided in 2005 that NIOSH would take its first evaluation step. In order to conduct these reviews in an orderly and consistent way, NIOSH charged the National Academies with creating a study panel to develop a framework that could guide all the reviews. Today, evaluation at regular intervals has become the norm, with the trend toward internal management review supplemented by periodic evaluation by external parties.

INRS: An internal working group indicated in 2011: “Today INRS does not have a real culture of evaluation”. Despite a good number of enquiries conducted for many years, INRS has been conducting actions related to the evaluation of its activities: qualitative studies, readership studies on brochures, assessment of the scientific quality of research by independent external experts, satisfaction and impact study of assistance actions, etc. In 2013, Stephane Pimbert decided to implement an evaluation policy, based on an accepted methodology ensuring consistency between its various evaluation actions. This evaluation approach answers a number of objectives set by its board of directors and is in line with the evolutions of the environment in this field. INRS therefore aims, through its evaluation process, to be able to demonstrate its contribution to OSH.

IRSST: In 2004, the Robert-Sauvé Research Institute for Occupational Health and Safety (IRSST), at the instigation of its Director General, launched an extensive evaluation study. The aim was to analyse the current research capacity, determine whether it was optimal given the available resources and whether the current organizational structure was adequate for achieving the mission. Periodic evaluations allow the organization to assess the progress made, to identify the main difficulties and to illuminate external and internal challenges and to draw up a plan of action for the next five-year period. The conceptual framework used to develop this review was based on a document developed by the International Development Research Center (IDRC) and an original approach built on the work of a strategic development committee made up of 11 people from IRSST. This methodology has been pursued and strengthened since then and the evaluation has become a five-year participative process.

DGUV: DGUV created the evaluation section in 2006 that now comprises seven people. The rising significance of evaluation evolved from a political debate in Germany about the effectiveness and efficiency of prevention measures. A comprehensive research project titled “Quality in Prevention – Effectiveness and Efficiency of the Prevention Services of the Social Accident Insurance in Germany” can be seen as the starting point of evaluation at DGUV. The first “evaluation” expert talk took place in 2010 when experts from DGUV and several statutory accident insurance institutions dealing with evaluation in their daily work came together to discuss current evaluation topics and future OSH evaluation strategies in Germany. Other expert talks on current evaluation topics took place in 2012, 2014, and 2016.

AUVA: Against the backdrop of scarce resources, which had resulted in near-constant increases in cost pressure in the health sector, proof of effectiveness and efficiency were becoming increasingly important. In 2013, AUVA commissioned the Department of Applied Psychology at the University of Vienna to develop an integrated modular system called “EvaluationKIT” (eKIT) in close consultation with the client. Since 2014, eKIT has been the basis for evaluations in the field of prevention at AUVA, particularly with regard to prevention campaigns. The use of a common model for all evaluations allows the results of interventions to be compared. Evaluators seeking contracts with AUVA must refer to this model in their bids and must specify how they will take it into account in their evaluation, stipulating which areas they would like to focus on and why.

A clear mission is a key factor for the success of evaluation

A clear and shared mission statement is the foundation of an evaluation culture in the organization. When properly formulated and understood, the mission statement makes it possible to reveal, both internally and externally, the values, rules and objectives in force in the organization. It is a point of reference from which achievements are measured and it represents, for all the personnel and management, the final expected impact.

Who should lead the evaluation process?

Each institute has designated a person in charge of the evaluation process. Directly reporting to the general manager, this person:

- pilots the evaluation process at the institute's level;
- implements strategic evaluations in liaison with the evaluation committee (facilitating the process, participating in the steering group, etc.);
- coordinates the reporting of follow-up information;
- accompanies the evaluation committees in their evaluation work (methodological support);
- gradually becomes a resource center by participating in the various networks active in the field of public policy evaluation, sharing the technical resources collected and ensuring the capitalization of the evaluation approach for the entire institute;
- organizes training and awareness-raising on the evaluation of the personnel concerned; and
- ensures the monitoring and reporting of evaluation activities to the general manager.

Who should prepare the evaluation?

The OSH institutes have, more or less, used the same methodology to build their collection of convincing and conclusive information, which is necessary before asking for external assessment or for special enquiries to complete the collection of convincing and conclusive information. The methodology is based on the commitment and work of an evaluation committee, composed of persons with expertise related to the specific program under review, and may include scientific researchers, representatives of stakeholder groups (such as labour unions, industry) and experts in technology, training, information, communication etc.

Based on exchanges between our institutes, it appears that each evaluation committee consists of about 10 members and that the number of meetings varies between 3 and 15 per subject area, depending on the institutes.

An evaluation committee can be set up for each topic the organization chooses to evaluate.

See Annex X.

Who should conduct the evaluation?

From a scientific and ethical point of view, it is recommended to entrust the evaluation to an independent party with no vested interest in a favorable report. In spite of all efforts to be objective, individuals are inherently more likely to draw conclusions that confirm their expectations⁴⁰. However, institutes need to balance human and financial resources, and an external evaluation may not always be feasible. Although the bias inherent in internal evaluations is never entirely eliminated, it can be diminished by forming an external evaluation committee and tasking them with analyzing and writing the evaluation reports.

All levels of subcontracting are used by our institutes:

DGUV has set up a special department which manages the evaluation process and conducts evaluation from the first step through the final reports.

IRSST and AUVA prepare collections of convincing and conclusive information and ask their committee members to write reports.

INRS, NIOSH and IWH collect convincing and conclusive information and ask for overall assessment and reports from external organizations.

Initially, NIOSH and IRSST subcontracted all of the first evaluation exercise to external organizations. Since then, NIOSH has used a combination of external and internal evaluation to assess its programs and IRSST uses an external review committee when doing institutional evaluation exercises. Its task is to assess the relevance and performance of IRSST's scientific work and to provide guidance regarding strategies for improvement, development and future directions.

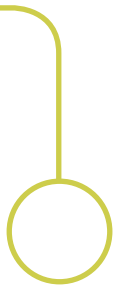
Subcontracting is considered to be a success factor as it ensures neutrality and objectivity.

40. E. Yudkowsky –Machine Intelligence Research Institute Cognitive Biases Potentially Affecting Judgment of Global Risks- 2008 – In Global Catastrophic Risks, edited by Nick Bostrom and Milan M. Ćirković, 91–119. New York: Oxford University Press.

VI

GLOSSARY





Terms used in the logic model

Inputs: Resources that support and guide activities. They can be split into production resources (funding, staff, equipment, premises) and planning resources (analysis of context and needs).

Activities: Actions conducted in the institute to produce outputs.

Outputs: Direct results ensuing from activities that are proposed to the target audience.

Examples: Research is an activity; reports and oral communications are outputs. Editing and publishing are activities; brochures are outputs.

Target audience: Users of the outputs.

Final target audience: End users of the outputs.

Intermediate target audience: Users that receive an output and modify, transform and/or transfer it to final target audience (or other intermediate target audience).

Outcomes: Changes that should occur and benefits that should result from the outputs.

End outcomes: Outcomes at the final target audience level.

Intermediate outcomes: Outcomes at the intermediate target audience level.

Terms used in a collection of convincing and conclusive information

External factors: Aspects and factors that are not under the control of the organization and

that could positively or negatively affect or influence outcomes of the evaluated strategy.

The different aspects that can be assessed

Relevance: The extent to which the policy, objectives, strategy and realisations (outputs) meet the needs and expectations of interested parties or prevention;

- Are the programme objectives justified in comparison with the needs?

Internal consistency: The extent to which the objectives (actions, realizations, etc.) of the

organization are aligned with each other. In addition, the extent to which the affected resources of the organization are aligned with the objectives.

- How do the different objectives contribute?
- Do the resources allocated and tools used correspond to the goals?

External consistency: The extent to which the policies, actions, realisations (outputs), etc. are complimentary, synergistic, additive or conflicting with other actors.

- Are the policy goals/actions complementary or redundant with those of other players that have the same topic area/target public?

Effectivity: The extent to which the outputs have been achieved as planned.

- Have all the brochures been printed as planned?

Effectiveness/Efficacy: The extent to which the objectives of policy (strategy, research, campaign, output) have been met, regardless of the cost and efforts required.

- Does the strategy work?
- Have achievements produced the expected outcomes?

Fidelity: The extent to which central components of the preventive measures that have been implemented are consistent with the preventive measure that was originally intended.

Efficiency: The extent to which the objectives of policy (strategy, research, campaign, output) have been met at the best cost.

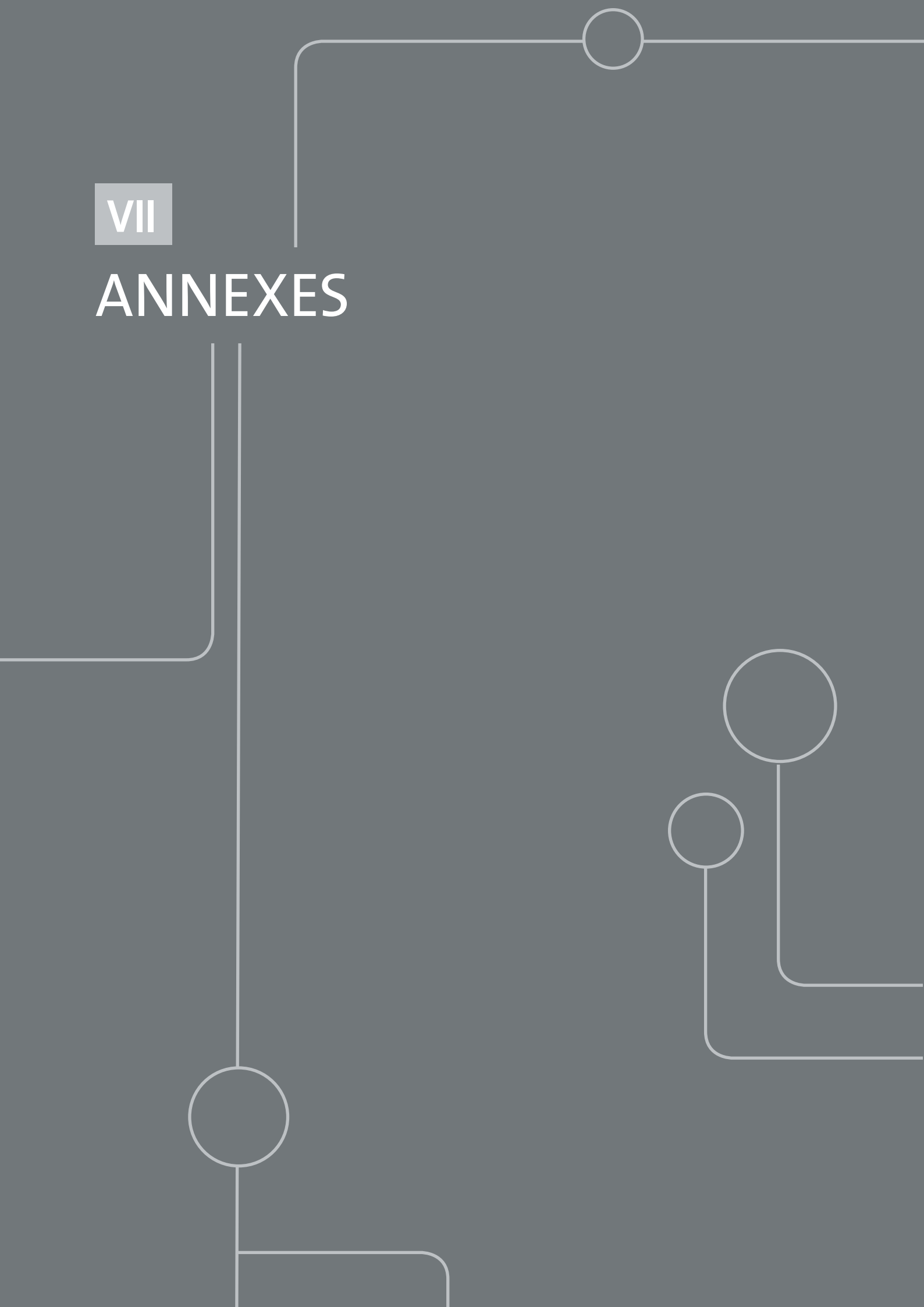
- Have the goals been reached at the best direct and indirect cost?
- Could more results have been obtained for the same cost?
- Could additional resources have been used to have more impact?

Impact: Expected and unexpected – desired and undesired - societal long-term outcomes of the policy (strategy, research, campaign, output).

- Have the actions had any health, social, economic or environmental consequences that were not planned or sought?

VII

ANNEXES



ANNEX I – Our structures

NAME	Status	Link with any external board of directors	Composition of board	Funding source	Mission decided and written by	Link with national insurance	Created by law	Annual budget
AUVA	Independent body	Autonomous administration	Bipartite (employers, unions). Minister for health has a control right. The Minister of Health appoints one person to the board with veto power. He has power of veto (once-twice a year)	Contribution from employers (1.3% of wages) and money from insurance for school (very small amount). 5% of the budget is for prevention	Mission enshrined in the law. Strategy is then developed and validated by the board.	National insurance	Yes	70 million euros, 25 millions are used to staff two free experts in OSH (one for safety, one for health) for SMEs.
INRS	Non-profit organization. No subordination to any governmental department.	Autonomous	Bipartite (employers, unions). Ministries and social insurance have a consultative voice.	Employers through a tax collected by social insurance	Mission described in the statutes	Actions conducted within the framework of social security directives (Art. 2 of the statutes 2009)	No	85 million euros
NIOSH	CDC is one of the major centers of the U.S. Department of Health and Human Services	The general manager of NIOSH is part of the executive committee of CDC		Government	Created in 1970 by the OSH Act. NIOSH was transferred to CDC - Centers for Disease Control and Prevention - from the Health Service & Mental Health Administration in 1973.		Yes	
IRSST	Linked to CNEST (Commission des normes, de l'équité et de la santé et sécurité du travail), labour ministry	Same members as CNEST board of directors	Bipartite (employers, unions). Labour Ministry has a consultative voice as an observer.	CNEST grants, originating from employer contributions.		Under contract for laboratory services	Yes	26 million CAN \$
IWH	Non-profit organization		Board of directors includes senior business, labour and academic leaders	Core funding from the Province of Ontario. The stewardship of this funding lies with the Ontario Ministry of Labour (MOL).	Created by Social Insurance	None	No	
DGUV	German Social Accident Insurance: umbrella association of the accident insurance institutions for the industrial and public sectors	Autonomous administration	Bipartite (employers, unions)	Employers, contributions collected by 9 institutions for trade and industry and 24 institutions for the public sector.	Mission described in volume 7 of the German Social Code	National Insurance	Yes	1.2 billion euros for prevention

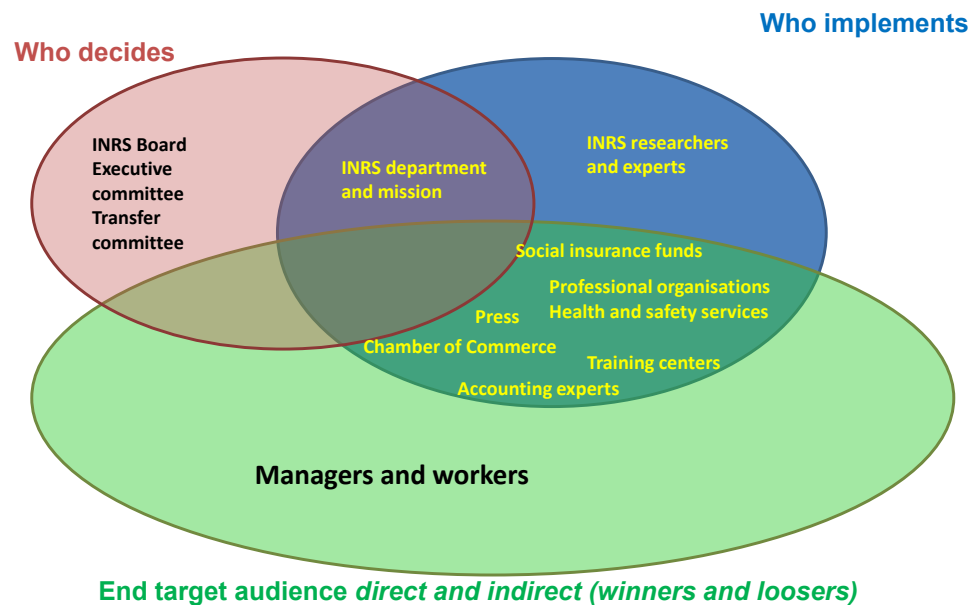
ANNEX II – Examples of scopes

Institute	Topic	Period
NIOSH	Extent to which NIOSH science research is relevant to real world-wide OSH problems; meets the highest scientific quality standards for which it can strive; and achieves the greatest impact that it can possibly have.	NIOSH has chosen 3 different periods. 1970 - 1995: period from the founding of NIOSH to the initiation of NORA 1996 - 2005: NORA 1 period 2005 - 2017: NORA 2 period.
IRSST	Use made of knowledge and impact of OSH research on stakeholders. Assess the relevance and performance of the IRSST's scientific work, and provide guidance regarding strategies for improvement and development and future directions.	Evaluation is conducted every six years (2005, 2011 and 2017).
INRS	Impact, relevance and consistency of actions built for SMEs.	From 2010 to 2016. That partially covers two strategic plans.
DGUV	Evaluation of campaigns such as "Think of me. Love, your back" and compilation of effects, success factors and obstacles associated with campaigns.	Duration of the campaign.
AUVA	Evaluation of the fidelity of programs or campaigns to strategy and expected outcomes.	Duration of the program or campaign.

ANNEX III – Examples of sociograms

III.1 – INRS

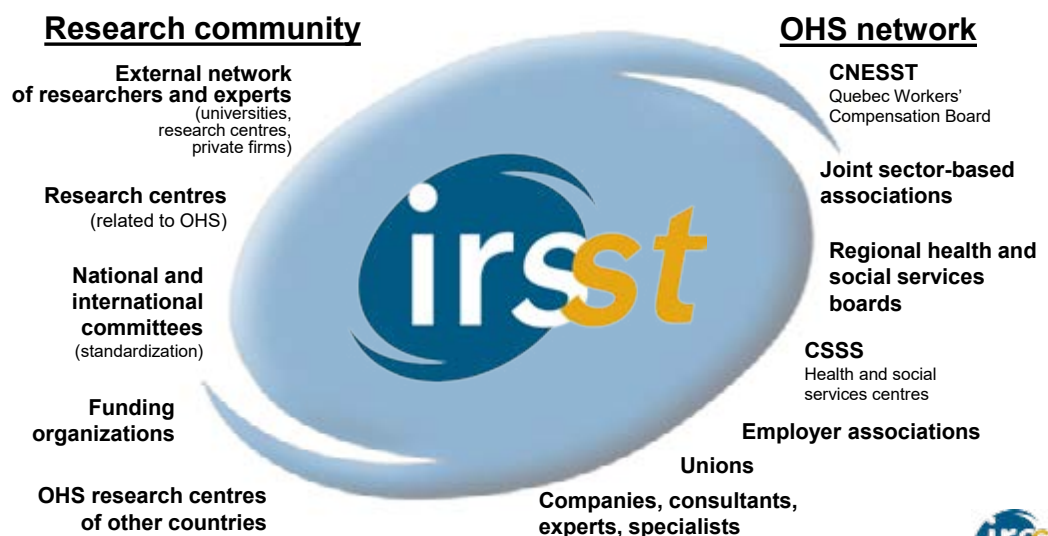
INRS – Sociogram- Actions towards SMEs



1

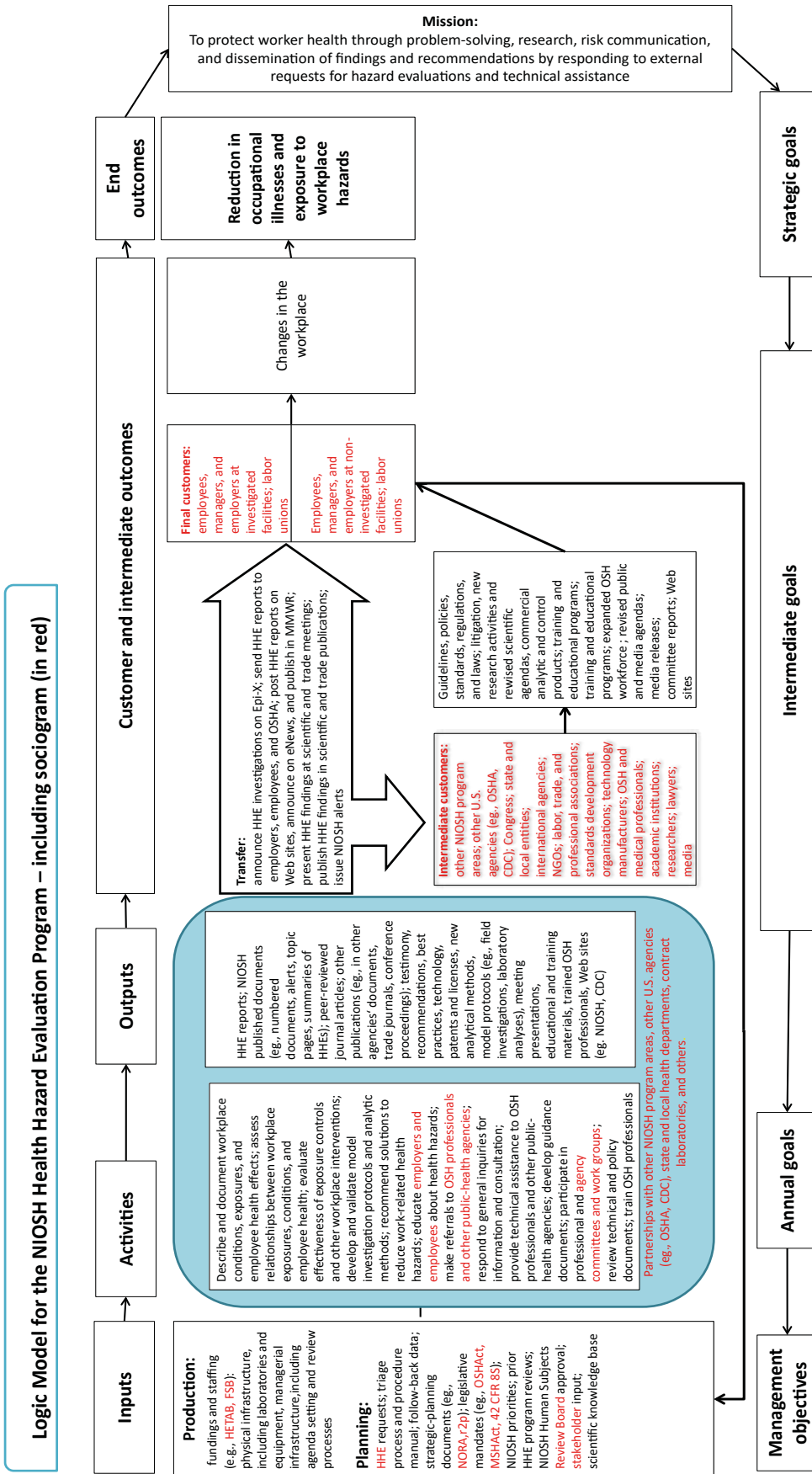
III.2 – IRSST

The IRSST : A dynamic interface between two worlds



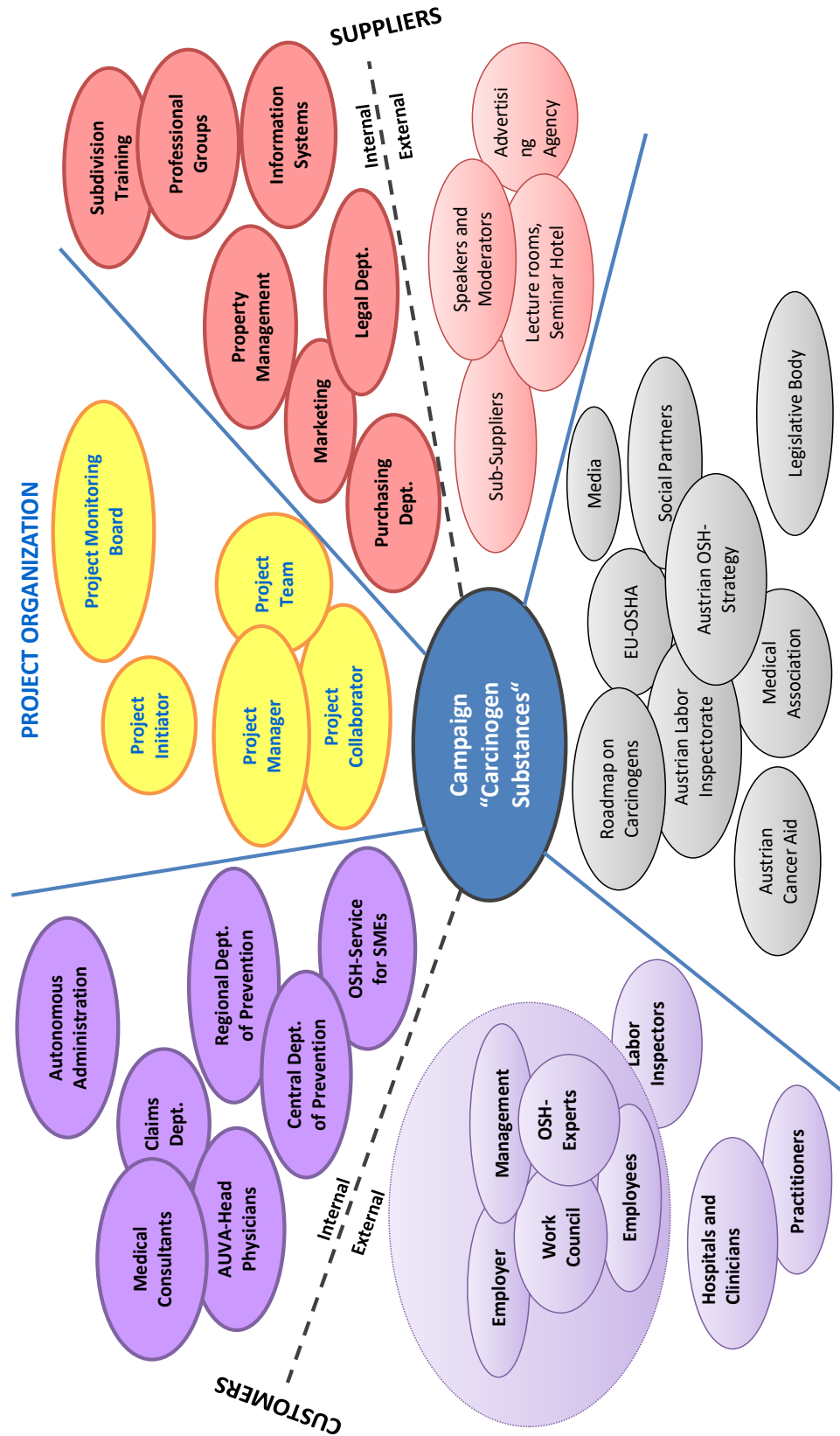
1

III.3 – NIOSH

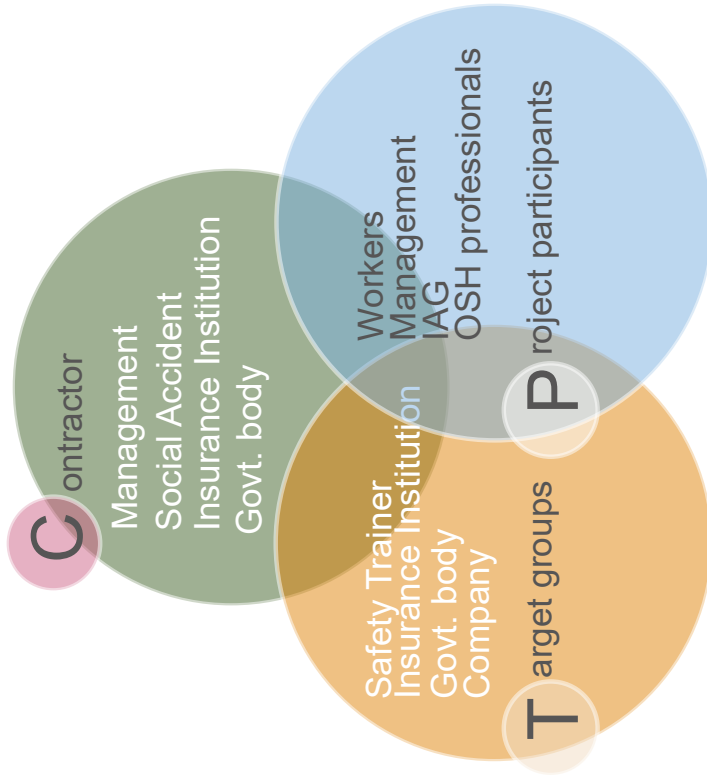


III.4 – AUVA

Stakeholder Analysis: Example of the Prevention Campaign “Carcinogenic Substances” (in planning stage)



Visual representation of target groups and participants



Dr. Annetkatrin Wetzstein

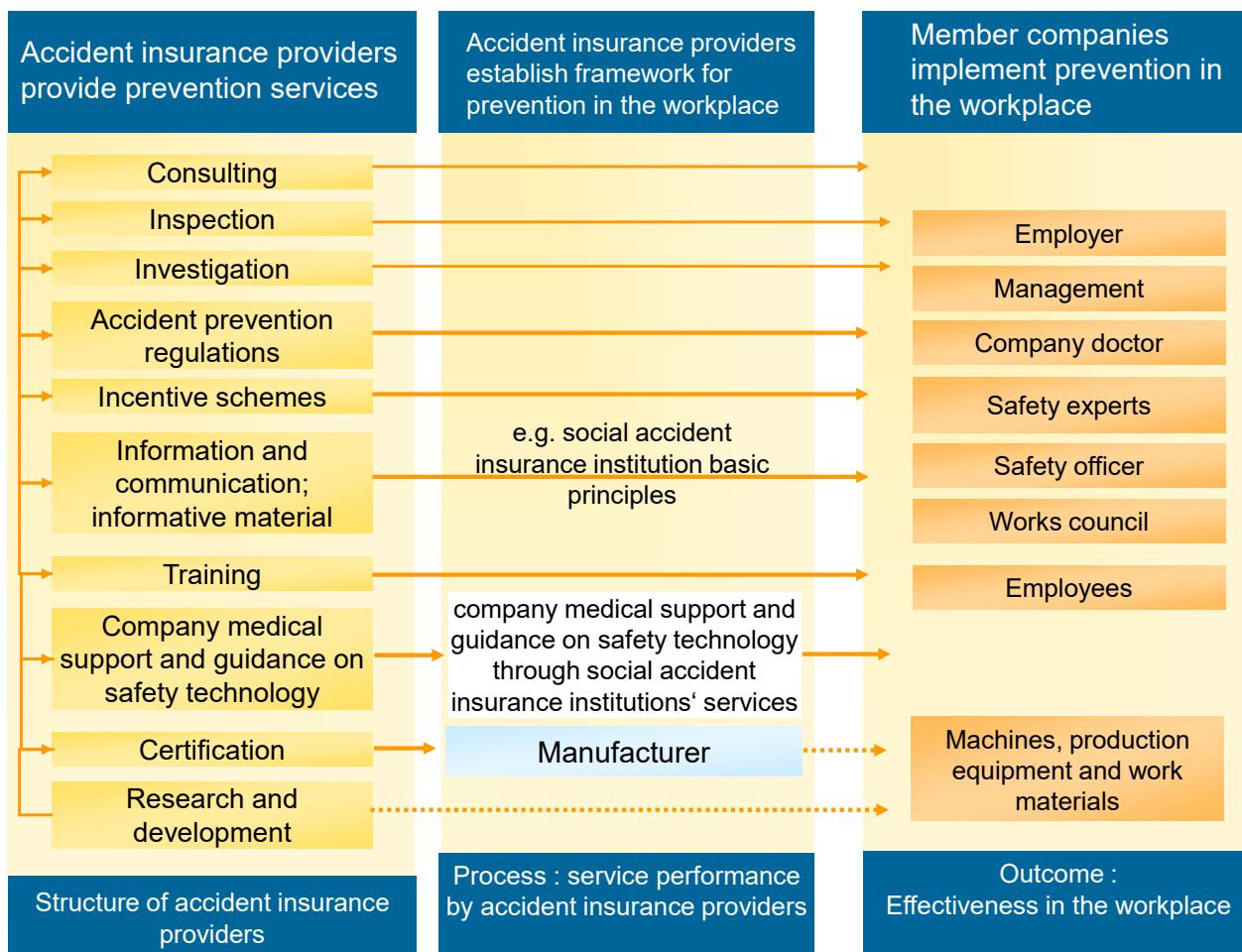


ANNEX IV – Examples of logic models

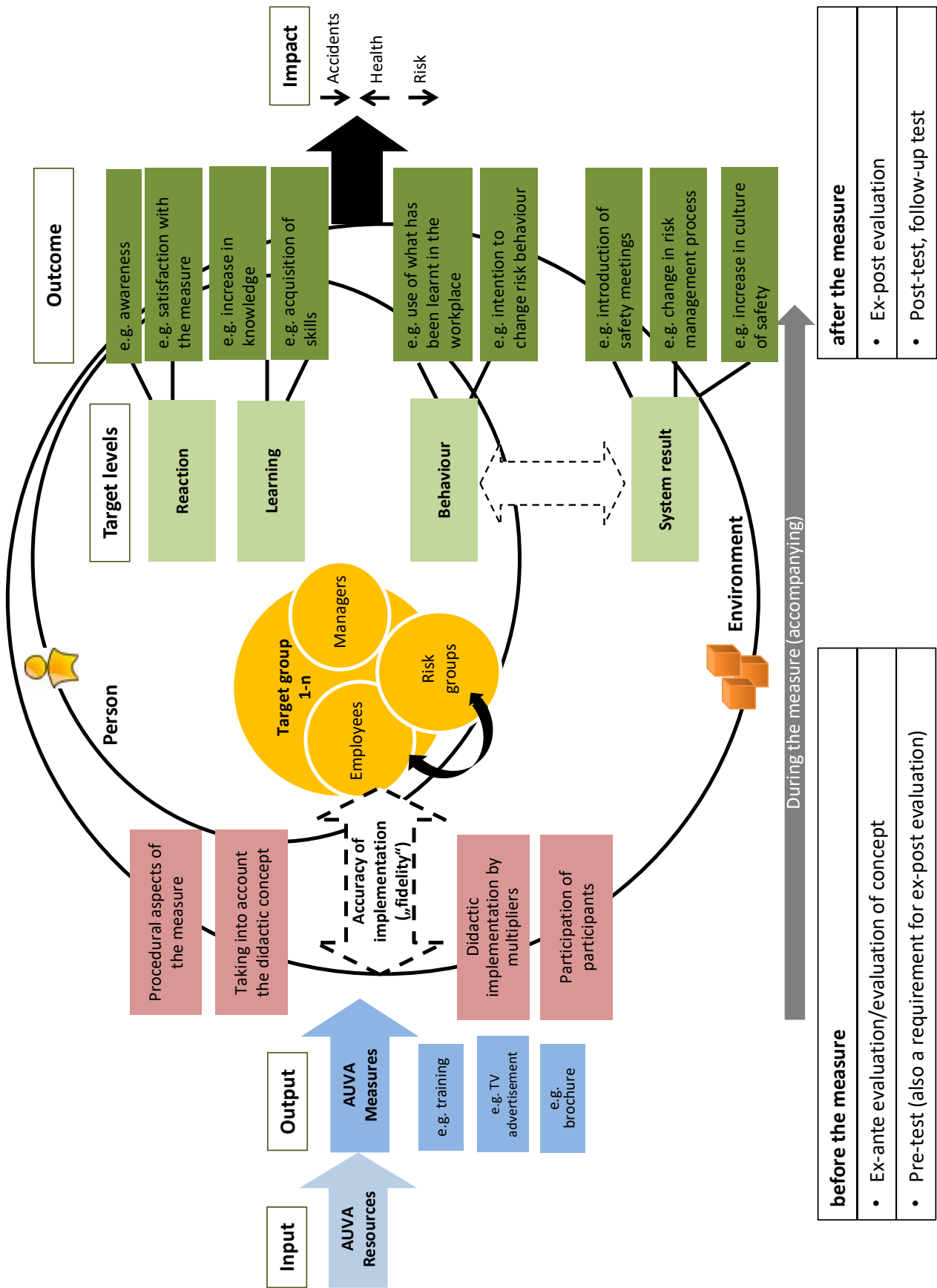
These are examples of logic models that have been used by our institutes for a special policy, strategy, campaign or project. These examples show the use of the same concept: logic model, with different graphics and different levels of precision. These examples also show that each institute has to adapt the format, drawing and representation to its own context and culture and to the scope of the chosen evaluation.

IV.1 – DGUV

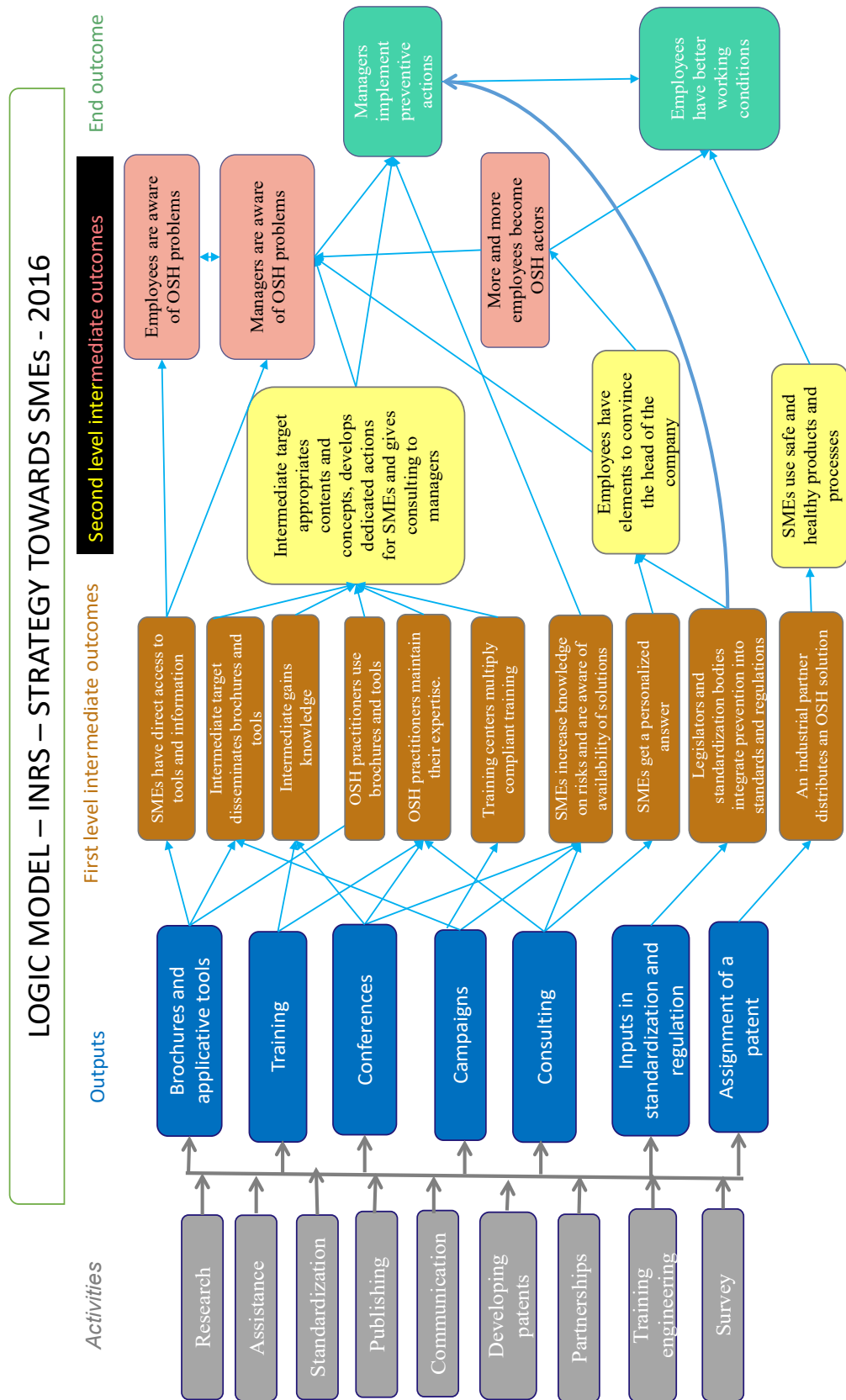
From the "Quality in Prevention" project for prevention services



IV.2 – AUVA logic model

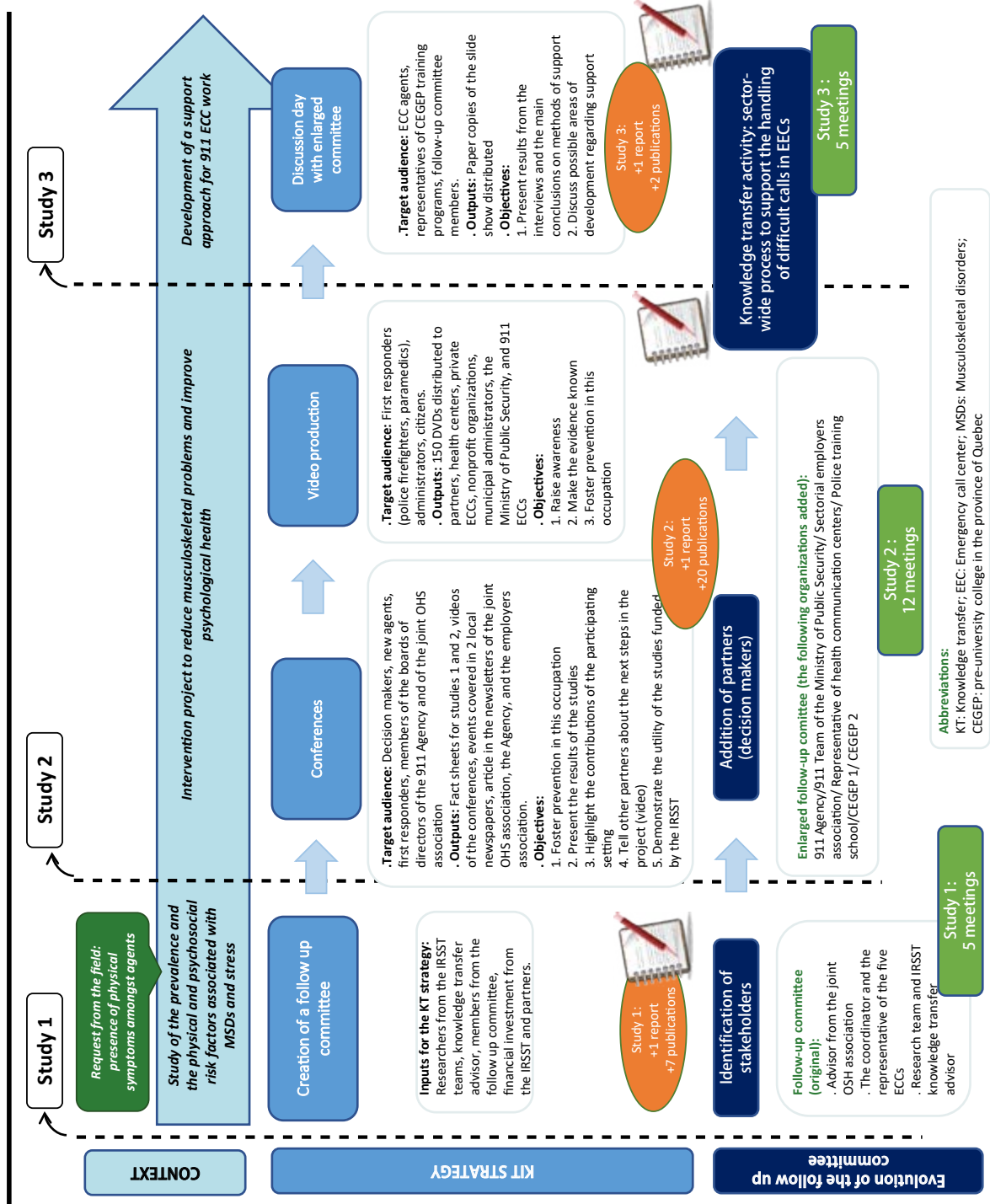


IV.3 – INRS logic model - A depiction of transversality and multi-causal effects

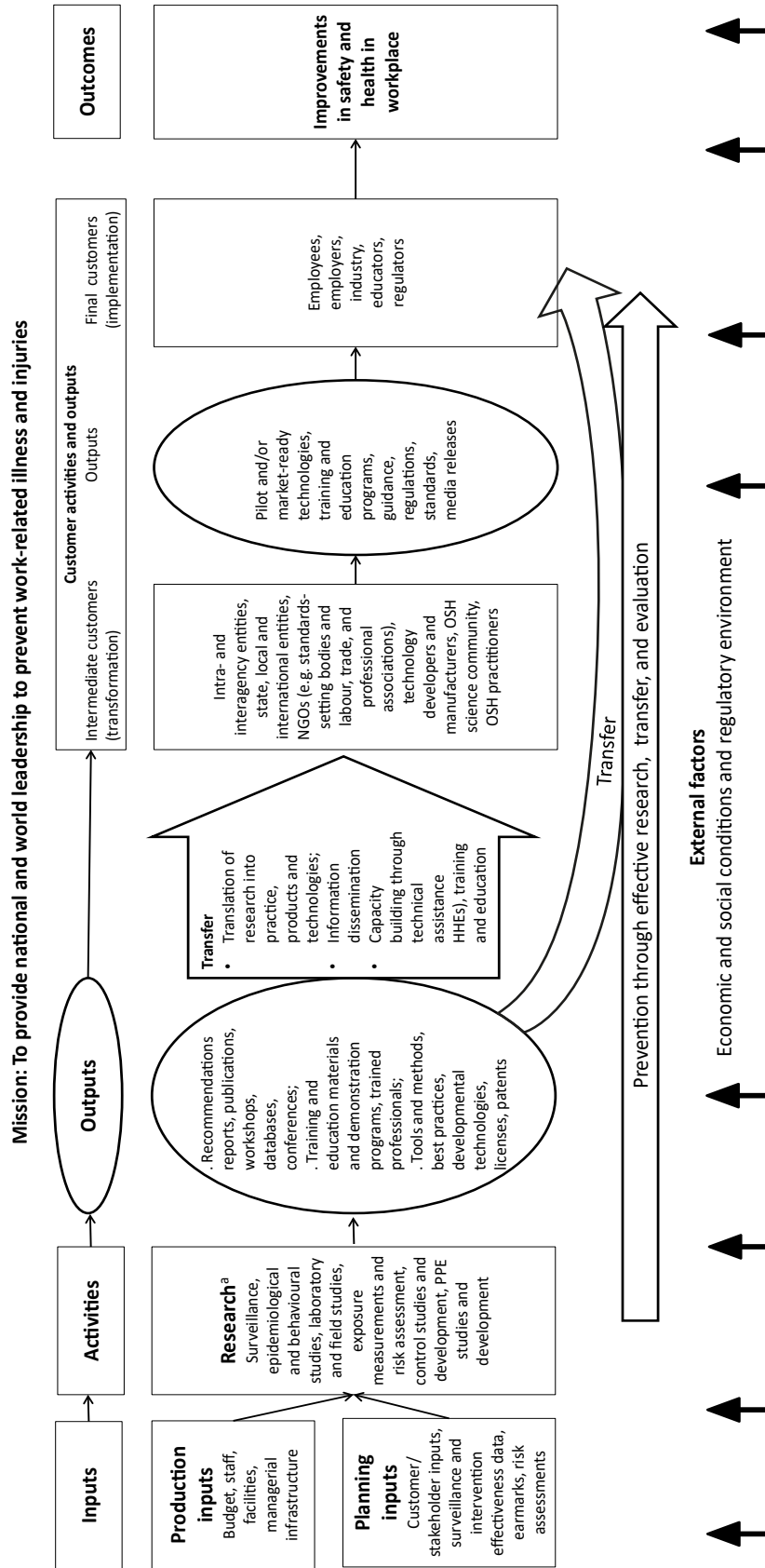


IV.4 – IRSST logic model

Logic model: The IRSST's KT strategy in the research program to improve prevention of health and safety problems among ECC 911 agents



IV.5 – NIOSH logic model



SOURCE: National Academies (2007).

NOTE: ARC = agricultural research center. WHO = World Health Organization.

^aIntramural and extramural, including domestic and international efforts, such as work conducted at ERCs, ARCs, and Global Network of the WHO Network of Collaborating Centres.

ANNEX V – Examples of collections of convincing and conclusive information

V.1 – IWH



sharing best evidence
Highlights of a systematic review

These summaries provide a quick overview of what the research says on specific OHS issues. They are based on systematic reviews by Institute researchers, who examine all the studies on topics of interest to OHS practitioners and policy-makers. The summaries present the key evidence-based findings and suggest how to use them.

[Full systematic review reports are also available.](#)

- [What workplace programs help prevent upper extremity musculoskeletal disorders? \(2016\)](#)
- [Factors affecting RTW following acute low-back pain \(2012\)](#)
- [Finding tools to measure the impact of KTE activities \(2011\)](#)
- [The effectiveness of interventions to address depression in the workplace \(2011\)](#)
- [Effectiveness of OHS education and training \(2010\)](#)
- [Do workplace programs protect upper extremity musculoskeletal health? \(2009\)](#)
- [Are workplace prevention programs effective? \(2008\)](#)
- [Improving health and safety in small businesses \(2008\)](#)
- [Factors for success in participatory ergonomics \(2008\)](#)
- [Is it worthwhile investing in health and safety programs? \(2007\)](#)
- [Prevention programs for health-care workers \(2007\)](#)
- [Systematic review of risk factors for injury among youth: summary \(2006\)](#)
- [OHS management audit instruments: Summary of a literature review \(2006\)](#)
- [Preventing MSDs among computer users: Summary of a systematic review \(2006\)](#)
- [Summary of a systematic review of factors associated with occupational disease among young people \(2006\)](#)
- [Effectiveness of participatory ergonomics: Summary of a systematic review \(2005\)](#)
- [Effectiveness of OHS management systems: Summary of a systematic review \(2005\)](#)
- [Workplace-based return-to-work interventions: Summary of a systematic review \(2004\)](#)

Systematic review of studies building an evidence package

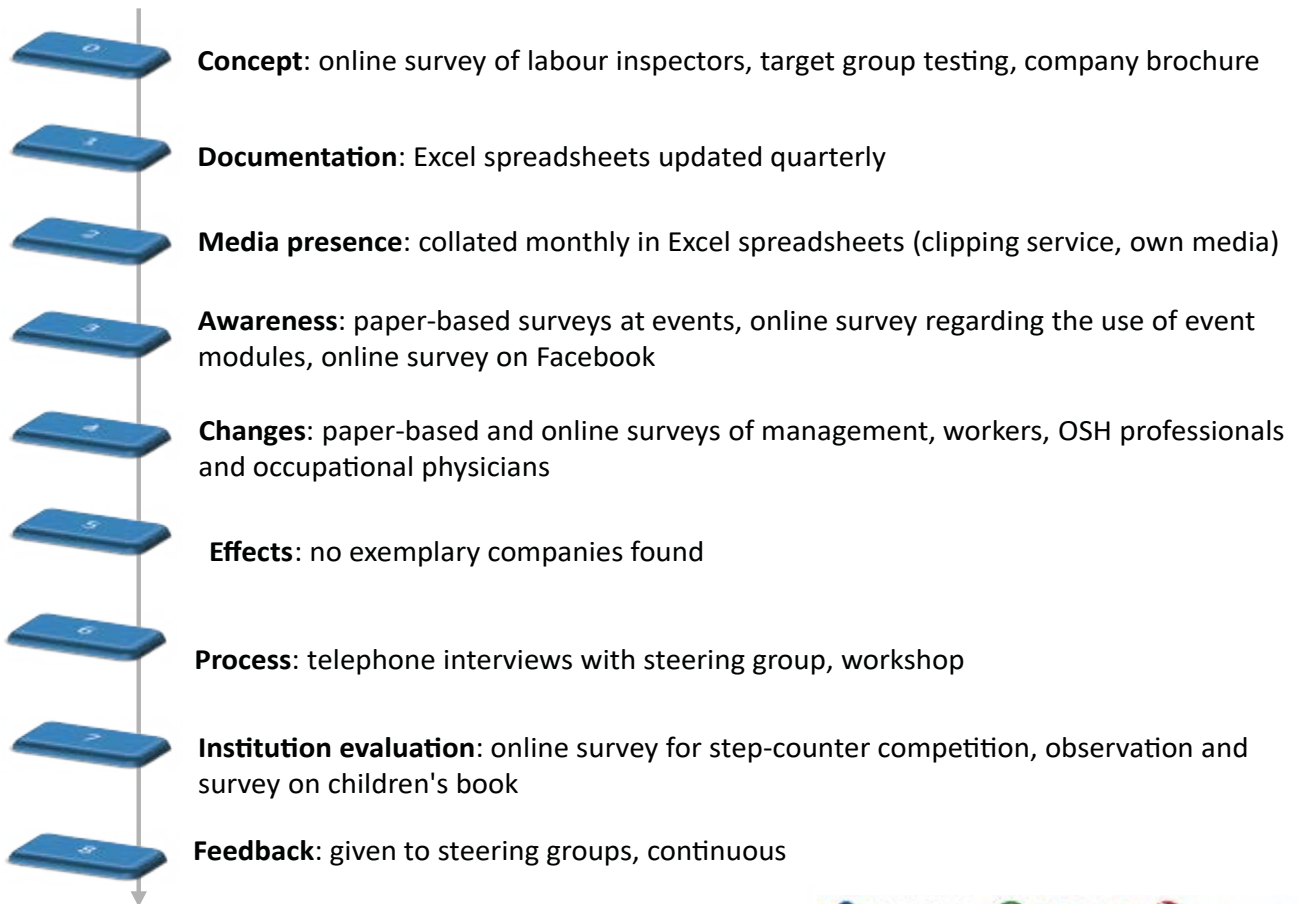
<https://www.iwh.on.ca/>



V.3 – DGUV

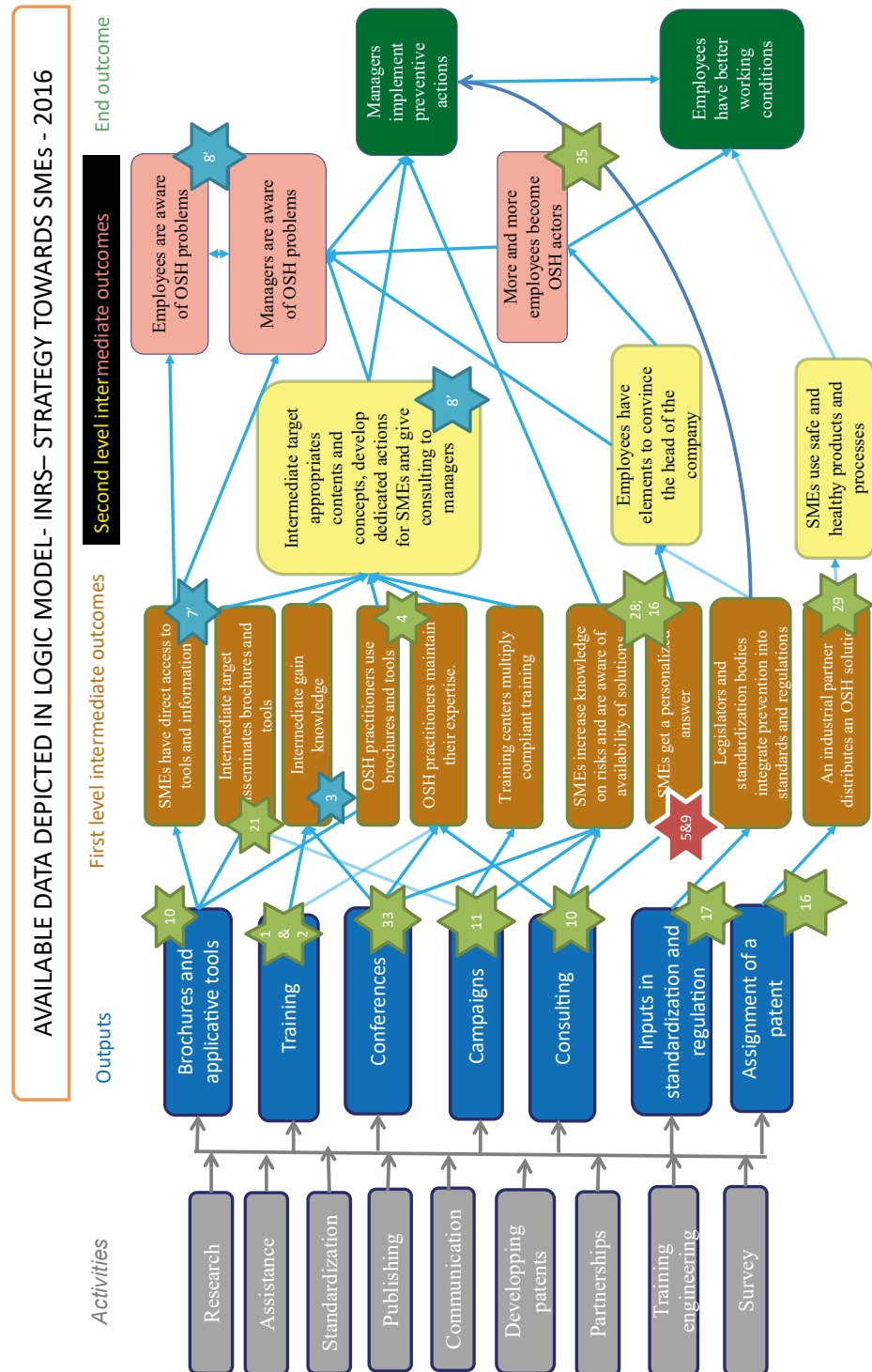
List of data and type of enquiries at each step of the logic model

Our evaluation tiers



V.4 – INRS – Collection of conclusive and convincing information

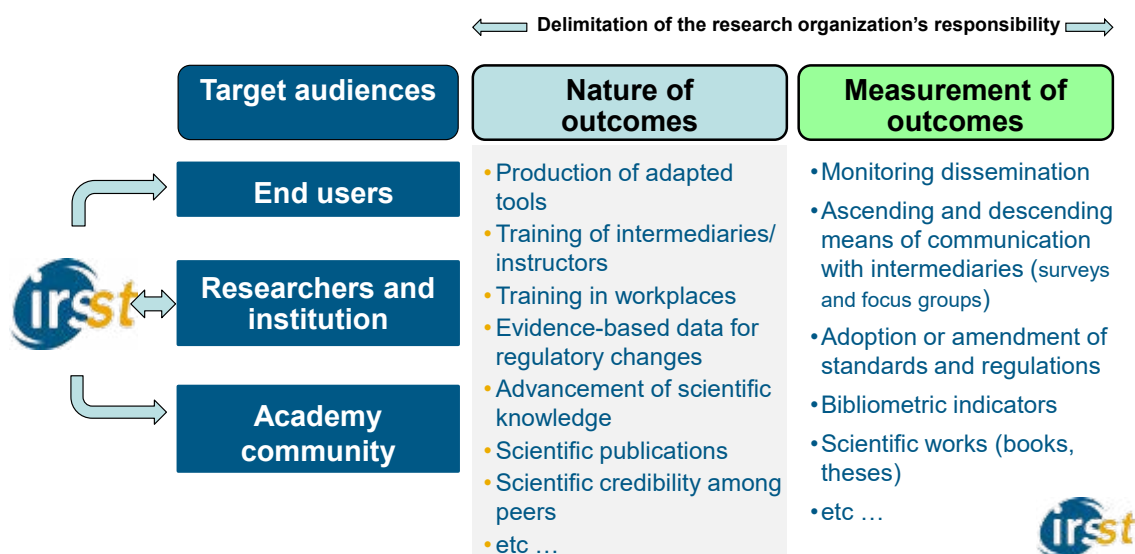
Stars depict available data (green stars), easily available data through enquiries and database analysis (blue stars) and data to be built through available documentation (red stars). All data, extractions from databases and documentation are then put in the collection of convincing and conclusive information.



Description of monitored data and number as shown in logic model (as identified on the left)

N°	Realisation	
1	Self-study	Web site : No. of connections, No. enrolled, Company size
2	Training	List of courses, List of participants, No. of hours, No. of days
3	Self-study	Knowledge validation (No. who followed the training path)
4	Formation	Results of enquiries conducted at the end of traing courses
5	Inputs in standardization	Bibliographic analysis of minutes available on Normaprev database
6'	See 61	
7'	See 71 and following.	
8'	See 81 and following.	
9	Inputs in regulation	Letters from Ministries
10	Brochures and documents	Number of copies printed, distributed, re-issued and remaindered
11	Conferences	List of presentations
12	Conferences	List of participants (company name, company size), satisfaction enquiries
13	Communication	Space purchasing, Annual press reviews, List and content of media and press releases, Case study report on campaigns (PER2 database), Communication campaigns
15
...

V.5 – IRSST – Contents of a collection of convincing and conclusive information for transfer initiatives evaluation



ANNEX VI – Examples of evaluative questions and registers

IRSST	Have the intermediaries appropriated the transfer tools made by the IRSST?	Effectiveness
NIOSH	Are outputs relevant to both sexes, vulnerable populations, and do they address health disparities? To what extent does the program build research and education capacity? Does the program result in research partnerships with stakeholders that lead to changes in the workplace?	Internal consistency (a strategic goal of NIOSH) Effectiveness Impact
AUVA	Extent to which targets have been met and objectives have been reached without deviation	Effectiveness Internal consistency Fidelity
DGUV	Has training resulted in participants changing their behaviour in practice? What were the effects of a campaign?	Impact Effectiveness
INRS	How does the use of relays promote the implementation of prevention actions in VSL? How does the multiplicity of achievements of the different actors impact the transferred message?	Adequacy External consistency

ANNEX VII – Examples of overall assessments

VII.1 – IRSST

Strategic orientations for the enhancement of research

In 2005, the main steps in the Strategic Orientations for the Enhancement of Research initiative were carried out. A 1999-2004 institutional assessment was drawn up documenting four main areas of concern:

- External opportunities and threats;
- Organizational motivation;
- Organizational capacity;
- Organizational performance.

This assessment was then handled over to an International Evaluation Committee (IEC - 2005). Its mandate was to assess how well the organization met the objectives of its mission during this six-year period regarding its research capacity and its efficiency.

Drawing on their broad experience in the research and health fields, the members of IEC-2005 evaluated the performance and relevance of IRSST's scientific activities in order to guide management in its positioning decisions. The Committee submitted its report at the end of 2005. On the basis of their observations, management targeted three avenues of development for the next five years (2006-2010):

1. strengthening research and expertise capacity;
2. structuring and implementing a strategic watch activity; and
3. systematically considering the potential for transferring knowledge resulting from research activities and expertise.

During the first months of 2006, the development scenario was modelled into a 2006-2010 strategic plan and submitted to the Board of Directors for approval.

In 2011 and 2017, the evaluation process was repeated. Each time, the IEC was commissioned by IRSST's management and had to take stock of what had been achieved since the previous evaluation, and provide advice on how to ensure the continuing fulfilment of the institute's mission.

VII.2 – DGUV

In recent years, the German social accident insurance institutions have increasingly employed campaigns for the prevention of accidents and diseases. Campaigns are measures conducted for a limited duration, in pursuit of a defined objective, and in which different measures are combined, and frequently several parties are involved. They differ in their effects. It is important that the measures of a campaign reach their target groups and are effective in terms of attaining objectives.

In December 2015, the prevention campaign “Think of me. Love, your back” conducted by the German Social Accident Insurance Institutions, the Social Insurance for Agriculture, Forestry and Landscaping (SVLFG) and the Knappschaft came to an end. The aim of the three-year campaign was to raise awareness of what employers and insured workers could do to prevent or reduce work-related back strain. The prevention campaign consisted of a joint umbrella campaign conducted by all institutions, as well as campaigns run by the individual institutions for specific target groups.

An evaluation was conducted by IAG to examine the effectiveness of this prevention campaign. To do this, the IAG further developed the Evaluation Model for Campaigns. In this model, the criteria and indicators to measure effectiveness are derived from the defined goals of the campaign. It assumes that the effect of a campaign occurs in tiers (phases), where the impact of each tier sets the course for the next tier up. Tier 0 precedes all evaluation phases. The evaluation concept consists of nine tiers:

Tier 0 – Concept evaluation: Assessment and acceptance of the planned measure by the target groups before full implementation (target group tests), as well as awareness, assessment and acceptance of the campaign by those internally involved with the campaign

Tier 1 – Scope of activities and measures: document all activities, communication media, advertising and promotional giveaways

Tier 2 – Media presence: document and rate editorial mentions of the campaign in print, online, radio and TV using qualitative and quantitative measurements

Tier 3 – Awareness/acceptance/rating: determine awareness of the campaign by the target groups (attention, recall, ease of understanding, association)

Tier 4 – Changes in behaviour and conditions: measure actual changes in the target groups (knowledge, attitude, behaviour, image)

Tier 5 – Effects in the company: determine the effects of the campaign on specific key figures

Tier 6 – Quality of the campaign’s structure and processes: determine and assess the organisation and processes of the campaign in order to optimise these internal processes

Tier 7 – Recommendations for and consultation with the campaign organizers: help the organizers to conduct evaluations

Tier 8 – Evaluation feedback: constantly provide structured feedback from the results of the evaluation (See III. fig 9)

The evaluation of a campaign provides information about:

- what expectations and needs the campaign’s target groups have;
- what measures and activities were carried out, how wide-reaching they were and which ones the media took up;
- how aware the target groups were of the campaign and how much attention it raised;
- what impact it has on the behaviour of the target groups and the conditions in the workplace;
- how much information the employers of the institutions conducting the campaign have and how motivated they are to pass on this information to the target groups; and
- how the campaign’s organization and implementation is internally rated and what could be done better in future campaigns.

Thus, an evaluation makes it possible to have structured, timely information about the current state of the campaign and its measures.

RESEARCH ON “RETURN ON PREVENTION” (ROP)

In order to answer the question about whether workplace prevention has a micro-economic effect that benefits a company's bottom line, in early 2010 the International Social Security Association (ISSA), the German Social Accident Insurance (DGUV) and the German Social Accident Insurance Institution for the Energy, Textile, Electrical and Media Products Sectors (BG ETEM) launched a research project called “Calculating the International Return on Prevention for Companies: Costs and Benefits of Investments in Occupational Safety and Health”⁴¹. The results of the 19 participating countries and 337 interviewed companies are presented in one report in consolidated form. The strongest impact of occupational safety and health is assessed in the company areas of production, transport, personnel allocation and warehousing. The strongest effects of occupational safety and health are defined as follows: reduced hazards, increased employee hazard awareness, reduced breaches and reduced workplace accidents as well as improved corporate image, improved workplace culture, reduced downtime and reduced disruptions. The survey data identified significant correlations pointing to different prevention cultures.

41. DGUV Report 1/2013e. Calculating the International Return on Prevention for Companies: Costs and Benefits of Investments in Occupational Safety and Health. Available at: www.dguv.de – Webcode e143522

VII.3 – NIOSH

In September 2004, NIOSH contracted with the National Academy to conduct external reviews of up to 15 research programs and the associated transfer activities. The aim of the reviews was to judge the extent to which each program was relevant to “real-world” OSH problems. Their goal was to verify the adequacy of the strategy with regard to OSH needs and the impact on the reduction of injuries and illnesses, and help them to target new research areas.

VII.4 – INRS

Ensuring health and safety of workers in small enterprises is a public policy concern, in France and in Europe. The European strategy for safety and health at work and the French government's occupational health plan indicated the need to develop risk prevention in small enterprises. INRS productions are historically intended for all players involved in risk prevention inside and outside of companies. Until recently, these productions have rarely taken into account the size of the company and the degree of expertise of OSH practitioners. In 2009, INRS wished to show a specific and greater commitment to improving occupational health in small companies by creating a unit in charge of defining suitable approaches for micro-enterprises and SMEs, assisting regional health and pension insurance funds in rolling out these approaches

and developing partnerships to spread the action in companies. The 2013-2017 strategic plan reaffirmed this line of action specifying the objectives. The work started by INRS in 2009 enabled an approach for small enterprises to be formalised and applied to several activity sectors. The evaluation relating to micro-enterprises/SMEs aimed to ensure that the approach was relevant, and it is expected to fuel reflections on the upcoming strategic framework starting in 2018. It should give insight into the impact of the actions conducted by INRS, and the usefulness thereof.

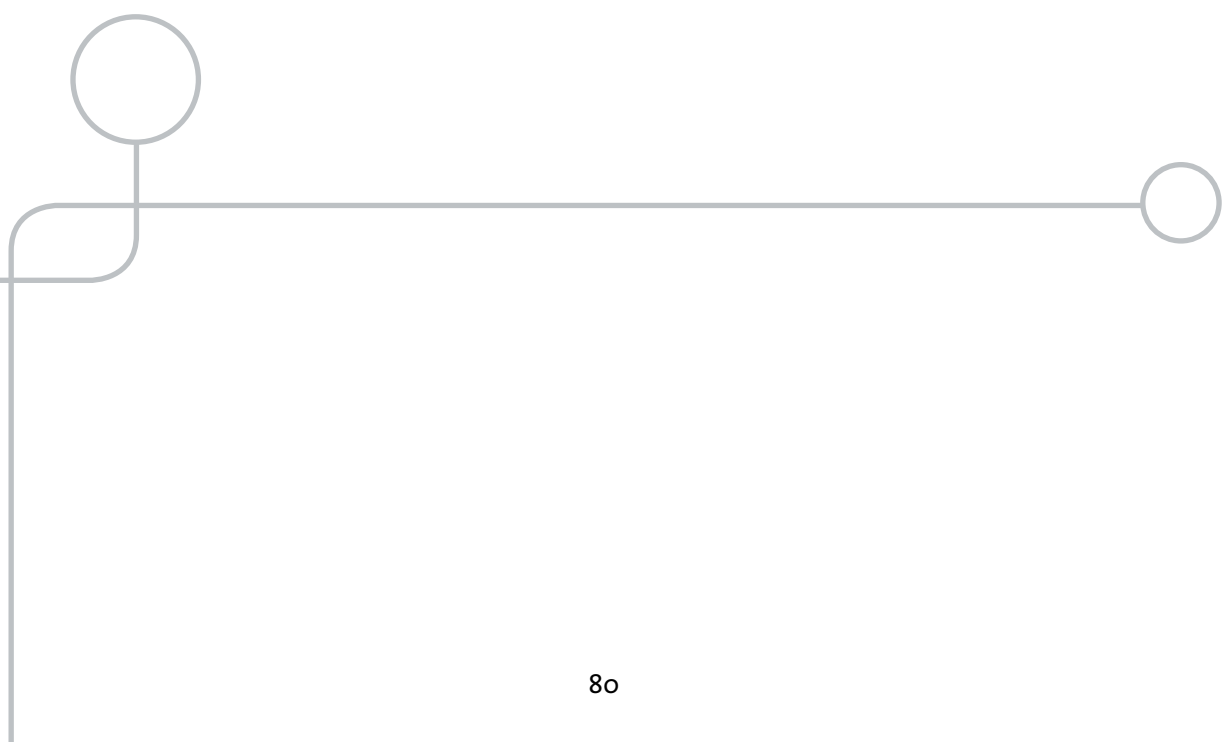
It involved comparing, over the last five years, INRS's actions intended for small enterprises based on completely different strategies:

- Actions intended for all companies, including small ones, with a more risk-based approach.
- Actions intended for small companies specifically engineered to be adapted to the situation of these companies. This approach was developed by the micro-enterprises/SME unit and formalised in a methodological document. It recommends a prevention approach based on the job and supported by the development of partnerships facilitating cascade effects.

The evaluation report is expected to:

- Provide INRS with the elements enabling it to judge the adequacy of all of the actions and achievements concerning enterprises with fewer than 50 employees, to improve or modify its strategy towards this target and to propose updates (priorities and how they are translated into quantified operational goals, targets and partners, etc.);
- Compare both types of prevention approaches, their respective advantages and disadvantages, their impact on occupational safety and health in micro-enterprises/SMEs;
- Propose recommendations enabling INRS to improve the effectiveness of its actions and to modify them if necessary.

28 evaluative questions on the seven registers were asked to allow INRS to propose an even more effective and relevant strategy for this target, in line with the prevention network's strategy.



VII.5 – AUVA

Of all occupational accidents in Austria, 41% affect the hand, and in young workers the accident rate soars to 50%. Apart from human suffering, these accidents cause considerable costs for the enterprise, the national economy and for AUVA. For these reasons, in 2014 and 2015, AUVA carried out a prevention campaign aimed at reducing hand injuries at work in the long term. Furthermore it was a goal to improve first aid standards in case of hand injuries. The campaign was designed with two approaches: a media campaign (e.g. television spots, posters in public space) and teaching, training and awareness-raising measures regarding prevention of hand injuries. For this purpose, materials such as brochures, apps and demonstration materials were developed.

To evaluate the campaign, AUVA commissioned external evaluators. The evaluation concept was developed in accordance with the integrative modular system applicable to AUVA for evaluations in the field of prevention, containing the following elements:

- Evaluation of the campaign concept (workshop with experts);
- Fidelity of implementation (online questionnaire for the multipliers after initial training, workshops with the multipliers over the period of the campaign);
- Outcome of the campaign (assessment of the alterations in the companies, by means of consultation as well as online surveys involving the perception and appraisal of the media campaign in the companies);
- Impact (monitoring changes in numbers and kind of accidents at work).

AUVA used this kind of concept evaluation for the first time in a campaign. The findings stressed the importance of inclusion of the target group and relevant experts at a very early stage of the campaign. They considered the concept positive in terms of significance and practicability, but they also identified critical points that had to be amended by the campaign team. The online survey of the companies showed a significant positive change in the companies caused by the consultation (for example, counselled companies had planned and implemented more hand-protective measures). The respondents also evaluated the media campaign positively with regard to publicity (88% of the respondents had already noticed the campaign), importance, clarity, relevance and comprehensibility (mean values of 5.69 – 6.28 for a scale of 1 = little and 7 = strong value). Although the number of accidents at work is a poor indicator for evaluating the success of a campaign (there are a lot of other factors which can have positive or negative influence which cannot be taken into account, in addition to potential data collecting problems, delayed evidence effects, etc.), there was a tendency towards a significant decrease of hand-related accidents in comparison with recent years and in comparison with other occupational accidents (absolute number of hand injuries and accident rate). This effect was particularly evident in the accident rate among under 25-year-olds. However, the most important findings for future prevention work could be deduced from the evaluation of fidelity: The online survey and the workshops with multipliers of the campaign showed a high need for improvement regarding role clarification and information flow.

ANNEX VIII – Examples of planned actions after evaluation reports

VIII.1 – DGUV decision

Evaluation steers evaluation!

Insights into evaluating campaigns grow with every campaign that is carried out. The experience gained from the “Fight the Risk!” campaign (Risiko raus!) clearly showed that, in the future, it makes sense to plan in a Tier 0 concept evaluation both internally and externally. This tier precedes all other evaluation tiers because it determines the extent to which the necessary requirements are already in place for the campaign to have an impact on the target groups. This means there can be differences between the internal and external concept evaluations. The former determines the conviction and acceptance of the campaign by those internally responsible for disseminating the campaign content, whereas the external concept evaluation is used to test various campaign measures and activities prior to use with a wider target audience. An example of this is the use of brochures. An evaluation can help determine how well this form of communication media is received by the target groups whether it has the desired effect or achieves the desired goals; and where there is still room for improvement. Tier 0 was used for the first time in the “Think of me. Love, your back” campaign, the aim of which was to prevent work-related back strain.

VIII.2 – NIOSH decisions

We will need to write down the strategy so that the objectives can be evaluated.

The results have been used in many ways throughout NIOSH. This 10-year process has:

- Led to direct changes in program delivery. For example, in response to feedback during a progress review, the NIOSH Construction Program’s National Center has developed 7 additional metrics to capture changes made due to research to practice (r2p) efforts. These are now used by the NIOSH Office of Construction Safety and Health, Center for Construction Research and Training and NIOSH construction researchers.
- Evolved our approach to evaluation. NIOSH has been a pioneer among government research agencies in developing ways to track and report our progress towards research goals.
- Led to an effort to adapt the National Academies Review methodology for continual review of NIOSH research programs.
- Changed our focus from producing outputs like peer-reviewed publications to promoting use of our research findings, tools and resources by external parties (what we call “intermediate outcomes”). We see this as a crucial transfer point between outputs and broader improvements in occupational safety and health.
- Led us to invest resources into information technology used for monitoring and evaluation. The NIOSH Project Planning and Management (NPPM) system is a central repository used to project and then track progress towards outputs and intermediate outcomes for individual projects. It is also routinely used to track progress towards larger programmatic goals.
- Allowed us to build subject matter expertise in evaluation through long-term training and new hires. These staff have created new job aids and tools for evaluation, which has further enhanced NIOSH’s evaluation capacity.

VIII.3 – INRS decision

Following a survey of the leadership position taken by different OSH actors for OSH practitioners, employees, supervisors and trainees, it has been proven that health and safety committee members are sometimes at a disadvantage when faced with a health and safety problem at work and did not properly identify the role and tasks of those who could support them. INRS decided that the health and safety committee would be one of the priority target groups during the next strategic plan period (2018-2024).

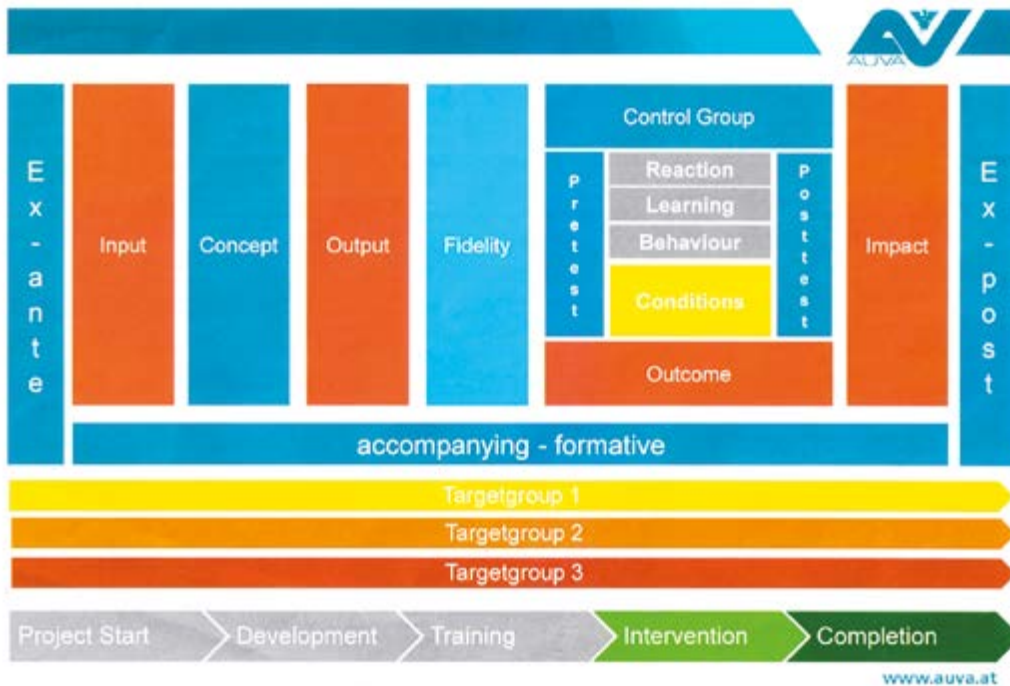
VIII.4 – IWH decision

We will build and compile existing reports as a collection of convincing and conclusive information

VIII.5 – AUVA decisions

As illustrated in the example above (Annex VII.6), results of evaluations of AUVA campaigns emphasise the significance of fidelity of implementation. AUVA carried out the following organizational changes:

- Adoption of a campaign manager who is responsible for organization and content of all AUVA prevention campaigns including the improvement of fidelity of implementation;
- Development and implementation of staff training in consultancy; and
- Development and implementation of initial training for multipliers who have the job of spreading the campaign across the companies.



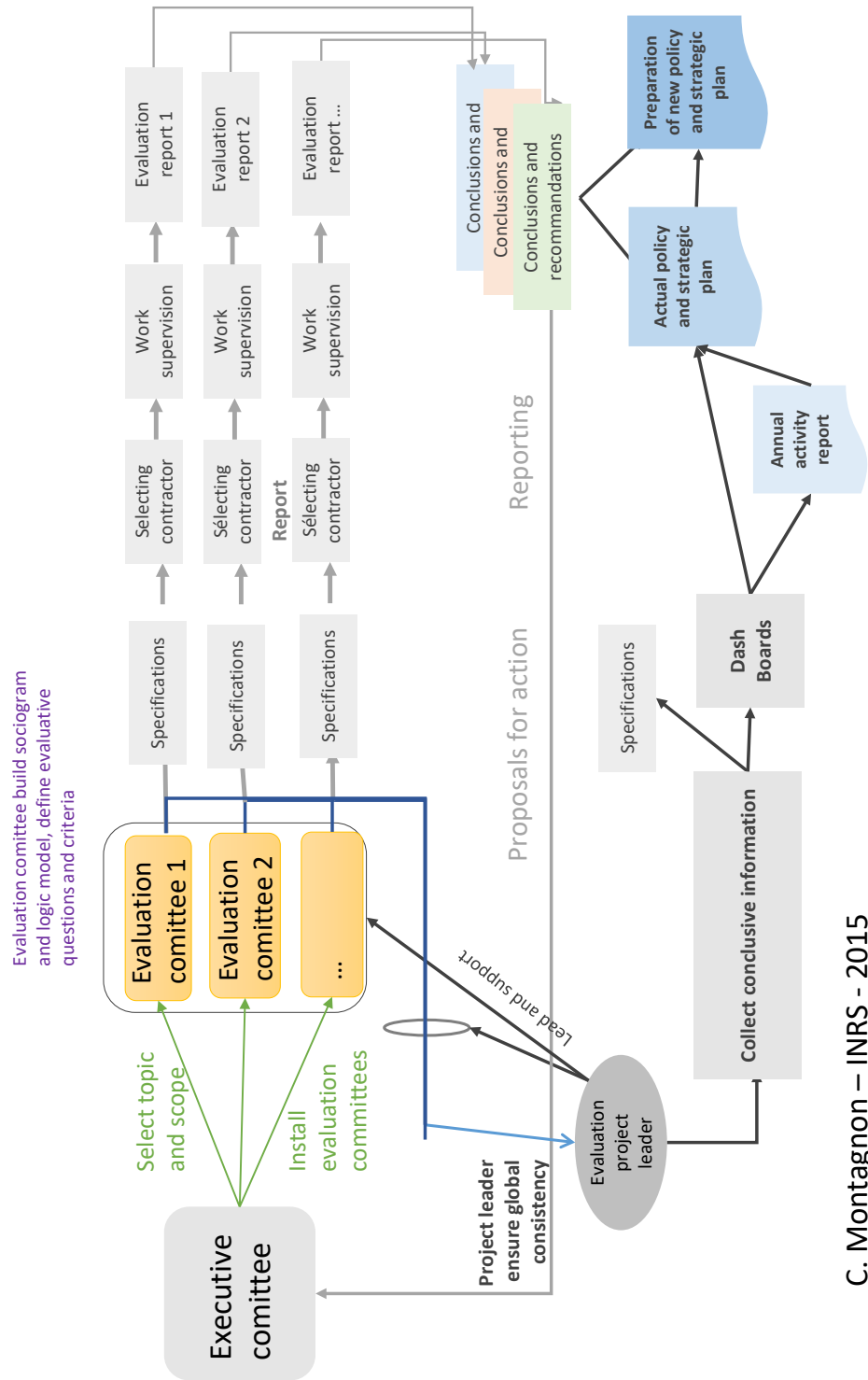
VIII.6 – IRSST decision

Change in organization and building a transfer model.

ANNEX IX – Examples of project flowcharts

IX.1 – INRS flowchart

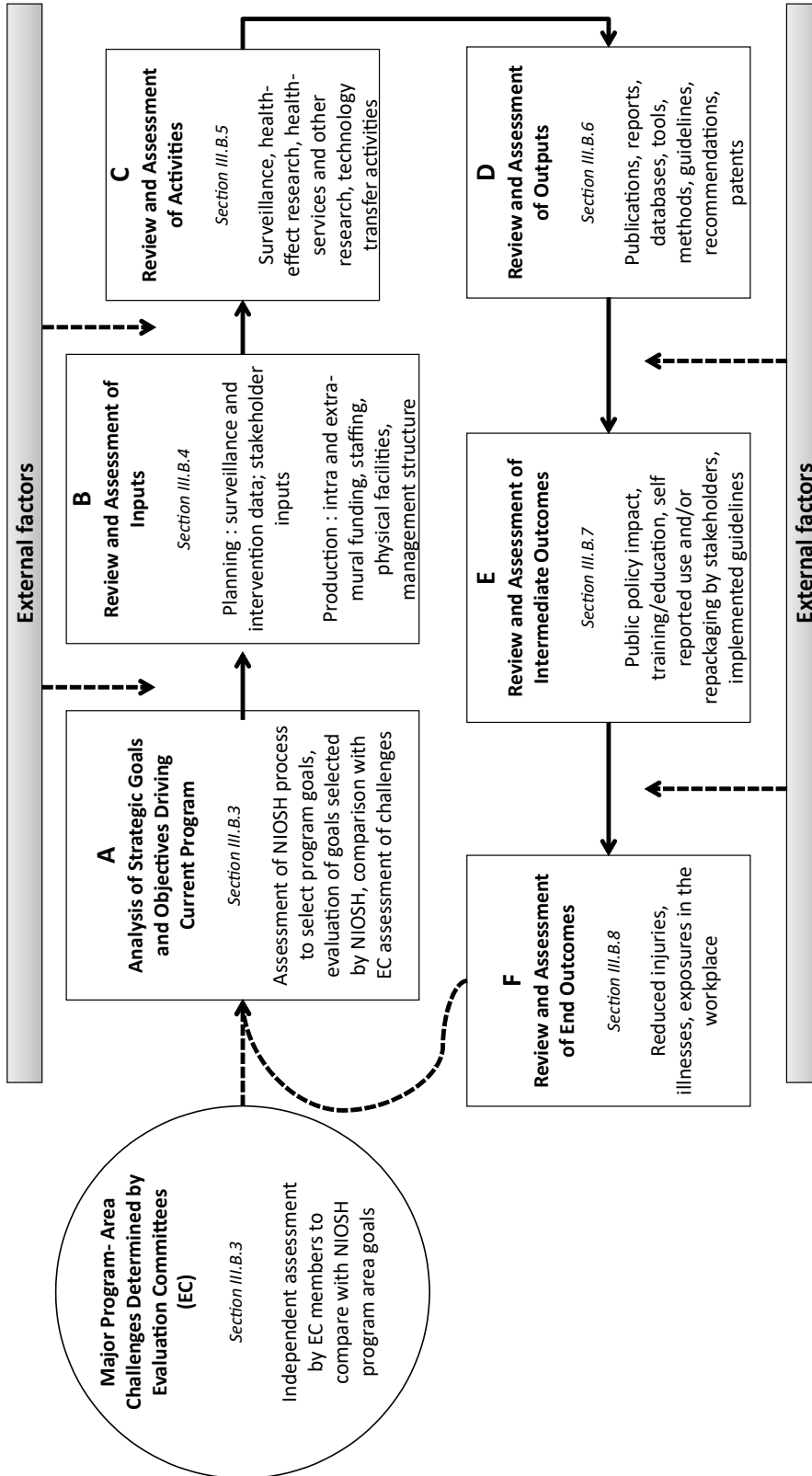
Project flowchart



C. Montagnon – INRS - 2015

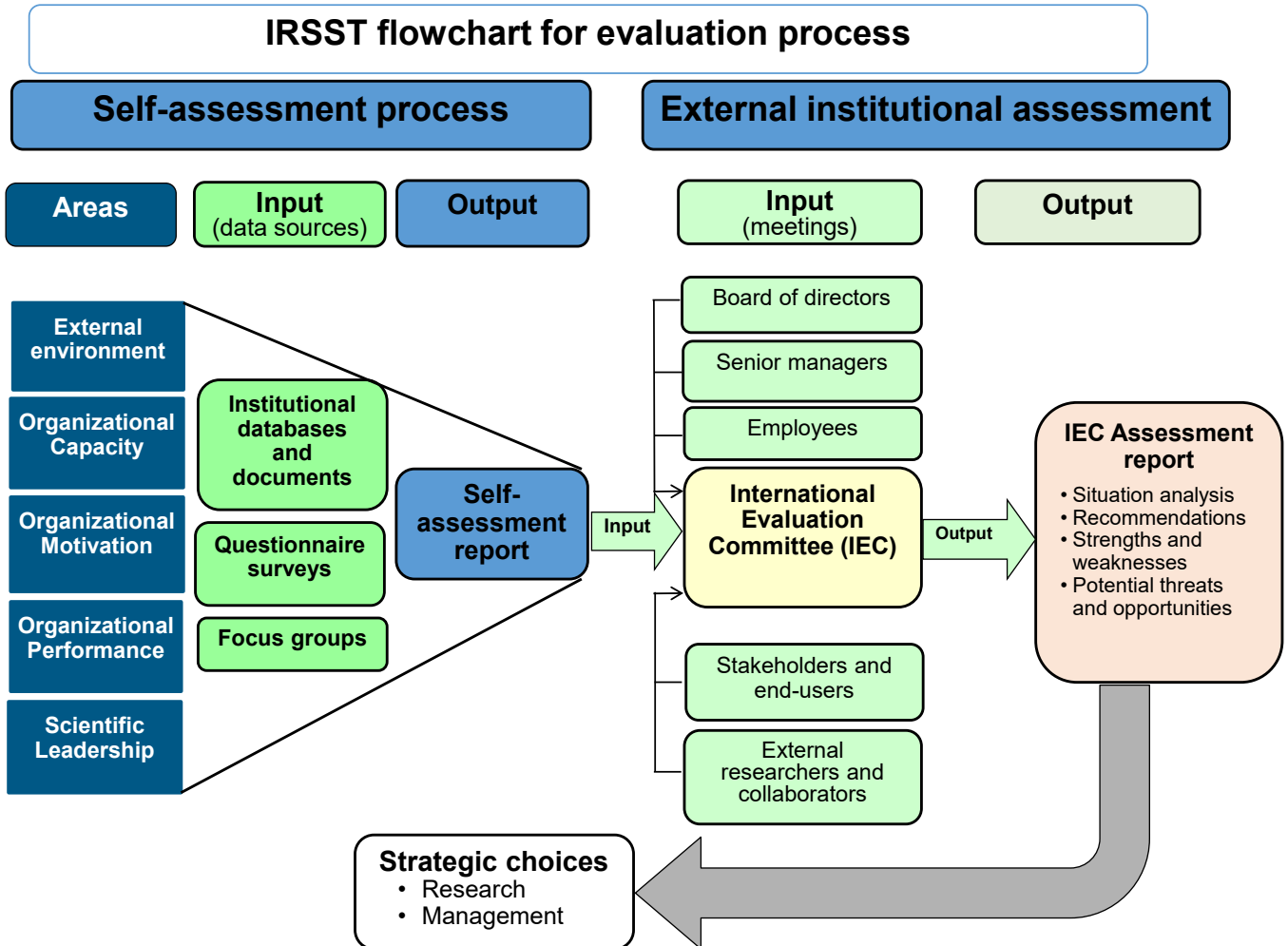
IX.2 – NIOSH flowchart

Flowchart for the evaluation of the NIOSH Research Program



NIOSH – Framework for the Review of Research Programs of the NIOSH - 2008

IX.3 – IRSST flowchart



ANNEX X – Examples of evaluation committees

X.1 – IRSST – “OSER” committee

Stakeholder Involvement in Follow-up Committees

Composition of the Committee

- Respect for worker-employer representation
- Representativity of people who can play the role of intermediary
- Diversity of viewpoints and generalization of results

Examples of organizations participating in a follow-up committee:

- Joint sector-based Associations
- Employers and Workers Associations
- Professional Associations
- Quebec Workers Compensation Board
- The occupational health network

X.2 – INRS evaluation committee

Follow up committee – Evaluation of different strategies towards SMEs

- Designer of the new strategy towards SMEs
- Study and research manager, expert in standardization, process engineering department
- Head of work equipment engineering department
- Expert in assistance and technical advice and standardization
- Study and research manager, occupational psychologist, human at work department
- Expert in information and communication
- Person responsible for technology transfer
- Evaluation project leader

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