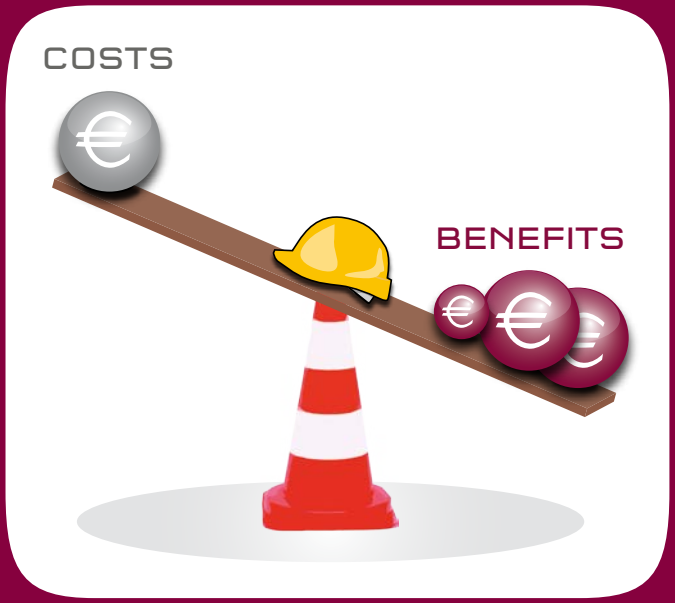
OPPBTP
La prévention BTP

AN ECONOMIC APPROACH TO PREVENTION

BASED ON 101 COMPANY CASE STUDIES



OPPBTP is the French Professional Agency for Risk Prevention in Building and Civil Engineering (BCE). Its mission is to advise, train and inform companies in this sector on the prevention of work-related accidents and occupational safety, and improve working conditions.

Thanks to its network of 350 members across 18 agencies in France, OPPBTP supports companies in risk-analysis within their profession, with a complete documentation offer, and in implementing training plans.

OPPBTP offers companies services and training courses tailored to their needs. On its website www.preventionbtp.fr, there are various publications, practical tools and guidance sheets readily available to help companies in their risk prevention management.

Specialists in economic and environmental analysis, AVYSO has offered to apply methodology as a follow-on from OPPBTP to companies wishing to make an economic assessment of their risk prevention policy and foster best practices. www.avyso.com

This brochure is an extract taken from the publication in French « Une approche économique de la prévention », which is for sale and available for free download on the OPPBTP website www.preventionbtp.fr. The 101 cases of preventative action can be downloaded individually at: www.preventionbtp.fr/101cas.

INTRODUCTION

Risk prevention is of major importance in the improvement of the health and safety of those working in Building and Civil Engineering (BCE). In difficult economic times, it is generally perceived as a net cost for companies. However, at OPPBTP but also within several pro-active companies which we support, there is a feeling that prevention is rather a factor of economic performance.

Our proximity to construction site, thanks to our 180 advisors who accompany more than 8,000 companies each year, gives us the chance to monitor precisely the situation in the field. Through meticulous work underpinned by quantified analyses, validated by the companies in question, an OPPBTP team has compiled an initial collection of 101 cases of preventive action.

While one must be wary of mathematical extrapolation, the results across the board are convincing: prevention does typically contribute to improving the economic performance of the company! The study's figures demonstrate it.

Prevention should not be seen solely through the economic lens, since it is clearly neither its role nor its aim. Neither should it be considered as likely to hamper competitiveness. This study testifies to that.

How can economic performance become an argument in favour of prevention?

Preventing professional risks is an absolute necessity in BCE where danger is a daily reality due to the physical dimension of the works involved. Protecting the health and safety of the women and men on our work sites is first and foremost an ethical and social requirement. It is also a clearly spelled out regulatory requirement, governments ensuring that a strict and comprehensive framework is in place within the Labour Code because of the high risks entailed.

However, in many BCE companies, management and employees consider **prevention as a net cost to the company**. How therefore, given this context, can they be convinced to act beyond the regulatory or ethical aspects in this field?

If prevention is perceived as an anti-profit measure, it is vulnerable in the world of business where economic constraint is inevitable. It is therefore important to study the link between prevention and company performance, and within that, economic performance.

The OPPBTP approach

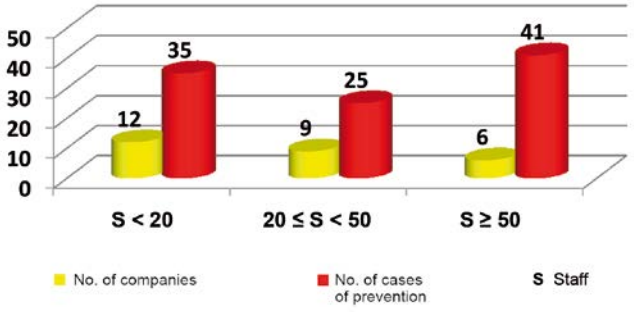
Conventional economic arguments put forward in favour of prevention are almost exclusively cost-based: costs avoided, from *potential* accidents, and reduced costs, from absenteeism, for example. These arguments are not worthless, whether they be regarding reduction in WA/OH payments (workplace accidents/occupational health) or acting to reduce the number of BCE employees off-work, estimated in France at more than 35,000 per day on average. But this cost-avoidance approach is not enough to engage all companies in prevention.

OPPBTP wished to go beyond that sphere by speaking of **economic performance** and by also assessing the **positive economic factors** brought about by preventive action.

A study was therefore launched in 2010 with the aim of **researching a potential link between prevention and performance**. The field work consisted of researching examples from within companies, in an attempt to **measure the link**, in order to establish **a method** for understanding, replicating and convincing. In this way:

- the study covered the 27 companies visited, encompassing 90% of the occupations in the sector, and 101 preventive actions were studied in detail;
- a methodological tool was designed in order to identify and characterise a preventive action, and to gather the data enabling all the economic impact of those actions to be assessed;

- each case was characterised based on the company (size, occupation...) and the action itself (its OTH type- *Organisation, Technical, Human*; its motivation; the risk involved);
- an economic analysis was then made, per action, based on a **before/after** state of all the positions impacted and the results obtained regarding prevention (risk eliminated or reduced).



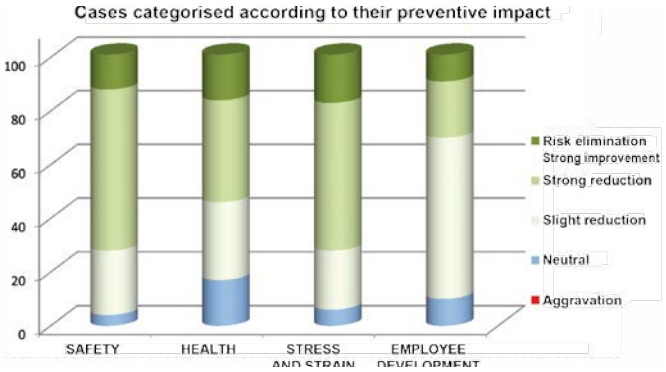
Prevention is also a factor of economic performance

An exemplary prevention record

Of course, we focused, initially, on qualifying the impact in terms of prevention of the actions in the cases under review. These impact were categorised according to four criteria:

- level of **physical safety** prevention, in other words the aptitude to prevent an accident able to alter the physical aptitude of an employee;
- level of **health** prevention, in other words the aptitude to prevent the alteration of an employee's health; this deals with differed risks capable of provoking an occupational health issue;
- level of **stress and strain** prevention;
- level of **staff development** of each employee concerned..

The prevention analysis of the 101 cases assessed is indeed excellent, with the risk being eliminated or significantly reduced in 67% of the cases, and positive results across the board.



An unequivocal return on investment

In the vast majority of the cases analysed, we were able to measure the economic impact of preventive action undertaken, and the most common outcome was a net positive impact. When this was not the case, profits were indeed generated but did not cover all the costs.

In order to level out the differences in values (the sums in question ranged from 100€ to 600,000€), we chose a relative indicator, **the return of prevention**: profits over costs.

Consolidating the outcomes of the 101 actions reviewed, we observed **an overall return of 2.19**, in other words for every 100 Euros spent on preventive action, the economic benefit is 219 Euros.

Prevention contributes to operational excellence

The benefits which we observed were found around the major pillars of the company's operational excellence:

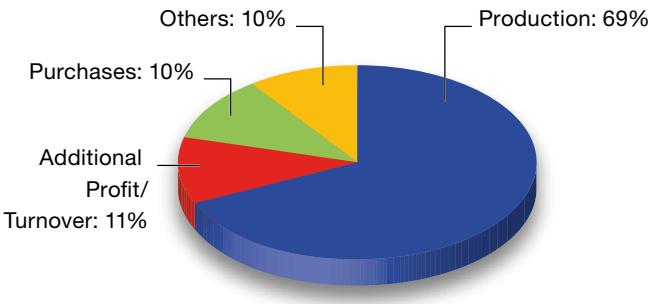
Productivity: safe working conditions bring with them greater effectiveness of hours worked.

Purchases: better exploitation of resources enables gains to be recorded against this key item.

Quality: 80% of the actions reviewed are related to gains linked to quality, although it was not always possible to quantify these.

Profit: 13% of the actions reviewed enabled higher company **turnover** and profit to be achieved, by opening the door to associated activities enabled by the action in question.

These benefits were re-allocated and put to their best possible use by the companies involved: **recruitment** (43% of them), **investment**, to maintain **profit** and **competitiveness** when faced with widespread rising costs.

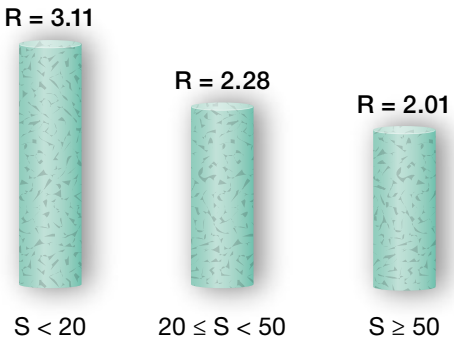


Percentage profit per category

Prevention is within everyone's reach

Prevention is accessible: 24 actions reviewed represent costs of less than 5,000€. And they are the ones with the best return (more than 20!). The actions with the best return were related to product changes and method changes.

Small businesses have even more to gain: small businesses are very aware of this since, in our sample, they are the ones which benefit from a return greater than 3.



Cash flow is balanced: the average payback, the speed at which the expense is covered by earnings, is 1.5 year. This short time frame enables funds to be spent without implying a long period of cash flow burden during difficult financial times.

Regarding **quality** which only accounts for 2% of positive benefits, it was often difficult, or even impossible to quantify the impact in figures, without simply making unverifiable hypotheses in the short term. However, the qualitative assessment of each of the 101 actions shows that 80% of them have an impact on quality.

If the *raison d'être* of prevention is acting against risk, its implementation is also to the economic benefit of the company.

CASES OF PREVENTION

The cases presented on the following pages have been selected from the 101 cases in the full study.
The calculation method, defined in partnership with an engineer and economist from the company, was validated by the management of the companies involved, for each case reviewed.

A case is presented on a double-sided page which summarises the elements gathered in the field.

- The cases are categorised by **type of action** from 1 to 8:

1. preparation, organisation and upkeep of the workplace;

2. purchase of machines or equipment;

3. workplace visit, audit and check;

4. employee training, welcome, communication and awareness raising;

5. substitution of materials or products;

6. adoption of new ways of working or methods;

7. assigning personnel dedicated to encouraging preventive or safety maintenance;

8. use of equipment for collective or individual protection except the purchase of machines or equipment.

- On the front of each sheet the reviewed **action is described**:
  - occupations involved;
  - staff members directly involved by this action;
  - description of the company;
  - description of the preventive action;
  - a before/after chart of the operational context.

- On the reverse side, the **results observed** are described:
  - **operational observation**: where the economic effects and action prevention effects lie;
  - how that observation translates **economically**:
    - the **duration** of use or effectiveness of the action upon which the analysis is calculated,
    - the **type of action** (organisation, technical, human: **OTH**),
    - the costs/ benefits split shown in the **analysis**,
    - ratio R = benefits/costs defined as **return**,
    - **payback** (P), the time period required to cover the costs with benefits generated;
  - translation in terms of **prevention**:
    - **safety** / **health** / **strain** / **staff development**: these four categories are assessed on a scale of 3 to 1 (3 for complete elimination of the risk, 2 for significant risk reduction, 1 for slight reduction, 0 for lack of impact and -1 for creating another risk),
    - qualitative translation of two additional categories: **quality** and **sustainable development**, for which we simply indicate if the action has an impact (1) or not (0) on the category considered.

Self-erecting crane at every roofing works site

PREPARATION
ORGANISATION
MAINTENANCE

1.24

EMPLOYEES INVOLVED

7

OCCUPATIONS INVOLVED

Carpenter	Mason
Cladder	Stone Mason

Company

Artisan carpentry-cladding-roofing company. Staff are seasonal workers: seven colleagues in summer, three in winter.

Preventive action

Hire of a self-erecting crane for each roofing works site as soon as the configuration of the site permits.

BEFORE

- In the event that it is not possible to install the crane, use of an equipment-lift as a hoist.

AFTER

- Every new roofing works site, new or undergoing renovation, is equipped where possible, with a self-erecting crane whose reach spans the entire works.

Reduction in the carrying of heavy loads, MSDs and mental stress.

1.24 Self-erecting crane at every roofing works site

Observation

- Time savings: ease and speed of assembly.
- Manual handling reduced: completely automated, high capacity handling.
- Risk of falling reduced: offload pallets of equipment in the precise position to avoid the need for movements across pitched roofs.
- Overall site improvement: average duration of work site went from 36 to 32 days, at the rate of three people (the cost of trainings is paid back after two and a half months and, moreover, this action brings in more than 30k € per year).

Note: the use of a crane requires:
– verification before use by a certified body;
– the crane operator to have authorisation issued by the employer for obtaining the "CACES" (French safe driving aptitude certificate);
– equipment to be slung load with cargo handling gear checked daily by trained operators.

Economic Analysis (in €)

Duration/ planned duration	5 years	OTH type	0
Costs		Gains	
Investments	–	Production	217,560
Training	6,285	Purchases	
Implementation/Rental	54,348	Quality	
Maintenance		Additional Profit/TO	
Additional human resources		Insurance premiums	
		Others	
Total costs	**60,633**	**Total gains**	**217,560**
Financial impact (in €)	**+ 156,927**	**R = 3.59**	**P = 0.2 year**
		Result/ employee/ year	**+ 4,484**

Prevention analysis

Risk prevention				CSR/quality	
Physical safety	Health and Hygiene	Phys. stress & strain reduction	Employee development	Sustainable development	Quality
1	3	3	1	0	1

Radio control for loading crane on truck

PURCHASE
MACHINE
EQUIPMENT
4.6

EMPLOYEES INVOLVED
2

OCCUPATIONS INVOLVED

- Insulation Installer
- Conduit
- Tile-setter
- Carpenter
- Road builder
- Cladder
- Demolisher
- Asbestos remover
- Scaffolder
- Electrician
- Facade specialist
- Waterproofer - Cladder
- Mason
- Joiner
- Painter - Glazier - Surfacer
- Plasterer - Drywaller - Suspended ceiling worker
- Plumber - Heating Engineer Ventilation Specialist
- Locksmith - Metal Worker
- Stone Mason
- Landscape Labourer

Company

Civil engineering company with 36 employees. Its main activity: installing piping of all types. This company is characterised by a constant search of innovative solutions.

Preventive action

Installation and use of a remote controlled loading crane, for supplying sites with material and equipment. The truck was already equipped with the loading crane.

BEFORE

■ The truck driver was sometimes accompanied by another worker to help with the unloading of the truck.

AFTER

■ The truck driver is alone and has the radio control. So, he can take the adequate position to control the unloading activity.

Reduced risk of crashes, exhaust gas, noise pollution and elimination of risk by electrocution via direct contact with overhead cables.

4.6 Radio control for loading crane on truck

Observation

- Better working conditions:
  – improved ergonomic work stations;
  – increased mobility and flexibility of the logistics resources used by production;
  – fewer moves between the truck and the load to stabilise it and/or guide it;
  – reduced exposure to noise by being farther from the source of the disturbance.
- Reduced risk of:
  – crashes;
  – electrocution via direct contact with overhead cables;
  – respiratory problems due to exhaust gas from the truck engine.
- Financial benefits:
  – no more need for the support worker, a saving of 198 hours per year (one half-hour per day + one day per month);
  – 10% increase in the driver's performance; valued at a third only in our calculation, with the time gained not always usable;

Economic Analysis (in €)

Duration/ planned duration	5 years	OTH type	T
Costs		Gains	
Investments	10,420	Production	35,017
Training		Purchases	
Implementation/Rental	140	Quality	
Maintenance	200	Additional Profit/TO	
Additional human resources		Insurance premiums	
		Others	
Total costs	10,760	Total gains	35,017
Financial impact (in €)	+ 24,257	R = 3.25	P = 1.5 year
		Result/ employee/ year	+2,426

Prevention analysis

Risk prevention				CSR/quality	
Physical safety	Health and Hygiene	Phys. stress & strain reduction	Employee development	Sustainable development	Quality
2	3	2	1	0	0

Safe, environmentally-friendly, driver training

Training/Introduction Communication/ Awareness

7.5

Employees involved

160

Occupations involved

Insulation Installer	Joiner
Conduit	Painter - Glazier - Surfacer
Tile-setter	Plasterer - Drywaller - Suspended ceiling worker
Carpenter	Plumber - Heating Engineer - Ventilation Specialist
Demolisher	Locksmith - Metal Worker
Asbestos remover	Stone Mason
Scaffolder	Landscape Labourer
Electrician	Road builder
Facade specialist	
Waterproofer - Cladder	
Mason	

Company

Civil engineering company, established in 1880, which has fourteen agencies or subsidiaries employing more than 430 people. Management is convinced of the benefit of prevention and regularly meets with employee representatives regarding Health and Safety issues.

Preventive action

Signing of a «Managing road risk» charter, with the French mandatory workers' insurance body aiming at reducing the increasing «Trip accidents» flat-rate WA-OH fee.

Actions undertaken:

– introduction of specifications consisting of airbags, ABS, ESP, AFU, speed limiters, curbed at 100km/h for 3.5t, light trucks, adequate interior partitioning fittings;

– «Road risk prevention» training courses;

– log book for vehicles;

– maintenance contract ensuring the good working condition of its fleet of vehicles.

BEFORE

- Fleet of 160 vehicles with third-party insurance provided by the company which bears the cost of excess claims of each claim (50k € in 2010 for 160 vehicles clocking-up 28,000 km/year on average).
- Constant increase in financial burden of fuel.
- The state of certain vehicles could damage the company's image.
- Uncontrolled pollution.

AFTER

- Better monitoring of vehicles and consumption.
- Improved behaviour.

Reduced road risk and mental stress

7.5 Safe, environmentally-friendly, driver training

Observation

- 50% reduction in the insurance premium, equivalent to 0.135% of total salaries for 2011.
- Reductions in number of work-related traffic accidents.
- Reduction in claims (down from 55 to 40 per year, for an average unit cost of 1,000€).
- Reduction in fuel consumption (on average 0.4L per 100km per vehicle).
- 10% reduction in consumption of tyres and fluids.
- Reduction of CO_2 emissions.
- Reduction of road traffic offences.
- Enhanced corporate image. Environmental certification reflecting the company's commitment to this domain.
- With a slightly higher payback after 6 months, the annual result is positive by 36,314€.

Economic Analysis (in €)

Duration/ planned duration	5 years	OTH Type	H
Costs		Gains	
Investments	2,550	Production	
Training	25,600	Purchases	108,498
Implementation/Rental		Quality	
Maintenance		Additional Profit/TO	
Additional human resources		Insurance premiums	101,222
		Others	
Total costs	**28,150**	**Total gains**	**209,720**
Financial impact (in €)	**+ 181,570**	**R = 7.45**	**P = 0.7 year**
		Result/ employee/ year	**+95**

Prevention analysis

Risk prevention				CSR/quality	
Physical safety	Health and Hygiene	Phys. stress & strain reduction	Employee development	Sustainable development	Quality
1	1	0	0	1	0

The following persons contributed to this study:

Paul DUPHIL, OPPBTP Secretary General, project initiator.

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Philippe EMSALEM, Engineer, BA in Economics, Associate Director at AVYSO.

Jean-Jacques MESLIERE, Prevention Executive at OPPBTP agency, Marseille.

Jean-François CANAL, Prevention Advisor at OPPBTP agency, Toulouse.

The latter two gathered information, in the field, required for feeding into the documentation base to support the statistical analyses

We would especially like to thank the companies which provided us with the data required for our study.

Listed below, in alphabetic order:

ACTIBAT PROVENCE, 13290 Aix-en-Provence • ALTI BOIS Construction, 74370 Argonay • BELAUBRE, 12000 Rodez • BROUCHET, 82230 Monclar-de-Quercy • CONSTRUCTION DU CACOR, 82200 Moissac • CEPECA, 82000 Montauban • COLAS SUD OUEST, 82000 Montauban • DIRUY, 80000 Amiens • ENERGETIQUE SANITAIRE, 13003 Marseille • FLEXXCOAT France, 13790 Rousset • FORAE, 82700 Finhan • FRANÇOIS FAÇADES, 51170 Aougny • GAGNERAUD CONSTRUCTIONS REGION SUD, 13127 Vitrolles • INSA, 82000 Montauban • Jean-Michel DELOCHE, 74450 Le Grand Bornand • JOUBEAUX ENTREPRISE, 13590 Meyreuil • LEON GROSSE PROVENCE, 13100 Aix-en-Provence • PRIMO CONSTRUCTION, 31150 Gratentour • SOCALP, 05100 Briançon • Société Nouvelle d'Asphalte - PACA Ouest, 13705 La Ciotat •
Société nouvelle de Plomberie, 13530 Trets • SOGECHARPENTES, 24680 Lamonzie Saint Martin • SOMEPOSE, 31140 Aucamville • STAP, 46210 Montet-et-Bouxal • TARDIEU, 13750 Plan-d'Orgon • TG BAT, 82700 Saint-Porquier • TRIANGLE SCOP SA, 13120 Gardanne

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How can economic performance become a factor in favour of prevention?

Most managers and employees consider prevention as a net cost to the company.

Through this study, OPPBTP demonstrates that actions taken by business in favour of prevention and improving working conditions are in fact positive economic factors for the company and easily transferrable to many sectors of activity in Building and Civil Engineering (BCE).

Key strengths of the study:

- 101 cases of prevention illustrated through quantified analyses.
- The analysis and calculation method, developed and applied hand-in-hand with business.
- Learnings applicable to all.

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