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Final project reporting, dissemination, communication, training & education, ethical/socio-political/broader stakeholder involvement

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Duration: 48 Months

Project co-funded by the European Commission under the Euratom Research and Training Programme on Nuclear Energy within the Horizon 2020 Framework Programme		
Dissemination Level		
PU	Public	x
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the partners of the CEBAMA project	
CO	Confidential, only for partners of the CEBAMA project	

ABSTRACT:

The deliverable collects the knowledge dissemination, communication and training activities developed along the 4-years of the CEBAMA project.

RESPONSIBLE:

Amphos 21

This deliverable presents the Dissemination and Communication, Training and Education and Knowledge Management activities developed in WP4 (see Figure 1).

Activities aimed at fostering interaction with non-scientific stakeholders have been developed, namely, (i) Panel discussions with stakeholders, and (ii) Non-scientific Newsletter. More information on these activities is compiled in Deliverable 4.14 of Cebama “Report on interaction with non-scientific stakeholder”, which is available at the project website (www.cebama.eu).

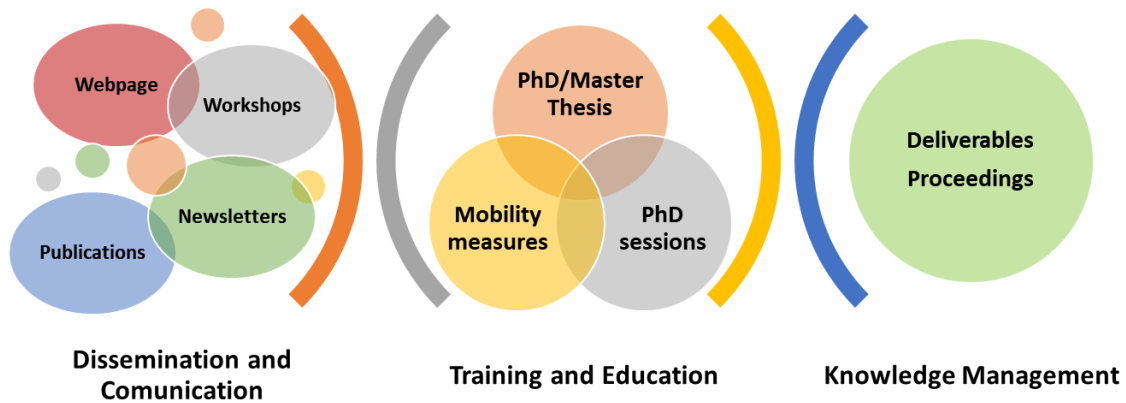
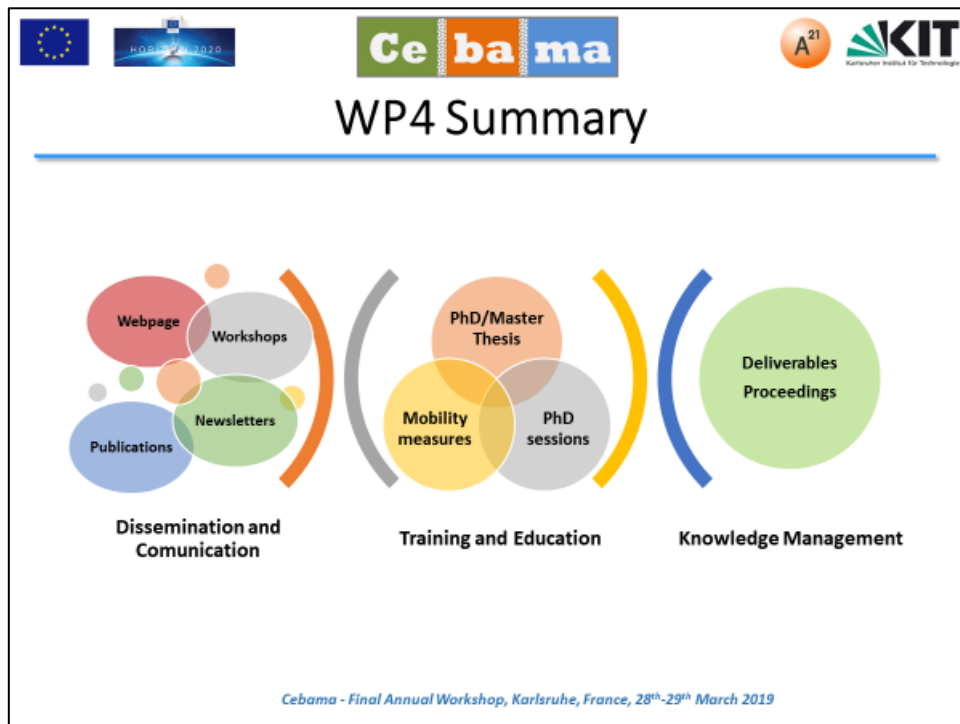
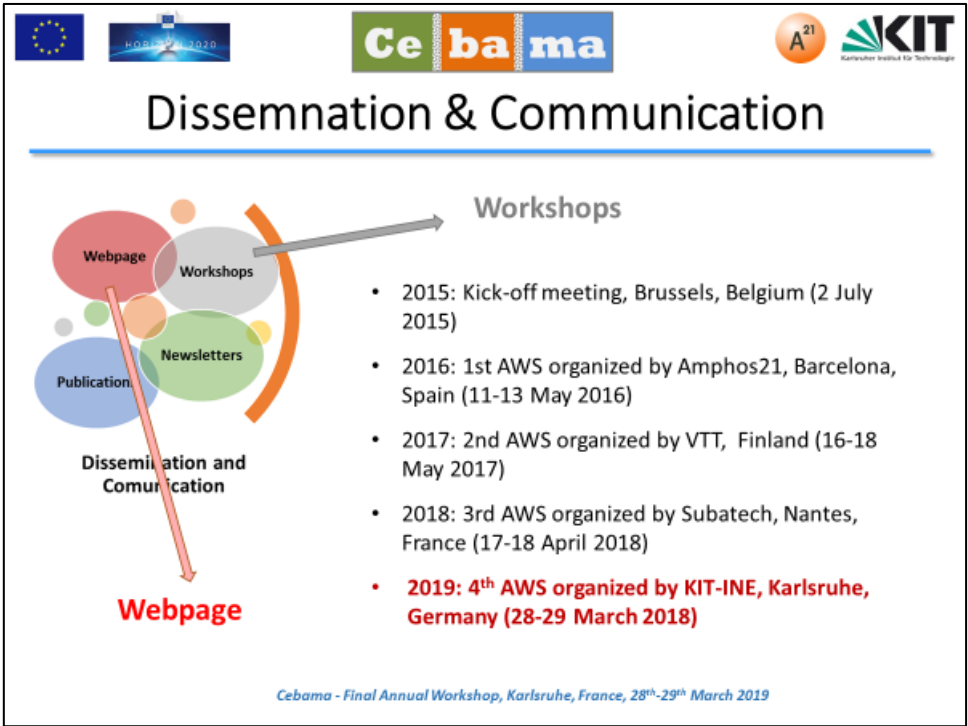
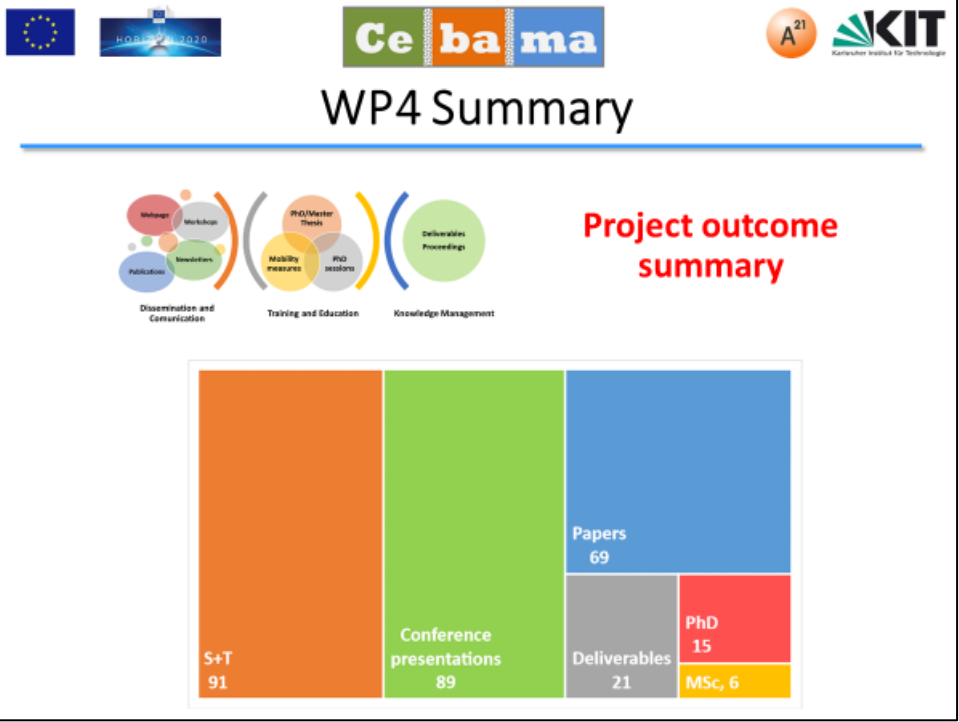



Figure 1: Scheme of the activities developed in WP4.

All activities developed in the frame of WP4 were presented at the 4th Annual (Final) Workshop of the project. The slides presented are shown below.







Dissemination & Communication




**Dissemination and
Communication**


Final Newsletter



Cebama - FI




Dissemination & Communication



**Dissemination and
Communication**

Final Newsletter



April 2019 – Newsletter will be ready

Please **distribute and post** it in social media
to reach as much **non scientific public** as
possible

Cebama - FI



Dissemination & Communication

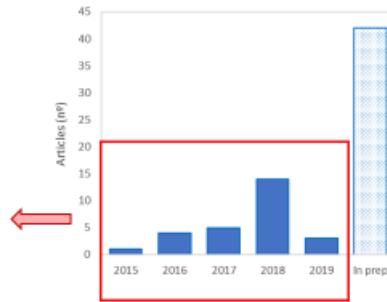


Dissemination and Communication

Journal	Articles
Applied Geochemistry	6
Cement and Concrete Research	4
Clay Minerals	2
Solid Earth	2
Geophysical Journal International	2

Publications - Articles

- 29 articles published
- 40 articles planned to be prepared in 2019-2020



Workshop, Karlsruhe, France, 28th-29th March 2019



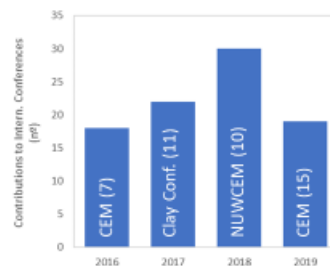
Dissemination & Communication



Dissemination and Communication

Publications - Conferences

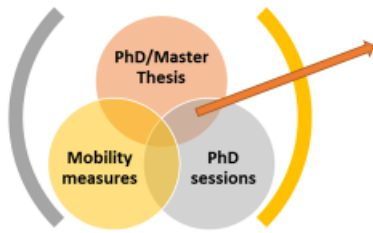
- 89 oral or poster presentation in international conferences
- Attendance to 39 conferences (12 European countries & EUA, Australia, China, Korea, Japan)



Cebama - Final Annual Workshop, Karlsruhe, France, 28th-29th March 2019



Training & Education



Training and Education

Master & PhD Thesis

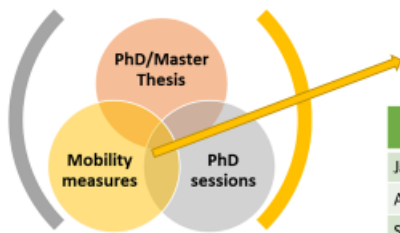
- 6 MSc Thesis
- 15 PhD Thesis

Daniel Enrique González Santamaría, Černík M., Naila Ait Mouheb, Maria Angulo Martinez, Rosenlöf T, Tapio Vehmas, Rita Vasconcelos, Schmidt, L., Emily Rastrick, Philippines Lalan, Kitterová J, Stephan Rohmen, Adèle Grellier, Leonardo Hax Damiani, Steve Lange, Chen Xi, Latina Nedyalkova, Zamaikhaeva I, Jesús Fernández Águila, Alba Mon

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Training & Education



Training and Education

Mobility measures

Applicant researcher	Sending organization	Hosting organization	WP
Janna Kittnerová	CTU	JUELICH	WP2
Aku Itälä	VTT	AMPHOS 21	WP3
Stephan Rohmen	JUELICH	PSI	WP3
Enrique Rodríguez Cañas	UAM	BRGM	WP1
Marta López García	AMPHOS 21	JUELICH	WP2

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Training & Education

Jana Kiltnerová (CVUT / JUELICH)



My name is Jana Kiltnerová and I am a PhD student in the Czech Republic. From January 13, 2018 to April 15, 2018, I spent 2 months as a guest scientist at Forschungszentrum Jülich (JUELICH), Germany within CEBAMA Mobility Measures, related to her work within CEBAMA WP2, radionuclide retention by high-pH concrete. The main goal of this mobility measure was to study the adsorption of Mo (as molybdate) onto specific aluminate phases representative for hydration products in cementitious materials, namely AFm and AFt and mixtures thereof, containing different anions (i.e. carbonate and sulfate). The solid phases synthesized in her home lab in Spain were characterized in JUELICH by various spectroscopic and microscopic techniques including XRD, SEM-EDX, FTIR, and Raman as well as by TG-DSC. The uptake kinetics of molybdate by the various AFm/AFt mixtures were investigated in specifically designed batch sorption experiments using equilibrated solid/liquid mixtures for up to 16 days under anoxic and CO₂ free conditions in a glove box (Ar 99.99 %).

Marta López García (AMPHOS 21 / JUELICH)



In May/June 2018, Marta López-García, postdoctoral researcher at AMPHOS21, Barcelona, Spain, spent 2 months as guest scientist at Forschungszentrum Jülich (JUELICH), Germany, in the frame of a CEBAMA Mobility Measure, related to her work within CEBAMA WP2, radionuclide retention by high-pH concrete. The main goal of this mobility measure was to study the adsorption of Mo (as molybdate) onto specific aluminate phases representative for hydration products in cementitious materials, namely AFm and AFt and mixtures thereof, containing different anions (i.e. carbonate and sulfate). The solid phases synthesized in her home lab in Spain were characterized in JUELICH by various spectroscopic and microscopic techniques including XRD, SEM-EDX, FTIR, and Raman as well as by TG-DSC. The uptake kinetics of molybdate by the various AFm/AFt mixtures were investigated in specifically designed batch sorption experiments using equilibrated solid/liquid mixtures for up to 16 days under anoxic and CO₂ free conditions in a glove box (Ar 99.99 %).

Enrique Rodríguez Cañas (UAM / BRGM)



The mobility measure UAM-BRGM was planned using the methodologies developed by S. Gaboreau and J. Cuevas (UAM) was following at BRGM the acquisition Cameca SX Five EPMA microscope equipped with five wavelength dispersive spectrometers.

Aku Itäälä (VTT / AMPHOS 21)



PhD student and research scientist Aku Itäälä of VTT visited Amphos 21 in Barcelona, Spain during the period of 12-18.2.2018 for cooperation with CEBAMA WP3 on modeling issues. The host was Andrés Idart from Amphos 21 who is also the WP3 leader. On this trip Itäälä presented AMPHOS some of the CEBAMA WP1 experimental results by VTT as well the CSH model developed at VTT for CSH dissolution. The model was further tested together with Andrés Idart and the complexity of the model was also simplified. Also some comparison between PHREEQC and GEM-Salektor was done.

Stephan Rohmen (JUELICH / PSI)



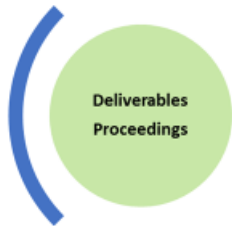
PhD student Stephan Rohmen of Forschungszentrum Jülich (JUELICH) spent two weeks at the Paul Scherrer Institute (PSI) in Villigen, Switzerland between 19.02.2018 and 02.03.2018 within the frame of the mobility measures of the CEBAMA project, related to CEBAMA WP3, Interpretation & modeling. His PhD studies, co-supervised by Andrés Idart from AMPHOS21 and Guido Dreesmann from JUELICH are focused on the development and application of a pore-scale model for the simulation of degradation processes occurring in cementitious materials (e.g. calcium leaching). To get further insights into the effects of chemical and mineralogical changes in cementitious barrier materials on its transport properties. During his stay at PSI he had the possibility to extend collaborations with other groups contributing to WP3 and exchange experiences with other researchers in the domain of pore-scale reactive transport modeling. Discussions with experts in pore-scale reactive transport modeling helped to improve the Lattice-Boltzmann based reactive transport code developed within CEBAMA called PP. These include the usage of input data from cement hydration modeling, the implementation of a multiscale effective medium approach to model the diffusivity of C-S-H phases, or approaches to model C-S-H as ternary or quaternary solid solutions. In addition, a benchmark activity to compare the results of PP against another reactive transport code (Yantra) has been started. Stephan was also able to attend to the 8th International reactive transport PhD workshop & CEBAMA PhD meeting which took place during his stay at PSI. The outcome and the experiences gained during his mobility measure to visit PSI will enhance the capabilities of PP and allow for application of PP to simulation of experiments performed within CEBAMA WP1, thus providing for an enhanced understanding of the coupling between chemical alteration processes in cementitious materials and

There was discussion related to the modeling of the VTT experiments and hydration of reference cements. VTT's CSH model was also applied to the hydration model of AMPHOS and tested the workability of the model. There was discussion about the usability of the model of VTT for low pH values (below 0.8). Role of different ion activity models and use of different models of this visit are being utilized to enhance the very long-term pH expectations.

28th-29th March 2019



Knowledge Management



Deliverables

Status of deliverables showed in WP summary presentations

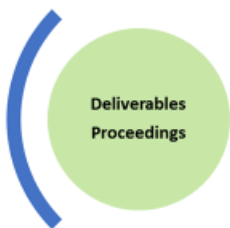
WP4 deliverables to be submitted:

- D4.14: Interaction with non-scientific stakeholders
- D4.15: Final project reporting
- D4.16: Press release
- D4.17: List of mobility measures
- D4.18-19: Minutes and Proceedings of Final WS
- D4.20: Relevance of Cebama for the Safety Case

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Knowledge Management



Knowledge Management

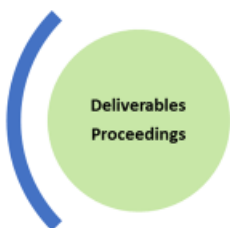
Proceedings

The workshop proceedings to be published at KIT-Scientific publishing will be openly accessible and can be downloaded free of charge at the project WEB page <http://www.ksp.kit.edu>.

- Printing of 1 AWS Proceedings.
- Printing of 2AWS & 3AW Proceedings: soon will be available as KIT report.
- Preparing Final WS Proceedings!



Knowledge Management



Knowledge Management

Proceedings

The workshop proceedings to be published at KIT-Scientific publishing will be openly accessible and can be downloaded free of charge at the project WEB page <http://www.ksp.kit.edu>.

- **Contents FWS Proceedings**
- Introduction by CT
- **Pr** • Work summaries by WP leaders
- **3** • Technical Summary of work by each
- **Pr** partner (survey)

Planning of **submission**: May-June 2019