



## TOWARDS SUSTAINABLE QUARRIES: ECOSYSTEM SERVICE AND BIODIVERSITY MANAGEMENT

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## Global material solutions company



## Sibelco at a Glance



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# SIBELCO NATURAL CAPITAL AND BIODIVERSITY STRATEGY

## *Objectives of mapping and assessing ecosystem services*

- » Develop a Natural Capital Approach to assess impacts of mining and show how sustainable mining practices can create great opportunities for nature and biodiversity.
- » Natural Capital Toolkit : guidance on regulation, capacity building, partnerships, planning, monitoring, communication
- » Species Protection Program for pioneer species in quarries
- » Calculator for Ecosystem Services and Biodiversity based upon specific land use in and around the quarries (before, during, after mining) and management variables



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# QUARRY MANAGEMENT



» Quarry activities have impact on the environment:

- » Visual - land use
- » Emissions e.g. dust, noise
- » Water
- » Biodiversity

» But create also opportunities for (future) recreation and biodiversity :

- » Walking path with view point eagle owl (old quarry)
- » Old quarry classified as N2000
- » Steengroeve theater
- » Paleontological findings



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# A “TOOL” FOR ASSESSMENT OF ECOSYSTEM SERVICES AND BIODIVERSITY

## Why ?

- » Sustainable management of quarries and mines throughout the life cycle: before - during - after operations
- » Improved sustainability performance and reduced environmental footprint
- » Management options based upon the specifics of the quarry and it's location
- » Exchange best practices



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# INSPIRATION 1: WWW.NATUURWAARDEVERKENNER.BE

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My scenarios

achelman

Study Area

Measures

Extra Info

Services

Results

Feedback

## Added measures

Click on the pencil to see/change detailed information about your area

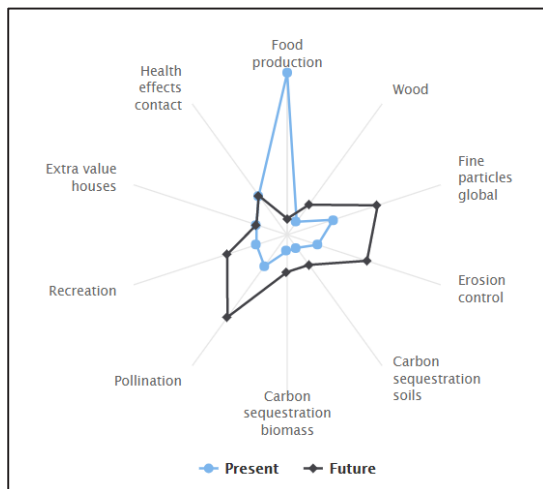
Eik1

Heide3

Total landuse inside scenario

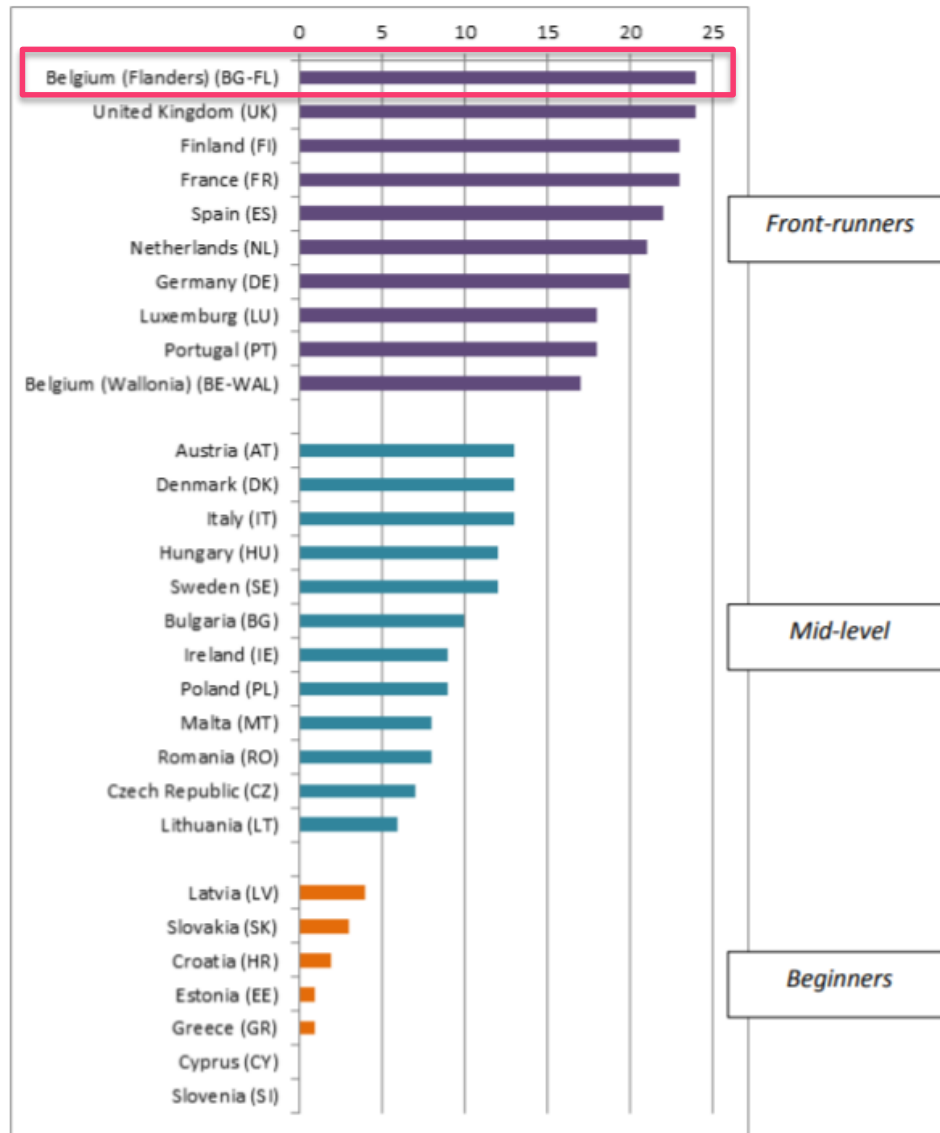
Add another measure

I am ready for the next step



	Global climate	PM10 capture	Global climate	PM10 capture	Food
<div>Society</div>	<div>Icon: Tree and sun</div> <div>247.0 € avoided costs</div>	<div>Icon: Leaf and person</div> <div>Extra capture equal to the emissions of 2.4 people</div>	<div>Icon: Tree and sun</div> <div>Extra sequestration equal to carbon emissions of 22149.3 vehiclekm</div>	<div>Icon: Leaf and person</div> <div>Extra PM10 capture, equivalent of 295227.1 vehiclekm</div>	<div>Icon: Cow</div> <div>for 1.3 people less</div>
<div>Users</div>	<div>Icon: Person and dog</div> <div>11.9 tonnes less</div>				
<div>Owner</div>	<div>Icon: Person and dog</div> <div>11.9 tonnes less</div>	<div>Icon: Tree and sun</div> <div>1.0 m³ sustainably harvestable wood more</div>	<div>Icon: Cow</div> <div>4610.0 € less</div>		

## INSPIRATION 2: MAES STATUS - OLD VERSION



## INSPIRATION 3: FLEXIBLE MAPPING METHODOLOGY ESMERALDA

### Stepwise approach

#### Mandate

Sustainable quarry management, *license to operate*

#### Scoping

Which ecosystem services are important and are potentially affected by site management



#### Management steps

Identification of the possible management variables that affect the relevant ecosystem services



#### Methodologies

Select relevant ecosystem types

Develop qualitative, quantitative and monetary indicators and simplified models to assess the impacts



#### Testing - scenarios



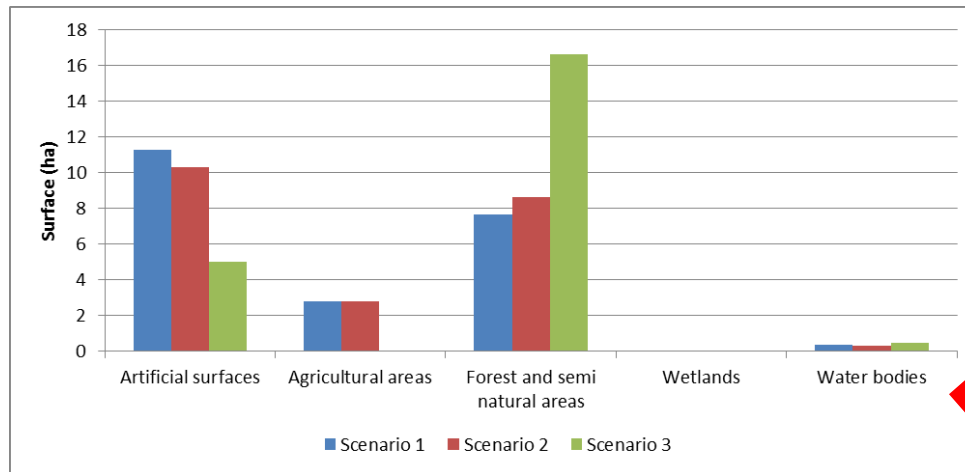
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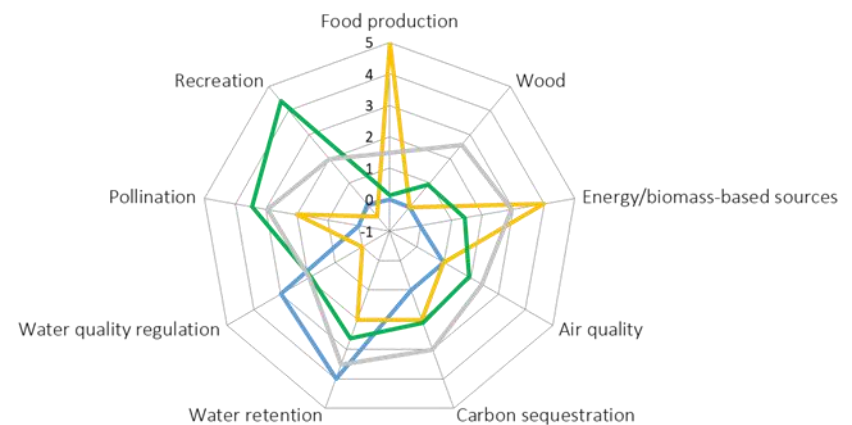
- » **Tier 1 matrix tables from the Flemish MAES ecosystem service assessment**
- » **Refinements in quarry land use types**
- » **Biophysical methods:** knowledge tables, empirical relationships
- » **Monetary methods:** benefits transfer (€), societal relevance indicators (jobs, household equivalents, DALY, ...)
- » **Specific recreation, biodiversity methods:** scoring system based on quarry management actions, demand and land use distribution

# A TOOL FOR SELF ASSESSMENT OF ECOSYSTEM SERVICES AND BIODIVERSITY



Input: land use  
(also surroundings)

Output: impact on  
ecosystem services



Input: management options



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## NEXT STEPS PERFORMED BY SIBELCO

- » Apply tool and build up more expertise
- » Embed assessments in the way of working to improve long term sustainability and support the license to operate
- » Set and refine management variables
- » Think of a smart way to introduce natural capital accounting



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THANK YOU!

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