



Energy and Transport Newsletter

VOLUME 6, ISSUE 1

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CSD-15 PREVIEW

- **26 February to 2 March 2007: Inter-governmental Preparatory Meeting in New York**
- **30 April to 11 May 2007 at UN Headquarters in New York: CSD Policy Session**

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CSD-14 Review Session

The Commission on Sustainable Development (CSD) concluded its 14th Session with a review of progress in the thematic cluster of energy for sustainable development; industrial development, air pollution/atmosphere; and climate change.

In his opening statement, Secretary-General Kofi Annan called on the Commission to act with greater imagination in exploring ways to bring the poor into the modern energy and industrial economy, while moving energy use and economic activity onto a cleaner path and safe-

guarding the planet and its climate for future generations.

In the High-level Segment, which was opened by the Chairman of the Commission, Mr. Aleksi Aleksishvili, Minister of Finance

on adaptation to and mitigation of climate change for achieving sustainable development goals and the Millennium Development Goals (MDGs). The harmful impact of air pollution on human

health was also highlighted, particularly with respect to poor women and children in developing

countries

exposed to indoor air pollution from traditional cooking methods.

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Secretary-General Kofi Annan addresses CSD-14.

of Georgia, many ministers stressed the urgency of concrete actions to increase access to energy by the poor in developing countries, particularly in Africa. There was an emphasis by many

Energy Challenges and Options for Asia

Developing countries in East Asia, Southeast Asia and the Indian subcontinent have in recent decades achieved high economic growth rates, lifting hundreds of millions of people out of poverty. As elsewhere, securing adequate energy at affordable prices while minimizing the impact on the natural environment continues to pose a tremendous challenge for sustainable development in Asia.

CHALLENGES

Sustained economic growth of the emerging economies of Asia led to a 63 per cent increase in commercial energy consumption from 1985 to 2004. The region's share of global energy consumption has consequently grown from 38 per cent in 1985 to 44 per cent in 2004. China and India, though still largely relying on domestic energy resources to meet their energy demand, have

become increasingly important players in the global energy market.

In 1990 these two countries consumed less than five per cent of the world oil supply; by 2004 their share had doubled to 10 per cent.

Two factors contributed to this rapid growth in energy consumption.

(continued on page 4)

Farewell to Walter Shearer



Walter Shearer

After 13 years, the Energy and Transport Branch bids farewell to Walter Shearer, who joined the Branch from the United Nations University via the United Nations Centre for Science and Technology for Development. Fully conversant with all relevant issues in the field of energy for sustainable development, Walter also had the capacity to surprise with his knowledge of somewhat more unusual fields, such as obscure languages and dialects. Perhaps not that surprising, however, given that in 2002 he co-authored a book on the non-Han languages and dialects of China.

As a Senior Economic Affairs

Officer, Deputy to the Chief of the Branch, Walter was immersed in all the activities of the Branch and Division in the normative, analytical and operational fields. Although we all appreciated his scientific knowledge, not all of us would have known that Walter holds a doctorate in nuclear physics. Most recently he shepherded to its conclusion the report of the Sigma Xi Expert Group on Climate Change and Sustainable Development, which is due to submit its report to DESA in early 2007 (see page 10).

As an editor, his felt-tipped pen swiftly corrected poor grammar and marshalled jum-

bled ideas into order. As a writer, quite a few parliamentary documents bore his imprint, having been turned out quickly and quietly. As a colleague and friend, Walter was fond of leavening the office routine with a joke or two.

Over the years, the Branch and the United Nations benefited a great deal from Walter as a colleague and from his curiosity and breadth of knowledge, which went well beyond that required of our work. We know therefore that he has many interests and passions to pursue. We wish him well and look forward to welcoming him back as a regular visitor.



Viktor Badaker

ETB welcomes new member

Viktor Badaker joined the ETB in June 2006. He has extensive advisory experience in the field of clean energy technologies. He has formulated and implemented environmental programmes and projects. Prior to joining the United Nations, he was assistant research professor at the University of Kentucky, working on, among

other things, carbon sequestration through the reforestation of surface-mined land. He has also worked with the United Nations Mission in Kosovo (UNMIK), as a country director (Kazakhstan) for the "Consortium of the American Business in the Newly Independent States", a project of the US Department of Com-

merce, and as a Technical Advisor for the Ministry of Energy and as a Researcher for the Government of Kazakhstan.

Viktor holds the equivalent of a Master Degree from the St. Petersburg Mining University. He also holds a Ph.D. from the Kazakh Research Institute of Power Engineering.

@ Find the Energy Indicators online here:

http://www-pub.iaea.org/MTCD/publications/PDF/Pub1222_web.pdf

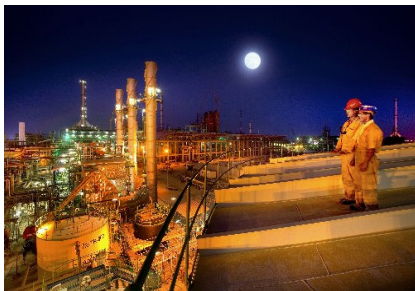
Energy Indicators for Sustainable Development: A New Interagency Publication

The publication is the product of an international initiative to define a set of Energy Indicators for Sustainable Development (EISD) and corresponding methodologies and guide-

lines. The successful completion of this work is the result of an intensive effort led by the International Atomic Energy Agency (IAEA) in cooperation with UNDESA, the

International Energy Agency (IEA), Eurostat and the European Environment Agency (EEA).

Growing Role for Natural Gas in Sustainable Development



Oryx Gas-to-Liquids Plant in Qatar

The Government of the State of Qatar and the Energy and Transport Branch, DESA, co-organized the *International Symposium on Natural Gas and Sustainable Development*, which was held in Doha, Qatar from 6-8 February 2006. The Symposium provided an international forum for the high-level exchange of national and expert experiences on the development and use of natural gas and its contribution to sustainable development.

Natural gas is a major and rapidly growing element in the world energy mix, and it is projected to play an increasing role in future global energy markets. The presentations at the symposium emphasized the multiple benefits of increasing the use of natural gas to provide energy for sustainable development. Participants also underlined that natural gas can be a strong vehicle for socio-economic development in both producing and in consuming countries, particularly when revenues from natural gas development help to promote sustainable development through benefit-sharing, enhanced social inclusion, poverty eradication and the financing of public expenditure in human and infrastructure development. The environmental qualities of natural gas were emphasized by the participants in particular related to its

lower greenhouse gas emissions and to the development of the power sector where high efficiency is obtained in gas-fired combined-cycle technology. Many speakers emphasized the need for continued efforts to reduce flaring and venting of gas associated with the extraction of crude oil.

“The Dialogue among energy producers and consumers needs to expand”

The Symposium also heard calls for continued and expanded dialogue among the energy producers and consumers. Participants also stressed the need for continued research and development in cleaner fossil fuel systems as well

as for tangible action to provide financial and technological assistance to developing countries in natural gas development.

Summary of conclusions and recommendations (E/CN.17/2008/11) and presentations accessible at: www.un.org/esa/sustdev/sdissues/energy/op/natural_gas_symposium.htm.

Energy Security and its Implications for the Future

Energy security and its implications for the future was the topic of presentations made by energy experts to the Second Committee of the General Assembly on 1 November 2006. Mr. Daniel Yergin, Chairman, Cambridge Energy Research Associates, focused on the changes that the age of globalization has imposed on the security of global energy supply and demand. He noted that net energy importing countries see energy security with a growing “supply anxiety” and a view to supply disruptions caused by political instability and natural disasters, while net exporting countries are mainly concerned with security of demand. He added that required future investments in energy infrastructure represent a great

“Required future investments in energy infrastructure represent a great challenge to energy security”

challenge to energy security, in particular for rapidly growing developing countries in Asia, some of whom require very large additions to their electricity generation capacity. Concluding his presentation, he called for the better integration of India and China into the current energy system and also underlined the challenge posed by the large investments required for energy infrastructure worldwide in the coming decades.

Mr. Masanori Kobayashi, Senior Policy Researcher at the Institute for Global Environmental Strategies in Japan, addressed the Asian perspective on climate change mitigation and energy security. Given that fossil fuels, particularly coal, are projected

to dominate energy supply in Asia, Mr. Kobayashi stressed the need to prioritize technical cooperation for clean or low carbon emitting coal production. He also highlighted the importance of low carbon technology investment and transfer for the continuation of the Clean Development Mechanism (CDM) beyond 2012. Mr. Kuinang Mak, Chief of the Energy and Transport Branch, DESA, emphasized the social and economic benefits of bringing modern energy services to the estimated 2.4 billion people who lack such access. He emphasized the different perspectives on what he coined “energy insecurity” rather than energy security and stressed the need for stability of markets for net importing developing countries. He also highlighted the growing importance of South-South cooperation for energy security.

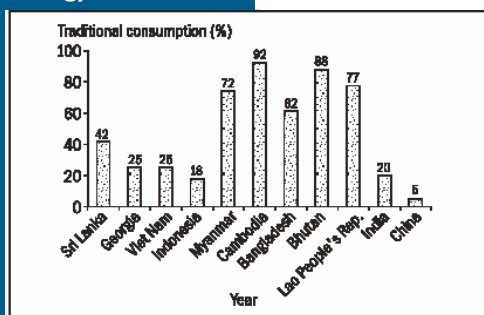
Energy Challenges and Options for Asia (Cont.)

Table 1: Per Capita Energy Consumption 2003

Region/ Country	Oil Equivalent (Barrel)	Percent of World Average
Central Asia		
Azerbaijan	13.0	114
Russian Federation	35.0	304
Turkmenistan	26.7	232
Uzbekistan	14.2	124
West Asia		
Qatar	140.2	1,219
Iran	15.1	131
Saudi Arabia	40.5	352
United Arab Emirates	125.0	1,087
East Asia		
China	5.9	52
Japan	30.3	263
Indonesia	3.9	32
Thailand	7.0	75
Republic of Korea	31.2	271
South Asia		
Bangladesh	0.7	6
India	2.3	20
Nepal	0.4	4
Pakistan	2.1	19
Sri Lanka	1.8	15

Source: U.S. Energy Information Administration

Table 2: Traditional Biomass Share in Energy Mix



Source: BP Statistics 2005

First, many Asian emerging economies underwent economic transformation starting with the development of export-oriented and generally energy intensive manufacturing industries. Second, economic progress augments the purchasing power of society and creates a new middle class, with increases in purchases of consumer goods, such as televisions.

Asia is expected to continue its record of above average economic growth in the coming decades, with energy demand also increasing faster than the world average. By 2020, both consumption and importation of oil and natural gas of Asia is expected to exceed those of North America. However, as indicated in Table 1, per capita energy use in Asia as a whole remains low.

Of 2.4 billion people without modern energy services in the world, over one billion live in Asia, where traditional biomass

meets their basic energy needs (see Table 2). Providing these people with access to modern energy services is an essential part of addressing the Asian energy challenge for sustainable development.

The energy mix in Asia is dominated by fossil fuels. For example, in East and South Asia, coal is the most important source of primary energy, accounting for respectively 66 and 54 per cent of total primary energy supply in China and India. Massive use of fossil fuels, in particular coal, causes serious environmental consequences, from local acid deposition and particulates, long-distance transmission of pollutants, and the emission of greenhouse gases that contribute to climate change.

In sum, the energy challenge faced by Asia's emerging economies has three dimensions: securing an adequate supply of energy to continue fuelling economic growth, improving energy access for hundreds of millions of people living in rural communities and urban slums, and striking a balance between energy growth and environmental protection.

OPTIONS

Improving energy efficiency

Energy efficiency is the most cost-effective way of expanding the supply of energy and reducing impact of environment since many energy efficiency technologies are mature and readily available. A recent report published by the IEA points out that there is a potential of 17-33 per cent in improvement of energy efficiency in

industry, transportation and construction worldwide. The potential for developing countries is much larger.

Many of the emerging Asian economies have long realized the importance of energy efficiency and have implemented a number of effective policies. The Government of India enacted the Energy Conservation Act in 2001 and established the Bureau of Energy

Efficiency to be specifically responsible for its implementation. China has succeeded, through government-industry partnerships, enhancement of public awareness and other administrative and economic instruments, in reducing the energy intensity of its economy at an average rate of 5.5 per cent per annum since the 1980s. It aims to achieve a 20 per cent

energy-intensity reduction within five years. In this regard, strengthening regional cooperation could considerably accelerate the process in Asia.

Enhancement of energy access for the poor

Bringing modern energy services to the poor is critical to achieving the Millennium Development Goals (MDG). Despite some successes, much remains to be done. Three impediments constitute bottlenecks: a) the mobilization of financing necessary for the expansion of energy services; b) the selection of appropriate technologies suitable to local natural and economic conditions and social organization; and c) the identification and deployment

(Continued on page 8)

COP-12 and MOP-2 in Nairobi



COP 12 President Kivutha Kibwana and FCCC Executive Secretary Yvo de Boer

The twelfth Conference of the Parties to the United Nations Framework Convention on Climate Change (COP-12) and the second Meeting of the Parties to the Kyoto Protocol (COP/MOP-2) concluded in Nairobi on 17 November 2006. The meeting did not see the launch of any new negotiations; instead, parties continued discussions under the two-track process established at COP-12 in Montreal in 2006.

tion, particularly the integration of climate change adaptation into development planning. The parties adopted the “Nairobi Work Programme on Impacts, Vulnerability and Adaptation”, setting the stage for activities to help enhance decision-making on adaptation action and improved assessment of vulnerability and adaptation to climate change.

Another important outcome was the agree-

ment on the management of the Adaptation Fund under the Kyoto Protocol. The Adaptation Fund draws on proceeds generated by the Clean Development Mechanism (CDM) and is designed to support concrete adaptation activities in developing countries. It is expected that programme priorities and eligibility criteria for the activities to be supported by the Adaptation Fund will be determined at COP-13.

Parties welcomed the “Nairobi Framework” announced by United Nations Secretary-General Kofi Annan, under which six agencies and programmes of the United Nations systems have pledged to provide additional support to developing countries, especially in Africa, to successfully develop CDM projects.

In other decisions, the parties adopted an amendment to the Kyoto Protocol permitting Belarus to join the group of industrialized countries with emission reduction or limitation commitments. The parties also agreed to review the Kyoto Protocol by 2008. The conference also welcomed the offer of Indonesia to host the COP-13.

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Workshop on Climate Change and Sustainable Development

The DESA and The Energy and Resources Institute (TERI), in cooperation with the Government of India, organized *Climate Change and Sustainable Development: An International Workshop to Strengthen Research and Understanding* from 7-8 April, in New Delhi, India.

Discussions at the Workshop illustrated that the relationship between climate change and sustainable development has emerged as a key theme in research and policy.

The integration of climate change mitigation and adaptation with sustainable development requires a thorough understanding of the physical and socio-economic consequences of climate change in a given region. This understanding will permit the identification of priority areas of adaptation and development, such as water and food security.

Several presenters underscored the significance of adding an adaptation dimension to ongoing development activities. For example, programs such as watershed management, drought management and flood protection can serve adaptation goals. Participants noted that the energy sector is of key importance with regard to climate change mitigation and sustainable development linkages. Presenters gave examples from India and China showing that for developing countries, the co-benefits of mitigation strategies, such as energy efficiency and reduction of air pollution, are important drivers for addressing GHG emissions.

In a concluding panel discussion participants highlighted a number of actionable points, including:

- Making climate change relevant to the

broader development community, particularly with respect to disaster preparedness and prevention;

- The need for further research on integrating climate change concerns into development strategies;
- Adopting a learning-by-doing approach to adaptation; and
- Enhanced public awareness both at the policy-maker and community levels in developed and developing countries.

The discussions at the workshop were structured to serve as an input to the 14th Session of the Commission on Sustainable Development (CSD-14), in May 2006. A wide range of stakeholders comprising experts from the scientific and research community, industry and policy makers from 25 countries participated in the Workshop.

CSD-14 Review Session (Cont.)

Photo courtesy of Leila Mead/HISD



Secretary-General Kofi Annan and Chairman of the Commission, Mr. Aleks I Aleksishvili, Minister of Finance of Georgia

@ All documentation on CSD-14 is accessible online under: <http://www.un.org/esa/sustdev/csd/csd14/review.htm>

Ministers also recognised the importance of energy efficiency and renewable energy in reducing air pollution and greenhouse gas emissions. The need for energy diversification was emphasized by several ministers. However, since energy from fossil fuels will provide the dominant share of energy supply in most countries for the foreseeable future, the need for cleaner fossil fuel technologies was also underlined. The High-level Segment included a ministerial dialogue with business leaders, with a focus on the role of the private sector in implementing sustainable development.

Ministers identified a number of challenges to be addressed with a view to strengthening implementation of Agenda 21, the Johannesburg Plan of Implementation and the Mauritius Strategy. When the Commission convenes in April/May 2007, it is expected to adopt policy decisions addressing these challenges, including with respect to:

- Mobilizing financial resources for implementation, enhancing the role of partnerships, building capacities in developing countries and increasing technology transfer;
- Enhancing access to reliable and affordable energy services to meet basic human needs and

facilitate the achievement of the MDGs;

- Promoting energy efficiency and increasing the share of renewable energy;
- Promoting an enabling environment at the international and national levels for industrial development;
- Reducing air pollution, with particular attention to indoor air pollution from biomass and its health impacts on women and children; and
- Promoting international cooperation on climate change, including both mitigation and adaptation.

Power Sector Reform in Central Asia

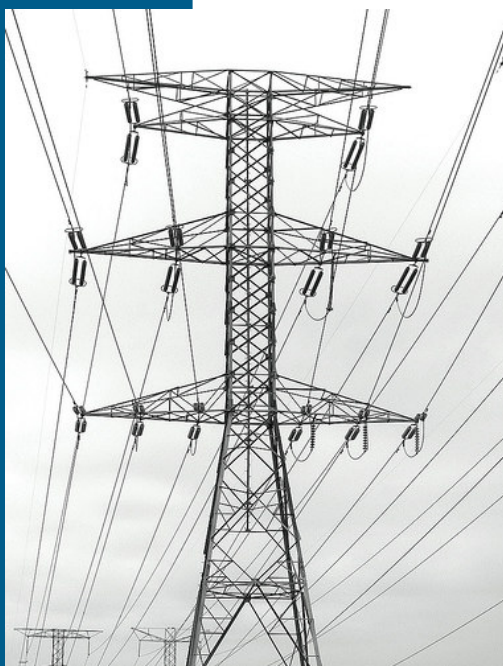


Photo courtesy of Tina Mee

A workshop on energy for sustainable development in Central Asia was co-organized by UN ESCAP and UN ECE and was held in Almaty, Kazakhstan, 15-17 November 2006. More than 30 officials and experts from the governments of Afghanistan, Kazakhstan, Kyrgyzstan, Mongolia, Tajikistan, and Uzbekistan, the private sector, the European Commission, the Eurasian Economic Community (EurAsEc), the Eurasian Development Bank, and UNDP participated. As part of the workshop DESA ETB organized a special session on the "Privatisation of the Power Sector: Issues, Challenges, and Opportunities". The session

considered policies and measures relevant for power sector reform. The session discussed the role of foreign direct investment, privatization and the development of markets for economies in transition. It was highlighted during the session that cooperation in cross-border energy trade has many advantages also for the development of corresponding energy infrastructure.

The workshop welcomed a proposal made by the government of Kazakhstan to create a regional center for promoting sustainable energy including energy efficiency, renewable energy and energy security.

The Energy Service Business in Egypt

INTRODUCTION

The energy consumption of most Egyptian industries is high compared with international norms. Energy intensity is four times that of the OECD average countries and double that of some other developing countries, as shown in Fig. 1. On the other hand, electrical energy consumption per capita is around one fifth of that in the OECD countries. This means that the potential increase in energy demand will be excessive with the growth in the national product, unless corrective action is taken.

The Energy Efficiency Market in Egypt: Potential and Barriers

The energy efficiency market size in Egypt was estimated at \$1.1 billion. Figure 2 shows the breakdown of the market size by technology. Cogeneration, process control and power factor correction have the highest opportunities. However, when the cost per unit is considered, power factor correction and lighting will have the highest number of implementation opportunities. The industrial sector accounts for 95% of the total market opportunities, while the commercial sector accounts for only 5%.

Regardless of the market high potentials, the market suffers from many negative forces. Although many efforts have been made to improve awareness, further efforts are still needed especially with the decision makers. Lack of operating and calibrated energy measuring instruments and absence of forms and records for energy consumption add to the unawareness problem on the plant level. Absence of national codes and standards for energy consumption also limits the efficiencies of industrial processes, limits the market. There is also a lack of incentives or rebate policies for energy conservation projects, except the bonus offered for power factor correction. The attractiveness of energy conservation projects is also under-

mined by a range of economic and financial barriers, including that financial institutions lack knowledge and experience regarding the risks of financing energy conservation projects, high interest rates, and currency risk.

Role of EIGR Project in Developing the Energy Efficiency Business

The Energy Efficiency Improvement and Greenhouse Gas Reduction (EIGR) Project was been designed with the aforementioned market potential and barriers in mind. The project is executed and partially financed by the Egyptian Electricity Holding Company (EEHC), GEF/UNDP and technically sup-

ported by DESA. The technical support by DESA has encompassed all phases of project development and implementation from the formulation phase to the current support in its execution phase. One of the important components of the project is the energy efficiency business development component. Through this component, the project has helped in establishing and promoting eight Energy Service Companies (ESCOs). These companies have different backgrounds including energy efficiency equipment suppliers, electro-mechanical contractors, utility and consultants. EIGR has offered both technical and business training for these ESCOs. The project supported and promoted these ESCOs through adopting a program for partially financed 200 energy audits. The projects implemented are mainly power factor correction and high efficiency lighting. However, the ongoing implementations include two cogeneration projects, one demand-side management, mainly peak shaving project, and one project for energy conservation in electric drives.

EIGR has developed several techniques to increase the number of ESCOs and provide them with capacity building. These mechanisms include targeting specific companies to help them to establish their energy efficiency department as well as encouraging public-private partnerships. Regarding public-private partnerships, EIGR has succeeded in establishing such partnership between one of the private ESCOs and a utility company.

This formula makes use of the credibility of the utility company and the dynamism of the private sector.

EIGR has provided the ESCOs and the customers with additional support including measurement and verification and technology verification services. EIGR has also encouraged the ESCOs to provide contracted services such as furnace and boiler tune up. To encourage projects, EIGR has established

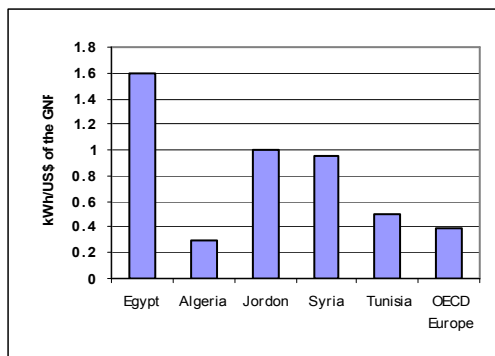
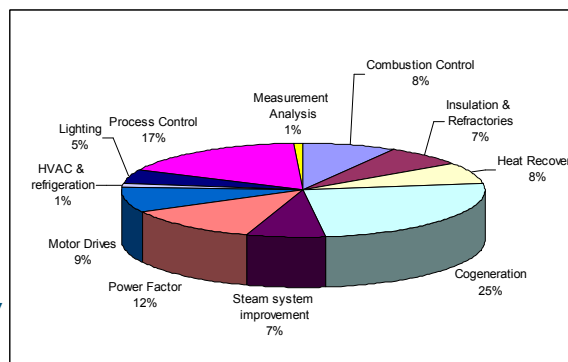


Figure 1: Intensity of electrical energy in Egypt compared with other countries

ported by DESA. The technical support by DESA has encompassed all phases of project development and implementation from the formulation phase to the current support in its execution phase.

One of the important components of the

Figure 2: Break-down of energy efficiency market in Egypt by technology



project is the energy efficiency business development component. Through this component, the project has helped in establishing and promoting eight Energy Service Compa-

ny verification services. EIGR has also encouraged the ESCOs to provide contracted services such as furnace and boiler tune up. To encourage projects, EIGR has established

The Energy Service Business in Egypt (Cont.)



Photo courtesy of Tina Mete

a loan guarantee program, which provides performance contracting guarantees for the ESCOs. On the other hand, EIGR also provided effort to expand the market, for instance through a comprehensive study for customs reduction on

selected energy conservation equipment. Moreover, EIGR has developed energy codes

for buildings, covering both the commercial and residential buildings, which are currently under review.

Conclusions

High demand as well as potential for energy efficiency service exists in the Egyptian market. The indicators resulting from EIGR efforts for developing the ESCO business are promising. Nonetheless, it is important to mention that

regardless of these efforts, the ESCO business is facing challenges. Most of the ESCOs are under-capitalized and lack trained personnel. As a result, continuous efforts on both the institutional and the business levels are needed. In the long run, the market is likely to become more promising as the national economic reform measures are implemented and the economy achieves higher growth.

“Coal plays an important role in providing a reliable energy supply for Asia because of the abundant endowment of this resource and the mature status of the technology.

Energy Challenges and Options for Asia (Cont.)

of sustainable models for operating installed energy systems.

Since energy access projects may not be economically viable, particularly in the early stages, government funding and policy support are necessary to forge an effective public-private partnership that is service-oriented as opposed to profit-making. Contrary to the perception of many, grid extension is the least cost option for reaching the majority of the population in many countries. However, in areas with dispersed populations, technically mature and easily operated technologies and techniques, such as cleaner and fuel-efficient stoves, mini-hydro and wind-diesel hybrid systems, should be given priority. For example, in China some 800 counties of a total of 2,400 have constructed mini-hydro power stations which provide electricity to over 252 million people. Where possible, a key policy consideration is that users should be able to generate income through the use of energy, which allows

them to improve livelihoods and also pay for the energy services.

Development and application of clean coal technologies

As mentioned before, coal plays an important role in providing a reliable energy supply for Asia because of the abundant endowment of this resource and the mature status of the technology.

To reduce the environmental impacts associated with coal use, the development and application of clean coal technologies (CCT) deserves immediate attention and action by all coal-using countries with support from the international community. There is a wide array of clean coal technologies available from “low-tech” and cost-effective coal washing and benefaction to advanced combustion technologies such as Circulated Fluidized Bed Combustion (CFBC) and Integrated Gasification Combined Cycle (IGCC). Recently, R&D and demonstration of CO₂ capture and storage have

gained momentum due to increasing concern about climate change. Emerging economies that rely heavily on coal could strengthen their policy frameworks to support R&D on and large-scale deployment of CCT, with partnerships to address technology cooperation and the transfer of relevant environmentally sound energy technologies from developed countries. In this regard, existing regional cooperation mechanisms, including the Asia Pacific Economic Cooperation (APEC) and the Asia-Pacific Partnership for Clean Development and Climate (AP6), are expected to make a significant contribution.

The energy future of emerging economies in Asia is not set in stone. The adoption of appropriate policy changes and options, with support from the international community, could play a key role in ensuring energy security, expanding access to modern energy services and minimizing environmental consequences.



Yantai IGCC Project, China

The Hydrogen Economy for Sustainable Development



H.E. Ms. Valgerdur Sverrisdottir, Minister of Foreign Affairs of Iceland, Mr. Kui-nang Mak, Chief, Energy and Transport Branch, UNDESA and Mr. David Garman, Under Secretary in the U.S. Department of Energy at the opening of the seminar.

The International Seminar on the Hydrogen Economy for Sustainable Development was co-organized by the Government of Iceland and the United Nations Department

of Economic and Social Affairs, in Reykjavik, Iceland from 28-29 September 2006. The Seminar was convened to provide an opportunity for energy policy makers and representatives

from governments, industry and academia from both developed and developing countries to exchange information on the recent progress in the development and application of hydrogen energy technologies. Among other things, participants acquainted themselves with the sustainable development and use of geothermal energy in Iceland. Some 80 participants from 20 countries took part in the Seminar. H.E. Ms. Valgerður Sverrisdóttir, Minister of Foreign Affairs of Iceland opened the seminar. Mr. David Garman, Under Secretary in the U.S. Department of Energy, presented a keynote address.

The proceedings of the seminar are available at: www.un.org/esa/sustdev/ssissues/energy/op/hydrogen_seminar/hydrogen_seminar.htm.

Training Seminar on Carbon Capture and Storage

Advanced Energy Technologies and Sustainable Development was the theme of a training seminar on Carbon Capture and Storage (CCS), which saw presentations by distinguished energy experts to staff members of the Division for Sustainable Development (DSD) on 6 December 2006.

Professor Howard Herzog, of the Laboratory for Energy and Environment at MIT, focused on technology aspects of carbon capture with respect to different coal-fired power plants (Pulverized Coal and Integrated Gasification Combined Cycle plants) and cost uncertainties for related electricity production. He emphasized the importance of simultaneously pursuing several combustion options without anointing “technology winners” at this early stage of CO₂ capture technologies.

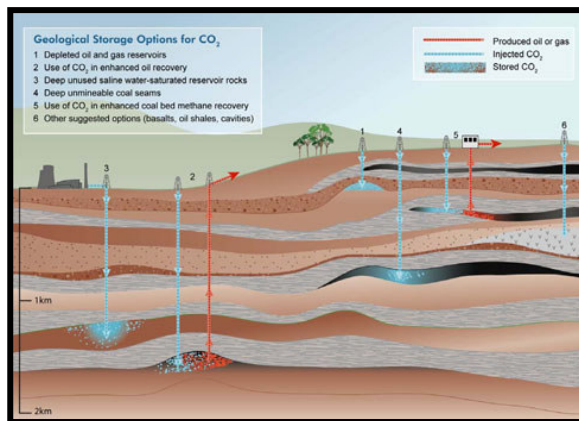
“Increased R&D in technologies needed to overcome challenges associated with carbon capture and storage.”

Concluding his presentation, he called for increased R&D in CCS technologies to overcome the challenges of reducing costs associated with capture and of minimizing uncertainties associated with storage at scale.

Professor Klaus Lackner of the Department of Earth and Environmental Engineering, Columbia University, addressed the long-term implications of carbon capture and storage for sustainable development. Given that global fossil energy resources will not run out in the foreseeable future, and that carbon-based fuels will remain a low-cost source, highly fungible source of energy, Dr. Lackner formulated the challenge posed by climate

change as holding the stock of CO₂ constant while energy demand and fossil carbon consumption continues to increase drastically. He highlighted three options that he considered have neces-

sary scale to satisfy the increasing demand of a future energy system: solar, nuclear, and fossil energy. For the latter to be sustainable in the long term, Dr. Lackner emphasized



Geological storage options for CO₂

Source: IPCC

the need to eventually achieve a Net Zero Carbon Economy with CO₂ capture and permanent and safe disposal.

Dr. Zara Khatib, Manager for Technology Marketing and Deployment, Shell, focused
(Continued on page 10)

Scientific Expert Group on Climate Change

Pictured are members of the Scientific Expert Group on Climate Change and Sustainable Development convened by Sigma Xi, for the United Nations Department of Economic and Social Affairs (DESA) with support from the United Nations Foundation, at its recent final meeting. The Group is expected to release its report to DESA in early 2007. Sigma Xi is an international, multidisciplinary research society whose programmes and activities promote the health of the scientific enterprise and honour scientific achievement.



The photograph was taken at the Statue of Albert Einstein in front of the US National Academy of Science.

Carbon Capture and Storage (Cont.)

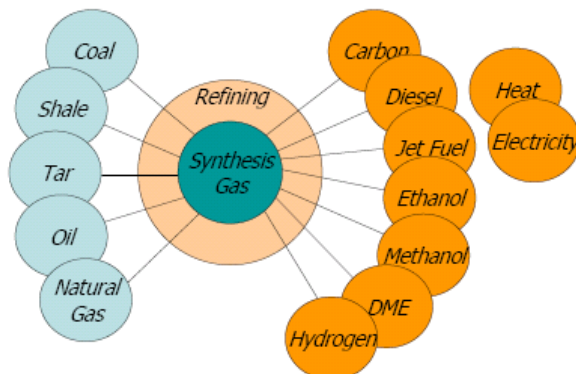
her presentation on Enhanced Oil Recovery (EOR) as an incentive for the deployment of CCS and other mitigation options. EOR consists of in-

jecting CO₂ into mature reserves to recover additional oil that could otherwise not be pumped out. Ms. Khatib presented the vision Shell has for

the Gulf region to establish a grid of CO₂ pipelines by 2020 crossing over borders and connecting the points of emissions with the oil and gas fields to enable EOR and CCS on a large scale.

Mr. Michael E. Moore, Managing Partner, Falcon ES/CO₂ Global, addressed the external drivers and market forces that turn CO₂ into a commodity. He highlighted the potential of EOR to add value to CCS projects once geological capture has been further defined as a GHG mitigation process under the UNFCCC or other regulatory schemes.

Prof. Klaus Lackner, Columbia University, presented this slide on the substitutability of fossil fuels at the DSD training seminar.



LENFEST CENTER FOR SUSTAINABLE ENERGY

The Partnership for Clean Fuels and Vehicles: Two Success Stories

The Partnership for Clean Fuels and Vehicles (PCFV) was established at the World Summit on Sustainable Development (WSSD) in 2002 with the aim of supporting developing countries in their efforts to improve fuel and vehicle technologies that reduce air pollution and more specifically to: "Help developing countries to develop action plans to complete the global elimination of leaded gasoline and start to phase down sulphur in diesel and gasoline fuels, concurrent with adopting cleaner vehicle requirements".

One of the first goals set by the Partnership was to phase-out lead from gasoline worldwide by 2008.

SUB-SAHARAN AFRICA

In 2002, when the Partnership for Clean Fuels and Vehicles was formed out of 49 countries, only Sudan was completely unleaded.

In December 2005 it was announced that, as of 1 January 2006 the Sub-Saharan Africa's vehicle fuels would all be lead-free. When South Africa, as the last country on the continent went unleaded on 1 January 2006, all of sub-Saharan Africa had switched.

To celebrate the event, ExxonMobil a partner in the PCFV, sponsored a luncheon organized at the United Nations Headquarters on May 8, 2006, during the 14th Session of the Commission on Sustainable Development. The luncheon was attended by more than 90 guests coming from 40 different countries. Interventions were made by the Nigerian Minister of the Environment, Ms. Helen Esuene; by the ExxonMobil Vice President for Health, Safety and Environment, Ms. Sherri Stuewer; by the UNEP Deputy Director of the Division of Policy Development and Law, Mr. Kilaparti Ramakrishna; by the USEPA Deputy Assistant Administrator, Mr. Jerry Clifford and by the Director of

the Energy and Transport Branch of the Division for Sustainable Development of the United Nations, Mr. Kui-nang Mak.

Rob de Jong, UNEP, head of the PCFV Clearing House in Nairobi, said in an interview: "The moment you stop using leaded petrol, the lead levels in blood start to drop. Six months from now, the blood lead levels in Africa should have dropped significantly."

For Sub-Saharan Africa the Partnership is now focusing its attention on the very high levels of sulphur in fuels.

CENTRAL AND EASTERN EUROPE AND TURKEY

In October 2005, the Partnership for Clean Fuels and Vehicles organized a Conference on Cleaner Fuels and Vehicles in Central and Eastern Europe and Turkey, held in Szentendre, Hungary. The Conference was organized in cooperation with UNEP, the Regional Environmental Centre (REC) for Central and Eastern Europe, the United States

and Bosnia and Herzegovina. In these countries, the PCFV Clearing-House is supporting national projects to encourage the adoption of effective state legislation to phase-out leaded gasoline, reduce sulphur levels, set targets for automotive emissions and air quality, and to disseminate cleaner vehicle technologies.

SULPHUR ISSUE

The Partnership for Clean Fuels and Vehicles continues to work towards a complete phase out of lead by 2008 and towards a reduction of sulphur in fuels, especially in diesel.

Unlike lead, which is added to fuels as an anti-knocking agent, sulphur is naturally occurring in petroleum. In Europe, the United States and Japan, sulphur levels are not allowed to exceed a maximum of 50 parts per million (ppm). In many developing countries, however, this can still be at levels up to a 5,000 ppm or higher.

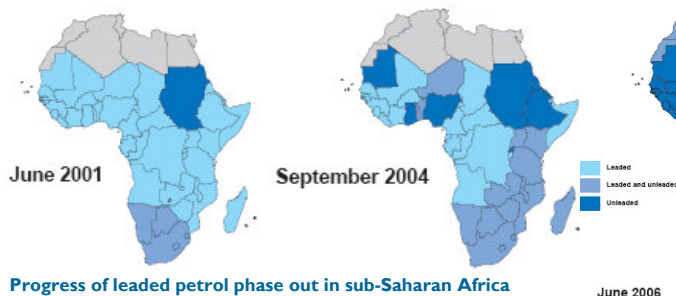
During its 4th Global Meeting in December 2005 in Nairobi, the Partnership agreed to work towards a long-term global target of 50 ppm for sulphur in diesel and petrol vehicle fuels.

NEXT STEPS

The Partnership is currently undertaking studies for a

project in Central Asia, where there appears to be a great need and opportunity for cooperating with the PCFV. Most of the countries in Central Asia still use leaded gasoline; levels of sulphur are extremely high; the car fleet is pretty obsolete and there is a growing trend of urbanization. It has been proposed to organize a regional workshop in 2007 to be followed up by national projects in interested countries.

PCFV website: www.unep.org/pcfV



Government and UNDESA.

This event represented the first major regional event for the PCFV in Central and Eastern Europe and Turkey. It led to the establishment of a network of experts and practitioners in the Region to support collaborative activities in the Region. It also led to the creation of a dedicated website: www.rec.org/rec/programs/pcfV/downloads.html. To complement the initiative, follow-up national meetings have been held in Bulgaria; Serbia; Turkey

The Voluntary Carbon Offset Market

In 2006, the interest in carbon offsets has grown dramatically, if measured by media attention and in number of retail carbon offset providers and driven by increasing public awareness of climate change. The New Oxford American Dictionary even chose "carbon neutral" as its "Word of the Year".

In practice, carbon offsets are generated from projects that reduce the amount of greenhouse gases entering the atmosphere. To qualify as an offset, the reductions achieved by a project need to be additional to what would have happened in the absence of the project, a condition defined as 'additionality'.

Carbon offsets can be used for compliance or for voluntary purposes. In the compliance market, offsets are used by the private sector or governments to comply with their emissions reduction targets set un-

der the Kyoto Protocol or other compliance initiatives (e.g. the EU Emissions Trading Scheme). Equally, companies and individuals around the world have started to use offsets as a voluntary way to reduce their carbon emissions commonly known as the non-binding voluntary offsetting market, including retail offset providers. To ensure that credits generated from emissions reduction projects are equivalent to each other, well defined standards have been developed in the compliance market that regulate carbon offsets for CDM projects. In the voluntary market, there is no equivalent to a defined standard, but a variety of standards, protocols, and verification methods, most of them proprietary to the offset provider. Recently, the Voluntary Gold Standard (cdmgoldstandard.org) has been created in an effort to harmonize the voluntary market.

For individuals, more than 30 companies and initiatives are now offering to calculate the greenhouse gas emissions from households, car or airplane travel and to sell offsets for these emissions.

For example, a return flight from New York to Geneva produces around 4 tonnes or 11,000 pounds of CO₂, according to most available emissions calculators. The price offered to voluntarily offset these emissions varies widely by retail provider. It ranges from \$30 (at carbonneutral.com, UK) or \$50 (at nativeenergy.com, US) to \$150 for a business flight on a specified aircraft (at atmosfair.de, Germany).

A recent consumer's guide to retail carbon offset providers can be found here: cleanair-coolplanet.org/ConsumersGuidetoCarbonOffsets.pdf.

Go calculate your travel emissions!

Calculate your Emissions!

UN Department of Economic and Social Affairs Division for Sustainable Development



The Energy and Transport Branch

The Energy and Transport Branch of the Division for Sustainable Development (DSD) of the Department of Economic and Social Affairs (DESA) services the intergovernmental processes of the United Nations in the fields of energy and transport, prepares analytical studies on these subjects, and provides advisory services to governments and supports energy projects at the field level.

These services focus on increasing the supply of energy services in developing countries, particularly in rural areas, and managing the demand for energy, largely through energy efficiency efforts. Such technical assistance is directed toward capacity building, institutional strengthening, promoting increased energy investments, and expanding the role of the private sector and

local communities.

With a core staff of fourteen in-house energy experts and with over 200 associated consultants, the Branch has the capacity to technically backstop projects dealing with all aspects of this highly diverse sector.

Online: www.un.org/esa/sustdev

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