



Project no. 038946

Project acronym: CO2NET EAST

Project title: CO2 capture and storage networking extension to new member states

Instrument: Co-ordination Action

Thematic Priority: Sustainable development, global change and ecosystems

### **Publishable Final Activity Report**

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Project coordinator name: Vit Hladik

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VERSION 1.4

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# 1. Project execution

## 1.1. Introduction

CO2NET EAST – “CO2 capture and storage networking extension to new member states” - was a project co-funded by the European Commission within the 6<sup>th</sup> Framework Programme (FP6). It was a Co-ordination Action proposed as a mechanism to involve the new EU Member States and Associated Candidate Countries in the current European CCS networking activities, particularly in the existing Carbon Dioxide Knowledge Transfer Network (CO2NET), which was initiated and funded by the EC 5<sup>th</sup> Framework Programme as the leading European CCS networking forum. The project was built on East-West cooperation, helping the new member states to add to the co-ordination effort to fast-track the development and commercialisation of CCS technology for Europe.

CO2NET EAST was started on 1 October 2006 for a period of 3 years. The project consortium was composed of 7 R&D institutions representing 5 new EU Member States and 2 Associated Candidate Countries + 1 strong industrial partner (StatoilHydro) responsible for mainly organisational tasks. The 7 Central & Eastern European partners were:

- Czech Geological Survey - (Czech Republic – project co-ordinator) – CGS;
- University of Zagreb - Faculty of Mining, Geology and Petroleum Engineering (Croatia) – RGN;
- Eötvös Loránd Geophysical Institute (Hungary) – ELGI;
- Dionýz Štúr State Geological Institute (Slovakia) – SGUDS;
- Institute of Geology at Tallinn University of Technology (Estonia) – IGTUT;
- PBG - Geophysical Exploration Company (Poland);
- National Institute for Marine Geology and Geoecology (Romania) – GeoEcoMar.

Sofia University ‘St. Kliment Ohridski’ (Bulgaria) was involved in project activities as sub-contractor. All these institutions can be designated as the pioneers in implementing the CO2 capture and storage concept in their countries.

## 1.2. Project objectives

The main objective of CO2NET EAST was to extend the existing European CO2 capture and storage (CCS) networking activities to EU new Member States and Associated Candidate Countries.

The detailed objectives of the project were:

- Provide membership support to new CO2NET member organisations from EU new Member States and Associated Candidate Countries and enable them active participation in networking activities;
- Co-organise the CO2NET Annual Seminar in 2008 and organise 2 regional workshops in new Member States and/or Associated Candidate Countries (2007 and 2009);
- Disseminate knowledge and increase awareness of CO2 capture and storage technologies in new Member States and Associated Candidate Countries during the whole project duration and afterwards;
- Establish links among CCS stakeholders in new Member States and Associated Candidate Countries and between them and their partners in other EU countries using the existing networks, especially CO2NET and ENeRG (European Network for Research in Geo-Energy) as well as links with the European Technology Platform for Zero Emission Fossil Fuel Power Plants (ETP ZEP).

## 1.3. Project results

The main project objective – extending of European CO2 capture and storage (CCS) networking activities to EU new Member States and Associated Candidate Countries – has been achieved in close cooperation with the Carbon Dioxide Knowledge Sharing Network (CO2NET). All project partners became CO2NET members and actively participated in the network’s activities. CO2NET EAST Steering Committee and CO2NET Board were personally interconnected, which secured close cooperation between the project

and its mother Network. To secure financial resources for providing membership support to further organisations from EU new Member States and Associated Candidate Countries (in addition to project partners themselves) and to enable them active participation in networking activities, the CO2NET Support Fund has been established. The Fund was run outside of the EC project scope itself but in close relation with it and under the control of the CO2NET EAST Steering Committee. Industrial sponsors filled the Fund. During project duration, 13 stakeholder institutions from new EU Member States and Associated Candidate Countries were supported by the Fund, which covered their CO2NET membership & seminar fees and travel support for participation in the CO2NET Annual Seminars.

The highlights of the project activities were the two regional CCS awareness-raising and knowledge-sharing CO2NET EAST workshops, entitled "Carbon Capture and Storage – Response to Climate Change". The first workshop took place in Zagreb, Croatia on 27 - 28 February 2007. It was organised by the University of Zagreb - Faculty of Mining, Geology and Petroleum Engineering (RGN) with help of Czech Geological Survey (CGS). 91 participants coming from 22 countries attended the workshop. 24 presentations were given, incl. lectures on the current European status of CCS and results of the most prominent FP6 CCS projects as well as presentations of R&D results and status quo in new EU Member States and Associated Candidate Countries or plans for future CCS developments. There was a short discussion after each block of lectures and a lengthy concluding discussion at the end.



*Fig.1 – Participants of the CO2NET EAST workshop in Zagreb (February 2007)*

The 2<sup>nd</sup> workshop took place in Bratislava, Slovakia, on 3 - 4 March 2009. It was organised in the premises of the State Geological Institute of Dionýz Štúr – SGUDS who hosted the event by providing facilities and all the needed technical support. 126 delegates took part in the workshop, coming from 24 countries. The country representation shows a strong regional impact with 98 delegates (i.e. 78 %) coming from New EU Members States and Associated Candidate Countries. Altogether 32 oral presentation and 15 posters were included in the workshop programme. Lively discussions, question & answers and/or comments that took place just after the presentations, or within special discussion blocks at the end of each session indicated that CCS is a living issue, which will be a matter of great concern of research institutions, CO2 emitters and regulators in the next years. Press conferences were organised within both workshops, providing the local journalists the opportunity to gain information about CCS from participating representatives of the EC, industrial stakeholders, the organising institutions, and from the CO2NET EAST project coordinator.



*Fig.2 – Participants of the CO2NET EAST workshop in Bratislava (March 2009)*

On the occasion of the workshop in Bratislava, a special issue of the Slovak Geological Magazine was published, devoted to geological storage of CO<sub>2</sub>. The publication included a foreword by the project coordinator and 9 scientific articles prepared by project partners and associated partners.

CO<sub>2</sub>NET EAST also co-organised the 2008 Annual Seminar of CO<sub>2</sub>NET. The event took place in Warsaw, Poland on 22-24 April 2008. Approximately 150 participants took part in the Seminar, 46 of them coming from new EU Member States and Associated Candidate Countries. CO<sub>2</sub>NET EAST project partners and associated partners were active not only in the organisation of the event but also in its technical programme – by poster presentations, session chairing and providing a speaker for the panel discussion. The CO<sub>2</sub>NET Annual Seminar in Warsaw was the biggest CCS-related event in the new EU Member States and Associated Candidate Countries so far; it significantly contributed to CCS awareness raising among stakeholders from new EU Member States and Associated Candidate Countries.

Major attention was aimed to the creation, maintenance and regular updating of CO<sub>2</sub>NET EAST national project websites. These websites, run in national languages and serving as national CCS information portals, are in operation since March 2007 (the Bulgarian one since July 2008). They comprise sections News, Downloads, Calendar and Links, and bring up-to date information from the CCS branch. In Period 2, bi-lingual (English + national language) glossaries of CCS-related terms comprising ca 180 expressions and their short explanations were added. Special attention in Period 3 was paid to the new EU Directive on the geological storage of carbon dioxide; information about the approval procedure were provided and a 5-page EC document entitled “Questions and Answers on the directive on the geological storage of carbon dioxide” has been translated into national languages and posted on the websites to explain the main principles of the Directive. The addresses of the websites are listed in the table below.



Language	Institution responsible	Website address
Bulgarian	Sofia University	<a href="http://nis-su.uni-sofia.bg/co2net-east/">http://nis-su.uni-sofia.bg/co2net-east/</a>
Czech	CGS	<a href="http://www.geology.cz/co2net-east">http://www.geology.cz/co2net-east</a>
Croatian	RGN	<a href="http://www.co2neteast.rgn.hr">http://www.co2neteast.rgn.hr</a>
Hungarian	ELGI	<a href="http://www.elgi.hu/co2net_east/index.htm">www.elgi.hu/co2net_east/index.htm</a>
Slovak	SGUDS	<a href="http://www.geology.sk/co2neteast/co2net-east.htm">http://www.geology.sk/co2neteast/co2net-east.htm</a>
Estonian	IGTUT	<a href="http://www.gi.ee/co2net-east">http://www.gi.ee/co2net-east</a>
Russian	IGTUT	<a href="http://www.gi.ee/co2net-east/r">http://www.gi.ee/co2net-east/r</a>
Polish	PBG	<a href="http://www.pbg.com.pl/CO2_net_east.htm">http://www.pbg.com.pl/CO2_net_east.htm</a>
Romanian	GeoEcoMar	<a href="http://www.co2net.ro">http://www.co2net.ro</a>
English	GeoEcoMar	<a href="http://co2neteast.energnet.com">http://co2neteast.energnet.com</a>

Tab.1 – List of national CO2NET EAST websites

National CCS stakeholders were identified in all CO2NET EAST countries; informal national CCS stakeholder groups were created and continuously enlarged. These groups were provided by up-to-date CCS-related information and are rapidly expanding. In addition, cooperating institutions were identified in most of those new EU Member States and Associated Candidate Countries that are not represented in CO2NET EAST (Latvia, Lithuania, Slovenia, Bulgaria, Turkey), and became actively involved in the project as “associated partners”.

The figure displays three examples of CO2NET public brochures translated into national languages:

- Polish Brochure:** Titled "GEOLOGICZNY SPOSÓB NA ZMIANĘ KLIMATU" (Geological way to climate change). It discusses the geological storage of CO2, its benefits for reducing greenhouse gas emissions, and the role of CO2NET in promoting this technology. It includes a diagram of CO2 storage in geological formations.
- Russian Brochure:** Titled "«Возвращение в недра Земли» – решение проблемы изменения климата" (Return to the Earth's interior – solution to the problem of climate change). It features a table showing the capacity of geological storage for CO2 in different countries. The table lists countries like Bulgaria, Czech Republic, Croatia, Hungary, Slovakia, Estonia, Russia, Poland, Romania, and the UK, along with their respective CO2 storage capacities in Gt CO2.
- Czech Brochure:** Titled "CO2NET 2007". It provides an overview of the project, its goals, and the role of CO2NET in promoting CCS technology. It includes a diagram of CO2 storage in geological formations.

Fig.3 – Examples of CO2NET Public Brochures translated into national languages

Possibilities of utilizing information flows suitable for CCS-related knowledge dissemination and awareness raising were explored in all CO2NET EAST countries. Dissemination activities ran during the whole project period; they were based mostly on national CO2NET EAST websites, regular e-mail news alerts sent to national stakeholders, dissemination of the CO2NET Public Brochures on CCS (translated

to national languages and printed – see Fig. 3), presentations of latest CCS R&D achievements at suitable local events and to national decision makers and publications in national technical magazines and media. In many cases, project partners became permanent consultation partners of the national CCS stakeholders, especially in the case of Ministries of Environment, but also for several industrial enterprises. The consultations were focused on various aspects of CCS; the newly adopted EU Directive on the geological storage of carbon dioxide attracted, however, the most interest. Some of the project partners were involved in the preparations and negotiations before the adoption of the Directive, and many of them were consulted during the translation process into national languages, especially regarding the CCS and geological terminology.

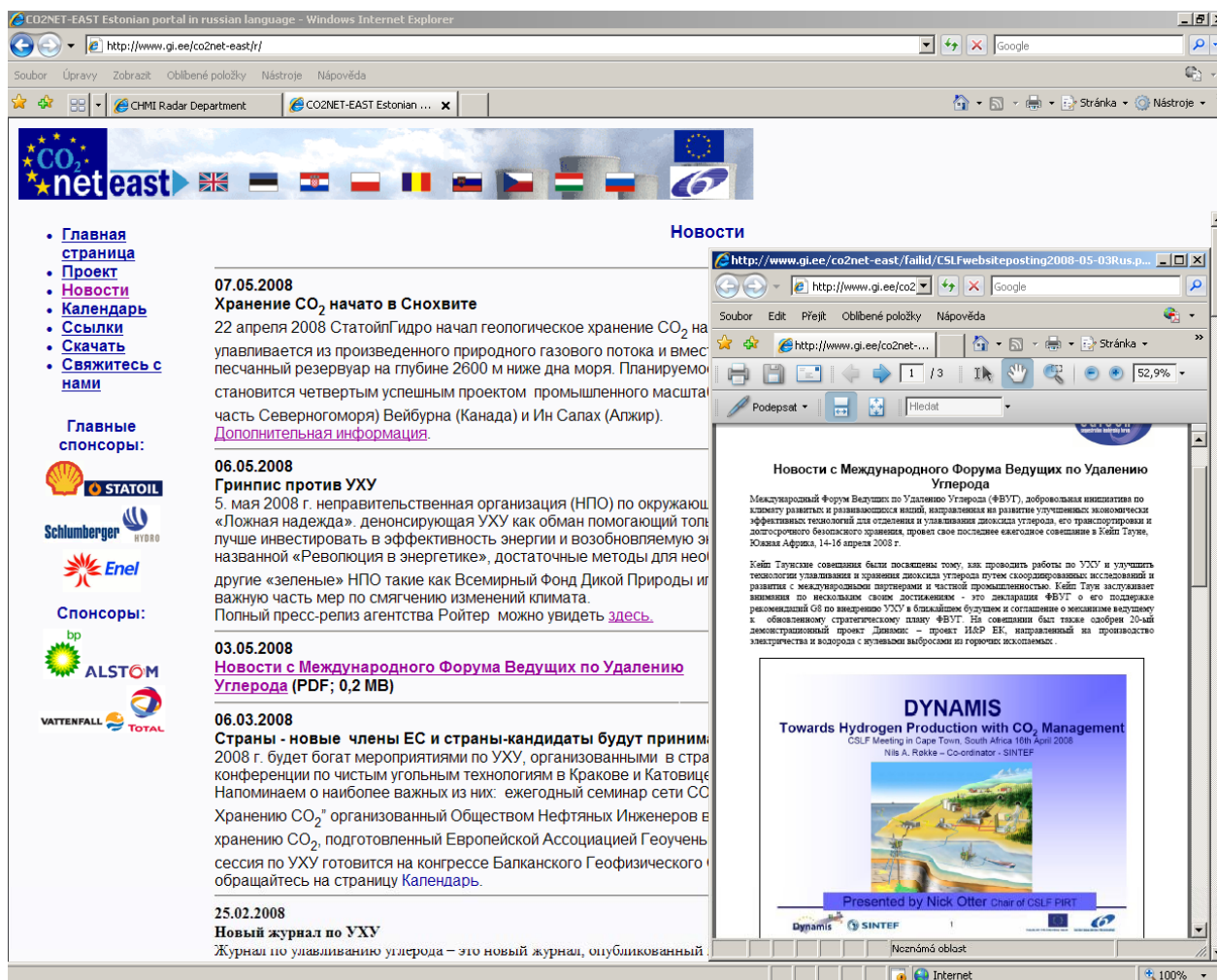


Fig.4 – Russian CO2NET EAST website run by Estonian project partner IGTUT

In the course of the project the CO2NET EAST project partners executed a lot of activities connected with presentation of the project and CCS-related R&D results from new EU Member States and Associated Candidate Countries to European stakeholders.

Close liaison was created and kept between the project and ENeRG (European Network for Research in Geo-Energy). Many project partners were represented in the ENeRG Steering Committee; the English project website <http://co2neteast.energnet.com> used the Internet domain of ENeRG <energnet.com>. GEO ENeRGY, the newsletter of ENeRG, was used as one of the CO2NET EAST dissemination tools. ENeRG members from “old EU-15” countries actively support dissemination activities of the project. A joint activity of CO2NET EAST and ENeRG was agreed and organised for the 5<sup>th</sup> Congress of the Balkan Geophysical Society (BGS) held in Belgrade, Serbia, in May 2009 – common support of and patronage upon a CCS session at the Congress and a special associated event ‘Energy, Economy and Environment’ in Mecavnik.

Good links were established between CO2NET EAST and the ZEP European Technology Platform. Several project partners were active in ZEP Task Forces (TFs on Technology and on Public Communication). CO2NET EAST information channels served for dissemination of information from the Platform to stakeholders in new EU Member States and Associated Candidate Countries, providing a valuable feedback at the same time. A coordinated input from new EU Member States and Associated Candidate Countries was provided to the overview of national pilot/demo and R&D projects in Europe, which was complied by the TF on Technology. CO2NET EAST members also helped with finding suitable candidates to represent new EU Member States and Associated Candidate Countries in the ZEP Government Group; this activity has so far resulted in enlargement of the Government Group by representatives of the Czech Republic, Estonia and Romania. Project partners also provided input and feedback to the new ZEP website.

#### 1.4. Project impact

In 2006, when the CO2NET EAST project was starting, CCS was hardly a topic both among the public, and at stakeholders' institutions (ministries, industry, research institutions, etc.) in most of the countries involved. Since that time the awareness of this technology has raised significantly. CCS stakeholders and potential future stakeholders – big CO2 emitters (power, iron & steel, cement companies), oil & gas producers, regulators (especially Ministries of Environment and Ministries of Industry), researchers and later also environmental NGOs were identified and contacted. Informal CCS stakeholder groups were established in all participating countries.



*Fig. 5 - Ludovít Kucharčík (SGUDS, Slovakia) giving interview on CCS for the Main News programme of the Slovak TA3 television on 26/03/2007 (snapshot from TA3 website)*

In the space of the three project years, project partners made significant knowledge dissemination and awareness raising efforts, using many information channels from websites through dissemination of printed materials, presentations and consultations to organisation of workshops and seminars. These activities helped to substantially increase the awareness of the CCS technology, especially among regulators, industrial CO2 emitters and related research communities. Activities focused on general public were performed as well; and in many cases, thanks to CO2NET EAST, CCS appeared for the first time in national TVs, radios and newspapers.



In many cases, project partners acted as consultants for stakeholders, and often they were able to keep this role permanently, as advisors or consultants of Ministries and/or big industrial companies (power utilities, oil & gas producers, steel companies, etc.). This role has become much more important in the second half of project duration when the EU Directive on the geological storage of carbon dioxide was prepared, negotiated and translated into national languages. It is highly probable that project partners will continue with playing this role in the future when the Directive will be implemented into national legislations and implementing provisions will be prepared.



*Fig. 6 – Press conference at the occasion of the CO2NET EAST workshop in Bratislava on 3 March 2009. From left to right: Miroslav Zachar (Ministry of Environment of the Slovak Republic), Lubomír Hraško (Director SGUDS), Scott Brockett (EC – DG Environment), Vít Hladík (CO2NET EAST coordinator), Tore Torp (StatoilHydro), Jana Kaplanová (spokeswoman of the Ministry of Environment)*

In most of the countries involved, the CO2NET EAST activities helped to introduce CCS into national energy policies as well as into company policies focused on reduction of greenhouse gas emissions.

An unambiguous sign of CCS awareness raising is the appearance of national CCS-related projects, whether it be R&D projects (funded by the governments or by the industry) or purpose-oriented studies for industry. Such projects started in all CO2NET EAST project countries, paving the way for possible future pilot and / or demonstration CCS projects. In Poland, the CCS pioneer among the new EU Member States and Associated Candidate Countries, the demonstration project in Belchatow will probably be among the first European full-scale CCS plants, and the former Polish national CO2NET EAST coordinator A. Wojcicki is now heading a big national CO2 storage research programme preparing a suitable storage site.

CO2NET EAST activities were not limited to the 8 new EU Member States and Associated Candidate Countries represented in the consortium; knowledge dissemination and awareness raising activities took also part in further new EU Member States and Associated Candidate Countries, mostly with help of associated partners of the project, supported by the CO2NET EAST Support Fund. This was the case of Latvia, Lithuania, Slovenia and Turkey. Moreover, CO2NET EAST as propagator of CCS could also be seen and heard in other countries like Russia, Ukraine, Azerbaijan or Kosovo.

An important role of CO2NET EAST was to provide the feedback and CCS-related information from new EU Member States and Associated Candidate Countries to European structures / initiatives and stakeholders in the “old EU-15”. This has been done within link & liaison activities with the ZEP Technology Platform, within the networks like CO2NET or ENeRG, in relation to other FP6 and FP7 projects focused on CCS, etc. Thus, CO2NET EAST secured bidirectional flow of knowledge and information between “East” and “West” and contributed in this way to lowering the knowledge and awareness gap between new EU Member States and Associated Candidate Countries and the European leaders in CCS.

CO2NET EAST has been, even in the midst of its duration, very positively appraised both by stakeholders in new EU Member States and Associated Candidate Countries and by project sponsors. This lead project partners to the decision to prolong the project by one year beyond the end of EC financing. The respective amendment of the Consortium Agreement was signed in October 2009; project activities will thus continue until 30 September 2010, using own resources of the institutions involved and, hopefully, also the sponsor’s grants concentrated in the Support Fund. For further activities, CO2NET EAST entered into a cooperation agreement with the CO2GeoNet Association, which resulted into submission of a common proposal of a FP7 project focused on networking in the field of CO2 geological storage. Possible success of this proposal would enable the CO2NET EAST partners continuing their activities for another 3-year period.

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#### ***1.6 Project logo:***



## 2. Dissemination and use

The highlights of the project dissemination activities were the two regional CCS awareness-raising and knowledge-sharing CO2NET EAST workshops, entitled "Carbon Capture and Storage – Response to Climate Change", held in Zagreb, Croatia (February 2007) and in Bratislava, Slovakia (March 2009). Major attention was also aimed to the creation, maintenance and regular updating of CO2NET EAST national project websites. These websites, run in national languages, are serving as national CCS information portals. For details on both the CO2NET EAST workshops and websites see Chapter 1.3.

In the course of the project the CO2NET EAST project partners executed a lot of activities connected with presentation of the project and CCS-related R&D results from new EU Member States and Associated Candidate Countries to European stakeholders.



*Fig. 7 – Project coordinator Vit Hladik (CGS, Czech Republic) presenting CO2NET EAST at the JRC Integration & Enlargement ‘Workshop on the Role of Fossil Fuel Power Generation Technologies in the Future European Energy System’ in Petten (November 2006)*

During Period 1, the CO2NET EAST project has been introduced to European stakeholders at several occasions, e.g. at the CO2NET Annual Seminar in Athens (10/10/2006) or at the ZEP Technology Platform Advisory Council meeting in Brussels (11/2006), as well as in printed newsletters GEO ENeRGY (December 2006) and Greenhouse Issues (March 2007). In addition, project partners presented not only the project itself, but also the CCS concept in general and/or CCS-related R&D results at international events focused on new EU Member States and Associated Candidate Countries. This was the case of the JRC Integration & Enlargement Workshop on the Role of Fossil Fuel Power Generation Technologies in the Future European Energy System in Petten (11/2006), the 4th International Symposium of Petroleum Geology in Zagreb (11/2007), the CO2NET EAST workshop in Zagreb (02/2007), the TAIEX workshop on efficient, clean and sustainable energy production in Pristina / Kosovo (07/2007) or the Polish-German GEOPOMERANIA conference in Szczecin / Poland (09/2007). CCS-related R&D results from new EU Member States and Associated Candidate Countries were shown at several pan-European events, e.g. at the 69th Conference and Exhibition of European Association of Geoscientists & Engineers (EAGE) in London (06/2007) and at MAEGS-15 and geo-resources – the 15th Meeting of the Association of European Geological Societies in Tallinn (09/2007).

In period 2, such presentations appeared at the a TAIEX Workshop in Tallinn (4-5/10/2007), at the CO2NET Annual Seminars in Lisbon (6-7/11/2007) and in Warsaw (22-24/04/2008), at the Ukrainian Institute of Geology in Lviv (28/11/2007), at the 100th anniversary international meeting of ELGI in Budapest (28/02/2008), at the CO2GeoNet Open Forum in Venice (17-18/04/2008), at the Carbon Capture and Storage Workshop at the British Embassy in Budapest (7/05/2008), as well as at the 70th EAGE Conference & Exhibition in Rome (9-12/06/2008) and at the Russian-Romanian Scientific Session in Moscow (03/09/2008). Similar topics also occurred in printed articles, e.g. in the European Research & Innovation Review (project information - 12/2007), in 6 articles in GEO ENERGY – the newsletter of the ENeRG network (December 2007; June 2008), and in the "Oil Shale" international journal. Project partners were also active in co-organization of CCS-related international workshops and trainings, e.g. of the „First EAGE CO2 Geological Storage workshop in Budapest" (29-30/09/2008) and of a study visit of Central & Eastern European CCS stakeholders to the UK (BERR and DEFRA dept.).



*Fig. 8 - CO2NET EAST Project Partners' and Associated Partners' representatives at the CO2NET Annual Seminar in Warsaw (April 2008)*

In Period 3, CO2NET EAST and CCS-related information from New EU Members States and Associated Candidate Countries were presented at GHGT-9, the 9th International Conference on Greenhouse Gas Control Technologies in Washington (16-20/11/2008), at the 2nd CO2NET EAST workshop in Bratislava (3-4/03/2009), at the Research Connection 2009 conference organised by EC – DG Research in Prague (07/05/2009), at the 5th Congress of the Balkan Geophysical Society in Belgrade, Serbia (May 2009) and the associated event 'Energy, Economy and Environment' in Međavnik (14-15/05/2009), at the International Oil Shale Symposium in Tallinn (June 2009), at the CO2NET Annual Seminar in Trondheim (June 2009) and at the OXAND Training Seminar „Risk Management of CCS Project" in Fontainebleau, France (25–26/06/2009). Printed articles appeared in Energy Procedia (GHGT-9 Conference proceedings, published by Elsevier), in the special issue of the Slovak Geological Magazine devoted to geological storage of CO2 (issued on the occasion of the CO2NET EAST workshop in Bratislava), in Greenhouse Issues, the newsletter of the IEA GHG Programme (No. 94, June 2009), in the Oil Shale international magazine and in the Abstracts of the 5th Congress of the Balkan Geophysical Society, published by EAGE.

The CO2NET EAST partners and associated partners gave numerous presentations at local events and to national stakeholders. 12 presentations of the CCS concept, national CCS activities and possibilities and R&D were given by the partners at local events in Period 1, 14 presentations in Period 2 and 18 presentations in Period 3. In addition, the Croatian project partner RGN organised a short course on



“Carbon Capture and Storage” within the Petroleum Engineering Summer School in Dubrovnik (22-26/06/2009). All these presentations enabled continuing communication with the wider scientific communities in new EU Member States and Associated Candidate Countries to follow European trends and encourage national CCS-related actions. The presentations and related efforts also inspired further national CCS activities in most of the countries.

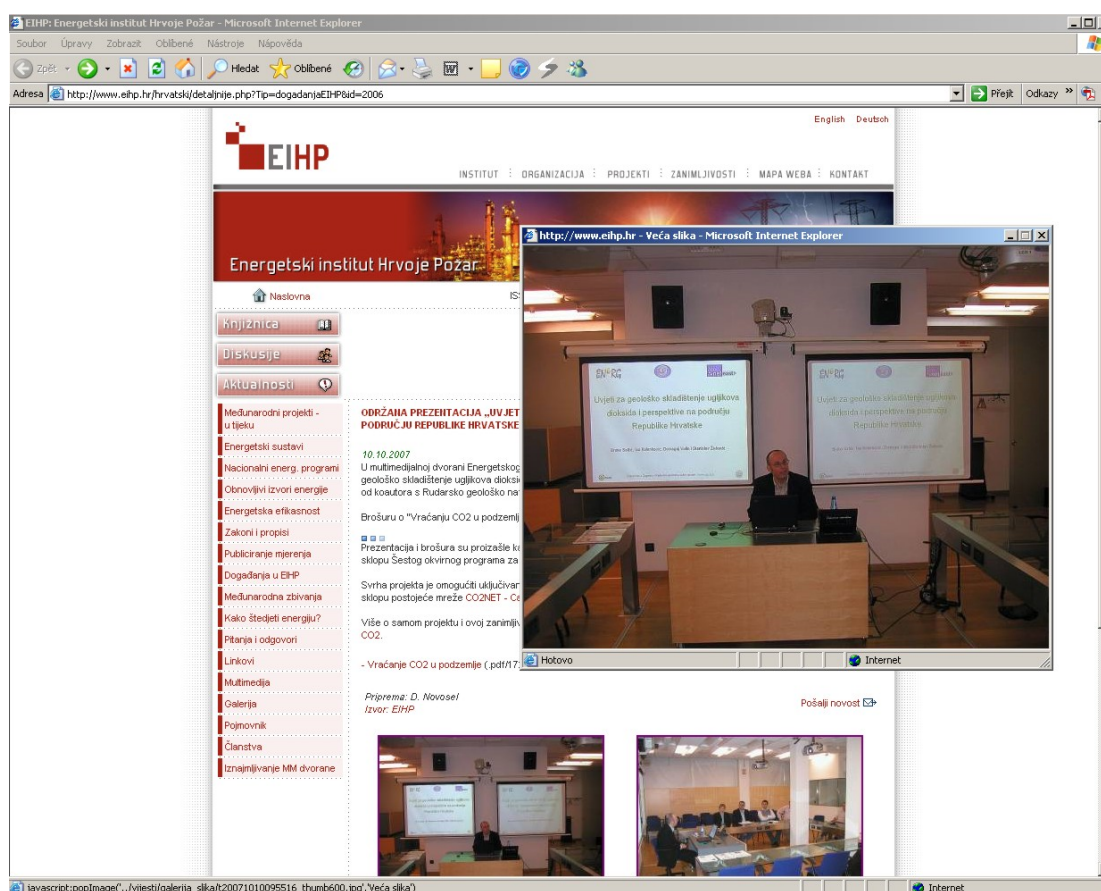


Fig. 9 - Bruno Saftic (RGN, Croatia) presenting CCS at the Energy Institute “Hrvoje Pozar” in October 2007 (screenshot from the Institute website <http://www.eihp.hr>)

Many presentations, consultations and discussions with national stakeholders (especially regulators, power and oil companies) provided a unique opportunity to discuss CCS possibilities in detail. All project partners reported a large number of stakeholder meetings during the project period. In many cases, project partners were serving as permanent consultation partners of the stakeholders, especially in the case of Ministries of Environment, but also in case of several industrial enterprises. The discussions were focused on various aspects of CCS; in Year 3, however, the newly adopted EU directive on geological storage of CO<sub>2</sub> attracted, however, the most interest. Some of the project partners were involved in the preparations and negotiations before the adoption of the Directive (e.g. CGS, SGUDS), and many of them were consulted during the translation process into national languages, especially regarding the CCS and geological terminology. Further support of national regulators is expected in near future, during the process of transposition of the Directive in the Law of the Member States.

In Period 1, articles introducing the CCS concept (incl. the CO<sub>2</sub>NET Public Brochure) as well as articles on national & regional CCS opportunities, on the status of CCS in Europe, etc. were published in 9 technical journals in the first 12 month of the CO<sub>2</sub>NET EAST project. IGTUT and GeoEcoMar published the translation of the CO<sub>2</sub>NET brochure to national languages in 4 technical journals (“KESKONNATEHNIKA”, “Jurnalul de Petrol si Gaze”; “Univers Ingineresc”; “Revista de Stiinta si Tehnica”). Technical papers on national storage potentials were published by IGTUT (EESTI PÕLEVLOODUSVARAD JA –JÄÄTMED), PBG (GlobEnergia and Journal of the Polish Geological

Survey) and RGN (Scientific and Profesional Journal of the Croatian Association of Petroleum Engineers and Geologists), whereas a conference abstract on the same topic was published by SGUDS (Abstracts from the 6th Geophysical conference Bratislava).

In Period 2, such articles were published in 12 technical journals. RGN and ELGI published extended abstracts in “Geophysical Transactions”, PBG and IGTUT published extended abstracts in the Proceedings of the First EAGE CO<sub>2</sub> Geological Storage Workshop, CGS published an article on CCS principles in the „EGRSE Journal” together with the Czech version of the CO<sub>2</sub>NET Public Brochure. IGTUT published an article in the volume of the „Third geological student school in the south of Estonia”. PBG published 2 papers on CO<sub>2</sub>NET EAST and ECBMR in „Geological Review” - the Polish national geological magazine. GeoEcoMar published 3 papers on CCS in the „Engineering Universe” journal.



*Fig. 10 – Cover of the special issue of Slovak Geological Magazine focused on geological storage of CO<sub>2</sub>*

The main project achievement of the 3rd reporting period was the publication of a special issue of the Slovak Geological Magazine devoted to geological storage of CO<sub>2</sub>, which was issued on the occasion of the CO<sub>2</sub>NET EAST workshop in Bratislava. Vit Hladík (CGS) wrote the Foreword and 9 articles were published, prepared by project partners SGUDS, CGS and IGTUT, project subcontractor Sofia University and associated partner MEERI PAS. Moreover, 8 other articles and abstracts introducing the CCS concept as well as articles on national & regional CCS opportunities, on the status of CCS in Europe, etc. were published during Period 3. Technical papers were published by RGN (“Geophysical Transactions”), PBG (2 articles in “Geological Review” and another one in the PBG Company Bulletin), GeoEcoMar (“Patronat E” and “Univers Ingenieresc”) and SGUDS (“Mineralia Slovaca” and “Enviromagazine”).

CO<sub>2</sub>NET EAST project partners were also able to bring the CCS concept to the media. CCS-related information appeared on TV in Croatia, Hungary, Slovakia, the Czech Republic, Bulgaria (altogether in 16 programmes with participation of RGN, ELGI, SGUDS and Sofia University), in radio broadcasts in the Czech Republic, Romania, Hungary and Slovakia (activities of CGS, GeoEcoMar, ELGI and SGUDS), in Czech, Hungarian, Slovak, Estonian, Polish and Romanian printed media

(activities of CGS, ELGI, SGUDS, PBG and GeoEcoMar) and in on-line media in the Czech Republic and Hungary (by CGS and ELGI), providing –the first one in many cases – information on CCS to the general public in the partner countries.

The project partners gave several lectures at universities and higher education institutions, connected with the presentation of the CO<sub>2</sub>NET educational CD-ROM, organised seminars on CCS well-attended by students, or provided the educational CD-ROM to be used directly for teaching students. Such activities were undertaken e.g. at Tallinn University of Technology, Tartu University, Tallinn Higher Technical School (Estonia), Vilnius University (Lithuania), University of Zagreb (Croatia), Eötvös University Budapest and Miskolc University (Hungary), AGH University of Science and Technology Krakow, Warsaw University (Poland), Charles University in Prague, Masaryk University in Brno (Czech Republic), Sofia University “St. Kliment Ohridski” (Bulgaria) and University of Bucharest (Romania).

CCS has become part of regular educational programmes in Croatia (University of Zagreb) and in Bulgaria (Sofia University “St. Kliment Ohridski”) as well as a topic of BSc theses (at the Eötvös Loránd University, Budapest - 2 cases supervised by ELGI), Master theses (at the Tallinn University of Technology, Institute of Geology - 1 case) and/or PhD theses (at the University of Zagreb, Faculty of Mining, Geology and Petroleum Engineering - 3 cases and at the Tallinn University of Technology, Institute of Geology - 1 case).

In Period 3, project partners started activities focused on environmental NGOs; in the first step on those actively supporting CCS. Consultations about the current CCS-related situation in the individual countries and, in some cases, even active cooperation on promoting CCS took place in the Czech Republic, Hungary, Romania and Bulgaria.