

### Meso studies help to answer questions such as

- What are the economic benefits for a given sector to act in favour of the environment?
- What is the part of the cement sector in the national degradation of the environment?
- What would happen if the price of water or fuel increased?
- What economic incentives should be put in place?

### Abstract

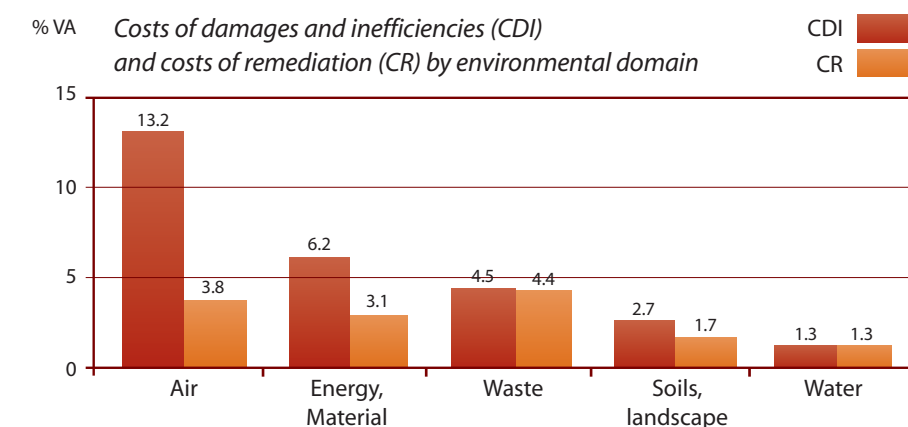
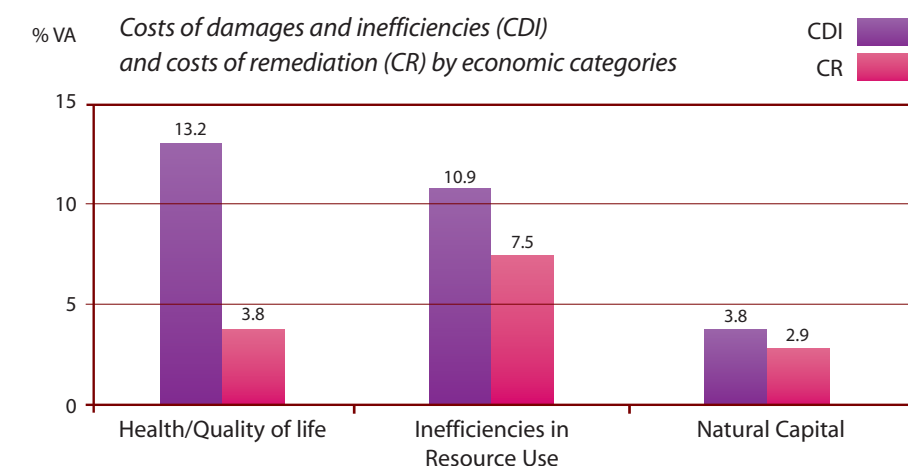
Nationally, the cement sector in Libya is not a major economic and environmental actor. Nevertheless, on a sectoral level, the impact of the production of cement on the natural and social environment in Libya is important. According to the meso profile of the Libyan cement sector, the overall environmental degradation was estimated at nearly one third (27.7%) of the sector's value added (VA) in 2003. This is equivalent to 10.6 million USD. The interesting fact is that the costs needed to mitigate the pollution and reduce the impact of the Libyan cement sector are estimated at just over half of the costs of environmental degradation presently generated (14.2% of the VA). More than 60% of the degradation is due to damages to natural and social environment (17% of the VA) of which Air has the biggest share (13.2%). Still, inefficiencies in the use of resources are also significant and deserve some attention. The loss of profit in the management of resources is estimated at 4.2 million USD, which is 10.9% of the sector's VA. This represents an interesting potential of savings that would benefit both the environmental image of the company and its expenses.

### Positioning

By comparing the sector to the national context, the contribution of the Libyan cement sector to the national value added (GDP) is 0.2%. Its contribution to environmental damages is not known as macro damages are not yet available.

### Main Results

The most important environmental feature in the meso profile of the Libyan cement sector is the domain 'Air'. It is the only contributor to the economic category 'Health/Quality of life'. The main issue concerns the significant impact of the cement factories on the close environment and the neighbouring communities.

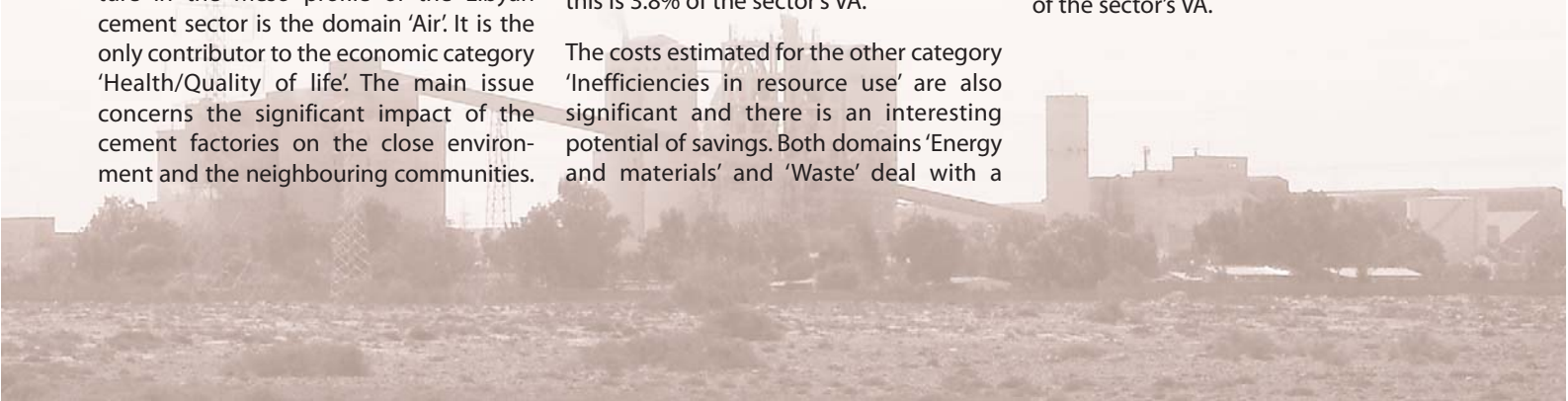


Dangerous dust particles are emitted and accumulate in the area. Humans pay a high toll and see their quality of life decreased because of the important air pollution. In principle, however, this specific domain would not need such a big investment to alleviate the damages. Less than a third of the costs of damages would be necessary, this is 3.8% of the sector's VA.

The costs estimated for the other category 'Inefficiencies in resource use' are also significant and there is an interesting potential of savings. Both domains 'Energy and materials' and 'Waste' deal with a

better management of resources. It would be thus interesting for the Libyan cement factories to rethink the supply, stock and discharge management.

CO<sub>2</sub> emissions have to be added to this profile as the impacts are broader and more diffuse. They are estimated at 12.5% of the sector's VA.



# Environment-economic indicators

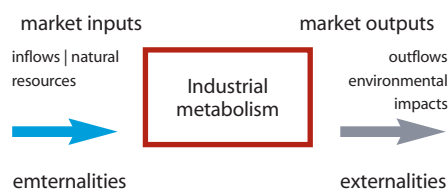
## Cement sector, Libya

### What is meso

A meso study is the economic assessment of the environmental degradation at the level of an economic sector or an urban community. It focuses on connecting micro (unit) and macro (country) evaluations on a middle (sector) - meso - level. The objective of meso studies is to seize and measure the importance of material flows and transformations of the industrial or urban metabolism and translate them into economic monetary terms, into environmental degradation costs (costs of damages and inefficiencies) and remediation costs. Then, these costs are related to the value added (VA) of the studied body.

### An innovative methodology

The assessment of environmental degradation requires a lot of data collection (in individual companies) and different stages of analysis. The entity studied is seen as a **'living body'**, that is to say, through its activities, the entity ingests, transforms resources, produces goods, and generates discharges, thus putting pressure on ecosystems (industrial metabolism). This prospect sets the limits of the system studied.



The data collection takes place at the entry of the production process (input) and at its exit (output). The data are then analysed in detail listing precisely all materials entering the process (water, limestone, sand, energy, etc.) and exiting the process (finished product, water, CO<sub>2</sub>, SO<sub>2</sub>, waste, etc.) as well as general economic and human resources data. Along with national economic records, the economic calculation of the environmental degradation of the sector is therefore possible. The results are then allocated to six **environmental domains** (water, air, soil and landscape, wastes, energy/materials, global environment) and three main **economic categories** (health/quality of life, natural capital, inefficiencies in the use of resources).

#### COSTS OF DAMAGES (CD)

*Costs of environmental damages are a loss of well-being, from an economic point of view, for a community or a country. It could be the consequence of health impairment, loss of revenue, or loss of environmental services.*

#### COSTS OF INEFFICIENCIES (CI)

*Costs of inefficiencies are the economic consequences of mismanaged use of natural resources, e.g. loss of water through leakage or wastage of energy.*

#### COSTS OF REMEDIATION (CR)

*Costs of remediation are expenses incurred to protect the environment, either by preventing or repairing its degradation (e.g. new filters, new sewage treatment unit, awareness session, etc.).*

### Reference study

Pillet, G., Maradan, D., Qaddoura, A., Triki, J. (2005). *Meso-economic study of the environmental costs and benefits of the cement industry in Libya. Results and methodology guide.*

### Study undertaken by

**Ecosys**<sup>fi</sup>

Ecosys® Inc.  
Geneva, Switzerland  
Gonzague Pillet, President  
pillet@ecosys.com  
www.ecosys.com

**SBA**

Sustainable Business  
Associates

Sustainable Business Associates  
Lausanne, Switzerland  
Karim Zein, President  
sba@sba-int.ch  
www.sba-int.ch

### With the support of



Swiss Agency for Development  
and Cooperation  
Bern, Switzerland  
Annick Tonti,  
Head of Middle East and  
North Africa Division  
annick.tonti@deza.admin.ch  
www.sdc.admin.ch



Arab Union for Cement  
and Building Materials  
Damascus, Syria  
Ahmad Al-Rousan,  
General Secretary  
aucbm@scs-net.org  
www.aucbm.org

### Local partner

#### Arabian Cement Company

Al Fateh Street  
P.O. Box 40200  
Khoms  
Libya  
Tel : 218 22 63 1555  
Fax : 218 31 622 689

#### Libyan Cement Company

P.O. Box 2108  
Benghazi  
Libya  
Tel : +218 61 223 52 44  
Fax : +218 61 223 52 54

#### Environmental General Authority

P.O. Box 83618  
Tripoli  
Libya  
Tel : +218 21 484 0043  
Fax : +218 21 483 9991  
Eng. Jalal Triki