

Sustainable Aggregates Resource Management: S A R M a

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Geological Survey of Slovenia**

7th EUREGEO

Bologna | Italy | june 12th - 15th 2012





SUSTAINABLE AGGREGATES RESOURCE MANAGEMENT - **SARMa**
Project SEE AF/A/151/2.4/X
2009 - 2011

SUSTAINBLE APPROACH TO AGGREGATES

MANAGEMENT / SUPPLY

LOCAL, REGIONAL, NATIONAL, TRANSNATIONAL LEVEL



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Content

- Project Background & Goals
- Partnership, Activities,
- Products, Dissemination
- Conclusion

Importance of Aggregates

- Within the EU, the aggregate sector represents almost 3% of Construction & Housing sector gross value added, just above 5 % of EU economy. Main producers (over 400 million tons) are larger EU countries: France, Germany and Spain.
- Price varies between 3 € (south of Europe) and 8 € (mostly Scandinavian countries), while the majority of countries have a price ranging between 6,0 and 6,5 € per ton of aggregate.
- Access to land is restricted; for example, extraction is banned on more than 80% of sand and gravel territory.
- Aggregates are heavy and bulky. Transportation can add significantly to the cost of aggregate. Transportation range: 80 % is used within 35-50 km radius in UK.
- Recycling rate of construction and demolition waste for use as aggregates varies from almost zero to up to 25 % in NW Europe.

Contribution to EU policies

- Raw Materials Initiative COM (2008) 699 & Tackling the Challenges in Commodity Markets and on Raw Materials COM(2011) 25
 - Fostering sustainable supply within the EU
- European Innovation Partnership proposal
 - Work Package 3 – mineral policy, regulation, authorisation, geological knowledge base....

Main objectives of the project are:

- to develop common approach to sustainable aggregates resource management (**SARM**) and
- to ensure sustainable supply mix (**SSM**) planning, at three scales, to ensure efficient and secure supply in SEE.

SARM is efficient, low socio-environmental impact quarrying and waste management.

SSM uses multiple sources, including recycled wastes and industrial by-products (slag) that together maximize net benefits of aggregate supply across generations.

- Local level
 - Environmentally friendly extraction
 - Illegal quarrying
 - Recycling
- Regional / National level
 - Management / Supply
- Transnational level
 - Management / Supply
 - After project structure / Regional centre

Description of the Partnership

- Expertise and responsibility
- Geographical coverage: 14 partners in 10 countries of SEE area,
- Inclusion of partners from old member states, new member states, and candidate countries
- Partnership: ministries in charge or mining, regional authorities, chamber of commerce and industry, geological surveys, institutes and faculties – internal dialogue



Project partners (14)

1. ERDF: GeoZS - **Geological survey of Slovenia, SI**
2. ERDF: MUL - University of Leoben, AT
3. ERDF: PELLA – Prefectural Authority of Pella, GR
4. ERDF: IGME - **Institute of Geology and Mineral Exploration, GR**
5. ERDF: TUC – Technical University of Crete, GR
6. ERDF: MBFH – Hungarian Office for Mining and Geology, HU
7. ERDF: ER – **Emilia-Romagna Region - Environment, Soil and Coast Defense Department, IT**
8. ERDF: PARMA – Parma Province - Territorial Planning Service, IT
9. ERDF: IGR – **National Institute for Research-Development in domain of Geology, Geophysics, Geochemistry and Remote Sensing, RO**
10. ERDF: FGG – University of Bucharest, Faculty of Geology and Geophysics, RO
11. IPA: MGK10 – Herzeg – Bosnia Canton Government – Ministry of Economy, BiH
12. IPA: RGF – University of Belgrade, Faculty of Mining and Geology, SRB
13. 10 % partner: METE – Ministry of Economy, Trade and Energy, AL
(Albanian Geological Survey)
14. 10% Partner: MINGORP – Ministry of Economy, Labor and Entrepreneurship, Energy and Mining Directorate, HR **(Croatian Geological Survey)**



Regional distribution of project partners



Internal dialogue & cooperation

- 14 Partners,
- 9 Observers,
- 6 Pool of stakeholders,
- 3 Advisory Board
- Subcontractors

Structure / Methodical approach

Project partners aim to achieve objectives through work packages (WP):

- WP1: project management
 - WP-leader: Geological Survey, Slovenia
- WP2: project dissemination
 - WP-leader: Technical University of Crete, Greece
- WP3: activities at **local scale**
 - WP-leader: Institute of Geology and Mineral Exploration, Greece
- WP4: **regional/national scale**
 - WP-leader: Hungarian Office for Mining and Geology
- WP5: **transnational scale**
 - WP-leader: University of Leoben, Austria




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Questionnaires, baseline (case) study reports.....



SARMa - NATIONAL LEGISLATION QUESTIONNAIRE
WP4. Activity 4.1 Task 2
AUSTRIA

Conducted by:
Ministerialrat Dipl.-Ing. Mag. Inr. MAURER
Montanbehörde West (Regional Mining Authority)
Dipl.-Ing. Dr Günter TIESS



SARMa - NATIONAL LEGISLATION QUESTIONNAIRE

NAME OF THE COUNTRY **ROMANIA**

NAME AND COMPANY
Mihai Marinescu, Geology

PLACE AND DATE OF THE REPORT
Bucharest, 25.07.2010.

REPORT

NAME OF THE COUNTRY
SLOVENIA

NAME AND COMPANY OF NATIONAL LEGAL EXPERT(S)
GEOLOGICAL SURVEY OF SLOVENIA


PLACE AND DATE OF THE REPORT
LJUBLJANA, MAY 2010

REPORT

1. Does your country have a law (or act) on mining (ie. exploration and exploitation of primary aggregates)? If yes, please give its title, number, year of issue and the implementing legislation relevant to primary aggregates? If no, please state the reason why it is not implemented in your country.


RS, No. 56/99, fully renewed text in last amended in 2008 (Official Gazette of the Republic of Slovenia). Changes and amendments are published in the Official Gazette of the Republic of Slovenia.

Uradni list RS, št. 56/99, 110/02-7



SARMa database (SDB) model for legal and illegal quarry extraction

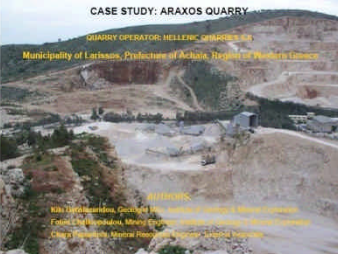
- ID of location
 - Tormani Quarry
- Name of location
 - Tormani Imathias
- Coordinates of location (using WGS84 system)
 - 40° 26' 58" N
 - 22° 08' 19" B
 - h= 735 m s.l.m.
- Location type (can be)
 - Quarry
- Status of location (can be)
 - Active
- Prosperity of the area with illegal activity (can be)
 -
- Municipality
 - municipality : Veria
 - Region : Imathia (Centr. Macedonia)



Preparatory Site Report (PSR)

ACTIVITY 3.1
ENVIRONMENTALLY FRIENDLY EXTRACTION PRACTICES

CASE STUDY: ARAXOS QUARRY



Municipality of Larissa, Prefecture of Peloponnese, Greece

1. Planning policies dealing with recycling & recycled aggregates

With reference to the 4 above listed types of recycling, what is the percentage of aggregate recycling in your country/region?

no statistics, it is supposed to be rather a small amount and to be used only for fill within the quarries

83% (5 Mio.t from 6 Mio.t)

72 % (15,9 Mio.t from 22 Mio.t)

69 % (1,1 Mio.t from 1,57 Mio.t)

use pay attention: The backfill of C&D waste is not considered as aggregate in many other countries.

What kind of disposal is presently forecasted for waste/residues from aggregate recycling?

recycling is supposed to have achieved nearly the maximum.

Regarding asphalt nearly 100% is recycled. Regarding concrete, small amounts are not economic to be transported to recycling plants. Movements are necessary for bricks. Here the material is mostly used as a building material nevertheless is rather low. Production of bricks is not recycled.



BASELINE STUDY REPORTS (BSR) FOR NATIONAL SSM (Slovenia)



Geological Survey of Slovenia
Author: dr. Gorazd Žilber
Reviews: dr. Slavko V. Šolar, Alex Burger

BASELINE STUDY REPORT FOR GOSTAVATU ILLEGAL QUARRYING ACTIVITY

Description of location

Geographical data/coordinates

From a geographical perspective, Gostavatu area is situated in Romanian Plain at the confluence point of its major units: Central Valachian Plain (represented by one its subunits, named Burnasului Plain) and Bucharest Plain (represented by one of its subunits named Vlăsiei Plain).

The illegal quarrying activity was carried out on a plot situated on the Argeş river major bed, on the left shore, in the area (allotment) NP 62 – Mironesti Bridge, which is registered in the Goştinari village, called natives "Gostavatu". The distance between the river and the Gostavatu perimeter is approximately 150 m. The relief is a little out of level and is specific for the major bed. In this area can be found alluvial soils. The climate has a mild character, being continental excessive. The average annual temperature is about 11°C. In winter, the average temperature is -3°C, and in June it reaches 22°C.

Administrative and legal framework

From an administrative point of view, the Gostavatu perimeter belongs to Goştinari commune, Giurgiu county. Also the localities of Goştinari and Mironesti belong to the same commune. The illegal quarrying activity was carried out without quarrying license.

Demographic issues

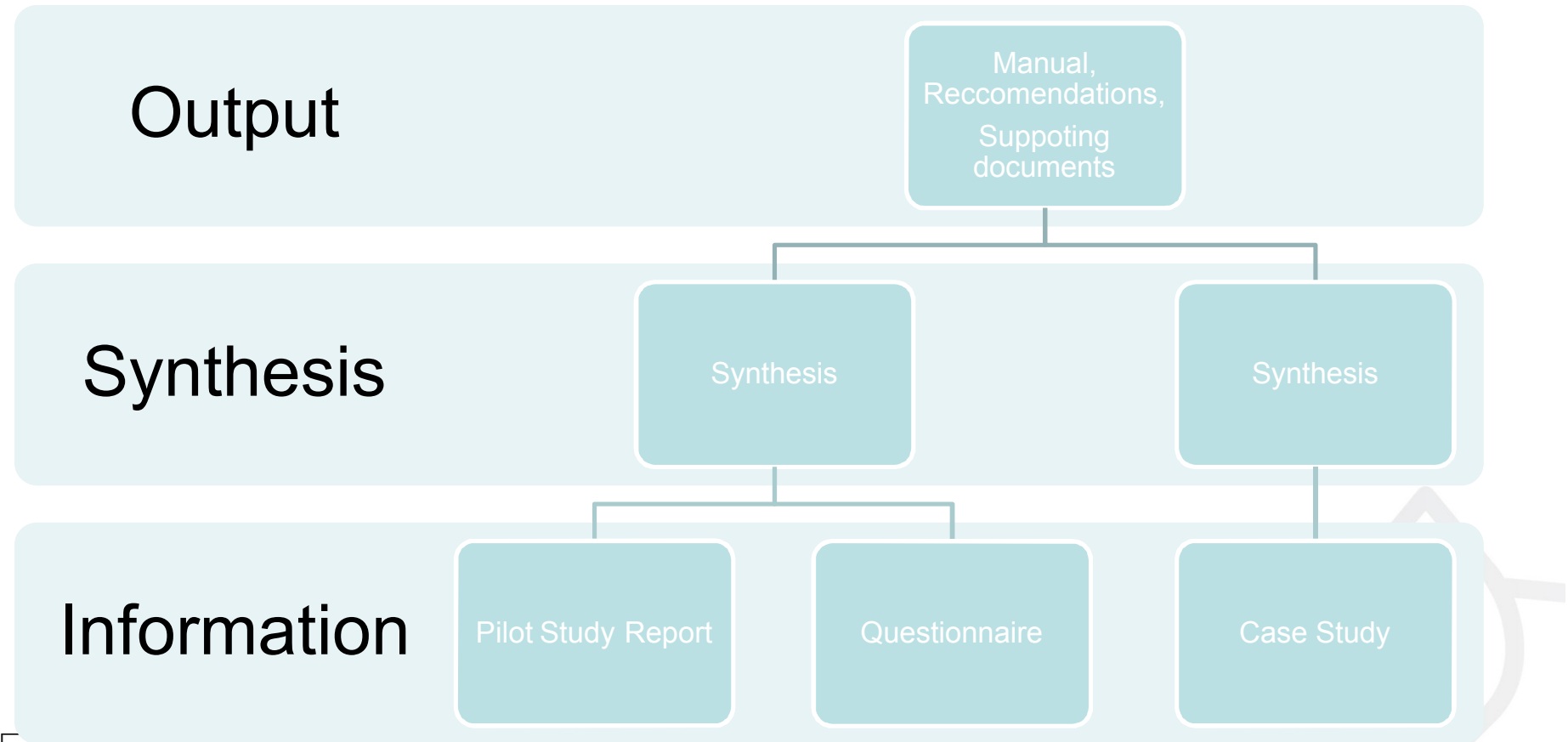
The nearest villages, located on the left shore (northern shore) of the Argeş river, are: Câmpurelu, Colibaşi, Dragului. The following villages are located on the right shore of the Argeş river: Grădiştea, Falaştoaca, Mironesti and Teiuşu.

The total population of these little villages reaches a few thousands people. Their main occupation is agriculture.

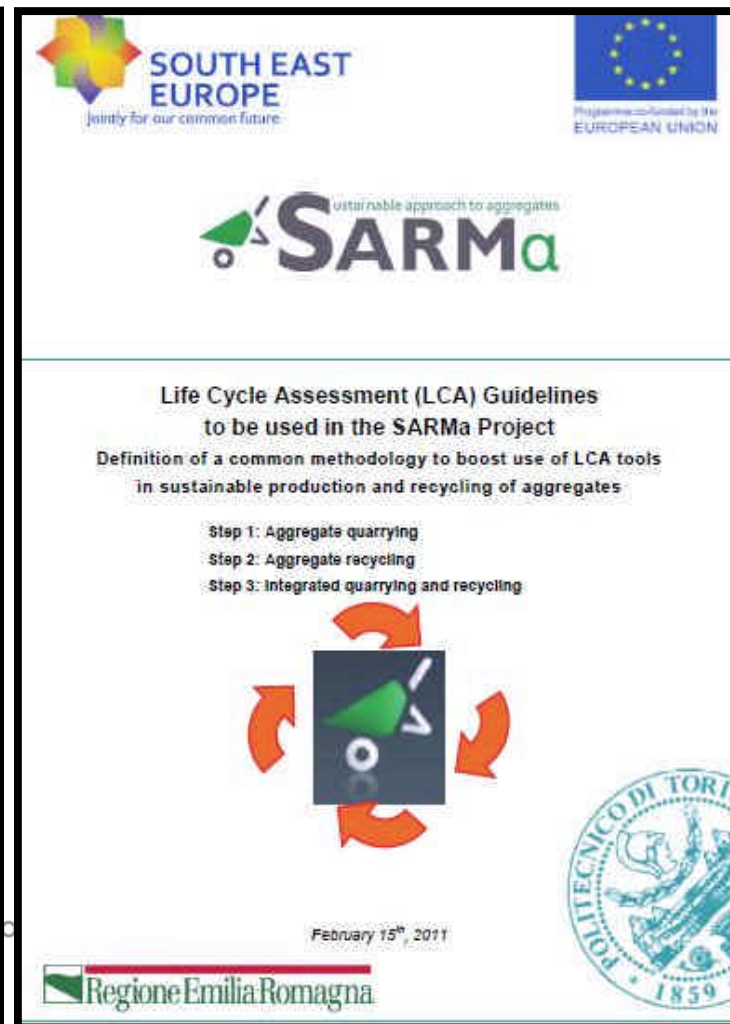
Infrastructure



Products



Products



SARMa Numbers

- Case Study Reports (**50**), Analyses (**10**), Recommendations and supporting documents (**9**)
- Manuals (**3**) in 11 languages
9.500 copies

- 48 articles ...




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workshops, conferences, articles, project meetings, field visits.....



Journal of Cleaner Production 18 (2010) 1021–1030

Contents lists available at ScienceDirect
Journal of Cleaner Production
journal homepage: www.elsevier.com/locate/jclepro

Construction waste management in Turin (Italy): the role of recycled aggregates in sustainable supply mix

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ABSTRACT

The ever increasing quantity of construction and demolition waste (CDW) in Italy is presently challenging public administrators, which strive to ensure that collection and recycling are sustainably managed and need to understand whether and to what extent recycled aggregates can complement natural aggregates in a sustainable supply mix (SSM) for the construction industry. The paper presents a research aimed at analysing energy and environmental implications of the CDW recycling chain in the administrative territory of Provincia di Torino in Northern Italy, with 2.25 million inhabitants and yearly generation of 12 million tons of CDW. A combined Geographical Information System (GIS) and Life Cycle Assessment (LCA) model was developed using site-specific data and paying particular attention to land use, transportation and avoided landfill: crucial issues for sustainable planning and management. A GIS was used to handle data and information about 89 recycling plants, including technological features, output and physical-mechanical characteristics of recycled aggregate. The LCA methodology was used to identify and quantify energy and environmental loads, under different assumptions relevant to delivery distances, quality of recycled aggregates, local availability of natural aggregates and geographical coverage of market demand. The CDW recycling chain was proved to be eco-efficient, as avoided impacts were found to be higher than the induced impacts for 13 out of 14 environmental indicators. It was also estimated that the transportation distance of recycled aggregate should increase 2–3 times before the induced impacts outweigh the avoided impacts.

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1. OTVORENI SKUP U SKLOPU PROJEKTA SARMA



Održivo gospodarenje kamenim agregatima

Zakonodavstvo Gospodarenje Okoliš





Joined up planning

WHILE AGGREGATES ARE FAIRLY COMMON, ENSURING ACCESS TO THEM THAT MEETS REGIONAL, NATIONAL AND INTERNATIONAL DEMAND TAKES CAREFUL PLANNING. CLAIRE SYMES TAKES A LOOK AT A PROJECT AIMING TO DELIVER THIS IN SOUTH EASTERN EUROPE

MEANWILE

ESSENTIAL INFORMATION TO SUCH PLANS DID NOT EXIST. THE PROJECT IS AIMED AT DRAWING TOGETHER AND DEVELOPING THESE FOR THE PREPARATION



External Cooperation



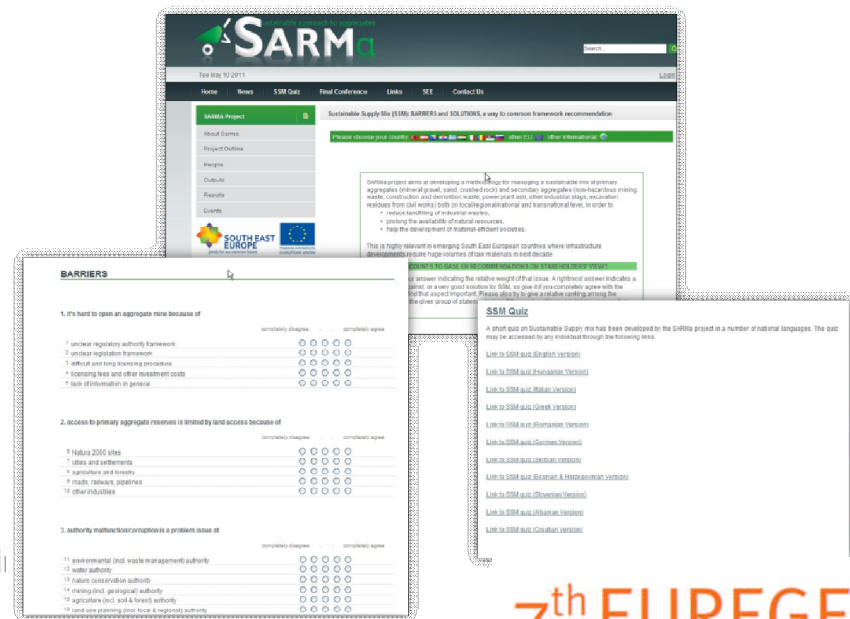
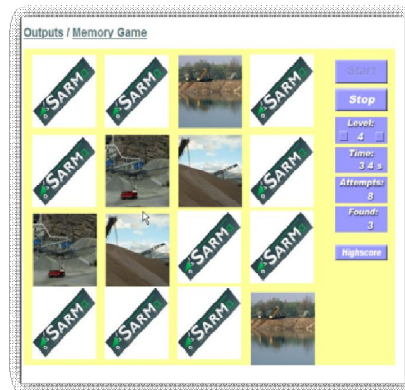
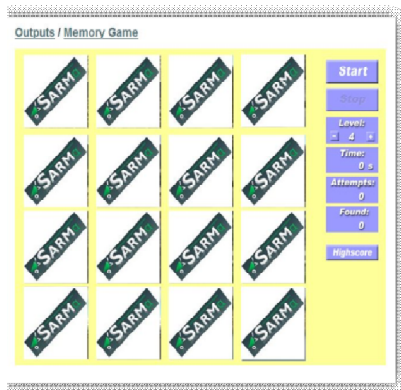
SARMa Numbers

- National / regional workshops (**13**) & Transnational activities / conferences (**5**) – with 1.100 participants
- Papers, articles, media appearance – estimation over 900.000 people reached
- PowerPoint's presentations

too many

SARMa project with passion

- Sustainable Supply Mix – SSM Quiz
- Barriers and Solutions
- Memory Game

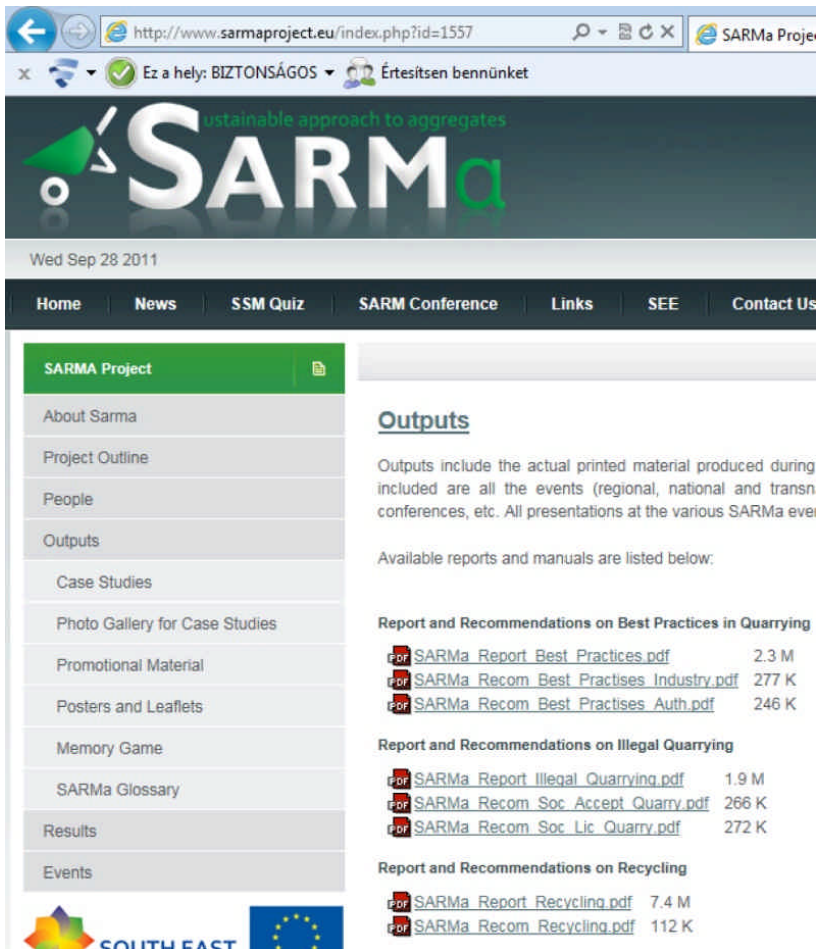


SARMa Impact

- Regional and national policies improved (**11**), including Greek National Minerals Policy
- Local, regional and national public authorities / expert level / private sector/ civil society and general public
- EU level contribution (Hungarian and Polish Presidency) to Raw Materials Initiative



SARMa details are on website

www.sarmaproject.eu



The screenshot shows the SARMa website homepage. The browser address bar displays 'http://www.sarmaproject.eu/index.php?id=1557'. The page features the SARMa logo and navigation menu with items: Home, News, SSM Quiz, SARMa Conference, Links, SEE, and Contact Us. A sidebar on the left lists various project resources like 'About Sarma', 'Project Outline', 'People', 'Outputs', 'Case Studies', 'Photo Gallery for Case Studies', 'Promotional Material', 'Posters and Leaflets', 'Memory Game', 'SARMa Glossary', 'Results', and 'Events'. The main content area is titled 'Outputs' and lists several reports and recommendations with their respective file sizes.

Reports on LCA Guidelines and Scheme

-  [SARMa LCA Guidelines.pdf](#) 1.8 M
-  [SARMa LCA Scheme.pdf](#) 243 K

Guidelines for Near River Quarry Restoration

-  [SARMa Guidelines Restoration Quarries River Areas.](#)

Manual on Quarry Restoration

-  [SARMa Manual Quarry Restoration.pdf](#) 5.3 M

Recommendations on Regulations and Policy

-  [SARMa Report EU Legislation.pdf](#) 686 K
-  [SARMa Recom Legal Solutions.pdf](#) 125 K
-  [SARMa Recom Aggreg Polic](#)

Report on Sustainable Supply Mix

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THANK YOU !

Questions ?!?



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