

TECHNICAL PART OF THE FINAL REPORT

Name of the Asia-wide Programme : Asia Pro Eco

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Project Title: **CO₂ Managers for the Industry in the People's Republic of China**

Name of Beneficiary: Centric Austria International

Period covered by this Interim Report: 04.05.2005 - 03.05.2007

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<i>Project Budget</i>	<i>EUR 369,976.95</i>
<i>Funds Disbursed by Commission to date</i>	<i>EUR 170,345.04</i>
<i>Expenditure Incurred by Project to date</i>	<i>EUR 382,991.47</i>



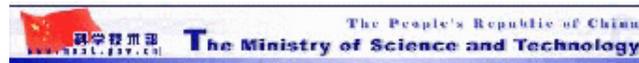
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CO₂ Managers for the Industry of the People's Republic of China

Austrian

Development Cooperation



Executive Summary

The CO₂ Managers for the Industry in the People's Republic of China Project was implemented for the duration of 24 months between 04 May 2005 and 03 May 2007. The European Commission by the means of the Asia Pro Eco II Programme provided co-financing for the project, additional financial resources came from the Ministry of Science and Technology in China and the Austrian development agency as well as the partners who implemented the project. The applicant and main co-ordinator for the project was Centric Austria International, who had teamed up with the China Energy Research Society and Clean Technology Centre in Cork, Ireland.

As a primary result of the project 26 Chinese experts achieved the qualification as a 'CO₂ Manager & Trainer' and received a certificate issued by MOST and CAI during the final workshop.

As means to achieve this a total of five training blocs were conducted, of which four took place in China and one in Europe, several long term CO₂ management projects were designed and implemented in co-operation between the CO₂ managers and the European experts and a final conference was implemented at the end of the project duration.

As secondary result from the project a total of more than 50 CDM projects was initiated or assisted with an estimated total of CO₂ reductions of 90,000,000 tons annually. According to the project objective to understand CO₂ in a wider meaning than CDM the Chinese experts were using their knowledge in projects related to energy efficiency, energy conservation and renewables development, which lead to an additional not yet quantified amount of CO₂ emission reductions. Especially the study tour in Europe led to several contacts between European companies and Chinese experts resulting in joint CDM activities.

Another secondary result was the training efforts undertaken by the CO₂ managers. It was an objective of the project to train the CO₂ managers as trainers for other experts in China. During the project life time the CO₂ managers did introduce the concept of CO₂ management or further trained a combined 3,000 additional Chinese experts in CO₂ management throughout China.

To sustain and institutionalise all these activities, the Chinese CO₂ managers have concluded on being organised in the CO₂ alumni network, which was established formally during the final workshop.

Throughout the project the spirit and understanding among the project partners and between the project partners and the CO₂ managers was high and several longer lasting co-operations have formed during the two year period.

Overall the project has achieved its objectives in most areas and over-achieved them in quite a few. The co-operation in the project team and the interaction with the group of CO₂ managers has been excellent and is still ongoing.

I. Introduction

Main activities during the 24 months of project implementation

- Holding project kick-off and interim meeting in Beijing
- Advertisement of trainer positions and selection of future CO₂ management trainers
- Implementation of 1st training bloc
- Implementation of 2nd training bloc
- Implementation of 3rd training bloc and study tour in Europe
- Implementation of 4th training bloc
- Implementation of 5th training bloc
- Concept and implementation of final conference
- Concept, design and content development for replicable training bloc 1 - 5
- Design of the website www.centric.at/co2-china
- Establishment of a CO₂ Manager alumni network

Main results

- The project management structure were set up and common project management tools are in place (action plans, project plan, reporting mechanism, monitoring and evaluation system)
- Inception report, quarterly updates and the interim report were written and sent to the EC delegation in Beijing.
- A web site in English and Chinese language was developed and published.
- Terms of reference for future CO₂ management trainers were developed and applied.
- Seminar papers, training materials, background material and mission reports have been drafted and collected for training blocs 1 - 5
- Training of future CO₂ management trainers was conducted on basics of CO₂ management and from company strategy for CO₂ reduction to a PIN and PDD.
- Study tour in Europe including a training session in Europe on negotiating CO₂ was implemented.
- A final conference was held in Beijing to ensure the further dissemination of the projects results
- Most of the CO₂ managers have taken up their task of training other experts in CO₂ management throughout China
- A significant number of the CO₂ managers have developed an individual dissemination strategy on how to utilise their own know-how and skills as well as the network of their institutions to disseminate knowledge on CO₂ management

Main difficulties

- The only difficulty was to ensure the consistency of participation. Some of the participating institutions send different people to different training blocs. However the general core group of trainers has attended all training units.
- Satisfy huge interest in the training bloc 3 in Europe.
- Encourage the CO₂ managers very active in dissemination to overcome any obstacles

II. Description of Implementation of Activities

Overall most expected results have been achieved or overachieved in course of the project. Some of the expected results needed to be readjusted in the course of project implementation.

Expected results

Actual results and achievements in relation with these indicators mentioned in the logical framework:

- **A first stock of Chinese experts will reach the level of CO₂ managers according to international standards**

This result has almost been achieved, the number of individuals who attended all courses whole training programme fell short, due to fluctuation among the participants. However the skill level of the individuals attending all trainings was excellent and has been significantly improved throughout the project. A total of 26 Chinese experts achieved the qualification as a 'CO₂ Manager & Trainer' and received a certificate issued by MOST and CAI during the final workshop.
- **First CO₂ management projects will demonstrate the assets of the approach for the industry in environmental and commercial terms**

A whole series of CO₂ management projects were carried out during the project in connection with the project by the trainers trained in the project; additionally several CDM projects were initiated and advanced during the project duration. A total of more than 50 CDM projects alone was initiated or assisted during the project implementation. These projects range from hydro power, wind power, biomass and bio gasification, coal mine methane, waste heat recovery and cogeneration projects to new methodologies for municipal solid waste combustion and power generation. The estimated CO₂ reductions per year amount to more than 90,000,000 tons. Some of the experts are involved in bigger bilateral programmes, e.g. with France, Canada, Japan, who promise to double the number of projects.

According to the project objective to understand CO₂ in a wider meaning than CDM the Chinese experts were using their knowledge in projects related to energy efficiency, energy conservation and renewables development. Industries covered by such activities are: iron & steel, glass, cement, petrol-chemical Projects were linked with other systems like Cleaner Production Audits, Energy Audits, etc. Publications and research, e.g. on CO₂ reduction in coke ovens, efficient lighting, biomass use for rural areas etc
- **A standard how to manage CO₂ in China's industry will allow replication and extension of the approach**

The establishment of a commonly officially accepted standard was not achieved. However the technologies and techniques applied throughout the CO₂ management project have set the base for the development of a commonly accepted standard. The endorsement of such a standard will be further advanced by the CO₂ managers' alumni network.
- **Potential European partners will know more about demands and constraints for CO₂ co-operation projects in China**

During the Exposure tour to Europe and during several meetings of CO₂ managers in China with European counterparts from the CO₂ management and CDM sector several co-operations were achieved and will be further advanced in the future.

Additional results not anticipated in the original project design

In addition to the expected results as mentioned in the original logical framework a set of additional results could already be achieved in the project life time.

- **Train the trainers' effort and education and training of additional CO2 managers and dissemination.**
During the past twelve months the CO2 managers were active as organisers of seminars and workshops, acted as speakers and lecturers. More than 3000 participants attended such seminars and workshops. Target groups range from SMEs, company staff, CDM centres, local authorities to postgraduate students of universities and project owners. Activities took place in Beijing, Tianjin, Hangzhou, Nanjing, Sichuan, Guangdong, Guangxi, Gouzhi, Yunnan, Hebei, Liaoning, and Shandong
- **Dissemination through conferences**
The Chinese experts attended a number of conferences, gave there presentations or were even involved in the organisation of such events in prominent role: Asian Carbon Expo, several national conferences and bilateral conferences, e.g. with Germany, France and Japan and even abroad events in UK, Italy and Japan. The estimated number of people approached this way is more than 3000.
- **Establishment of an alumni network of CO2 managers**
To sustain and institutionalise these activities, the Chinese CO2 managers have concluded on being organised in the CO2 alumni network, which was established formally during the final workshop. A core team of three persons, appointed by MOST, will structure the network in detail according to basic definitions and visions concluded so far.

Indicators

- **About 30 Chinese experts have successfully participated in the seminars**
About 40 individuals participated in the seminars, however not all of them attended all seminars. All received a full set of training materials and have the basic know-how to consult industry and to train other CO2 managers. A total set of 26 trainers have attended the whole training programme successfully.
- **In the minimum 5 first pilot projects have been worked out**
A total of more than 50 CDM projects is currently under preparation, most of them have been initiated during the project furthermore several CO2 managers have started doing consulting for industry in regards to CO2 management and energy efficiency
- **First project designs and documents for CDM projects with European partners have been worked out**
A total of more than 50 CDM projects were initiated and supported.
- **A guideline for CO2 management in China has been designed, edited and disseminated.**
A general guideline and training toolkit for CO2 management in China was developed and is available for download on the projects website.

Changes

Overall most activities have been executed according to the 8 out of 12 activities planned in the project. The only major changes have been regarding the thematic contents of some of the work packages and the swap between training bloc 3 and 4.

- **Thematic changes**

After the first training bloc it was decided to include more CDM related topics in the trainings. It became clear that the main focus of CO₂ management activities in China currently takes place in the framework of CDM. While this change was made so satisfy the expectations of future CO₂ management trainers, it was also made clear between the project partners, that there might be certain overemphasize on CDM based activities in China at the moment.

Therefore a second thematic enlargement was done in the area of energy efficiency in industry. For the industrial sector one of the main concerns is energy efficiency and the financial benefits resulting from efficient use of energy. CO₂ management is a clearly established measure to achieve more efficient use of energy.

- **Change in order activity 7 and 8**

It was clear from the start of the project that the bloc conducted in Europe should include a visit to CarbonExpo the biggest trade fair and conference in regard to CO₂ management. To include it in the training programme it was necessary to change activity 7 and 8 hence to swap bloc 3 and 4 and do the study tour and training in Europe about 4 month earlier.

Activities

For each activity the activities carried out are listed, problems highlighted and deliverables compared with the originally proposed

- **Activity 01 - Inception phase "Meeting of EU project managers in Brussels"**

Due to the organisational change in the management of EuropeAid projects. The project partners decided such a meeting would not be necessary to be conducted in Brussels but rather to be done in China. Therefore all tasks foreseen in this activity were moved to activity 02 "kick-off meeting of all partners in China"

- **Activity 02 - Inception phase "Kick-off meeting of all partners in China"**

In preparation for this meeting the project partners developed a trainee application form (Annex A) and a suggestion for the general training outline (Annex B). The meeting was also attended by representatives of the Chinese Ministry of Science and Technology (MOST) to underline the importance of this project. Furthermore some of the organisations who were about to nominate trainers were present. The general work plan and the project objectives were introduced and all organisational, financial and personal terms were agreed upon. As well as the trainee application form and the training outline with some minor changes. A rough time frame for all activities was developed and for the first and second project year all activities were implemented according to this time frame.

- **Activity 03/1 - Inception phase " Design and install internet web site in English and Chinese language"**

A website in English and Chinese language was developed and published including a project summary and background. A section for seminar contents and materials was included.

Furthermore it proved especially useful, to use a web based group (yahoo group) to facilitate communication among the groups and between the experts and the group. Questions and consultations were held via email and over the phone.

- **Activity 03/2 - Inception phase „Continuous updating of the web site according to project progress“**
 After initial problems the website in Chinese and English language have been regularly updated throughout the project duration, with the latest development and the project materials.
- **Activity 04 - Inception phase "Terms of reference for Chinese participants" + "Final selection of Chinese experts attending training & seminars"**
 The selection of participants took place based on the trainee invitation and a standard application form. Selection was done by the CERS with advice from the Ministry of Science and Technology and support from the two European partners. Apart from personal qualifications of the individual participant, two selection items were crucial to the selectors. Firstly the likeliness given that the individual participant will remain during the whole training course in the same or similar position in its organisation and secondly the ability of the organisation, in which the participant is employed, to conduct its own series of training courses as host organisation. Last but not least the spatial distribution of the participants was important.
- **Activity 05/1 - Implementation phase "First bloc of training & seminars in China (Basics of CO2 management)" - Prepare the training & seminar**
 The training outline was developed by Centric and then discussed with the two other partners and all EU and Chinese experts involved in the project. The final version was then used as outline for the whole training bloc. To guarantee a sound and harmonised development of training materials guidelines were given to the trainers. The trainers delivered their presentations and materials in time and translation in Chinese of all materials was done in time as well.
- **Activity 05/2 - Implementation phase "First bloc of training & seminars in China (Basics of CO2 management)" - Implementation the first bloc of training & seminars in China**
 The first bloc was implemented from the 1st to the 4th of November 2005 in Beijing. The open ceremony was attended by high ranking members of Chinese and EU institutions. A total of 25 participants attended the training seminar. Upon a first review of the feedback given by the participants, expectations of the target group were met. However there is a strong focus in the current climate change debate in China on CDM, combined with a lot of insecurity about the issue. Therefore the European experts were strongly encouraged by the participants to give the issue of CDM considerable weight.
- **Activity 05/3 - Implementation phase "First bloc of training & seminars in China (Basics of CO2 management)" - Seminar papers (start work on concrete CO2 management projects)**
 At the end of the first bloc of training & seminars the Chinese participants were divided into 4 smaller groups with an interdisciplinary set-up. Each of these groups was given the task to develop their first own CO2 management project with data from a real company.
 The groups which had been setup during the first training seminar continued their work and the EU and Chinese experts assisted the groups.
- **Activity 06/1 - Implementation phase "Second bloc of training & seminars in China (CO2 inventory)" - Prepare the training & seminar**

The training outline was developed by Centric and then discussed with the two other partners and all EU and Chinese experts involved in the project. The final version was then used as outline for the whole training bloc. Finally all translation was done in time.

- **Activity 06/2 - Implementation phase "Second bloc of training & seminars in China (CO₂ inventory)" - Implementation the first bloc of training & seminars in China**

The 2nd training bloc was held in Hangzhou between 28th February and 3rd March 2006. Hangzhou was chosen to encourage the participants to completely concentrate on the training course. Since a significant part of the participants comes from organisations in Beijing a noticeable level of distraction was present. Based in experiences in China and Europe, this might be avoided by going to a place which is away from the usual work environment. Hangzhou as a training location minimised fluctuation among the trainees and a led to a satisfactory result in this regards. Overall training in the 2nd training bloc went smoothly, detailed results can be found in the outline 2nd training bloc and the report on 2nd training bloc.

- **Activity 06/3 - Implementation phase "First bloc of training & seminars in China (Basics of CO₂ management)" - Seminar papers (start work on concrete CO₂ management projects)**

At the end of the second bloc of training & seminars the Chinese participants were given the task to develop a PIN (Project Idea Note) for the 4th training bloc and to present this PIN there. The PIN should be on a concrete project rather than a fictional one (many participants chose a fictional project for the exercise between the first and second training session). The participants were encouraged to have their draft PIN ready for the study tour in Europe in order to present the PIN to experts during the study tour.

Please note: Activity 7 was changed in order with Activity 8.

- **Activity 07/1 - Implementation Phase "Third bloc of training & seminars in China (CO₂ assessment and company strategy for CO₂ reduction)" - Seminar papers (preparation of presentation of PIN and PDD) - Prepare the training & seminar**

The training outline was developed by Centric and then discussed with the two other partners and all EU and Chinese experts involved in the project. The final version was then used as outline for the whole training bloc.

- **Activity 07/2 - Implementation phase "Third bloc of training & seminars in China (CO₂ assessment and company strategy for CO₂ reduction)" - Implementation the third bloc of training & seminars in China**

The 3rd training bloc was held in Yinchuan between 19th and 15th September 2006. Yinchuan has been chosen to encourage the participants to completely concentrate on the training course. However not all CO₂ trainers attended this location since it was considered to remote by most trainees. The notice my many of the participants, that they will not attend the course came rather late, not leaving any time for the organisers to adjust. In Yinchuan it was also possible to perform a site visits to a wind farm.

- **Activity 08/1 - Implementation phase "Fourth bloc of seminars in Europe (Emission trading)" - Prepare the mission to Europe**

The project partners had decided to move the fourth bloc forward from month 17 to month 13 of project implementation During May 2006 the biggest conference and trade fair on CO₂ management and Emission trading will be held in Cologne, Germany. It has been decided to attend this trade fair with the delegation from the CO₂ manager project. The third training bloc was therefore moved backward to

September 2006. The study tour was prepared by all project partners organising VISA, travel arrangements and appointments.

Originally a total of 11 (plus two project managers from Chinese side) participants were foreseen for the study tour; due to high demand from the Chinese participants and the envisaged benefits in regards to training quality it was decided to take 16 participants (plus three project managers from Chinese side) along for the study tour.

- **Activity 08/2 - Implementation phase "Fourth bloc of seminars in Europe (Emission trading)" - Prepare training & seminar in Europe and**

It was decided not to have a too formal training approach in Europe but rather make good use of the resources and expertise available in Europe. The training component was substituted by three major conferences, networking events and meetings: CarbonExpo in Germany, EPA in Ireland and Kommunalkredit in Austria.

- **Activity 08/3 - Implementation phase "Fourth bloc of seminars in Europe (Emission trading)" - Interim review of seminar papers in individual consultations**

The main part of training was the review of the seminar papers in Europe. This review did not produce sufficient results. Only a very small portion of participants had a finished PIN available. Therefore it was decided to extend the deadline till the next seminar in September and introduce frequent checks by the Chinese and European partners, to ensure the sustainable learning effects of the training.

- **Activity 08/4 - Implementation phase "Fourth bloc of seminars in Europe (Emission trading)" - Implementation of the fourth bloc of seminars in Europe**

The main objectives were to expose the participants to the realities of the international Carbon Market, to establish a network with major European actors in the carbon market, to highlight some technologies in CO₂ mitigation and to learn from experiences of European companies with Emission Trading. All these objectives were achieved. Further details please see the outline for fifth bloc (Annex A).

- **Activity 09/1 - Final Phase "Final seminar in China" - Prepare the conclusion meeting with the training & seminar participants**

The final seminar in China was held on the 16th and 18th March 2007 as a preparation and follow-up seminar for the final conference. The set-up of a CO₂ Managers network was drafted and further details of this were discussed during the final seminar in Beijing. Each participant developed an individual dissemination strategy, on how to spread the knowledge about CO₂ management further in China.

- **Activity 09/2 - Final Phase "Final seminar in China" - Review of seminar papers and prepare presentation in individual consultations**

The actual final seminar in China had two major focus areas. Firstly, the forming of a CO₂ managers alumni network. The network was constituted during the meeting and three individuals were assigned to develop an overall strategy for the formal recognition of the network by CERS and the Ministry of Science and Technology.

Secondly the CO₂ trainers presented their individual dissemination strategy. The strategy focussed on the individual efforts to promote CO₂ management and the strategy implemented by the institution the individual works for. Each CO₂ trainer gave a more or less detailed plan on how the further dissemination will be implemented by him and the organisation he is working for. These were reviewed by the Chinese project partner CERS and co-ordinated with the European partners.

It was very positive to see that many CO₂ trainers had already started with efforts to promote CO₂ management and were conducting training on CO₂ management themselves, also giving presentations on the topic at various conferences. Further details please see the outline for fifth bloc (Annex B). For the Alumni Network please see Annex C

- **Activity 10/1 - Final Phase "Guideline for CO₂ management in China " - Design the guideline**
 A general guide for CO₂ management was developed in the course of the project. This guide and training materials was developed and used during the CO₂ management project. It follows the general training structure developed in the project. The guidelines and training materials have been applied and adjusted by several of the CO₂ managers to fit their specific needs.
- **Activity 10/2 - Final Phase "Guideline for CO₂ management in China " - Edit the guideline in English and Chinese language**
 The guidelines were edited in English and Chinese language to be used as a basis for CO₂ managers to implement CO₂ management projects in the Chinese industry. They are available for other experts and the general public on the project website.
- **Activity 11/1 - Final Phase "Final conference in China " - Prepare the conference**
 The final conference was held in conjunction with the annual CERS meeting in Beijing on the 17th March. During the preparation time terms of references for EU and CN experts taking part in the conference were prepared and co-ordinated. The input from the individual dissemination strategies was used to prepare the individual conference input. Potential participants were invited a total 176 participants attended the conference. Presentations on various topics were given by the EC delegation representative, the CO₂ managers, associated companies and the Chinese and European project partners.
 In addition to the final conference various dissemination efforts by the project partners and especially by the CO₂ managers took place
 A wide array of training efforts in regard to CO₂ management and CDM was undertaken. During the past twelve months the CO₂ managers were active as organisers of seminars and workshops, acted as speakers and lecturers. More than 3000 participants attended such seminars and workshops. Target groups range from SMEs, company staff, CDM centres, local authorities to postgraduate students of universities and project owners. Activities took place in Beijing, Tianjin, Hangzhou, Nanjing, Sichuan, Guangdong, Guangxi, Gouzhi, Yunnan, Hebei, Liaoning, and Shandong
 Also the idea and concepts of CO₂ management were presented at various conferences. The Chinese experts attended a number of conferences, gave there presentations or were even involved in the organisation of such events in prominent role: Asian Carbon Expo, several national conferences and bilateral conferences, e.g. with Germany, France and Japan and even abroad events in UK, Italy and Japan. The estimated number of people approached this way is more than 3000.
- **Activity 12 - Implementation phase "Cross-section programme management" - Technical and financial reporting**
 All project partners have contributed to the financial and technical reporting as required by the project management.

III. Partnership

Overall the partnership has been successful and fruitful for all the partners. After a quick start the project has been running smoothly among the partners. After the implementation of a training bloc a certain slow down of activities was observed. However this was quickly overcome by the next training event coming up. Direct interaction between all project partners was swift and without any misunderstandings.

Main roles

Centric Austria International

- Centric's role in the project was to manage and control the project implementation according to the contracted work programme including the management of involved personnel based on job titles. And to prepare training materials.
- Centric also designed and maintained the English version of project web site.
- Chairing meetings and training activities and provide experienced trainers and experts taking part in missions to China.
- Evaluation and reporting according to the requirements of the Asia Pro Eco programme.

CERS - China Energy Research Society

- All activities in regard to China were managed and controlled by CERS according to the contracted work programme, including the management of involved personnel based on job titles.
- All training, evaluation, assessment and reporting activities were aided and supported by CERS throughout the project.
- Organise and invite the participants; organise the seminar premise
These two very time consuming tasks have been carried out exceptionally well by CERS.
- Accompany and co-organise the study tour to Europe

CTC - Clean Technology Centre

- CTC provided expertise for the project and prepared and managed the project according to the given job titles.
- CTC participated in the training activities and provide experienced trainers and experts taking part in missions to China.

IV. Links with other projects/programmes (if any)

No formal links were established to other projects during the project life time. However:

- Some of the CO₂ managers are involved in bigger bilateral programmes, e.g. with France, Canada, Japan. Also CO₂ management projects were linked with other systems like Cleaner Production Audits, Energy Audits, etc.
- The CAI project manager was invited by the Asia Pro Eco project 'CAPACITY BUILDING ON BUSINESS OPPORTUNITIES FOR CDM PROJECTS IN CHINA' and provided training on the Austrian CDM programme during to the participants of this training programme from November 30 to December 1, 2006.

V. Assessment of the project

Impact

- The focus of the future CO₂ management trainers has shifted away from an only CDM focussed approach towards a more wholesome way of CO₂ management. However the process has been slower than originally anticipated. The connection between CO₂ management and energy efficiency was clearly being established.
- The reaction from Chinese primary and secondary sector industry has been slow throughout the project, to establish closer and more intense links with industrial players would have been an asset. However given the reaction of European companies from these sectors towards the first ideas of CO₂ management, this reaction was not surprising.
- The tertiary service sector has been much quicker to pick up on the ideas of CO₂ management; a further boost is being expected after the next round of UNFCCC negotiations taking place in December 2007. The participants from the project and everyone now getting training by them to become CO₂ managers are in excellent position to help China measure its CO₂ emissions on an industrial level and to contribute to the reduction of CO₂ emissions.
- Understanding of market based instruments such as Emission Trading and CDM has greatly improved in the course. All participants have been at the end familiar with the basic ideas of using market based instruments for emission control. And given the entrepreneurial spirit from some participants, the project partners are very optimistic, that they will make best use of it.
- All participants are able to communicate to a wider group the basics of CO₂ management and the application of basic tools.
- All CO₂ managers have been introduced to CO₂ management methods and technologies, with a clear positive feedback from both themselves and the experts involved in the training. The new ideas and especially the increased confidence have already had a positive impact on their daily work.
- All partners and the involved experts have had the chance on an institutional and personal level to increase their experience and know-how in CO₂ management in the Chinese context.
- First contacts between Chinese and European experts have been established, which will most likely lead to a long running partnership.

Results

- Overall the results have been achieved, especially in establishing guidelines for CO₂ management there have been some shortcomings, since any approach to formally establish such guidelines has received a limited welcome from the various stakeholders on the Chinese side.
- In various other areas the results have been significantly over fulfilled, like the training and dissemination efforts taken up by the CO₂ managers and the level to which concrete projects have reached maturity and are already saving CO₂ emissions as well as in terms of establishing further contacts between players from China and the EU:

Assumptions

- All assumptions the project partners had in the application revealed true. It is assumed that the sorrow preparation of the application form and the very intense and direct involvement of the Chinese partners in preparing the application form plus the direct

and intense contact with Chinese government institutions helped to have a clear picture of the situation and anticipate difficulties coming up.

Lessons learned

- Strong links to government institutions in a critical topic such as CO₂ management helps very much to guarantee a smooth project implementation and wide dissemination of results.
- Intense personal interaction with Chinese participants is a huge asset; this was largely stimulated to the comparatively small group of participants and the frequent interaction between them and the European experts.
- The strong and intense involvements with the Chinese participants lead to a wide dissemination of the project results. Hence the concept of rather training a smaller group of and picked 30 participants, lead in the end to a wider dissemination than training several hundred participants with a lesser dissemination.
- Keeping the pressure and flow in the project high is essential, once the level of interaction, frequency of communication and level of attention drops it proved very hard to create it again.
- Social events are an integral part to form strong inner-group dynamics and networking.
- The selection of the right training location and training venue is crucial.
- An interactive and participative training approach works as well as in Europe given that the group has a chance to meet frequently.
- For some participants frequent usage of internet communication tools can be a problem and the level of internet literacy varies widely.
- Networking skills e.g. for the visit to Carbon Expo in Germany should have been trained into more detail, especially the level of feeling comfortable to communicate with strangers (trade fair visitors) in English could have been higher.

VI. Impact and Sustainability

Sustainability factors

To achieve sustainability the possibilities for replication and extension of project outcomes are substantial.

- **The ToT concept**
The training of trainer's concept is likely to be successful, since all the CO₂ managers have the potential to conduct trainings with the outreach of their organisations as base. How financing for such training activities can be secured is currently under discussion among the project partners.
- **CO₂ management projects**
Some of the project ideas developed during the CO₂ management training have already become concrete projects.
- **CO₂ managers' alumni network**
Most prominently among the actions to sustain the momentum of CO₂ management in China the CO₂ managers' alumni network was formed during the fifth and final seminar bloc.

CO₂ managers' alumni network

To sustain and institutionalise the activities, the Chinese CO₂ managers have concluded on being organised in the CO₂ alumni network, which was established formally during the final workshop. A core team of three persons, appointed by MOST, will structure the network in detail according to basic definitions and visions concluded so far.

- **Definition**
We are an international group of experts with scientific, public, industrial, academic background in the field of CO₂ management in China. We offer a networking platform for our members to share expertise, know-how and capacity to jointly implement training programmes, capacity building and consulting services.
- **Vision**
We want to develop into a legal structure, which becomes the first address for industrial and governmental institutions and international bodies for consulting and training services in CO₂ management in China, wider Asia.
- **Brainstorming**
 - Network offers training in several regions, travel money for meetings
 - Website - web staff, translation staff
 - EU experts provide input and online consulting
 - CO₂ management database
 - Development of training books
 - Establish association, articles of association
 - Target LDC areas of China
 - Energy efficiency and conservation training
 - Annual meeting, budget to support annual meetings
 - Training of network members by training (self-training)
 - Pilot project CO₂ management in selected enterprises

- Survey of CO₂ emissions nationwide (provide environmental indicators)
- Organise joint trainings (university, professional bodies, industry)
- Combine knowledge and resources
- Invite other network members to own activities
- Maintain network
- Draft business plan for network
- Update CO₂ manager website to network website
- **Potential “net workers”**
 - Start: CO₂ managers (from various institutions), Chinese and EU experts (from CERS, MoST, CAI, CTC)
 - Future: CO₂ management experts, Public bodies, Private enterprises

VII. Recommendations

Methodology and effectiveness

- **Result-Oriented Project Management**

This approach was followed throughout the project. In some circumstances as mentioned earlier it was deemed necessary to change the order and content of some of the activities achieving the desired results.
- **Learning by doing**

The learning by doing approach is an essential part of the training efforts. The approach has been very successful in the training blocs so far implemented using group work in small and large groups to conduct a very active and participative training. Unfortunately this activity did not transfer completely to homework assignments. The participants getting back into their daily work efforts did mostly not make the time to conduct the assigned homework into depth.
- **Seminar and training structure**

The seminar and training structure consisted of lectures, interactive group work, discussions, and role-play as well as Q&A and feedback sessions. These methods were taken up well by the participants. As a result of the feedback session in the first bloc the interactive part for further increased in the second training bloc
- **Seminar and training materials**

A rich array of training materials was produced using various media from PowerPoint slides and textbooks to CD-ROMs, meta-plan and flip charts.
- **CO₂ software tools**

So far only basic software tools, mostly specifically designed excel files were applied. However it was offered to the participants to use specific CO₂ management software to conduct their assessments.
- **Mission to Europe**

Many contacts were formed between the Chinese participants and a range of experts from Europe, well beyond what the network of project partners could have provided without the mission to Europe and the visit to CarbonExpo.

o **Communication**

The partners had mostly the same opinion regarding the further implementation of the project and if disagreement existed it could be solved jointly. Therefore inefficiency, insecurity, resistances, or escalation within the project were not an issue. Contacts to the outside, especially Chinese Ministry of Science and Technology, as well as the Irish and Austrian government agencies and institutions were excellent.

o **Location and venue**

Overall the experience has shown that the selection of the training location and venue are crucial for the attendance from the participants and the attention given during the training. For future training efforts in China, attractive but not to remote locations should be choice for trainings. A major hub like Beijing guarantees for a high attendance, but not such a high attention, while minor centres like Yinchuan give low attendance but generate great focus and attention during the training course. The best choice for this project was the training held in Hangzhou which generated high attendance and high attention at the same time.

ANNEXES

All relevant supporting documentation can be viewed or downloaded from the project web site under www.centric.at/co2-china .

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