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22598



FORGEA  
INTERNATIONAL  
CENTRO DI FORMAZIONE PER TECNICI MINERARI  
E AMBIENTALI DEI PAESI IN VIA DI SVILUPPO

*the Forgea International Executive Director.*

Cagliari, June 29<sup>th</sup>, 2001/ GC

**Workshop on "The Best Available Technologies for Recycling of  
Inorganic Materials".** Iglesias (Sardinia), Italy, May 21<sup>st</sup> to 26<sup>th</sup>, 2001.

**EXECUTION FINAL REPORT.**

Structure of Report.

- I. Background.
- II. Justification and objectives.
- III. The execution agency.
- IV. Contents of the workshop. Methodology and formulas.
- V. Preparation.
- VI. Opening.
- VII. Program. Classes, case-studies, visits, round tables and discussions.
- VIII. Conclusions and perspectives.
- IX. Financial report.
- X. Acknowledgments.
- XI. List of attachments.
  - A) : Table of candidates, admitted and participants.
  - B) : List of teachers, assistants, instructors, operators.
  - C) : Final Programme.
  - D) : Table of Financial Report.

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ALL OF THE MISSING PAGES IN THIS DOCUMENT  
WERE ORIGINALLY BLANK**

## **I. Background .**

1. The strategic and cultural source of these Projects' typology has to be searched in increasing attention devoted by UN system to priorities dictated by the objective tensions between environment safeguard, imperative needs of economic development through its unavoidable industrial passages, research and implementation of technologies giving chances of waste recovering not only for environment safeguard and rehabilitation but for its re-use, through adequate treatment and change, as a basic component, with role of raw material, for new, different industrial processes.

2. The key-problem of "no-waste technologies" in the double framework of environment parameters and of coherent productive processes has generated technical, organizational, socio-economic and normative dynamics in large extensions and number of industrialized countries, from Europe (Russia, Germany, Italy) to Japan to USA.

Very serious impacts of the question are more and more heaving over plenty of countries belonging to developing areas as well as to areas in hard socio-economic transition, because of negative convergence between unlimited exploitation of industrial and mining resources and lack of what could be called as "culture of the future" with its practical implications.

## **II. Justification and objectives .**

3. This Project's justification is based on the following three orders of reasons.

3.1. A general diagnose, that is to say:

- \* need of right balance between earth resources exploitation and socio-economic costs of the environment degrading;
- \* low awareness of environment conditions in comparison to priorities of resources exploitation: even if its stronger evidence in certain areas (development or transition statuses) can be caused by social constraints rather than by adopted policies;
- \* the innovative view searching and testing technically viable models to manage new industrial cycles taking out resources even from certain waste which otherwise would be in itself a threat for integrity of land and often of human health.

3.2. A specific analysis focusing the information and training resources available in countries of Mediterranean basin:

- \* due on one hand to typical sites, characterized by this above mentioned phenomenology;
- \* on the other hand, to the organization of structures for management and research of these problems, like Ministerial Departments, Agencies, R&D Units, etc., created by many national Governments.

Such an analysis is especially tailored to the field of building industry, considering its strategic value in industrial and employment systems, without neglecting a large spectrum of other typologies of waste and related materials: zinc, lead, ceramics, etc.

3.3. The availability, as an working instrument for the workshop, of the productive structures and in general of the significant sites, as well as of living experiences, which mark the isle of Sardinia, like a seal from centuries of mining and extractive organizations.

4. We consider more orders or groups of objectives.

4.1. The first of them deals directly with training and information exchange in the participants' group, that is to say, to improve their own scientific and technological knowledge so to enable them in better managing industrial processes and environmental phenomenology: including information returns in their originating countries.

4.2. The second one deals rather with relationship and expected interactions between:  
\* the training/information system of the workshop's participants (individuals and related institutions), \* the institutions organizing and leading the workshop; \* significant points, institutions, organizations, enterprises, operating in the involved countries belonging to Mediterranean basin inside the fields treated by the workshop.

4.3. A third objective is to be searched in a reasonable and motivated design of those changes which should be the last, even within far delays, result of the training, viewed as a single or as more, mentioned, training events.

Change as development of participants' effectiveness and roles, change as positive evolution of technical and managerial problems, focused by training events but verified in their own actual context.

Such a concept of "objective" opens over two working lines: a follow-up for the training, a system of indicators and its management; and should say something about returns from training investments.

### III. The execution agency.

5. FORGEA INTERNATIONAL, with office in Cagliari, Sardinia, Italy, is a training centre in the fields of Geo – Engineering, Technologies of Materials, Environment, to the intention of scientific and technical experts, management staff, researchers, from developing and emerging countries.

6. Its mission finds inspiration as well as working instruments:

a) in a specializing approach concerning the impact of geo-mining industries over environment;

b) in information and training resources made available in Sardinia by heritages coming from extraction industries (mines, quarries, etc.) which marked the isle history and are a true "case-study" rich in polyvalency and in exemplariness.

#### IV. Thematic content.

#### Methodology and training formulas.

7. The workshop presented, developed and discussed the following main topics.
- i). ICS New Material and Forgea International. Presentation.
  - ii). Life cycle assessment's theory and application. General view of the system.
  - iii). Zinc and lead cycles as experienced historically in the Sardinia mining district.
  - iv). Alumina-aluminium cycle as currently practised in Sardinia. Lecture, presentation, field visit.
  - v). Deconstruction and demolition problems of the building industry.
  - vi). Deconstruction debris recycling. Case studies from Spain, Bulgaria and Brazil.
  - vii). Pilot and production plants. Field visit.

8. Teaching formulas included lectures over main relevant theories and methods, development of cases studies and histories usually targeted on represented countries experiences and events of represented countries and their participants, field visits to industrial complexes according to their relevance for the topics discussed by classes.

#### V. Preparation.

9. **Project document, detailed programme and schedule:** process lasting from end of January to the end of April.

ICS / UNIDO with Prof. Meriani as a Scientific Coordinator prepared originating scientific documents, with progressive integrations as far as they contacted teachers and experts and committed each of them expected actions and performances, so that to design successive tentative, and at last definite, workshop programme. All these elements have been forwarded to Forgea International for the needs connected with check, diffusion, equipment, management of the administrative arrangements for teachers and participants.

10. **Information diffusion:** from April 16th.

Two orders of components: information content and material;  
action of information diffusion.

Information content and material.

The most utilized documents were the above mentioned working papers drafted by ICS/UNIDO as components of the process, beginning by the Project Document, based on "Aide-mémoire", and contacts with expected lecturers and experts coming both from international scientific and technological areas, mainly managed by ICS, and from Sardinian qualified organizations (in this case, industrial plants and technical staff) belonging to a constant keeping in touch from Forgea. Practical needs of essential information suggested Forgea to draft out an elementary version of Aide-mémoire (April 16<sup>th</sup>).

Action of information diffusion.

As usually all available routes were exploited.

Broadly speaking, ICS exploited that institutional and academic network which looks among its constant working references, fishing there at the same time teaching resources as well as candidates for in workshop participation.

Forgea, besides receiving and filing ICS candidatures in order of an omni-including selection, exploited its own network, partly of consolidated interaction with territory, partly of relationship with relevant countries: addresses of individuals (ex., former courses participants) like profiles of professional friendship, formal official and responsible relationship with Ministers, high Administrations, specializing Units in relevant fields, UNIDO territorial Units, Italian Embassies for consular procedures, etc.

#### **11. Candidatures, selection, visa procedures: from April 25th.**

A total of **32 candidatures** were received by ICS and Forgea and registered by Forgea: 9 from Algeria, 9 from Morocco, 4 from Egypt, 2 from Bulgaria, 2 from Turkey, 1 respectively from Brazil, Croatia, Macedonia, Nigeria, Peru, UNIDO.

Selection was made jointly by ICS/Unido (Prof. Meriani) and Forgea International (Mr Corbani). **15** places were available, **16** were admitted, some of them with additional variable role of teaching.

We refer to Annex A) of this report: a table containing the visualized process of the 32 candidatures and 16 admissions.

### **VI. Opening.**

12. Workshop was open on the morning of Monday, May 21<sup>st</sup>, in a classroom of AUSI Building (AUSI - Associazione per l'Università del Sulcis - Iglesiente) which was made available to the Workshop for its total duration according to the needs of the scheduled activities.

Professor Ilio SALVADORI, Chairman of AUSI, welcomed participants as well as teaching and organizing Staff of the Workshop;

Professor Sergio MERIANI, from the Management Staff of ICS/Unido, Workshop's Scientific Coordinator, provided participants with an introductory description of the programme (content and general timing);

Doct. Enzo PASCI, delegated by the Mayor of the town of Iglesias, concluded the sequence of welcoming addresses;

Mr. Gianmario CORBANI, Forgea Coordinator, designed the working framework and availabilities of the organization during the workshop's week

13. Each of Workshop participants introduced himself, through adequate presentation of his professional and managerial identity as well as of his interest's liaison to this event and of hypotheses of contribution.

## VII. Programmes.

### Classes . Field - visits . Case - histories . Discussions and round tables.

14. Four working typologies marked the rhythm this of the workshop running:  
room lectures,  
technical field visits,  
case-histories usually introduced by participants (sometimes keeping double role)  
assisted by teachers and experts,  
discussions and round tables opening large fields for exchange and synergies of  
concepts, data and experiences.

15. The time of each class unit was in principle of 90 minutes, with practical chances of extension as far it is requested by the dynamics of the lectures and by interactions with participants. Visits time was organized according the different situations. Time for case-histories, round tables, etc., was in principle the equivalent of two class units.

In Annex B) of this report a list can be found, including the name of all collaborators to this workshop as teaching staff (coordinator, lecturers, experts, technical assistants).

16. The final Workshop Programme is visualized by the table presented through Annex C) of this report.

## VIII. Conclusions and perspectives.

17. We suppose and wish this Workshop's collaboration, contractual obligations included, between ICS/UNIDO and Forgea International as execution agency and local organizer, has encouraged and created fruitful synergies, each of them using its own working instruments and context.

Effectiveness perception and evaluation belong to records and due analyses: a field where we give the floor to the information, descriptions and evaluations managed by the Scientific Coordinator Professor S. Meriani through his reporting as well as by the workshop scientific organization through the gathering of participants views (questionnaires and relevant elaborations).

18. One of the capital problems of the training events, whatever their success can be in terms of technical, methodological and organizational performance and even in issues of subjective satisfaction, is to enable the received message to work and produce effects according to targets of change.

Given the different roles of the main Organization, namely ICS/ UNIDO, and Forgea International as a local organizer, we suppose the first one keeps views and instruments for right strategy, action, needed relationship in the mentioned field of developments.

In fact ICS/Unido devotes great care to the main routes of follow-up:  
production and spreading of material prepared for, or created by, the present workshop;  
working around pre-announcement and preparation of programmes for further Training Courses and Workshop.



19. As for Forgea International, its institutional mission spreads out through involving two typologies of actions.

To manage directly training events in their whole system: strategic objective, financing, thematic, contents, target beneficiaries (countries and individuals), teaching, general organization, logistic: in coherence with those technological sectors designated by constitutive acts, statute, increasing tradition.

To work as a subcontractor or with equivalent role with Project launched and therefore substantively managed by other Organizations, belonging, as in the present case, to International Organizations systems or to public or private Institutions or Enterprises.

Two orders of contributions are expected from Forgea and actually look to have been performed:

the first one, to take in charge general organization framework and running of the training event and system;

the second one, to exploit and make available for the Project's needs its basins of territory (things and competences of Sardinia framework) and of this system of relationship, with individuals but more with high Administrations and their specializing structures, as well as with any formally responsible channel, of number of countries and of international systems. The table of Annex A) of this same Report could show the concrete process of this dynamics.

## **IX. Acknowledgments.**

20.. Our warmest acknowledgements are addressed:

to AUSI – Associazione per l'Università del Sulcis – Iglesias, namely to its Chairman Prof. Ilio Salvadori, for friendly attitude and availability in supporting services;

to local Authorities for their welcoming;

to industrial Companies, namely Euroallumina and ALCOA, for field visit in their installations and related class presentation by managing Staff mentioned by attachments of this Report;

to IGEA – Interventi Geo-Ambientali, for its Staff assistance (see attachments) in field visit to Porto Flavia;

to the governmental, institutional and academic Structures and Officials of the countries that gave strong effective support to the organization of information, invitation and evaluation of candidatures for the Workshop, as well as to the Italian Diplomatic and Consular Representatives and to UNIDO territorial Units;

to the Speakers and Assistants group organized and directed by the Scientific Co-ordinator;

to the Participants, for their active and strongly motivating attention as well as for their qualified contribution in teaching programmed passages;

to the ICS/ UNIDO framework's actions and attitudes which open the way to generous synergies.

## X. Financial Report.

21. Due Financial Report is presented by a Table attached to this Execution Final Report – Annex D).

Workshop financial dynamics has been divided into three main chapters.

### 1. "Teaching".

We mean financial charges, travel and accommodation, involved by Speakers.

Two special positions:

Mr André De Vries gave his contribution holding to classroom lectures the first day of the workshop (reference to programme) and successively through his personal assistance to the all lectures and field visits : therefore, one travel and number of accommodation days;

Mr Paulinho Coelho was invited as a Participant as well as a Speaker (he held a classroom lecture) on the basis of an agreement with ICS: Mr coelho taking in charge his own travel, ics his accommodation.

### 2. "Learning".

We mean financial charges, travel and accommodation, involved by Participants..

Three of these gave special contribution in classroom information and presentation (see programme), namely Ms Zaarieva, Mr Gouda, Mr Kara, without changes in financial formula.

### 3. "Miscellaneous".

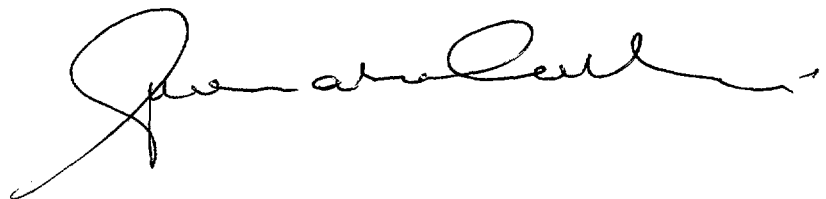
We mean financial inputs involved by activities and operations other than the two mention fundamental actions.

Therefore.

- \* Local transport.
- \* Field trips and visits, namely: Eurallumina, ALCOA
- \* Rental of lecture room and relevant equipment.
- \* Editing and proceedings.

## XI. List of attachments.

- A) : Table of candidates, admitted and participants.
- B) : List of teachers, assistants, instructors, operators.
- C) : Final Programme.
- D) : Table of Financial Report.

A handwritten signature in black ink, appearing to read 'Paulinho Coelho', is written across the bottom of the page.

ANNEX A)		ICS/UNIDO - FORGEA INTERNATIONAL					Cagliari, May 15th, 2001 /GC				
		Workshop: " THE BEST AVAILABLE TECHNOLOGIES FOR RECYCLING INORGANIC MATERIALS"									
		Cagliari / Iglesias, May, 21st to 26th, 2001..									
		LIST OF THE CANDIDATES BY COUNTRY AND IN ALPHABETIC ORDER									
<i>candidates</i>	<i>admitted</i>	<i>country</i>	<i>n a m e</i>	<i>sex/age</i>	<i>address</i>	<i>formal education</i>	<i>languages</i>	<i>working experience and present job</i>	<i>publications</i>	<i>institution</i>	<i>notes (status, etc.)</i>
1	1	Algeria	Moufida ASSOUL	F/ 33	tel. + 213 21 643300 fax * 213 21 66 31 36 Email: mouify_2000@yahoo.fo	Sc. & Technol. Univ. "H. Boumediene: chem. engineer Mst. Manager and Energy and Environment Economy	Engl. 2	Ministry of Energy and Mines. Environment: regulations of polluting industries.		Ministry of Energy and Mines.	
2		Algeria	Ahmed BELHOCINE	M/ 33	T. + 213 21 52 52 45 Fx. + 213 21 52 23 49 Email: abelhocine@carmail.com	USTHB/ Algiers/ Geol. Minerals/ Engineer 1992	Engl. 2 F/ 1	ENOF/SIDMINES Chief of Geol. Study Department - Algiers		ENOF/SIDMINES/ Geol. Study Dep.	
3	2	Algeria	Moustapha BENDOUMA	M/ 35	T. +213 21 673300 Fx. + 213 21 6638 05	Inst. Nat. d. Hydrocarb. & de la Chimie/ Boumerdès/ Engineer: drilling and mud used in wells of Algeria	Engl. 2/3	Ministry of Energy and Mines. Petroleum services and drilling wells. Environmental control.		Ministry of Energy and Mines.	
4	3	Algeria	Zohra BOUHOUCHE	F/ 37	T. +213 21 677115 office, but to be checked	USTHB/ Algiers/ Geol. Minerals/ Engineer. Mst Hydrogeology and Engineering	Engl. 1/2 German Spanish	Ministry of Energy and Mines. Environment protection in industrial and petrolish region		Ministry of Energy and Mines.	
5		Algeria	Sihem BOUYAHIAOUI	F/ 29	tel. +21324816384 +21321673300	Univ. of Hydrocarbures/ Boumerdès Degree and Master in Industrial Engineering, 2000	Engl. 1/2	Ministry of Energy & Mines Prospective studies and strategies		Ministry of Energy and Mines	

6	4	<u>Algeria</u>	Cherifi HOCINE	M/ 31	T. +213 21 7467 44 Fx. +213 21 742995 Email: tunnela@yahoo.fr	National Polytechnical College, Algiers: Mining Engineer Master	Engl. 2 F.1	Ministry of Energy and Mines. Engineer in charge of explosive files, vibrations and noise dusting		Ministry of Energy and Mines	
7		<u>Algeria</u>	Youcef LARNAK	M/ 32	Tel. +213 38 754070 fax 753603	Univ. of Annaba: Engineer, 1994 Spec. Electrical command	Engl. 2/3	Ministry of Energy and Mines. Direction of Skikda. Directeur		Ministry of Energy and Mines	
8		<u>Algeria</u>	Ahmed REDOUANE	M/ 48	Tel +213 24 897617 Fx +213 24 815485	Inst. Nat. Hydrocarbures et Chimie Boumerdes	Engl. 3 French 1	Ministry of Energy and Mines. Direction des Mines et de l'Industrie, Boumerdes: Chef de service		Ministry of Energy and Mines. Direction des Mines et de l'Industrie, Boumerdes:	
9	5	<u>Algeria</u>	Lila TERRA	F/ 33	tel. + 213 21 74 67 44 fx 213 21 74 2995 Email: lilaterra@yahoo.com	* Univ. of Sc. & Technol. , Algiers. Engineer.	Engl. 1/2 French 1	Ministère de l'Energie et des Mines - Direction Gén.d. Mines- Assistant of D.G. Eng. Geotech. Environm.		Direction Générale des Mines.	
10		<u>Bulgaria</u>	Daniel Nikolaev KUSHEV	M/ 33	tel. +359 2 979 2665 fax. + 359 2 723 507 Email: kushev@obzor.bio21.bas.bg	Higher Inst of Chemical Technologies - M Sc. 1994	Engl. 2 Bulgarian	BulgAcademy of Scienc. Inst of Molecular Biology.chemist specialist	4 publications Participation in three ICS courses 1999 and 2000.	Bulgaria Academy of Sciences. Inst of Molecular Biology	through ICS
11	6	<u>Bulgaria</u>	Roumiana Assenova ZAHARIEVA HADJIEVA	F/ 34	tel. +359 263 321 fax. +359 266 1570 Email: hadjieva_fce@uacg.acad.bg	Sofia Un.: civil/ ind. constr.engin. - Ms. Id.: applied math.& data processing - Ms. Artois Univ. : reuse of building waste durability of concrete- PhD	Engl. 2 French Russian Bulgarian	Un. of Arch.Civ.Eng.and Geodesy . Teaching. Expert's report preparing in relevant matters. Consultancy.	5 scient publi- cations. Partic. in courses on this same subject of the Workshop.	Un. of Arch.Civ.Eng.a nd Geodesy .	through ICS

12		<u>Croatia</u>	Verika HOCENSKI	F/ 46	tel. + 385 33 675 179 fx. + 385 33 675 720 Email: verikahocenski@hotmail.com	Univ. of Zagreb - MSC 1976	Engl. 2/3 Croatian	Kiv. Orahovica: Technology development management	partic. in course on this same subject of the Workshop	Kiv. Orahovica:	through ICS
13	7	<u>Egypt</u>	Mona FAYEK	F/ 42	tel: +7921190 Email: monfay@link.com.egmonafayek2000@yahoo.co.uk 010/1010281	Cairo Un., faculty of Engineering (Chemical) Environmental Engineering Diploma	Engl. 1	Ministry of Industry and Technology, Technical Department of the Ministry Office: tasks of technical assistance general		Minister of Industry and Technology. (MIT)	through UNIDO Egypt
14	8	<u>Egypt</u>	Hazem GOUDA	M/ 35	tel: +440297399 fax: +4401382308117 Email: hmgouda@yahoo.com	Cairo Un., irrigation and drainage Newcastle Un., Environm. Engineering, Ms Bradford Un. Idem, PhD	Engl. 1 arabic	Nation. Water Res. Centre: resp. for reasearch studies for riv. Nile	1 publications, partic. in several courses and colloquia	Nation. Water Res. Centre:	
15		<u>Egypt</u>	Mohammed ISMAIL IBRAHIM	M/ 36	tel: +5256452 fax: +5256490175	Al-Menoufia Un. Freshwater Biology Zoology MSc: Freshwater Biology PHD	Engl. 1/2 arabic			Egyptian Environmental Affairs Agency (EEAA)	
16		<u>Egypt</u>	Wessam Amir ZAKI	F/ 21	tel: +0020122203828 Email: gracex@disinfo.net	Bachelor in Business Administration at the Arab Academy for Science & Technology	Engl. 1				
17	9	<u>Macedonia</u>	Aco Giorgi MATEV	M/ 41	tel. +389 43 34 255 fx + 389 43 34 210 Email: aco_matev@yahoo.com	Kiril i Metodiy - technology of inorganic materials: degree. Spec. Silicate technol.	Engl. 2/3 maced.	Porcelanka A.D.: Technologist for Ceramics for developm.	partic. in course on this same subject of the Workshop	Porcelanka A.D. Company.	through ICS

18	10	Morocco	Mostafa AACHIB	M/ 41	T.+212 022 903275 (H.) W.+212 022 230717 (W.) Email aachib@hotmail.com aachib@ehp.ac.ma	Univ.Strasbourg, Fluid mechanics, Doct.&Mast. Ec.Polyt.Montreal,Phd, 1997	English 2/3 French 1	EHTP/Postgrad.Course 2001/ Environm.Engin.ing Coord.&Organization Professor	28 publications	Ecole Hassania des Travaux Publics Casablanca
19		Morocco	Lahcen BENAABIDATE	M/ 37	Route Sefrou, Lot Oua-fas, rue Imlil, 7- FES tel 0021267596767 - fax +55608214. Email: benaabidate@hotmail.com	1. Un. Sfax - Master in Geochem.& Hydrogeol.'94 2. Un. Sidi Moham. Ben Abdellah/ Fes/ Doct.Geo- chem & Hidrogeol. 2000	Arab English 2 French 2	1. Min Super Teaching Prof According his specializ 2. Sc & Techniques Fac Resp stud training. Unit Reas. Form "Geology Resourc.Naturals & Env	5 publications, particip.in Worksh., coll. on water pol- lution,hydroge ol. & environm.	Faculty of Science and Technology / Fes-Saïss BP 2202
20	11	Morocco	Yamina BOURGEOINI	F/ 42	T.+212 44 44 81 02 Email bourgeoini@fstg- marrakech.ac.ma	* Mtr.Sciences, Marrak. * DEA - Doct., Sc. Tunis Professor	French 1 Arabic 2	Education & Res. in Sciences & Technologies	5 articles in international reviews	Fac.Sciences & Technol., Dep.Geology Univ. Marrakesh
21		Morocco	Mohamed BOUTAKIOUT	M/ 48	T./Fax +212 037 771957 Email boutak@ftr.ac.ma	Un.Mohammed V, Rab/ Agdal Doctorat d'Etat en Biostratigraphy, sedimentary dynamic and environment	Engl. 2	Univ.Mohamm.V., Fac. Sciences, Depart.Sc.de la Terre Teaching & Reasearch	4 publications	Univ.Moham. V., Fac. Sciences, Depart.Sc.de la Terre: Rabat
22	12	Morocco	Mostafa EL QANDIL	M/ 37	app.4 imm.6, r.Abou Taïb Al Moutanabi, FES tel. +21261836072. Email elqandil@hotmail.com	Univ.Med V fac.of Sciences Rabat. Doctorat in Applied Geology, 1995	Arab Engl. 2	Un.Sidi Med Ben Abdellah Fac.Scienc.Dhar Mehraz Prof.petrography, ind.min., rocks. Researchs building materials etc. v.sus environment.	5 publications, particip.in cnferences on road construct. Materials	Un.Sidi Med Ben Abdellah Fac.Scienc. Dhar Mehraz tel +21255733405 fx+idem
23	13	Morocco	Rachid HAKKOU	M/ 35	T. + 212 63 22 52 83 Email rhakkou@fstg- marrakech.ac.ma	Un.Agadir/Mast.Chemist Un.Poitiers/DEA Appl.Ch Inst.Nat.Polyt.Lorraine, Nancy: DESS and PhD in: a) miner.res.valorization & optim.of processes, b) ge- osc. and raw materials	Engl. 2 French 1 arab, berber	Fac.Sc.et Technol/Dep. Chimie- Marrakech/ Education & Research in the fac. fields	5 publications	Fac.Sc.et Technol/Dep. Chimie- Marrakech/

24	14	Morocco	Lahlou KHALED	M/ 41	T./Fax +212 22 507922 Email lahlou@ehpt.ac.ma	Ec.Hassania,Casablanca Eng.in Civ.Enginnering Univ.Sherbrooke, Quebec Building Materials. PhD, 1994	Engl. 2/3 French 1	Professor in Ec.Hassania d. Trav.Publics - EHTP/ Casablanca Engineering education & research	12 articles (relevance:5)	Ec.Hassania d. Trav.Publics - EHTP/ Casablanca	
25		Morocco	Jabrane RAOUF	M/ 46	Route Ain Smen Residence Essabah, Imm.E, App.17 30000 Caablanca tel. +212 61454829 fax + 212 55 608214 Email rjabrane@hotmail.com	Un. Brussel Doctorat. Master in Applied Geology - 1984	Engl. 2 French 1	Un.Fes - Fac.Sc.& Tewchnology. Professor. Chief of Department	7 publications, partic.in several courses and colloquia	Un.Fes - Fac.Sc.& Tewchnology.	
26		Morocco	Abdellatif SOUHEL	M/ 39	Resid.Aj Wifak, app.A8, Av.Ibnou Badis/ 24000 ElJadida tel. +67 37 92 67 fx. +23 34 21 87	Un.Cadi Ayyad, Marrakech - Doct.d'Etat en Géologie	Engl. 2 French 1	Un.Chuaib Doukkali - Fac.Sciences. Professor Teach. & Researchs	5 publications, partic.in courses (Unesco déc.,Italy)	Fac. Sciences, Dep.Géologie, El Jadida	
27		Nigeria	Liadi Kolapo MUDASHIRU	M/ 29	tel. +23414936896 fax. +23414936896 Email. eykoye@caulfe.edu.ng	Cairo Un.Chemistry (Hms) Obafemi Awolowo Un. Chemistry certificate. Master of Sciences. 1999	Engl. 1 French, German	Un.Nigeria Teach & Research Professor R.S.A.Research		Obafemi Anolowo Univ / Department of Chemistry	
28		Peru	Cuzcano ROBERTO	M/ 30	Email: rozcano@southernperu.com.pe	Geographic Engineer - Environmental and Natural Resources	Engl.	Copper Corporation(SPCC). Environmental Supervisor in the Environmental Services Division			applica-tion// invited by ICS its own charge/ renounced
29	15	Turkey	Alpagut KARA	M/ 34	Exz 6360 tel. + 90 222 33 50 580 fax. + 90 222 32 39 501 Email: akara@anadolu.edu.tr	Un.Ist. -metallurgical engineering Un.Leeds - engineering ceramics (Msc) Un.Bath . Interfaces in glaze/body system - PhD	Engl. 1 Turkish	Anadolu Univ., Dep.ceramic engineering. Iki Eylul Kampusu	7 publications, partic.in several courses and colloquia	Anadolu Univ., Dep.ceramic engineering.	trough ICS

30		Turkey	Kemal INAN		tel. +90 (0216) 483 9500 fx. +90 (0216) 483 9550 Email: inan@sabanciuniv.edu	Sabanci University						through ICS but did not go visa to It. Embassy - revoked
31		UNIDO	Roberta DE PALMA	F/	Fax: +390409228122							through UNIDO - renounced
32	16	Brazil	Paulino COELHO	M/ 43	tel. +5567877242 fax: the same							ICS/ Special invitation



**ICS/UNIDO - FORGEA INTERNATIONAL**  
Workshop: "BEST AVAILABLE TECHNOLOGIES FOR RECYCLING OF INORGANIC MATERIALS"  
Iglesias/Cagliari May 21st to 26 th, 2001

**LIST OF TEACHERS, EXPERTS, ASSISTANTS**

	NAME	PROFESSIONAL DATA	INSTITUTION	WORKSHOP ACTIVITIES
1	Paulino Coelho			Construction and Demolition Debrics Recycling. (Wednesday, 23) Lecture
2	André De Vries	Location Manager, Materials Division. Members of the European and International Ceramic society.	Netherlands Organization for Applied Scientific research (TNO).	Life-Cycle Assessment and Recycling/reuse of Waste in Building Materials. (Monday, 21) Lecture
3	Harro Draheim	Eng. International expert in treatment of demolition waste; member of the TG3 Work. Group of the EU. Member of the International recycling Federation (F.I.R.) Coordinator of the Internet Network.	Eng. Dipl. in Catalunya and Spanish.	Construction Materials Cycle - The Spanish Experience - Management and Recycling of Industrial Waste: Environmental, Political, Commercial Aspects in Spain. (Friday, 25) Lecture
4	Hazem Gouda	Bradford Univ., Envir. Engineering, PhD	Nat. Water Research Centre	Life Cycle Assessment, reference U.K. Experience
5	Alpagut Kara	Eng. of Anadolu Univ., Dep. Ceramic Engineering. Iki Eylul Campus Eskisehir / Turkey.	Anadolu Univ., Faculty of Engineering and Architecture.	Current Technologies for Recycling of Inorganic Materials in Turkey. (Wednesday, 23) Lecture

6	Giuseppe Lazzaro	Responsible for Research (ALCOA-Portovesme).	ALCOA.	An Introduction to the Aluminium Cycle. (Wednesday, 23) Lecture
7	Sergio Meriani	Workshop Scientific Coordinator	ICS / UNIDO	Presentation of ICS Programme and of Participants - Lecture and discussion (Monday 21st)
8	Mario Pelino	Professor of Science of the Materials. Department of Engineering Chimic and of the Materials.	Aquila University, Faculty of Engineering.	The Zinc Cycle, Lead from Monteponi. (Tuesday, 22) Lecture
9	Jesus Ma. Rincón	Professor de Investigation, CSIC The Glass-Ceramics Group Lab.	Instituto E. Torroja de Ciencias de la Construcción.	Construction Materials Cycle - The Spanish Experience - Management and Recycling of Industrial Waste: Technological and Marketing Aspects in Spain. (Friday, 25) Lecture
10	Roberto Sarritzu	Geologist of IGEA.	IGEA. - Interventi Geo-Ambientali	Guided tour to Monteponi - Porto Flavia. (Saturday, 26) Field visit
11	Alfredo Teodosi	Process Technician (Euroallumina).	EUROALLUMINA.	An Introduction to the Aluminium Cycle. (Wednesday, 23) Lecture
12	Roumiana Zaharieva	Sofia University: civil/ind. Constr. Engineering - Ms. id.: applied math. & data processing - Ms. Artois University: reuse of building waste durability of concrete - PhD.	Sofia University Faculty of Arch.Civ.Engineering and Geodesy.	Opportunities for the Implementation of Recycled Construction Waste Materials in the Building Industry. Perspectives for Bulgaria. (Friday, 25) Lecture



# International Centre for Science and High Technology



## FORGEA

### INTERNATIONAL

CENTRO DI FORMAZIONE PER TECNICI MINERARI  
E AMBIENTALI DEI PAESI IN VIA DI SVILUPPO

Report June 29th,  
2001  
ANNEX C)

Iglesias, May 20th, 2001

Workshop: " THE BEST AVAILABLE TECHNOLOGIES FOR RECYCLING  
OF INORGANIC MATERIALS"

Iglesias/Cagliari May 21st to 26th, 2001

### DAILY CALENDAR OF THE ACTIVITIES

DAY	TIME	TYPE OF ACTIVITY	SPEAKERS
Monday, 21 May	09.00 - 09.30	Registration	
	09.30 - 10.30	Opening by the local authorities and Forgea	Prof. Salvadori/ AUSI / IGEA Dott. Pasci/ Iglesias municipality Mr. Corbani, Forgea
	10.30 - 11.00	Coffee break	
	11.00 - 12.30	Presentation by the Prof. Meriani of the ICS Programme and of the participants	Prof. Meriani
	12.30 - 14.00	Lunch	
	14.00 - 15.30	"Life-Cycle Assessment and Recycling/reuse of Waste Materials - Utilization of Waste in Building Materials"	Eng. De Vries, The Netherlands
	15.30 - 16.00	Coffee break	
	16.00 - 17.30	"Life-Cycle Assessment and Recycling/reuse of Waste Materials - Utilization of Waste in Building Materials"	Eng. De Vries, The Netherlands
Tuesday, 22 May	09.00 - 10.30	"The Zinc Cycle"	Prof. Pelino, Italy
	10.30 - 11.00	Coffee break	
	11.00 - 12.30	"The Zinc Cycle"	Prof. Pelino, Italy
	12.30 - 14.00	Lunch	
	14.00 - 15.30	"Lead from Monteponi"	Prof. Pelino, Italy
	15.30 - 16.00	Coffee break	
	16.00 - 17.30	"Lead from Monteponi"	Prof. Pelino, Italy

<b>Wednesday, 23 May</b>	09.00 - 10.30	"Current Technologies for Recycling of Inorganic Materials in Turkey"	Dr. Kara, Turkey
	10.30 - 11.00	Coffee break	
	11.00 - 12.30	Participants Presentations	
	12.30 - 14.00	Lunch	
	14.00 - 15.30	"An Introduction to the Aluminium Cycle"	Eng. Teodosi, Eurallumina, Italy Eng. Lazzaro, ALCOA, Italy
	15.30 - 16.00	Coffee break	
	16.00 - 17.30	"Construction and Demolition Debris Recycling"	Prof. Coelho, Brazil
<b>Thursday, 24 May</b>	09.00 - 17.30	Visit to Eurallumina and ALCOA	Eng.Lazzaro/Alcoa Eng.Teodosi/Eurallumina
<b>Friday, 25 May</b>	09.00 - 10.30	"Opportunities for the Implementation of Recycled Construction Waste Materials in the Building industry. Perspectives for Bulgaria".	Prof. Zaharieva, Bulgaria
	10.30 - 11.00	Coffee break	
	11.00 - 12.30	Construction Materials Cycle – The Spanish Experience – Management and Recycling of Industrial Waste: Technological and Marketing Aspects in Spain".	Prof. Rincon, Spain
	12.30 - 14.00	Lunch	
	14.00 - 15.30	Construction Materials Cycle – The Spanish Experience – Management and Recycling of Industrial Waste: Environmental, Political, Commercial Aspects in Spain".	Eng. Draheim, Spain
	15.30 - 16.00	Coffee break	
	16.00 - 17.30	Life Cycle Assessment, with reference to United Kingdom experiences.	Prof. Hazem Gouda, Egypt
<b>Saturday, 26 May</b>	09.00 - 13	Technical visit to sectors of Monteponi mines and to the installations of Porto Flavia, ancient charging point of minerals on cargo boats	Prof.R. Sarritzu, IGEA managing staff
	13.00 - 14.00	lunch	
	14.00 - 15.30	Discussion, Follow-Up and Recommendations	
	15.30 - 16.30	Coffee break	
	16.00 - 17.30	Conclusion	

Reference to Final Report 29 June 2001 <u>ANNEXE D</u> )						
		<b>ICS / UNIDO - FORGEA INTERNATIONAL</b>				
		Workshop on :				
		<b>"Best Available Technologies for Recycling of Inorganic Materials"</b>				
		Iglesias, May 21st to 26th, 2001		Cagliari, June 29th, 2001		
		<b>FINANCIAL REPORT</b>				
Countries	ACTIVITIES	University, Institution. Structure,	Travel	Accommodation: 156 each night	Subtotal US\$	Total US\$
	<u>TEACHING</u>					
	<u>Speakers</u>					
1	André De Vries	Netherl.Organiz. Applied Scient. Researchs				
	André De Vries - tutor	Netherl.Organiz. Applied Scient. Researchs	900	1092		
2	Harro Draheim	Intern. Recycling Federation	750	312		
4	Giuseppe Lazzaro	ALCOA	200	312		
5	Sergio Meriani	ICS/ UNIDO, Workshop Scientific Coord.				
6	Mario Pelino	Aquila University	550	312		
7	Jesus Ma. Rincón	Inst. E.Torroja de Ciencias de la Construccion	750	312		
8	Roberto Sarritzu	IGEA - Interventi Geo- Ambientali				
9	Alfredo Teodosi	EURALLUMINA	300	312		
	<b>Teaching budget</b>		<b>3450</b>	<b>2652</b>	<b>6102</b>	

LEARNING							
	Countries	ACTIVITIES	University, Institution. Structure,	Travel	Accommodation: 147 \$ X 7 nights		
Participants							
1	Algeria	Moufida ASSOUL	Ministry of Energy and Mines.	984	1029		
2	Algeria	Moustapha BENDOUMA	Ministry of Energy and Mines.	984	1029		
3	Algeria	Zohra BOUHOUCHE	Ministry of Energy and Mines.	984	1029		
4	Algeria	Cherifi HOCINE	Ministry of Energy and Mines	984	1029		
5	Algeria	Lila TERRA	Direction Générale des Mines.	984	1029		
6	Bulgaria	Roumiana Assenova ZAHARIEVA HADJIEVA	Un.of Arch.Civ.Eng.and Geodesy .	830	1029		
7	Egypt	Hazem GOUDA	Nation.Water Res.Centre:	1000	1029		
8	Egypt	Mona FAYEK	Ministry of Industry and Technology.	1000	1029		
9	Macedonia	Aco Giorgi MATEV	Porcelanka A.D. Company.	1020	1029		
10	Morocco	Mostafa AACHIB	Ecole Hassania des Travaux Publics Casablanca	950	1029		
11	Morocco	Yamina BOURGEOINI	Fac.Sciences & Technol., Dep.Geology Univ. Marrakesh	950	1029		

12	Morocco	Mostafa EL QANDIL	Un.Sidi Med Ben Abdellah Fac.Scienc. Dhar Mehraz tel +55733405 fx+idem	950	1029		
13	Morocco	Rachid HAKKOU	Fac.Sc.et Technol/Dep. Chimie- Marrakech/	950	1029		
14	Morocco	Lahlou KHALED	Ec.Hassania d. Trav.Publics - EHTP/ Casablanca	950	1029		
15	Turkey	Alpagut KARA	Anadolu Univ., Dep.ceramic engineering.	970	1029		
16	Brazil	Paulino COELHO			1029		
				<b>14490</b>	<b>16464</b>	<b>30954</b>	<b>37056</b>
		<b><i>Participants Budget</i></b>					
		<b><u>Miscellaneous</u></b>					
		* Local transport				800	
		* Field trips:					
		Eurallumina, ALCOA				400	
		* Rental of lecture room and relevant equipment				296	
		* Editing and proceedings				1400	
		<b><i>Miscellaneous Budget</i></b>				<b>2896</b>	<b>2896</b>
		<b>TOTAL BUDGET</b>				<b>USA \$</b>	<b>39952</b>