

Report No. 42

**REGIONAL CO-OPERATION IN
THE ENERGY SECTOR**

Center for Policy Dialogue

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The Centre for Policy Dialogue (CPD), established in 1993, is an innovative initiative to promote an ongoing process of dialogue between the principal partners in the decision making and implementing process. The dialogues are designed to address important policy issues and to seek constructive solutions to these problems. The Centre has already organised a series of such major dialogues at local, regional and national levels. These dialogues have brought together ministers, opposition front benchers, MPs, business leaders, NGOs, donors, professionals and other functional groups in civil society within a non-confrontational environment to promote focused discussions. The expectation of the CPD is to create a national policy consciousness where members of civil society will be made aware of critical policy issues affecting their lives and will come together in support of particular policy agendas which they feel are conducive to the well being of the country. The CPD has also organised a number of South Asian bilateral and regional dialogues as well as some international dialogues.

In support of the dialogue process the Centre is engaged in research programmes which are both serviced by and are intended to serve as inputs for particular dialogues organised by the Centre throughout the year. Some of the major research programmes of CPD include The Independent Review of Bangladesh's Development (IRBD), Governance and Development, Population and Sustainable Development, Trade Policy Analysis and Multilateral Trading System, Corporate Responsibility, Governance, Regional Cooperation for Infrastructure Development, Transport and Energy, and Leadership Programme for the Youth. The CPD also carries out periodic public perception surveys on policy issues and developmental concerns.

As part of CPD's publication activities, a CPD Dialogue Report series is brought out in order to widely disseminate the summary of the discussions organised by the Centre. The present report contains the highlights of a dialogue on the theme of Regional Cooperation in the Energy Sector jointly organized by the CPD and the Coalition for Action on South Asian Cooperation (CASAC), a public policy network of South Asian opinion and policy makers. The dialogue was held at BRAC Centre, Dhaka on March 17 and 18, 2001.

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Dialogue on
Regional Co-operation in the Energy Sector

The Dialogue

The Centre for Policy Dialogue (CPD) and Coalition for Action on South Asian Co-operation (CASAC) jointly organised the Inception Workshop on the Study on Regional Co-operation in the Energy Sector on March 17 and 18, 2001, at the BRAC Centre, 75 Mohakhali, Dhaka.

Experts, researchers and high officials from Bangladesh, India, Pakistan, Sri Lanka, Nepal and Bhutan participated in the workshop. In addition, a cross section of top-level policy makers, politicians, academics, business leaders and executives, and leaders of various civil society groups also participated in it.

The Inaugural Session, chaired by the Chairman of CPD, Professor Rehman Sobhan, was participated by Co-Convenor, CASAC, Ambassador Farooq Sobhan, State Minister for Planning of Bangladesh Government, Dr Muhiuddin Khan Alamgir, and the Executive Director of CPD, Dr Debapriya Bhattacharya.

The first Working Session, which dealt with Country Perspectives: India and Pakistan, was chaired by President, Institute for Integrated Development Studies (IIDS), Nepal, Dr Mohan Man Sainju, Associate Professor, South Asian Studies Division, School of International Studies of Jawaharlal Nehru University, Dr. Mahendra Prasad Lama, presented a paper on the Energy Sector in India and its Implications for Regional Co-operation. Secretary of Ministry of Petroleum and Natural Resources, Government of Pakistan, Mr. Abdullah Yusuf and Director General and Chief Executive of Hydrocarbon Development Institute of Pakistan, Dr. Hilal A Raza, jointly presented a paper on The State of the Energy Sector in Pakistan and its Implications for South Asian Regional Co-operation. Dr. Ardhendu Sen, Senior Fellow of Tata Energy Research Institute (TERI), India, presented another paper on “The State of the Energy Sector in India and its Implications for South Asian Regional Co-operation”.

The second Working Session, which dealt with “Country Perspectives: Sri Lanka and Bangladesh”, was chaired by the former Foreign Secretary of the Government of India, Ambassador AN Ram. Fellow, Institute of Policy Studies (IPS), Colombo, Sri Lanka, Dr Nisha Arunatilake, presented a paper on “The Power Sector in Sri Lanka”. The former Chairman of the Power Development Board (PDB), Mr. Nuruddin Mahmud Kamal, presented a paper on “The State of the Energy Sector (Power) in Bangladesh and its Implications for South Asian Regional Co-operation” and, Associate Professor of the Department of Chemical Engineering, BUET, Dr. Ijaz Hussein, presented a paper on “The State of the Energy Sector (Gas) in Bangladesh and its Implications for South Asian Regional Co-operation”.

The third Working Session, which dealt with Nepal and Bhutan, was chaired by Mr. Abdullah Yusuf, Secretary, Ministry of Petroleum and Natural Resources of the Pakistan Government. Former Member of the Planning Commission of Nepal, Mr. Shankar K Malla, presented a paper on “The Energy Sector in Nepal” while the Project Manager, Programme Implementation Division of the Department of Power, Bhutan, Pradeep M Pradhan, presented a paper on “The Power Sector in Bhutan”.

“Identification of Issues for the Study” was discussed in the fourth Working Session that was chaired by the former Chairman of Petrobangla, Mr. SKM Abdullah. Dr. Upali Wickramasinghe of the SAARC Secretariat, Kathmandu, Nepal, presented the issues for the Study.

The fifth Working Session, chaired by the former Secretary of Ministry of Energy and Mineral Resources, Bangladesh, Mr. Azimuddin Ahmed, dealt with “Firming Up the Study Approach”. Professor Sridhar Khatri of the Department of Political Science, Tribhuvan University, Kathmandu, made the presentation on the Study Approach.

The Executive Director of CPD, Dr. Debapriya Bhattacharya, summed up the workshop in the Concluding Session that was chaired by the Co-Convenor, CASAC, Ambassador Farooq Sobhan.

Initiating the Dialogue

Drawing the participants' attention to the current complex energy scenario in South Asia, Dr. Debapriya Bhattacharya initiated the dialogue. South Asia represents almost a quarter of the earth's population. Yet it consumes very little energy. Its dependence on biomass and fuel wood is high and access to commercial energy is very low. But different studies show high association among commercial energy consumption and per capita income and GDP growth.

Dr. Bhattacharya noted that, in such a context, South Asia is undergoing rapid changes in the policy area, installation of new power units and foreign investment. But, side by side, issues related to regional co-operation remain stagnant. Because of the missing links among the regional markets, regional co-operation in trade and investment is not growing.

CPD believes that there are two vital areas, which can give a new impetus to the regional co-operation scenario: the energy sector and multi-modal transport system. In this respect, CPD had been working on the energy situation within the country and with a regional perspective for the last couple of years. CASAC, which also has the same belief, has joined hands with CPD to undertake a study of the energy sector in the region.

Objectives of the Workshop

The CPD Executive Director described three objectives of the workshop.

First, the workshop should identify the regional institutions, like the South Asia Centre for Policy Studies (SACEPS) or TERI, which have similar interests and gather all information on what is actually happening in the region. This would help the participants identify a number of issues where further efforts would result in maximum benefit.

Secondly, the workshop needs to assess what would be the value addition for doing another study on regional co-operation.

And, thirdly, once assessed, the workshop should identify the methodology to undertake that study. The participants would also discuss technical, financial, policy and institutional barriers in this regard.

Dr. Bhattacharya emphasised that the study should not be country specific, as it tended to happen in the past. Rather the regional perspective should be addressed as a unified whole.

Activities of CASAC

Ambassador Farooq Sobhan described the activities of CASAC, which is an independent non-profit public policy network of South Asian opinion and policy makers, committed to promoting and strengthening regional co-operation in South Asia. CASAC was founded in 1994. CASAC decided to collaborate with CPD following a meeting in Nepal in December of 1999, which identified the importance of energy in the future of regional co-operation in South Asia. The meeting also identified several areas of co-operation in the energy sector--strengthening energy co-operation in the region on the basis of durability and profitability for all the countries, initiating confidence building measures for extensive energy co-operation in the region, and initiating the process on a regional basis to build a gas pipeline, or a South Asian energy grid, or a hydro project on a regional or sub regional basis.

The Nepal meeting also agreed that the creation of a South Asia-wide information network in energy, using information technology facilities, would be of immense benefit. Developing a common energy programme in the region was felt to be a priority, as indeed the development, in this context, of a regional power grid system. There was a need for a major restructuring of the energy systems in the region, including mechanisms to make South Asia an attractive destination for foreign investment in the energy sector, co-operation in the energy sector among the oil and gas companies, as well as the research institutes within the region, and finally creating a South Asian energy map, which would geographically depict the energy sources by type, demand and the economics of assessing each type of energy.

It was decided in Kathmandu that CASAC would then move to the next logical step, which was to launch a project on energy co-operation in South Asia. The Ford Foundation and CPD came forward to support this initiative.

Ambassador Farooq Sobhan noted that South Asia had a hydropower potential close to 220 thousand megawatts- one of the highest in the world. Of this, roughly 10.5 per cent or 28 thousand megawatts have so far been exploited. There is an enormous potential here for co-operation and for meeting the growing energy demand of the region, which is estimated to be at least 10 per cent a year. India alone has an energy demand of more than 120 thousand megawatts over the next ten-year period. Meeting this demand would have enormous benefits for the region as a whole. If India is seen as an engine of growth for South Asia, then meeting India's energy demands would have critical benefit for its smaller neighbours. It is suggested that if India could meet its energy requirements, this could add as much as 2 to 3 percent to the economic growth rate of the region as a whole.

The ambassador emphasised the need to look at both the supply and demand situation and accordingly identifying specific areas of co-operation in the study.

Areas of Co-operation

Dr. Muhiuddin Khan Alamgir said that there are at least five areas where regional co-operation in the energy sector can be fostered.

The first area is the mapping of the region's energy production potential for regional consumption.

The second area is mapping of energy transmission to make sure that energy produced in Nepal or Bhutan or other countries can be transmitted profitably in accordance with the demand arising in various places.

The third area is the dissemination of technology.

The fourth area is cultivating possibilities of joint venture production in power generation. India can take the lead in the area.

The fifth area is the scope for energy related training.

Dr. Alamgir also identified four main impediments to the five areas of co-operation. Firstly, the identification of the potentials might be hard. Therefore, it needs to be done in a precise and location-specific way. Secondly, delineating the findings for investment to utilise these potentials. Thirdly, overcoming the regional prejudices against co-operation by applying rationality. Fourthly, overcoming the dictates of short-term political experiences by taking a long-term view of the development of the area.

Regional Co-operation

Professor Rehman Sobhan observed that in addition to CPD-CASAC's efforts in the energy sector regional co-operation, the Nepal-based IIDS, led by Dr. Sainju, is already engaged in working on the economics of energy co-operation in South Asia.

The primary purpose of regional co-operation is to bring about sustainable human development and, within this perspective, part of the contribution of this process is to end the energy poverty of the vast masses of the people of South Asia, which is derived from the more general poverty and deprivation. The challenge here is not just raising the per capita consumption of energy but also to give the entire populations of South Asia the access to energy.

So far South Asia's initiatives in the area of co-operation have been largely autonomous. The only area in which significant co-operation has taken place has been between Bhutan and India. Bhutan has managed to draw upon its very significant water resources and to develop this into a significant export resource, which has in fact become one of the engines of growth of the Bhutanese economy. Outside of this significant process of co-operation, the countries in the region have acted in a way as if energy was a non-traded good and that each of the countries should need to address its own energy needs in a state of isolation. This, Prof. Sobhan said, he considered as being an exceptionally short-sighted position considering the fact that, through the countries' dependence on imported fuel, the region had been actually trading in the energy sector from its birth. And at all stages, energy has been part of the credit good sector of the national economy of these countries.

Prof. Sobhan noted that, the perspective, which we have towards energy co-operation, has to be situated in the recognition that these countries have already been a part of a globalised system of trade and energy, where they have participated in this trade largely on unequal terms and mostly as importers. He added that, our economies have been held hostage to the vicissitudes of the global market in energy and the price regime it imposes not just on us for our imports but as an intermediate cost in the processes of economic growth and development. It

should be recognised that in this day and age of globalisation, perhaps along with the drugs trade, energy is the most globalised element of the global economy.

The multinational companies are already excited about energy co-operation and are already designing their own agendas for promoting energy co-operation within the South Asian region. They, in many ways, are far more farsighted than the regional leaders, Prof. Sobhan noted. They recognise the nature of the global system, where countries themselves are merely sources of supply and demand for energy, which obviously needs to be collectively developed and marketed under the dynamics of the global system, which is dominated by the corporations. He said that, we are already familiar with the very significant power plays associated with the exploitation and development of the Central Asian energy resources. Already, this has driven a very significant geo-politics, which has ended up and fuelled the major war in Afghanistan. In this perspective, it is very important for the people and governments of South Asia to realise that, unless they themselves assume control over the direction of the processes of energy co-operation, they will be slotted into a much wider global scenario in which they will be merely kept at the receiving end.

Therefore, the processes of energy co-operation in South Asia can not be visualised outside of the global system of the major players in the global scene. But the region can determine itself the terms on which the countries would co-operate among themselves and interface with the global system. This process is likely to emerge out of the various initiatives taken to develop an endogenous process of defining the contours of co-operation, its dynamics and the ways in which its benefits will be shared within the region.

In addressing the process of co-operation, South Asia may be visualised as a seamless energy pool in which its supply potential should be viewed as the common resource pool of the entire region. Enormous hydroelectric potentials are captive in the waters of the Ganges and Bhrahmaputra and, in fact, provide a major energy base for trade for Nepal, Bhutan and we might also include North-East India, particularly as it interfaces with China in the upper reaches of the Bhrahmaputra. Bangladesh and North-Eastern India's gas resource potentials, and undiscovered potentials in Pakistan also need to be recognised. The huge energy resources of Central Asia, which are seeking the natural outlet within the South Asian region, should also be recognised so that an integrated energy source, which brings together both South and Central Asia, could be visualised properly.

The region needs to lay the infrastructure for tapping into this energy resource and to utilise through a regional energy system that distributes its resources around the region to optimise energy usage both over time and between places. In taking this broader perspective, which is based on the development of usable sources of energy, the Study group should recognise the enormous potential of renewable sources of energy.

Prof. Rehman Sobhan expressed his hopes that, as a consequence of the study process, the participants of the region would be able to put before their governments and people a programme of interaction, which will be enormously useful to them. He also said, that in addition to energy, CPD was also involved in transport co-operation. Both these areas are win-win areas in which the real benefits lie in our capacity for common action rather than working individually and across purposes with one other.

First Session

Energy Scenario of India and Pakistan

In the first session, chaired by **Dr. Mohan Man Sainju, Professor M. P. Lama** in his presentation on the **Energy Sector of India** pinpointed the major issues, including the demand-supply gaps, that face the energy sector in India, and identified the possibilities of power trading in the region. **Dr. Ardhendu Sen**, Senior Fellow at the TATA Energy Research Institute, presented the second paper of the session on the **State of Energy Sector in India and its Implications for South Asian Regional Co-operation**.

Mr. Abdullah Yusuf, Secretary, Ministry of Petroleum and Natural Resources, Government of Pakistan and **Dr. Hilal A. Raza**, Director General and Chief Executive, Hydrocarbon Development Institute of Pakistan, presented a joint paper on **the Energy Sector in Pakistan**.

Prof. MP Lama's Presentation

The most critical issue faced by India presently is the inefficient and imprudent use of energy resources. An overwhelming population of the country depend upon biomass fuel as the basic domestic cooking medium. While the traditional cooking methods are highly inefficient, energy wastage from bio-mass fuel is very high. Similarly, in commercial energy usage, transmission and distribution (T&D) loss across India is almost 22 percent, whereas the international average for T&D loss is less than 10 percent. In cities like Delhi, these losses can be as high as 42 percent. According to an estimate, India annually incurs a loss of about rupees 12 thousand crore. Reduction of 1 per cent T&D loss is equivalent to savings of over 800 Megawatt power.

The second issue is the sustenance of traditional pattern of energy consumption, particularly in the context of emerging environmentally problematic situations. The last forest survey of India found that when India consumed about 235 cubic metres of firewood, the sustainable level of forestry production was hardly 14 million cubic metres.

Meanwhile, there has been an overwhelming dependence on importing energy sources, resulting in a huge foreign exchange drainage, which is about 20 per cent of India's total commercial energy expenditure. So there is a tremendous pressure on the balance of payments management.

The third issue is what we generally call seasonality as far as power generation is concerned. We have a very clearly visible seasonality trend in power generations in the country. In our study, we found that, in the case of hydropower, the peak season is July to October and the lean is sometimes in February and March. And this creates a huge imbalance in the power scenario in the country.

Another issue is the very structure of power generations in India. There are revealing variations in the installed capacities of power utilities. The country generates about 96 thousand megawatts of power today. But if you look into the trends of last 30 years, you will find that the share of hydropower, which used to be almost 40 per cent in 1970-71, has steadily gone down to about 23 per cent today. On the other hand, you have projects where capital costs are increasing. Your per unit generation cost is increasing. And you have a whole lot of hydropower resources, which remain untapped. So in the long run, the cost of hydropower should come down.

The thermal sector constitutes almost 73 percent of the total installed capacity today. Eighty five percent of the installed capacity emanating from the thermal sector is based on coal and lignite, 10 percent is based on gas and gaseous fuel and hardly 4.5 percent on liquid fuel. And the problem with solid fuel is that, there is a kind of gradual degradation in the quality of Indian coal. Coal has both low energy efficiency and serious environmental implications. Import of coal, as a secondary option, is limited because of high transportation cost. So the alternatives for power generation in the thermal sector are of course liquid fuels and gas. In case of liquid fuels also the option is becoming increasingly very costly. So the last resort, which seems to be very attractive, is gas. There are studies recently done by the Gas Authority of India Limited and Unocal. They have showed that there is a huge scope for India to go for both natural gas and liquified natural gas (LNG) as alternate fuels. And this is where the importance of recoverable gas reserves in Bangladesh come up.

In the last 10 years, there has been a massive restructuring of the power sector in India. This has been done to allocate greater role for the private sector and to restructure utilities as corporate, commercial entities. This has been done to broaden the financial base by enabling the utilities to issue equity and resort to long-term borrowings, a major problem in the country. This has been done to allocate separate roles for owning, managing and regulating. That means unbundling of the present state electricity boards. And, finally, this has been done to retain nation-wide least-cost planning and optimal loading of generating units and operations. So you have an array of reforms in place today.

Foreign investment can now take place either in the form of joint venture with an Indian partner or as a fully owned operation with 100 percent foreign equity. Even in the case of transmission and distribution you can have foreign equity participation up to 74 percent. The private sector can go into all three sub-sectors, the thermal, the hydro and the wind.

Side by side, we have a number of states taking very drastic reform measures as these have remained as monopolies in the distribution and transmission of power in India for many years. But most of these states and the state electricity boards today have a very strongly negative rate of return. But again, despite implementation of reforms, some old problems remain because India is dealing with private power companies for the first time. As the power sector has remained a public monopoly for long, it generated a variety of interest groups and rent seekers, as a result reforms are facing a lot of resistance, including a number of deadlocks and a number of court cases.

There is a lack of clarity in the Government's policies in terms of developing a model framework for power purchase agreements, multiple clearance procedures, and inconsistencies in its political commitment leading to frequent breach of contracts. There is inadequate transmission capacity to evacuate power and, of course, inadequate legal framework and institutions.

One of the major issues India has faced in the power sector in the last few years is the pricing of energy. This is becoming more serious because the importance of commercial energy is gaining ground. Since the past, energy pricing has been form specific in India. It is dependent upon the world prices of petroleum, distribution cost, social considerations, and exchange of subsidies. But it is likely to undergo a kind of massive change. There are two strongly counter-

pulling forces discussed in the pricing debate in the country today. We have, on the one hand, the proponents of cross subsidy and differential price structure. Within different products also they want a specific or a differential price structure because they justify it on the ground of social justice, on the ground of promoting economic growth. Whereas you have another set of advocates, another set of people, who advocate that all forms of non-renewable energy are to be priced on their economic cost basis. They give the example that this kind of protracted subsidy in the past has caused a major loss to the state exchequer. They say that because of cost subsidies, for example, industries and commercial centres pay hardly 2.34 paisa per unit. Agriculture pays hardly 21 paisas per unit. And domestic consumers pay about 91 paisa per unit. So the subsidies that go to agriculture and domestic consumers comes to almost Rupees 20 thousand crore. And the significant users of these are rich farmers. And many of them get free electricity.

The third dimension of pricing problem is the prices offered to the IPPs, which are many a time much higher than the state monopolies on the cost of generation. On the other hand, consumers resist paying a higher price. Therefore, the state electricity boards invariably absorb the price difference, which amounts to giving subsidies to the IPPs. Again, there has been a constant tussle between the IPPs and the respective state governments like the Enron power project.

Let me go into the demand and supply gaps in the country today. There is a huge gap as far as demand and supply of power are concerned in the country today. And this gap is likely to increase because of the economic reforms relating to power intensive industrial activities. This gap is likely to increase because of the higher purchasing power and people shifting increasingly to modern and easy forms of energy. The power shortage in the past has had adverse impact on productive activities in the country, social development and investment climate. Studies done by Khativ and Monu Singhe show that the power shortage in India's industrial sector has led to a kind of an estimated loss of about 1.5 percent of GDP. In terms of region-wise demand-supply gaps in India, there is a 30 percent gap. In the Northern region it is 38 percent, in the Southern region it is about 25 percent, in the Western region about 23 percent and in the Eastern region about 20 percent. In terms of absolute numbers, the northern region is likely to have a supply gap of almost 9700 megawatt by 2007. And the Eastern part is likely to have about 5300 megawatt. There is both peaking power shortage and general energy shortage. And if the growth of the economy is to be sustained at 6 percent per annum, then the matching demand for power has to be 9 percent growth per annum.

There are quite a few studies done to project the power demand and supply gaps in the country. One of the studies, which carried out a thorough electric power survey of the central electricity authority, gave two different projections. In both the cases, the country would be falling short in power generation by almost 20,000 to 28,000 megawatts by 2011 and 2012. And if you see, we are now trying to do a two-time series analysis of the demand side management and the supply management. If you look at the state of demand profile of different states in the country, you will find, say for example in the state of Delhi, that the demand growth rate has been 8.24 percent in the last 12 to 15 years. The supply is 8.47 percent and the gap between demand and supply, which of course has been there from the very beginning, is almost 8 percent. So it's a significant gap. If you do a sector-wise analysis, in India the highest growth

rate, as far as the power consumers are concerned, is recorded by lift irrigation that constitutes almost 13 percent. For the domestic sector, particularly in the last few years, it is almost 11 percent. The Indian industries consuming more than 8 megawatts have not really recorded any significant growth in a relative sense. It is hardly 5 percent.

On the supply side, India's total hydro potentials are about 75,000 megawatts, of which about 35 percent have been tapped so far. About 45 percent of the hydropower capacity is located in the South, 34 percent in the North, 11 percent in the West and hardly 10 percent in the East-whereas East is known to be most potential in hydropower. In the interregional power transfer and energy exchanges in the country, the East supplies maximum power to the other regions of the country, which was 6056 megawatts in 1999. The exchange of power between the South and the other regions is minimum. Now the power grid corporations in India are talking about what it calls a transmission highway. That means additional power generations they look forward to in Tripura, in Sikkim and in Bhutan and basically it would be a kind of high capacity links from the Eastern part to the Northern part.

Secondly the privatisation drive in the transmission sector has also picked up. As a special instrument, the power grid uses now what is known as Special Purpose Vehicle (SPV). This is basically to ensure that developers do not spend unnecessary time chasing clearances. Now you have quite a few bidders today in the transmission sector from the East to the North. TATA's UK-based national grid, Kalpataru, and others are there. Totally, there are serious efforts to establish a synchronised national grid by inter connecting the generating and the receiving countries. India is located at the central point and has huge capability to build large amounts of power.

The gas sector now has started establishing some kind of interconnections between India and Bhutan, between India and Bangladesh and between India and Nepal. For example, between the Eastern region of India and the Western zone of Bangladesh they have designed the Farakka-Krishnanagar interconnection. Between the north-eastern region of India and the eastern zone, we have Kumarghat in India and Shahjibazar in Bangladesh. Through these two interconnections, it is possible to evacuate 100 to 200 megawatts of power. Similarly with Nepal, we have such kind of arrangement. For example, the Shiliguri project.

The last thing that I would like to mention is the cross border power trading. We have already decided about doing some kind of studies on this. We are looking into what the cost-benefit matrices are. We are looking into what the barriers to cross power trade are. The technical barrier, the dominant buyer situations, institutional barriers. There is a large scope of such kind of power trading between India and Pakistan, between India and Nepal, and between India and Bhutan. But the two instruments that we increasingly found need to be looked into very seriously in the cross border power trading are, firstly, the power project itself and, secondly, the instruments of power trading. And we draw a lot of experiences from the Bhutanese model, which is a very successful model. I give you the basic features of the Bhutanese model. I think this case has been a very successful model as far as power trading is concerned. And today if you look into the Bhutanese export basket, about 35 percent of Bhutan's total export is constituted by power exports to India. It has quite a few interesting features. The first feature is the strong institutional arrangement and linkage, which have been

established between the Power Trading Corporation of India and the Department of Power of the Royal Government of Bhutan. The Power Trading Corporation of India purchases all surplus energy from the Chhukha project. That is in excess of the requirements within Bhutan. There are very clear cut provisions for delivery point, willing charges, transmission losses, system monitoring and control, accounting of energy, maintenance schedule and billing and payment. Both these organizations jointly ensure the full utilisation of the generating capacity of the project. An interesting feature of this arrangement is that there is a strong provision for re-export of energy by the Department of Power (DOP). Some of the Bhutanese side are really not very accessible. It's economically very feasible to send power to some of the Bhutanese districts. And in that case what they do is they export power to the Bhutanese DOP. Bhutan exports power to India, which in turn re-exports power back to some of the Bhutanese districts. And it has worked perfectly well commercially.

In conclusion, I would say that there is a huge scope as far as power demand and power markets are concerned in different pockets of India. I don't want to talk about in what way we are going to supply to these power demand centres in India through projects in Bhutan, in Nepal or in Bangladesh. I would only say that there is a huge scope and this scope is created by sustained demand arising out of sustained economic activities. And this demand is going to be there. And it's a question of just matching this demand by the supplies from across the border.

Discussion

After the presentation of Professor M. P. Lama, workshop participants discussed various issues.

Energy Growth Rate in India

Dr. Mizan Khan of the Bangladesh Institute of International and Strategic Studies (BISS) noted Prof. Lama's claim that an energy growth rate of 9 percent is required for a 6 percent annual GDP growth rate. Many countries, including Japan, have specific and successful cases of decoupling of economic growth with energy growth rate. Starting from the seventies up to the mid-nineties, the British economy grew by more than 150 percent but energy demand grew by 80 percent only. He queried if decoupling could take place in India?

Prof. Lama noted that the 9 percent rate was derived from a simulation exercise done by the Central Electricity Authority. The Planning Commission of India also gives similar figures. And they pinpointed that growth was being hindered because of power crisis and consequent under utilisation of a large number of industries. They attribute this to a very low per capita electricity consumption and a number of other factors.

However, Prof. Lama agreed that in the case of the developed countries, economic growth with energy growth rate might not be coupled with each other.

Pricing and Subsidies in India

Mr. Shankar K. Malla observed that the internal rate of return on state electricity boards (SEB) of India is about minus 20 percent. And if it's going to be a breakeven with a zero rate of return the tariff would have to be increased substantially.

Agreeing with this observation, Prof. Lama said that most of the SEBs had a very high negative rate of return. In the last three-four years, restructuring of the state electricity boards

and setting up of the regulatory commissions have been debated. About a few weeks back, under the instruction of the Prime Minister, the power ministers of the states have formed a group led by Dr. Montek Sing Ahluwalya to look into the restructuring of the state electricity boards. This group is may be considering a provision that would write off to a certain extent the liabilities accumulated by the SEBs. In this write off, who will bear the cost depends upon how many states will go drastically in revising the tariffs or undertake other measures. In any case, power pricing is going to be the major element in restructuring the state electricity boards.

Subsidy remains another issue of debate. There are two very strong advocates for subsidies as far as pricing is concerned. One group wants to maintain the status quo of prices. The other group, seeking differential pricing, advocates a kind of pricing based purely on economic factors. But, at the same time, there is the realisation among the policy makers that, to a large extent, the subsidies have gone to well-off consumers. Particularly in the agricultural sector, it has gone to very rich farmers, as some of the states do not charge for electricity at all. In some of the states in South India and even in the Punjab, rich farmers don't pay for electricity to the extent that they should pay. Since the policy makers have realised that it has benefited only the large farmers, they believe subsidies should be drastically cut down. This may take place in the next 5-6 years as, if subsidies are not really cut down, restructuring the SEBs will fail.

System Losses in India

Dr. Mizan Khan inquired about system loss saying that in South Asia system loss runs from 20 to more than one third, 33 or 35 percent. In India it is about 20 percent. Bangladesh's system loss hovers around more than one third. Does Bangladesh have anything to learn from India in terms of system loss trend?

Prof. Lama noted that the system loss scenario was different from Bangladesh as it varies from state to state and from season to season in India. According to a time series data, some times it varies from state to state on a massive scale. In places like Manipur or Assam, the system loss goes up to almost 65 percent. While in some states like Gujrat or Maharashtra, it has not been very high, but in other places like Delhi it's very high.

Demand-Supply Gap and Regional Dimension of India

Dr. Debapriya Bhattacharya inquired whether India had any plans to meet the demand-supply gap and whether there was any implication for regional dimension on that. What are the current Indian energy security plans in terms of meeting the gap? Mr. Shankar K Malla wanted to know whether, under the present regime, there was any possibility of power trading in the region.

Prof. Lama replied that India was thinking of measures to reduce the demand-supply gap. As per the latest document prepared by the Power Trading Corporation of India, the gap would be addressed by both domestic sources of power generation and import of power from the neighbouring countries. It has named various projects in Nepal and gives information about how much these plants are likely to generate in 10 to 15 years and in what ways it is going to fill at least some of the gaps, which are there in India.

Co-ordination between Authorities in India

Mr. Al-Hussainy inquired about the relationship between the State authority and the Central Government authority in India and how the central authority co-ordinates the state energy affairs legislatively.

Prof. Lama explained the relationship between the states and the central units, and said that the SEBs drew a lot of power from the central units-- like the National Thermal Power Corporation (NTPC)-- creating a huge backlog. Now NTPC has started threatening SEBs that it would stop power supply unless they start paying for the power purchase. This situation is prevailing in India for the last five to six years very intensively. This is one reason why the Central authorities saw that SEBs need to be drastically restructured.

Clean Energy Issues in India

Research Director, BISS, Dr. Mizan Khan, raised a question whether India would introduce environment-friendly coal energy technologies, as it would continue to depend on coal as an energy source. He observed that Europe has been utilising clean coal technology using gas turbine and pressurized fluid as the source of conversion and involving Integrated Gasification Cycle (IGC).

Mr. Al-Husainy questioned whether India has decided on a standard for emission of pollution. To help clean technology kick start, he further questioned if India was ready to subsidise clean energy technologies in any form at the initial stage of clean technology.

LNG Options and Pipeline Gas Import/Export for India

Ambassador F. Sobhan asked Dr. Sen what stage India had reached in developing LNG options and to what extent LNG options would be meeting India's gas import requirements. He also inquired about how LNG pricing compares with import of pipeline gas from Bangladesh.

Dr. Ardhendu Sen said that there are a large number of LNG projects but not all of them will go through. The project of Petronet, which is tied up for gas supply from Qatar, should begin operation from 2005 and start LNG delivery. There is a project proposed by Enron in Dabhol, which might be completed next year. Enron in Tamil Nadu has tied up the same sources of supply from Qatar. They have not yet been able to firm up the power sales agreement. There is a proposal at Kakinara, which was being pursued by Indian Oil, that might come into operation after 2006. So Dr. Sen's assessment is, three projects may start operating within the time span of next 10 to 12 years bringing three into five that is 15 million tons of LNG per year into India. The cost involvement is \$3 to \$ 3.5 at the re-gasification terminal, which means gas delivered to the consumer is going to be like \$ 3.5 to \$ 4. No consumer in India can afford a higher price. All other projects, which were based on prices of \$4 to \$ 4.5, will not be able to come through.

The problem about pipeline gas is that cost is dependent very crucially upon the volume of that you are thinking about. But if you are thinking about the one BCFD project then the cost of transmission to somewhere in Central India should not be more than 80 cents, at the most \$1. So if you are thinking of a well head price of something like \$ 2 or \$ 2.5 million per BTU, the delivered price will be something like \$ 3 or \$ 3.25 million per BTU, compared to \$ 3.5 to \$ 4.

So depending on volumes, Bangladesh gas over most of the Eastern, Central or South Central India should be competitive compared to LNG.

India's Power Trading Policy

Prof. M.P. Lama replying to a question said that the existing Indian policy did not address power trading in the regional scenario.

Hydropower Problems in India

Dr. Upali Wickramasinghe asked Dr. Sen what problems were faced by different Indian states, among themselves, in negotiating hydro electricity.

Dr. A. Sen said that intra-state disagreements were not the only problem in pursuing hydropower projects. There are problems connected with rehabilitation of ousted people, etc. They are also very important problems. While in other projects the negotiation basically focuses on the production of electricity, these schemes are designed to be multi purpose projects. There is the matter of irrigation. So there is sharing of benefits of irrigation as well as the sharing of benefits of electricity. All these things come into play and the negotiation becomes very complex. Many projects got stuck for years on the question of the height of the dam. It becomes very difficult for people to agree. Because there is a trade off, depending on how states are located. Any decision that benefits a downstream state has put a loss on the upstream states and so on. These are some of the common problems.

Answering to a question on the future increase of share of hydro electricity up to about 40% of the total power generation in India, Dr. Sen said that there were long term projections about it. He added that there was a national hydropower policy that depicts the government's plan to increase the share of hydro electricity in the total energy.

Problems of Regional Co-operation

Mr. Jamaluddin Ahmed pointed out that regional co-operation among India, Bangladesh and Pakistan is not only dependent upon the relationship between the institutional organisations. South Asian co-operation in any sector, including energy, is dependent on political differences. In this context, Mr. Ahmed questioned how regional co-operation would take place, particularly in the energy sector.

Dr. Ardhendu Sen observed that it was not possible to set a time limit within which a gas project or power project can come through. But the idea is to keep trying and getting institutions from various countries together because this is the only known way. But it may take some time. And, on the other hand, the situation is not completely hopeless, therefore, efforts should be made in favour of regional co-operation.

Ambassador Sobhan adding to Dr. Sen's answer said that, in matters relating to export and import of energy, the key point was to look at the terms and conditions of a particular deal. He added that politics should not stand in the way of regional trade.

Mr. Jamaluddin Ahmed repeating his question said that, while inter-regional trade benefits all countries, politics does not depend on one individual person or a group of persons-- it involves many millions of people and deals with a lot of issues. Regarding trading in Bangladeshi energy, the nation was not clear how much gas it had. Some international oil

companies operating here have said that Bangladesh has got around 58 trillion cubic feet of gas while some others say it is 38 trillion cubic feet. A study says it is 15 trillion cubic feet. So what is it 15, 38 or 58? Do we have the exportable surplus? And what is the requirement of this country? While it is said that Bangladesh is floating on gas, our gas consumption is one of the smallest in the world. Even in Bangladesh we can not supply our electricity to all our industrial sector and agricultural sector. So there are lots of disparities in our assessment, in our thinking about energy. Mr. Ahmad was very surprised to hear that in India, they charge only about 21 paisa per unit for their agriculture.

Mr. Jamaluddin Ahmed argued referring to Prof. Lama's statement that in order to sustain a growth rate of 6%, a country should have an annual growth rate of 9% in the energy sector, said if Bangladesh does not achieve this 9% how does it achieve 6% growth rate. And if energy growth do not reach 6%, what would be the state of the economy? This is the arithmetic that one would like to hear on an overall basis. Energy is not an isolated matter, it is a total pervasive phenomenon in a country's economy.

Privatisation of Power Transmission in Pakistan

Mr. Rizwan, Managing Director, Power Grid Company of Bangladesh Ltd., inquired whether Pakistan was planning to privatise transmission in the future. Mr. Abdullah Yusuf said that Pakistan was not planning to privatise power transmission at the moment. It is planning to unbundle Water and Power Development Authority (WAPDA) into distribution companies, generation companies and transmission. At the moment, Pakistan plans to go through with the distribution companies and privatise those. The generation companies and the transmission will remain in the public sector.

Power Regulatory Commission in Pakistan

Replying to a question, Mr. Yusuf told the workshop that Pakistan has a regulatory authority by the name of National Electricity Power Regulatory Authority (NEPRA). The appointments include four representations at the provincial level. At the moment, Pakistan has initiated the process to appoint the Chairman who may join from the open market as the government intends to give it a colour of independence.

International Gas Pipelines in Pakistan

Replying to a question of a participant, Mr. Abdullah Yusuf said that there are three pipelines proposals. One would come from Turkmenistan, the other from Qatar and the third one from Iran. Pakistan is continuously talking to all the players involved in the projects. There have been various swings over the years. Originally, Turkmenistan issue started with a consortium led by UNOCAL and subsequently they started to withdraw from that project. And now China is pursuing the project. But the situation in Afghanistan is a big handicap in implementing the project. The project's financing is also in doubt.

The Qatar project is offshore, outlining a pipeline coming from Qatar to Karachi along the coastline. This project could become more feasible if the pipeline continues to go on to India so that the quantity of gas transmitted would increase. That is certainly a possibility, which Pakistan is looking at more closely.

The Iranian project is perhaps the most viable option. This uses all land routes coming across from Iran to Pakistan and then hopefully to India. That is the most probable proposition. Iranians, of course, are extremely keen. Pakistan has given Iran full support to the project. India and Iran are now talking and discussing about it. There were concerns that were shown by India. The concerns of security of the supplies, which Pakistan has duly given its assurances in whatever form, were raised by Iran. And Iran has accordingly passed that on to India. Now the question is how and when they would be able to reconcile.

There is also a talk of trying to see the feasibility of offshore potential or possibility from Iran to India, some initiatives have been taken for getting that feasibly done. Pakistan has already had some feasibility studies in the past and found that it was not a very attractive proposition--both technically as well as financially. The existing proposal had a favourable term for all the three players and it should be pursued.

India-Pakistan Energy Trading

Professor Lama noted that there was a very intense negotiation going on between government of India and government of Pakistan on power trading in the beginning of 1998. Everyone got the impression that it's quite possible because they just needed to reform some of the old transmission lines. So it is a much quicker process. Professor Lama asked Mr. Abdullah Yusuf, besides the political reasons whether there are any commercial or economic reasons for not going about with the proposal.

Mr. Abdullah Yusuf said that unfortunately between India and Pakistan it seems there is more of politics rather than commercial aspects really coming into effect. Back in 1997, the private power producers were extremely keen to go and sell energy to their counterparts in India without government involvement. But the government thought it was unwise to allow that to happen. Eventually the government changed this political view at the end of its tenure and allowed WAPDA-- the public utility-- to negotiate with its Indian counterparts. But during negotiations, it turned out that the two parties held opposing stances. Pakistan wanted to charge India 7.5 cents while India wanted to pay only 2.5 cents. If the two parties really wanted to operate in a totally commercial environment then the bargaining would have been different. But because it was not a purely commercial kind of a situation it was taken more as a politicized situation where neither Pakistan wanted to sell nor India wanted to buy. This was why they were talking of figures which really didn't make sense. Ultimately no deal was made. Technically and commercially and from the point of view of ability of Pakistan to supply, the product is available till now.

Conclusion

Chairman of the session, Dr. Mohan Man Sainju, concluded the session giving three observations. Firstly, from the presentations of both India and Pakistan, it was clear that there was a potential for give and take. The demand and supply pictures shown by both countries clearly indicate the potentials. But one cannot draw a conclusion that immediately trade is possible or collaboration or bilateral negotiation would come into existence to resolve the demand-supply gap situation. There is a lot needed to be done before making that happen. On

the one hand, there is knowledge gap in terms of better understanding the relationships. On the other hand, there is a need for taking political initiatives.

He said that this really leads us to the potential role that the track two process really brings in, not only in terms of preparing for collaborative possibilities but also in actually envisioning with a futuristic perspective in mind. He thought the track one process could be articulated to look into the possibilities.

Thirdly, Dr. Sainju observed, within the South Asian region the exchange of data and information could be very much meaningful in terms of understanding the supply-demand situation and projections of respective countries, and also in terms of creation of opportunities to identify the areas of possible collaboration.

Second Session

Energy Scenario of Sri Lanka and Bangladesh

In the Second Session, chaired by Ambassador A. N. Ram, Dr. Nisha Arunatilake made the first presentation on the **Power Sector in Sri Lanka**. **Mr. Nuruddin Mahmud Kamal**, former Chairman of the Power Development Board, presented the second paper at the session on the **State of the Energy Sector (Power) in Bangladesh and Implications for South Asian Regional Co-operation**. BUET Professor, **Dr. Ijaz Hossain**, spoke on **The State of the Energy Sector (Gas) in Bangladesh and Implications for South Asian Regional Co-operation**.

Coal as a Source of Energy and Environment

In the follow up discussion a participant noted that Sri Lanka intends to expand electricity generation focusing on coal as an important source. He inquired when coal is viewed as a number one culprit among fossil fuel and how Dr. Nisha Arunatilake defines the environment friendliness of coal as a source of power.

Dr. N. Arunatilake replied that there were new technologies which made coal cleaner. To date Sri Lanka did not implement any coal power plant. For Sri Lanka the other option has been thermal power, which is actually more detrimental to the environment than the proposed coal power plant.

Sri Lanka Power Price

A participant referred to Dr. Arunatilake's observation that importing of electricity from India would be two to three times costlier than its own power generation cost and inquired about Sri Lanka's domestic power generation cost.

Dr. Arunatilake informed the workshop that the price was Sri Lankan Rupees 4.6 per unit on an average.

Energy for the Rural Masses

A participant, who identified himself as the Chairman for South Asia for the World Energy Council for the last three years, noted that in all presentations the energy needs of the rural masses were not being addressed. He observed that the vast majority of the people did not even

have access to any commercial form of energy and emphasised the need to look into their needs and requirements. He added that Sri Lanka had previously taken up a major regional initiative and organised a regional conference on renewable energy development that identified a number of projects in the region, which were given consideration by the donors and the lenders. As a follow up, an Investors' Forum was planned to be held in New Delhi in April 2001 under the auspices of the World Energy Council. But it has been delayed.

The Investors' Forum will be an important interface for the group or the study that is going to be carried out to interface with the World Energy Council in its renewable energy development programme. The problem with renewable energy is that it does not enjoy a level playing field with other forms of energy, which enjoy all sorts of governmental, financial and institutional support. And renewable resources have a cost factor to them.

The participants asked Dr. Arunatilake how the additional or incremental cost of the renewable energy development could be met and how this appropriate technology could be extended to rural areas, especially to meet the basic energy needs of the rural population.

Dr. Arunatilake replied that Sri Lanka was, at the moment, using renewable energy on a very small scale. In particular, Sri Lanka is using mini hydropower plants to supply electricity regionally.

Pitfalls of Hydropower Projects in Sri Lanka

Referring to large hydropower projects, Ambassador A. N. Ram inquired whether Sri Lanka encountered any problems of the fallouts of such a large project, as India had faced in regard to Narmada and Teri dam. How did Sri Lanka handle those problems – environment-wise, dislocation-wise and rehabilitation-wise?

Dr. Arunatilake agreed that, like India, Sri Lanka also faced the problems of fallout of large hydropower projects. She said that people had to be given land in different areas though by the numbers, these were smaller than those that had to be given by the Indian government. People were relocated to other areas. There was a Ministry, which dealt with all the issues like relocating and environmental problems. She added that the remedial measures had not been very successful, as the issue was very big. Citing the example of the Korthawa plant, she noted that the plant was first proposed in the early 1990s and still the government could not decide on a location because of these issues.

Bangladesh's Gas Export, Reserve and PSC Gas Pricing

In the follow up discussions, former Secretary, Mr. Azimuddin Ahmed, shared some salient features of the issues of export of gas, gas reserve, gas pricing and Bangladesh's capacity to buy its own gas.

He said that the summary of a USGS report on Bangladesh's energy potential was not very encouraging. While the USGS report gave a picture of Bangladesh's oil and gas resources in numbers and probability—it would be wise not to rely on a figure that was 95 per cent uncertain. Rather, a resource base against 50 per cent uncertainty could be a starting point for discussion. He noted that Bangladesh has already discovered 25 trillion cubic feet (TCF) gas, of which 13 TCF is recoverable. In other words, Bangladesh is not

floating on gas.

But the more important point is that the Bangladesh government has already entered into internationally enforceable contracts--the Production Sharing Contracts (PSCs) and Gas Purchase Sales Agreement (GPSA). These contracts can be taken to the International Center for Settlement of Investment Disputes and International Chamber of Commerce in the event of failure of arbitration. And foreign oil and gas companies claimed to have had invested close to a billion dollars. Is it within the capacity of Bangladesh to buy a billion dollar worth of gas? May be not. Bangladesh is buying only 254 million cubic feet per day (mmcf) of gas. Bangladesh has arrears of close to 6 months. And Bangladesh spends \$28 million a month in terms of foreign exchange for purchase of 254 mmcf-- which is the cost recovery gas of the foreign companies-- from Sangu and Jalalabad. By some calculations, it is a very modest sum. This was calculated at the rate of \$2.25 per thousand cubic feet (mcf) of Sangu gas and \$ 1.75 per mcf for Jalalabad gas. Prices of gas from both these fields are actually \$ 2.90 and \$ 2.80 respectively today. Though Jalalabad gas is supposed to be much cheaper than Sangu gas, it is now close to Sangu price. It could be a serious miscalculation, Mr. Azimuddin Ahmed noted and sought Petrobangla's explanation.

Mr. Greg Gritters, UNOCAL--which is involved in Jalalabad gas production--clarified that the \$2.8 or \$2.9 prices were correct for the contract of the share of the gas. Jalalabad contract of share is half of the production. So Petrobangla pays \$2.8 which is currently the selling price for 40 million cubic feet a day. And for the other 40 million cubic feet, Petrobangla doesn't pay. So it's an effective price of \$ 1.40 per mcf.

Mr. Azimuddin Ahmed argued that, in Unocal's share of Jalalabad gas that included cost recovery and PGA gas, the price should be about 75% of Sangu. If Sangu's gas is being sold at \$2.90 per mcf then Jalalabad should sell at around \$ 2.17 per mcf. Mr. Azimuddin Ahmed clarified that he was referring to Unocal's gas, not Petrobangla's share of gas.

He pointed out that the base price that he had taken was much lower than the actual price of today based on the international price of fuel oil. Now, on this calculation alone Mr. Azimuddin Ahmed found two things. One is that by year 2005, if Bibiana's reserve is 5 tcf and if 7.5% of annual recovery of discovered reserve is there, then Unocal's production will be well ahead even of maximum gas demand of the country. Two factors are important here. One, the pricing and the costing, which would be close to \$438 million a year, even at the rate of \$2.25 per mcf and \$1.75 per mcf. Bangladesh will have to pay for the gas. Even at that price, if the price goes up as it is today, it will be close to \$600 million a year.

The other side is that even if Bangladesh had the capacity to buy this gas, the production would be in excess of even maximum demand for the years 2005 and 2006. Where will this excess gas go?

Another issue is that the PSC contract is unforeseeable. That the bulk of the gas that we are talking about exporting- the bulk of the gas in Sangu, in Jalalabad and in Bibiana, will belong to International Oil Companies (IOCs) and not Petrobangla. So here we have got ourselves into a straight jacketed position. And we do not have any manoeuvrability at all. Bangladesh is obliged to allow the IOCs to export gas because it can not buy the same gas.

Mr. Azimuddin Ahmed elaborated that, in 1970, Bangladesh's gas demand was only 48 mmcfd. Even in 1980, it was only 50 mmcfd. Today it is 1087 mmcfd. As per his calculations, in 2010 it will be 2150 mmcfd if the gas consumption growth rate is 10%. At the same time, this figure will be reached in 2006 if Bibiana production was full. What will Bangladesh do with the excess gas? So, Mr. Azimuddin Ahmed concluded that when we are talking about export, our talking about Bangladesh's reserve becomes quite irrelevant because we are actually talking about Bangladesh's affordability, Bangladesh's capacity to buy and what is the strategy that we should adopt. He urged the workshop to be open-minded and to look into the gas contracts, calculate the production, calculate the costing to Bangladesh and find out what Bangladesh can get out of it.

Referring to Professor Nurul Islam, who spoke against export and another person who was in favour of LNG export, Mr. Azimuddin Ahmed said LNG was three or two and a half times costlier than pipeline export.

In the case of export, Mr. Azimuddin Ahmed said that he had examined that pipeline export is the most economical and the safest. In the case of pipeline export, if the demand at the other end is less, the supplier can tune on. The supplier also has the control over the pipeline it has. Pipelines can work both ways. Pipeline from Bangladesh to Delhi would not cost more than \$0.80 per mcf or \$1 per mcf. Looking at the price of Shell of Sangu and at the price of Unocal in Jalalabad and of course in Bibiana a gas price of \$2.25 mcf is perhaps negotiable.

Ambassador F. Sobhan noted, in this connection, that Pakistan had a situation in combination with Iran, where they would like to export gas to India, presumably at a much more competitive price than that of potential price from Bangladesh. But Pakistan is promoting gas sales to India while India is shying away. At the same time, India wants to import gas from Bangladesh and Bangladesh is shying away from that. The price of gas for Bangladesh that is likely to get at this stage, is significantly low. What would be the price, which India would have to pay for the gas from Iran?

In addition to Mr. Azimuddin Ahmed's observations about contractual obligations, Ambassador Sobhan added two further points. One is, how does Bangladesh actually establish how much gas there is in Bangladesh? In other words, how do we pursue the IOCs to continue with fresh exploration activities in the country? And, obviously the way this will happen is only if they can convert their discoveries into profitable ventures. If that option is not available to them, and clearly at the moment that option is not being made available to them, what would be the incentive for them to carry out further exploration activities?

Referring to the two presentations on Bangladesh at the workshop, Ambassador Sobhan said that Bangladesh's own gas fields are at the moment almost generating enough gas to meet domestic demands. There will be a further expansion of production from our own eleven plus three gas fields. And these three gas fields are also being possibly revived. He urged Petrobangla Chairman to cast a light on gas production by local entities.

He summarised that the capacity or the option of purchasing gas from the IOCs was quite limited while Bangladesh's capacity to buy was also limited.

Bangladesh should continue encouraging the IOCs to come in and explore seriously in Bangladesh. In the process, Bangladesh could figure its full potential of gas.

Citing examples of other countries, which decided to go for export, against the Bangladeshi government policy statement that we should first have 50 years of reserves in hand before we start exporting, Ambassador Sobhan said, Indonesia and Malaysia-- which are major gas exporting countries today-- started with gas reserves considerably lower than the current gas reserves of Bangladesh when they started exporting gas. And this has been the experience in the case of all gas exporting countries. The more gas that you export, the more exploration activities take place and the more there are by the way of gas discoveries. That has been the trend of the last 50 years, in so far as gas exports are concerned.

Addressing the issue of regional co-operation, Ambassador Sobhan said the idea of gas pipeline grid across the region could be implemented in a way so that this pipeline could extend at one point from Myanmar and go all the way eventually to Iran. This will create an integrated grid in which different gas sellers would put in gas and consumers would take out gas without essentially worrying about the origins of this gas. It's a commodity in the same way that you have essentially what is emerging today in Europe and elsewhere in the world. It is an integrated energy system, where no one really seeks to bother about what the origin or complexion of the electricity or oil or gas is. It's a commodity you buy and use. That's it. The crucial issue then is designing a system that allows this to happen. Designing a system whereby we do get what we consider to be a fair price and above all a worthwhile price for us to meet this reality.

The second point is the issue of again meeting our electricity requirements. We have the LNG export option and the electricity export option. In both the cases, we can convert gas into electricity or LNG and export that. Hydropower potentials of both Nepal and India should be looked into. There is a very keen interest in the Indian north-east to develop and sell this hydro power to Bangladesh. So, if these options become a reality, then we can meet our electricity requirements through a renewable source, which is a much better option than using the gas and exporting it rather than our importing the electricity and exporting the gas.

Former Petrobangla Chairman, Mr. Abdullah said that he was not in favour of export or opposing it. He requested Mr. Azimuddin Ahmed to go through Bangladesh's policy decisions from 1995. He was in the government at that time.

In 1993, Mr. Abdullah noted, when we decided to open up this sector to international investments, private investments, we invited the IOCs. Almost within the same month, the Cabinet also formed the Pricing Commission headed by the Principal Secretary to the Prime Minister, with 2 or 3 Secretaries more and with the Energy Secretary as the Member Secretary of that Commission. Then we invited the IOCs. We signed contracts. Four contracts were signed at that time. Now two more contracts have been signed. Three new fields have been discovered. Two fields are producing. Jalalabad is not a new field, it's an old field given for development. The Pricing Commission never saw the light of the day. In India, the average price of gas for power and fertiliser is more than \$2.75 per mcf. In Pakistan it is almost similar, \$2.05 or \$2.75 per mcf. Here, it is \$1, and it is even less than that because of the devaluation of

Taka. The PDB is paying less than \$1 per mcf of gas. And fertiliser pays 97 cents per mcf of gas. In 2001, the gas price is like this. So, if the country does not want to decide that it will pay for the gas to the IOCs, the IOCs can take us to the International Court of Settlement. But at the same time, it may be noted that the PDB has got arrears of 11 or 12 months, and it uses 52% of the gas. Nearly 12% of the arrears is payable to Petrobangla. In other words, Petrobangla will get the money to pay for the IOCs.

Mr. Abdullah Yusuf from Pakistan noted that the workshop had talked about the gas pipeline corridor that would act like a motorway where anybody can come in through it or go out. He added that one could join the motorway whenever one liked and get off it whenever one liked. He just had to pay the toll and get off. So may be one can get the gas from Iran and he can then pass on his gas to India and others can sell the gas to India and buy something else on the way. It is a regional beneficial requirement, which is a very big and broader kind of a concept that tends to really get bogged down with more politics than what we should be looking ahead for as a whole region.

Dr. Ijaz Hussain added that Bangladesh had no excuse with gas export. He said that the process should have had started earlier-- 10 years back or may be 20 years back. We should have limited export, exchange of energy products over the borders for years now. We would have been quite experienced on these issues. But now as suddenly somebody comes in and tells Bangladesh that you have to build a huge pipeline, which will cost a billion dollars to New Delhi to transmit 7 tcf of gas-- of course, Bangladesh would be shy. Of course, Bangladesh wanted to export and there was no question of opposing export. But where is the experience? We only have the experience of hostility on all kinds of issues.

As a frequent visitor to TERI in New Delhi, Dr. Ijaz Hussain said that he has been asked about the problems of Bangladesh's gas export to India. His response to TERI had been that three countries, India, Bangladesh, Pakistan, are three separate countries, but we should be living in one country. So there are political issues, of course. Things that often divide these countries were that we don't even have common institute studying the problems. We talk about export, we talk about regional pipeline, this and that. They are all very good ideas. Dr. Hussain said that the pipeline he had mentioned in his paper, criss-crossing entire South Asian region and including South East Asia, can go up to Iran and Turkmenistan. While we are talking about 10 tcf or 20 tcf of gas, Iran has 400 tcf of gas. But they can not sell it. If you talked about 70 cents, you can get gas in some regions of Iran at 50 cents. One can build a pipeline at the end of the world and yet Iran can transmit gas probably cheaper than LNG. But there is a window of opportunity for Bangladesh to sell gas to India. If there was no insecurity in building a pipeline through these regions the question of exporting gas from Bangladesh would have never come up. Iran would have had dominated the scenario. Besides 10 tcf or 20 tcf is nothing if put against the consumption pattern of the United States of America, where every year 20 tcf of gas is being consumed.

Extending support to what Mr. Azimuddin Ahmed said, Dr. Ijaz Hussain noted, it is also true that we are probably at this point in a situation where we need to export gas simply to pay the bills. We must realize one thing that we are not doing our own exploration. This gas, only

half the gas that we get belongs to us. The other half either we have to export or we have to buy ourselves. Dr. Ijaz Hussain added that he could not imagine that Bangladesh would be affluent enough in 10 years' time to buy the kind of gas surplus that exists today. If Bangladesh invested its good funds to buy gas, how would the country build bridges, or industries or build any other things?

The question of how much reserve there is in some ways is secondary. The question of surplus and non-surplus is quite irrelevant. We are an investment poor country, we need the funds. We need it fast. We need to consider at least some export, and, at the same time, try to be able to find gas at the 5% probability level of the USGS study—or targeting to find 50 tcf of gas in this country. Petrobangla can not find this gas as it needed good technology, high capability and a lot of investment to find gas.

Lastly, on the issue of Bangladesh regarding what to do about its potential gas finds— what to decide, Mr. Yusuf observed that Bangladesh needed to be more forward looking. After it meets its own requirements, Bangladesh has a substantial amount for exports— even in a projected 5% growth scenario. Bangladesh has no point in just sitting on gas and it should take a very commercial approach.

The Basis of Determining Gas Pricing in Bangladesh

Mr. Abdullah Yusuf from Pakistan observed, in connection with the debate over IOC gas and domestic gas sales prices, that there was a common kind of controversy about gas pricing. What should be the basis, how should one work it out and then how should one select one's customers to sell and at what prices—are the common questions. Like Bangladesh, Pakistan is also confronted with the same things. And after a lot of debate we have managed to basically decide this issue on some principles. And if one is able to follow those, these would certainly lead to further investment, and further explorations, as a result further availability and the benefit to the economies of those countries.

What should be the basis has to be for determining your price? What is your well-head price? That is the starting point, then to that you add your transmission and distribution cost. To that you add the utilities operating on whatever systems, returns for them for their investments and the taxation that the government wishes to charge. That becomes your actual price for selling purposes. And then the customers that you choose and at the present time we have anomalies in the system because of subsidies and cross subsidies and things like that.

You have to really say, as far as the gas industries are concerned, subsidies are not an issue for them to decide. If at all a subsidy has to be given, it has to be given by the government because of whatever reasons, good or bad.

If that industry is commercially oriented, it has to have the ability to give a reasonable return on the investments. So, consequently, what we have decided is that we will have a basis to work out the price, which is based on the costs, and then we would charge the customers on the basis of the cost of service. Whatever we are incurring on that specific type of customer as a cost we would get ourselves reimbursed with that. And in that the bulk consumers would get a benefit as opposed to the smaller ones. Because what we have in our country is a lopsided situation in comparison to almost the entire world. Whereby the consumers, who cost us the

most, is being subsidized the most, whereas it should be the other way round. And it is the other way round in most of the countries. So that has to change. But, nevertheless, if you want to restructure you have to go through with this pain, which we have decided to actually do.

The fertilizer issue, which was actually raised and the pricing issue for the power sector. In Pakistan, we are pricing the power sector on a commercial basis. Which is about \$2.50 or so. Or in the case of fertilizer it is subsidized at the moment. And that is around \$1 or so, per mcf. I think it is the people of this region who have suffered. And the era we are entering into, none should undergo those kinds of sufferings.

The Gas Reserve Controversy of Bangladesh

One of the Bangladeshi participants noted that many believed that Bangladesh was probably floating on gas and IOCs have been spelling out gas reserve figures like 80 tcf, 100 tcf, 150 tcf gas. We were really encouraged by these numbers, he said, and we really thought that if it's really like that we must do something about this.

But oil and gas exploration is such a business that unless you go to the field, unless you do the seismic study, unless you drill a well, you are just as blind as you have been in the beginning. But then there are some technologies, which can predict the possibility of gas, availability of gas in a particular area. And this is not new. In the past, we have done these things when we did the explorations activity in the 70s and late 80s. We did a study through which we have calculated the probability of gas availability in different basin components of the country.

If one looks at the birth of Bangladesh geologically, the tectonic movement of this area of the world and the sedimentation of this area and if one compares Bangladesh with other places where lots of oil and gases are available, there is every reason to believe that this country must have more gas than what we are accepting now or what we are thinking now.

The speaker urged all to look for an avenue, which would shed some light on the probability of gas reserve in this country so that we can have a number. We can have a basis through which we can go to the IOC and other places. Or we can undertake our own oil and gas exploration. On this premise, the United States Geological Survey (USGS) proposal to determine gas resources was accepted by Bangladesh. USGS has been doing such surveys for the last 50 years and in this subcontinent they have also done some work. Petrobangla contracted USGS and provided local experts and Bangladesh collected all the data available, through its own institutions and through the IOCs. Using a universally accepted technology, USGS came out with the figure that there is 5% probability of getting 68 tcf of gas and there is 96% probability of 9 tcf of gas.

The essence of the whole thing is that as a third world country we don't have access to advanced technologies. As the other worlds have gone on to nuclear and other sorts of energy sources, we are still in the fossil fuel energy source as far as Bangladesh is concerned or most of the third world is concerned. The developed countries are always going to have this big lead over us. So, they are going to go on to better things or newer things, in which we will be lagging behind. So, when we talk about the interest of our country, any government for that matter has to consider the interest of our country first. All globalisation or free market

economy, everything is very nicely said but at the bottom of the line, as far as any government in Bangladesh is concerned, the interest of this country comes first. When we talk about 50 years, it does not mean that you have to have 50 years' worth of gas. Because when we talk about projections, we are not even sure as to what our consumption will be in 2005. There are varying figures, somebody says 1 tcf or somebody says 2 tcf. When we talk about energy requirements, the figures also vary to such a great extent that the figures are being quoted about 10 thousand megawatts or 15 thousand megawatts. These figures may not stick at all. Because we have to remember one thing that in Bangladesh only about 15 to 20 percent of the people have access to electricity. That is a fact of life. The rest 80% does not. Now, over the last few years, the mileage distribution of the Rural Electrification Board has more than doubled. This is ridiculous. Because when you talk about 10% growth per year and if the mileage or distribution mileage or accessibility for the people in the rural areas doubles in 5-7 years, these figures are going to put all the other figures out of proportion. We are not going to have any of the workable figures that we are talking about. The figures are quoted by the PDB. What is not quoted is that the demand even for the PDB is very much suppressed demand. Because PDB is not giving the distribution lines or getting the people to have access to electricity. So if you take off that suppressed demand and open up, power demands like 10 thousand or 15 thousand megawatts in 2010 or 2015 are going to look really ridiculous at that time.

Now the question comes, the IOCs contractual obligations definitely. You make a contract, you should have seen and signed. If you have not then you have to pay up. That is the bottom line. We have to find the ways and means to do it.

There is a small remark about neighboring countries. There is a very limited scope of hydropower in India's north-eastern part. There have been studies done on small mini hydropower projects. Nothing happened since then. There was a time, when there was a question of bringing limestones from Meghalaya and making cement in Bangladesh. It is being done in Chhatak. Subsequently there was another proposal which ended without any result. In another proposal, it was said that instead of bringing the limestone from India, it is cheaper to transmit the gas to Meghalaya and then you come to a sort of production sharing arrangement, that Bangladesh gets so many lakh tons, and Meghalaya gets so many lakh tons. The fate of this proposal is unknown. But these are the things, which we should be looking at. When we talk about co-operation on a border level, you take my gas and you make whatever you have and send to me my share. And this probably would bring the co-operation that we are talking about on to a fast track.

Mr. Nurddin Mahmud Kamal reminded what Mr. Yusuf from Pakistan suggested we should do with our gas reserve. Former Petrobangla Chairman, Mr. Abdullah, clearly said that the USGS report dealt with gas resource and not reserve. Petrobangla Chairman, Mr. Mosharraf tried to portray it as a reserve. United States Geological Survey does not conduct reserve study. So, one has to go to a professional body which does this job. For example, once the Bibiana gas field was discovered, there was a tussle as to what would be the number of reserves. The rumours were floating around 5, 6, 10, 20 tcf. The most common number was between 5 to 6 tcf. Now this figure of 5 tcf has gone down by 50% to 2.4 tcf, though the proper estimate was done through a certifying agency.

Conclusion

Ambassador A. N. Ram in his concluding remark on the session said that regional co-operation is very daunting and difficult. The biggest tonic for regional co-operation is our success stories. If we can build half a dozen success stories and we have some examples, we have examples of Bhutan-India, Nepal-India, we even nearly had an example of Pakistan-India buying electricity, these would help intensify co-operation to a greater degree. Indeed, if we can get one or two success stories from Bangladesh-India, it should work as a tonic to our efforts at regional co-operation. And it will then have what Professor Mahendra Lama calls the multiplier effect.

Third Session

Power Scenario of Nepal and Bhutan

In the third Working Session, which dealt with Nepal and Bhutan, former Member of the Planning Commission of Nepal, **Mr. Shankar K Malla**, presented a paper on **The Energy Sector in Nepal**. Project Manager, Programme Implementation Division of the Department of Power, Bhutan, **Mr. Pradeep M Pradhan**, presented a paper on **The Power Sector in Bhutan**. The session was chaired by **Mr. Abdullah Yusuf**, Secretary, Ministry of Petroleum and Natural Resources of the Pakistan government.

Power Sector Reform in Nepal

In the follow up discussions, Mr. Nuruddin M. Kamal asked Mr. SK Malla whether the reform package in Nepal is of the same standard unfolding reform package, where generating, transmission and distribution are done separately. Is Nepal's distribution the weakest one, and is Nepal facing problems in implementing the reform package? Is it home made or designed by external expertise?

Mr. Malla replied that the Power Reform Package (PRP) has come to the forefront as many development projects are taking place in Nepal. Either bilateral countries or multilateral agencies financed earlier Power Sector (PS) projects. Recently, the Government of Nepal (GON) has invited the private sector into this sector. The old reform package of unbundling is more or less similar in case of Bangladesh or India. The unbundling is the result of a study done by the World Bank. The package has given some options in case of reform and it is left to the Government to examine all options and come out with something that is acceptable to the Government.

Nepal's Inter-regional Agreement

Mr. Nuruddin Kamal inquired whether the Indo-Nepal agreement was an exclusive agreement with one country. Mr. Kamal noted that it has been said that it was designed in such a way that any public or private company can participate in it or go out of the agreement. In such a context, when we talk about regional co-operation, then is it possible that we can hold such agreements for neighboring countries, asked Mr. Nuruddin Kamal.

Explaining the Indo-Nepal agreement, Mr. Malla said it basically covers India and Nepal. However, the license for development is given to some Independent Power Projects (IPPs), mainly for meeting the power-demand of the Indian market. This has been incorporated to

facilitate the private sector on both sides so that they can take a lead in starting negotiations between the two sides.

Large Power Plants vs. Small Power Plants

Mr. Nuruddin Kamal noted that while Mr. Malla preferred large projects, depending on the economies of scale or geographic dispersion, many experts consider smaller projects of 40 or 50 MW as economically viable and competitive with large projects.

Mr. Malla replied that the main focus of Nepal is to develop hydro-plant and to meet the domestic demand of Nepal in addition to selling the power to India. He noted small scale least-cost power plant development is different when one takes account of power export of Indian market. Supporting small scale projects he said that as the Power System Grid (PSG) is absent in many remote places of Nepal, the country needed some cost effective small hydro-projects to mitigate the demand of such places.

Nepal's Large Scale Power Projects

Ambassador F. Sobhan requested the speakers to cast some light on large scale projects like Karnali and Koshi etc, their current status and problems that are hindering the development of these projects. He sought clarification on whether the problems were political, scarcity of resources, or a variation of Bangladesh's gas export problem.

Mr. Malla replied that while Nepal has been talking about large-scale projects for a very long time, unfortunately there had not been much success. Nepal recently signed an agreement with India for the development of Mohakali River with focus on some project. Despite signing the Treaty 4 years back, they did not make any headway. The feasibility report was to be completed within 6 months of signing the Treaty. But it is 4th year going and they weren't able to complete the feasibility study. Fortunately, Mr. Malla noted, some development has been made in very recent times and it is said that, at the end of 2001, the detailed project report will be completed. Still the problem of financing is there. The Nepal government is willing to involve the private sector in this regard. But the position of the Indian government is not clear.

Mr. Malla reminded the workshop that some steps were taken earlier under SAARC regarding trilateral or quadrilateral aspect. Unfortunately, no such development made any headway in any direction. Focussing on the Karnali project that has 10,000 MW power generation capacity, he said that when it was commissioned, it was legally constituted that the project would only mitigate the domestic demand of Nepal and it would promote the private sector. Recently, the response from the private sector has compelled GON to review the Power Sector Policy so as to change such unfavourable legal constituency. However, as it is at a premature stage nothing specifically can be said.

Nepal's Problems in Power Sector Investment

Prof. Lama observed that the Foreign Investment Policy (FIP) of Nepal is much more liberal in South Asia, especially in the case of Hydro-electricity sector. Nepal categorised its power sector for Investment in Operating Venture (OV), Under-construction Ventures (UCV) and License Category Ventures (LCV). Yet after having such a liberal FIP and high hydro-electricity potential, Nepal had very low investments in all 3 categories in recent years. It has

only seven in OV category, one in UCV and none in LCV. What could be the real reasons for such a situation, inquired Prof. Lama.

Prof. Lama, referring to the mega-scale projects like Karnali, observed that while so many feasibility studies have been undertaken for the last 30 years for that project, no actual development has been done. He pointed out that, as per his observations, there were three issues, which are hindering this project. First is the India factor. There are lots of problems involved as far as India's involvement in Nepal's water resources is concerned, except for two or three projects. Debigat project is the only project that is very successful and without controversy. Whether it is deliberate or by design, India remains a major stumbling block in the entire development process.

Secondly, more serious one is the lobby created by environmental activists. Particularly, The World Bank withdrew from Arun-3 project. In case of Mohakali project, the lobby protested and recently they've been very active.

Thirdly, The World Bank's withdrawal from Arun-3 project was a major blow to investor's confidence in Nepal.

In such a context, what is at stake for Nepal that it doesn't want to develop hydro electricity power because of all these factors?

Mr. Malla replied that foreign investors were losing interest in Nepal primarily because of what was happening to the west-Shethy license which was awarded to Snowy Mountains of Australia about 6 or 8 years ago. Since then, Snowy Mountains have been trying to sign a power purchase agreement with the Power Trading Corporation of India (PTCI). At the same time, the investors are waiting to see the outcome of the project. If the agreement between PTCI and Snowy Mountains comes out in the near future, this will be a very positive indication for other investors.

In case of Karnali, there has never been an agreement between India and Nepal. Nepal wanted to develop the project way back in 1960 and several studies had taken place. India was included in the study to ensure that the project's parameters were acceptable to India.

The environmental lobbies are not putting much pressure against hydropower projects. Both the government and the lobbies want to settle the pending issues amicably.

Chairman of the session, Mr. Abdullah Yusuf, gave his view that in the case of Nepal, electricity is contributing only 1% to their energy resources despite the fact that they have the potential to produce more hydropower. In the meantime, the Nepalese people are consuming a lot of their fuel from other sources of energy like animal waste. Ultimately these are affecting the forest, which they certainly do not want. Nepal needs to change the entire environmental situation.

Regarding lack of foreign investors' interest in Nepal when the country had a large potential of hydropower, Mr. Abdullah Yusuf mentioned that if a country does not base projections and policies on market or market oriented or commercially oriented economics, it discourages investors.

Mr. Abdullah Yusuf added that while the price is only a few cents for exporting power to India from Bhutan, the hydropower projects are very costly. Not every investor will be able to

sell at that price though hydropower is cheap in the long run. This is another hindrance for attracting investment in this kind of big project.

India-Nepal Power Exchange

The power exchange between India and Nepal is not synchronised. India is supplying power to some 10 to 15 Nepalese locations while Nepal is supplying to 2 or 3 Indian locations. As the power supplies are not synchronized, it puts constraints on exchange of power between the two countries, Mr. Malla said.

Nepal-Bangladesh Power Trading Possibilities

Ambassador Sobhan inquired about the problems in discussion-- trilateral or quadrilateral-- on co-operation regarding development and utilisation of hydro-resource. For example, if Bangladesh came as a potential end-user of Nepalese hydropower and there are a couple of multinationals that would like to finance such projects, what would be the response of Nepal? Specifically, what would be the position of Nepal in case of projects that are invested or built?

Mr. Malla answered that direct export of electricity from Nepal to Bangladesh is not possible because Bangladesh has no common border with Nepal. Electricity cannot be transmitted without transmission lines and it has to pass through Indian ground. However, export of electricity to Bangladesh is possible through the joint co-operation of three countries Bangladesh, India and Nepal.

Bhutan-India Power Trading and Possibilities for Bhutan-Bangladesh Trading

Ambassador Farooq Sobhan asked Mr. Pradhan whether Bhutan has made a sales agreement of the 100 MW hydropower of Talla project that was scheduled to be finished by 2005.

Drawing attention to the feasibility study carried out for the 360 MW Mangdechu Hydro-electric powers under NORAD funding and for the 900 MW Punalt-Sangchue projects under JICA assistance, Ambassador Sobhan inquired whether Bhutan made any sales agreements for these projects. He also asked if it was possible to see Bangladesh as a customer and what would be the modalities for the negotiations? Should Bangladesh Government approach the Royal Government of Bhutan?

Mr. Pradhan informed the workshop that Talla was a grid project that is funded up to 60% by the Government of India and up to 40% by loan-company. Before the construction of such grand projects, the sale contract of electricity has to be signed. So there is no provision for Bangladesh to become its customer.

He said that against the domestic prices of 50 paisa per kWh for rural consumers and 70 paisa per kWh for urban consumers, the Talla power export price to India was set at Rupee 1.5 per kWh. The Talla price is continually reviewed every 4 years as per the agreement.

Mr. Pradhan further said that there were two projects in pipeline, of which feasibility study of one has been completed. It has not yet been fixed who would be the buyer, and what would be the other modalities. The financing of the project has not yet been finalised. And it is not necessary that Bhutan would sell electricity only to India. People are talking about common grid or SAARC grid for the SAARC countries. If it happens then Bhutan will be able to sell power to Bangladesh also.

Bhutan's Hydropower Projects

Prof. Lama noted while Bhutan is a country with no FDI policy and no vision document for hydropower policy, it is undertaking various hydro-electricity projects. The Bhutan 2020 Document shows the Sancoach scheme as an important upcoming hydropower project that would generate revenue of almost Rs. 9500 million per annum. What is the status of the Sancoach project at present?

Mr. Pradhan said that after the preliminary studies of Sancoach project, Bhutan was working on a detailed Environmental Assessment Study (EAS). Upon completion of the EAS, the Royal Government of Bhutan will take a final decision on it.

Why Bhutan Imports Power

Mr. Rizwan inquired why Bhutan was importing power from India when it is in a position to export power. What is the import price?

Mr. Pradhan answered that since Eastern Grid is not connected to Western grid and since Eastern grid has low installed power generation capacity, Bhutan needs to import power from the Power Grid Company of India (PGCI) in Assam. The Bhutan power authorities resell power to consumers after purchasing it from producers like Chuka at the rate of 30 paise per kWh. In this manner, Bhutan just pays the wheeling charge of 5 paise only to India and the total comes to 35 paise. However, with the completion of Kurichchu project, the power supply scenario in Eastern grid would improve.

Conclusion

Mr. Abdullah Yusuf summarised the session saying that there was a need to:

1. Recognise the ability of the region to serve all types of energy needs of the countries.
2. Accept and recognise the commercial aspects of energy use.
3. Understand the historic background of different countries' subsidies, which were likely to go in the future, and that these countries have to find the way out from the situation created by subsidies.

He also observed that Bhutan has tremendous resource and potentials. But these were under-utilised. Bhutan has to move in a very commercial manner to utilise these resources. Dr. Debapriya Bhattacharya stressed the need to design a solution on energy with the various concepts of studies available. For this purpose, the workshop must have more focus and concrete design. The workshop should utilise the focused country presentations to evolve a broad picture having concrete policy agendas, which may be taken up by policy makers at government, or inter-governmental organisations.

Fourth Session

Identification of Issues for the Study

Chaired by the former Chairman of Petrobangla, **Mr. SKM Abdullah**, the fourth Working Session dealt with **Identification of Issues for the Study**. **Dr Upali Wickramasinghe** of SAARC Secretariat, Kathmandu, Nepal, presented the issues for the Study.

12 Issues for the Study

Dr. Upali Wickramasinghe dissected all the country papers and identified 12 major issues, which need to be tackled. His presentation is summarized below.

1. Politics of Energy (POE)

POE should be given priority for research topics. For example, the Sri Lankan (SL) government wants to undertake thermal power projects as they have shortage of energy. But due to political resistance, the government scrapped the project. All the SAARC countries have experienced the same kind of political obstacle. There is an emerging pattern in terms of academic exercise that political parties use energy-sector-resource issue as the weapon for winning the next election. The parameters of these political interventions and resistance should be identified.

2. Property rights in SAARC Countries, Excluding Maldives and Sri Lanka

When hydropower projects are implemented, many land properties go underwater. In Nepal, downstream benefits have to be evaluated and shared. The Nepalese government will need even to convince the population as well as politicians that it is a worthwhile exercise for us to go ahead with the development project. As long as we know, the outcomes of submerging vast amount of land under water are going to benefit Nepal as well as India. Therefore, it should be identified who has the right and who is going to benefit from the water resources.

In case of Bangladesh, there is a different kind of property right issue. There is a kind of problem of present generation as well as future generation because the whole question of exploitation of natural gas falls down to one particular issue—conserving 40 to 50 years reserves of gas, as if we are more concerned about the future generation than the present generation. It may be, of course, we should be warned right now about our present generation because South Asian countries are offering so much.

3. Contractual Obligations

Within the national boundaries of each country, we have independent power producers for electricity generation and selling to state electricity boards. Beyond that there are India-Nepal agreement, India-Bhutan Electricity Agreement and Bangladesh having exploration agreement with foreign firms. India-Pakistan failed to arrange a trade agreement on electricity. So there is a need to dig deep into problems of having these contractual obligations among power producers and power electricity boards on the one hand and, on the other hand, between various governments and obligations with foreign firms whatever that may be.

Then we can think of a better strategy to position ourselves in the future. So that we know exactly how we are going to enable other strategy, how to pay foreign firms, how we are going to pay the independent power producers and so forth.

4. Infrastructure

The first thing relating to infrastructure is the lack of readily available information. We readily need to evaluate the status of infrastructure before we take decisions about what really we want. Because, in the Indian context, particularly over the last several decades, the emphasis had been on adding new power generation plant, distribution and so forth. Even Sri Lanka builds more

distribution lines without adding sufficient power generation plants. South Asia actually is nowhere in terms of infrastructure.

Also we've to keep in mind the question of incompatibility. When we're thinking about regional co-operation we should also consider how we are going to design our system so that loads can be carried from one country to another. And what kind of designs it should be should we adopt Indian standard or European standard and should be stated with good assessment etc.

5. Utilisation of Resources Available in the Region

Starting from water resources in Nepal, gas resources in Bangladesh etc., there is coordination failure in the region. Market fails to coordinate due to various reasons. We need to identify the reasons. If you take within country situation, the resources are owned by various institutions within the country one department manages water resources; another department manage power supply and so forth. There are many agencies dealing with power and energy. For example, geological survey is done by one organization, natural gas is owned by another organization and, similarly, another department owns forest resources. Further, there are mismatches between demand and supply. So we need to get down to the bottom line of these institutional failures.

6. Growth and Energy

There is an understanding of the growth of economy as having major impact on energy demand. In my paper I showed a diagram that is set for 90 countries and derived a regression equation, which showed that basically a one percent increase in per capita GNP would constitute 16% increase in energy demand.

Then two questions arise: one is, what would be the situation if there is no growth in the energy sector? Second one is decoupling growth and energy growth. The tendency of the world seems to be that energy demand is not growing at the same rate of economic growth because efficient technologies can be used. So this linkage has to be really evaluated in terms of the South Asian situation what is the linkage between growth and energy? Keep in mind that this is not a unidirectional thing. Meaning it is not necessarily from growth of economy to growth of energy demand, but can be. I see that energy supply acts as a major constraint for the economic development of the region. For example, if Nepal can produce electricity and supply electricity to all the people, it can be the major force for the growth of the economy of Nepal. So we have to understand the process and really come to some concrete research.

7. Efficiency of Energy Use

Professor Lama made a very interesting observation. He identified two types of losses arising from inefficiency. One is related to household uses of energy efficiency lost in the process of converting bio-gas at the household level. At the commercial level that is transmission and distribution losses. I would like to add another inefficient use of energy: even at the commercial level we have lots of inefficient use of modern electricity. And there comes the use of all of the energy saving bulbs and so forth. So the whole issue of energy efficiency and use is an important one. The conversion loss of bio-fuel used by households has major implications for health and living standards of the poor sections of the country, particularly women and

children. Where gender issues are concerned this is a major issue. In a recent study in India, Prof. Parekh has found that the prevalence of respiratory diseases among women and children, who use bio-fuel, is very high. So we have to really look at the whole efficiency issue and find out important linkages.

8. Efficiency of Energy and Environmental Linkage

There we have a major problem of knowledge gap. We have to update our knowledge about forest reserves, available rate of extraction, transboundary implications of these forest reserves, etc. For example, reduction of forest reserves in Nepal has impacts not only in Nepal, but also in neighbouring countries like Bangladesh and India, because to the extent we cut down trees in Nepal can affect floods in Bangladesh and India. Recently, flash floods have become a frequent phenomenon in India and Bangladesh because of dwindling forest reserves in Nepal. And later the same issue of carbonisation. We have the issue not only locally but globally, India being a major user of energy, regardless of its low level of per capita energy consumption. It's a major contribution of carbonisation of the world. We have to really think about the parameters in this respect.

9. Rural Electrification

I would like to call it the energy security of the poor segment. I think the majority of the poorer segment do not have access to electricity and don't have enough income to secure enough energy for survival as well as for other economic activities. So that aspect has to be integrated in the plans that we have in the region. I have been talking to Professor Sainju this morning on one particular aspect that I would like to bring your attention to. What is lacking in the whole scenario is special planning. Think of supplying electricity to each and every village household in the region as a goal. I simply do not subscribe to that view. We should really discourage people from scattering their habitat and energy everywhere. You go to Nepal, you see that on the top of mountains, if you go to Sri Lanka you see patterns of households everywhere in the country. The major problem is we don't have land use policy and forest resource policy and so forth. The ultimate result is that providing electricity, water, telephone, etc. becomes extremely expensive in scattered households. So we have to rethink the process and whether we really want to have what I call sustainable poverty. We want sustainable growth rather than sustainable poverty.

10. Technical Standards and Code

This has been a major barrier for regional co-operation in many parts of the world. Because we use different standards, measures, instruments and codes, we have to identify standards and codes in order to plan for regional co-operation.

11. Energy as a Security Issue

This is a major theme that we have to address. Because not only energy security of the poorer segment but also energy security from broader perspective where we can have a major problem. Take the American Energy Policy, which is something completely driven by energy security.

They want to make sure that they have enough energy, enough resource for the next foreseeable future that has to be taken into account. When we talk of trans-boundary pipelines, integrated network, and so forth we also have to remember that this region has so many terrorist groups and fundamentalism. So, how are we going to deal with these issues that have to be tackled squarely? Otherwise, how can we build confidence among countries for usage of energy?

12. Market Reform

I think we really have to review what is happening in these countries in the region, particularly about the whole scenario of unbundling of energy sectors. The whole notion is shifting from central authority to unbundling. I think we need to evaluate whether it is that what we really want. For example, if you look at the experience of California, in the recent past, they have ended up with all of these problems partly because of the problem of unbundling. Of course, there are good examples and we don't want to fall in the same track. So I think we really have to look at market reforms as well as the whole issue of unbundling the power sector of the region.

Summary of Dr. Upali Wickramasinghe's Presentation

Professor Lama observed that Dr. Upali Wickramasinghe's issues could be summarised in 4 different levels of activities described below:

1. First of all, we need to have a regional perspective at the policy level that may include macro policy, foreign direct investment, reforms in the power sector, legal framework and many other things.
2. The power generation scenario at the regional level-- which would broadly relate to investment, types of investment, raw material, technology, and management etc. These should be looked into.
3. The trading of power and energy exchange should be looked into with four perspectives-- (I) Demand and supply match across the region, (II) Question of transmission and pipelines, (III) Question of trading agreements (IV) Institutional arrangements that would include legal framework and procedures.
4. Impact level study/assessment. Let us try to see the impact of trading or exchange on GDP and growth in the political economy. Then issues related to environment, its impact on environment, impact on poverty alleviation, and impact on energy security on regional co-operation.

Dr. Debapriya Bhattacharya observed that the points made by the participants converged on the issue of regional co-operation. These issues should be treated as crosscutting issues and included into Prof. Lama's four activities approach. Dr. Bhattacharya recommended the studies should start from the third one. He urged the participants to concentrate on exchange level and start with the issue of mismatch between supply and demand within the region as well as within the country. The three different types of issues under focus are:

1. Thermal power
2. Hydropower
3. Gas

These issues should be seen as crosscutting issues from the point of view of politics of energy, pricing, how IPP is working, and efficiency. This would build a matrix.

He also suggested focusing on the distribution pipeline issue, and exchange and actual infrastructure part of it, governance, regulatory framework, and legal issues etc.

He recommended breaking all the issues into two groups:

1. Review of existing experience, where we may concentrate on two countries-- Nepal and Bhutan-- because other countries do not have the operating experience, they have aborted experience. They may come as the part of the illustration of politics of it.
2. Review of proposed projects and programs.

In addition, he suggested concentrating on exchange issue more intensively. Look at the demand-supply and look at it from three types of energy resources. Use all these issues that are raised as cross-cutting issues that they should be all addressed, while looking at specific issues under each of them and under two broad categories, existing experience and potential one.

Discussion

Energy Security

Journalist Jaglul A. Chowdhury wanted to know, how many of the countries in the South Asian region have given or attached adequate importance to energy security and in what context are these countries are lagging. He inquired whether it was possible to promote or forge any kind of co-operation in this vital sector.

Dr. Upali Wickramasinghe replied that energy security has not come out in the region exactly the way it has come out in the western countries, particularly in the USA. Unfortunately many of these countries did not pay any attention to the energy issue until the crisis became a real crisis. For example, in Sri Lanka, the government initiated policy only after private enterprises suffered so much because of power cuts there. It did not have an energy program and energy security in its planning process to begin with. To some extent, there is some thinking in the planning process of India, where they have diversified energy usages from petroleum based power to wind power, solar power etc.

Referring to Table-6 of his paper, Dr. Upali Wickramasinghe said that many countries of the region have concentrated on one or two sources of energy, except for India and Pakistan. In brief, we don't have much thinking in the region at this moment.

SAARC

Referring to the SAARC Technical Committee that has been set up recently, Ambassador Farooq Sobhan inquired about the work of this technical committee on energy and the status of the SAARC Secretariat's involvement in the various energy initiatives that are underway.

Dr. Upali Wickramasinghe, explaining the status of technical committee on energy, said that the initiatives have not gone too far. Bangladesh is supposed to be the Chairman of the technical committee on energy. They are supposed to prepare a concept paper on it. In contribution to Bangladesh's paper the SAARC Secretariat prepared a small paper on it and is waiting for comments on it.

Chairman of the session, Mr. SKM Abdullah, said that, when the European Union was formed the first thing they built was the European Energy Council to look at energy in Europe on the basis of regional energy. EU talked about energy in broader sense in France, Germany, UK and Norway and involved all the people from university, academicians, national institutions. Very recently ASEAN has also started looking in this way. Papers are coming out about ASEAN's resource potentiality. They have already set up the ASEAN Mineral Development Centre. SAARC- Energy Council can be linked with this.

Composite Picture of Energy Strengths and Weaknesses in the Region

Dr. Sainju proposed that a study should look into a composite regional picture of energy in terms of strengths and weaknesses. Whether we talk about gas of Bangladesh, water of Nepal and Bhutan and most of India, there is a need to show a complementary picture, which has not been shown before in any study.

Mr. Greg Gritters, Unocal, added that the real issue in the region is finding energy security. It will be useful to follow a long-term view on regional co-operation, where one country starts building pipeline to cater to the others initially. After 20 years, may be that same country can have its own energy security because by that time the life time supply of gas is coming from another region. A study should be done on a regional basis looking at all of the supplies and all of the demand that exist. And it is wise to look at future value rather than to look internally.

Calculating the Cost of Non-cooperation

Dr. Sainju noted that while there had been talks about co-operation, none calculated the cost of non-co-operation-- in quantitative as well as qualitative terms. This would be useful not only for the sake of policy makers but also for informing the wider civil society in order to develop a sort of momentum for pressurizing respective policy making process for co-operation.

Demand Side Management of Energy

While everyone presumed higher energy consumption is a desirable thing and it is correlated to the degree of growth and development, the most modern concept on energy is the efficient use of energy, demand side management of energy. We should focus on the efficiencies in production, transmission, and especially focus on the demand side management of energy. Higher consumption of energy doesn't mean that we are developed. Some developed countries ought to be denounced for the misuse of energy.

Advocacy Force in the Region

A quiet revolution is going on at the non-governmental level within the region. Environmental groups are coming in Nepal and Bangladesh. This sort of initiative can act as an advocacy force for co-operation in the region.

Legal Issues

A participant, citing examples of Bangladesh, added that various laws act as an impediment for regional co-operation. In Bangladesh, the Electricity Act, 1910 did not allow any agency or any utility to carry out sort of border trade outside the country till it was amended.

Efficient Use of Energy

Mr. Azimuddin Ahmed observed that more use of energy is important. Wastage in both gas and power sectors, particularly in the power sector in Bangladesh is a horrendous story of 45% system loss and average power. In certain states of India the situation is not much better either. How can we tackle this issue? How can we use energy in the most efficient fashion? I think this forum could address this issue.

Chairman of the session, Mr. SKM Abdullah, added that system loss and poor energy efficiency are a South Asian disease. We hide power theft in a word-- system loss. According to some World Bank experts, this theft is not a loss, as it goes into the economy and somebody uses it. They call it unmetered consumption and term it Revenue Loss instead of System Loss. The electricity is not lost, the Power Board is losing revenue.

In the last 10 years the power consumption in Sweden has reduced but the per capita income has increased. So it proves that efficient use of energy saves money. So we need to confirm efficient use of individual and commercial consumption.

Nepal's Potentials

Nepal has 40,000 MW of hydropower potential. If Bangladesh could buy power from Nepal and perhaps Bangladesh can sell gas to India. In Bangladesh we have a fear that the country may run out of gas in the next 12-30 years if it is misused. And that's why issue of gas export became very important. Does Nepal have similar concerns about the future of its energy potentials? If they sell to Bangladesh and India, then what will be left for them? A study could be done to look into this particular area.

Energy Exchange Tariff

Pricing of both hydropower sales to Bangladesh and gas sales to India should be studied. Bangladesh has Production Sharing Contracts and Gas Purchase Sales Agreements where energy pricing has been related to global oil price. Since petroleum price has an impact on fuel oil price, the issue of pipeline gas price should be looked into.

Settlement Pattern and Distribution System

The Chairman of the session, Mr. SKM Abdullah observed that settlement patterns have dominated the designing, in the early 90s, of our energy distribution system. Describing how the settlement pattern affects distribution system, he said that in the central part of Uttar Pradesh in India, the settlement pattern is township. Towns have evolved either around the night castle of a village or around a well. But from Bihar to the east and from Southern India up to Sri Lanka one can see scattered settlement patterns. Here the distribution cost goes up 4 or 5 or 6 times.

He said that installing electric line, gas pipelines and telephone lines in one direction on one side of a town helped make township patterns. It is for economic reasons, otherwise it can be done by force as it was done in China.

Developing the Water Resources

Mr. Malla added that by 2025 Nepal thinks of developing around 7,000 MW of power to meet the domestic demand and 15,000 MW for export purposes. To do that it has to develop some large sized hydropower projects in Nepal. Nepal expressed her grave reservation about the comments by World Commission on Dams. This report is going to be a great hurdle. The responses of other countries of the region are still unclear. India has a very strong reservation about the report. This issue needs to be looked at if we really are thinking about the development of water resources of the region. We should emphasise on the Ganga, Brahmaputra and Meghna region.

Framework Agreement for Regional Co-operation

Ambassador Farooq Sobhan recommended looking at a framework agreement for energy co-operation in South Asia taking into consideration the regional politics. This framework agreement would include a vision statement addressing particular problems of exchange at two levels-- the issue of supply and demand in terms of national entities and export of surplus – and address a 10-year vision of the situation where we'd move from national to regional focus. The framework agreement would look at the critical issues of how we co-operate. SAARC is there for 15 years and talks on this co-operation did not materialise. We also have been talking about buying hydropower grid and export of gas had been mooted back in 1972, during the first Awami League Government and substantial progress was made. But 30 years later it still has not happened. And in 30 years we have not been able to make a step for purchasing hydropower, also electricity, from Nepal or Bhutan. Dr. Upali Wickramasinghe made a very important point that there is a need for harmonisation of standards, which should be addressed within the framework. We need a legal framework, a regulatory framework to look at the kind of entity through which these agreements and exchanges will take place. Can we think in terms of some kind of Regional Body or Regional Entity that will provide for energy exchanges? What will be the mechanism? Do we just agree within the framework agreement that we will have this pretty much up to the private sector and foreign investor to do it? Frequently, we find that it is the governments themselves that have stood in the way of co-operation taking place.

Dr. Debapriya Bhattacharya noted that once we go into trans-border/inter-regional co-operation, we obviously need a regional body for a dispute settlement mechanism and without dispute-settlement mechanism you cannot make any regional co-operation workable. In fact, in WTO, the discussion has already started on energy issues and energy is grouped under GATS (General Agreement on Trade and Services). So energy all of a sudden has become a service and it's tradable. In fact, USA is leading and creating a working group over there. And developing countries totally are not around the periphery that way. So this issue also has to be linked together with the global issue, which had been debated.

Energy Highway

In energy highway one may get it in or get out at one's convenient time. Assam got some excess gas that they are not using. Tripura's potential has not been fully developed. So India wants to get its own gas through pipeline. Bangladesh has excess gas it can sell either to West

or East, whichever it likes to sell to. So Energy Highway is one of our dream projects, said Mr. SKM Abdullah.

In this connection, Mr. SKM Abdullah recalled a World Bank official named Maha and said that he pursued some dream projects in Asia. In 1996, he had to roam around the whole region from Pakistan to Bangladesh. He used to start from Yadana (Myanmar) then come through Bhola, to Kolkata to Delhi to Pakistan, then to Iran, Qatar and Oman. That was the time when the Iran-Oman direct-pipeline project collapsed after spending nearly \$100 million. At the same time, the Turkmenistan-Japan project also collapsed at its initial stage. Turkmenistan has 17 TCF of gas but it did not have local or regional market.

But South Asia is energy hungry; we have got energy shortage in total with one and half billion people. But Oman, Iran, Qatar and Turkmenistan altogether have got more than excess. There are about 200 to 4000 TCF of gas in Qatar, which has a very small population. Recently, Qatar has extended its pipeline to Amman, Jordan. Jordan is also a large country with small population. Total appraisal has not been done yet. And they have no market, they cannot sell it to their neighbouring countries who are all surplus with energy. So they are bound to sell to the East. It is an issue that should be addressed politically.

As Mr. Azimuddin has mentioned, with all this power in Nepal and Bhutan they have already bilateral agreements with India. So Bangladesh has two choices: one is to have a bilateral agreement with Nepal and another is bilateral agreement with India for bringing it to Bangladesh. Another alternative is a multilateral agreement with all countries in one agreement.

What Bangladesh will do with its gas has generated political controversies. More than 52% gas is being used for producing electricity right now and in the next 5 to 10 years it will rise to 70%. Five thousand MW of power means 1000 million cubic feet of gas roughly. And that is what is needed to make a viable economic pipeline to link up with Iran, Qatar and Indian pipeline somewhere around Delhi or South of Delhi.

It is so much easy to sell an idea to our political administration of getting 5000 MW power from Bhutan or Nepal. But it is very difficult to do such thing without political consensus. It is even difficult to set up a pipeline locally. Installing the pipeline from Kailastila to Ashugang had been very difficult. Every Upazilla down the road created obstruction on constructing the pipeline, demanding that you cannot take pipeline without giving us gas. So we had to pay a million dollar of compensation for 180-kilometer pipelines for the delay of the contractor, because every upazilla head quarter had obstructed them from constructing for days and days. A case in this regard is hanging in the arbitrary council. So, for taking gas from Bibiana to Kolkata one will have to calculate how much compensation might have to be given.

Power Generation Planning at Regional Level

Mr. Malla added that in order to visualise South Asia as a seamless energy pool, one has to look at power generation planning at the regional level. Then it is needed to look at making optimum use of resources and making it available to countries of the region at the least cost option. We should also decide whether we want to limit the exercise at the national level and consider the exchange based on the surplus of one's requirement or whether we would limit it at the regional level itself to make the best use of the resource at least cost.

Fifth Session

Firming Up the Study Approach

The fifth Working Session, chaired by the former Secretary of the Ministry of Energy and Mineral Resources, Bangladesh, **Mr. Azimuddin Ahmed**, dealt with **Firming Up the Study Approach**. **Professor Sridhar Khatri** of the Department of Political Science, Tribhuvan University, Kathmandu, made the presentation of Study Approach.

Learning from other Regional Treaties

Professor Sridhar Khatri said that his perspective about the study was regionalism. First, we need to examine the other models and see what lessons we can draw from their experience. There are significant lessons from the region and outside that can be learned. We need to recognise that different regional groups in the world have done substantial work in energy co-operation and we could learn from them. For instance, we can learn from the Mekong delta project. It was originally planned in two stages but it was interrupted largely because of the Vietnam conflict. But it again was started in a way that would again be a major source for development in that part of the world. At the moment, they agreed on 169 different projects that would include such important issues like energy but also flood control, irrigation, meteorology, drainage, water management and all the rest. Now this is something that we must consider. Does energy issue need to be considered in an isolated forum? Can it be done in a gimmick of overall structure? Or, can one complement other projects that have been implemented? This is something that needs to be explored.

There are many treaties which this workshop should look into-- River Plate Basin treaty of 1967 among Argentina, Brazil, Uruguay and Bolivia, treaty in Africa between Mali and Nigeria under which the Volta-Leptaco-Golma regional integration development authority was created, and the Uasirata Treaty of 1973 between Argentina and Paraguay that involved the development of energy from Panama River that amounted to 5400 MW of electricity.

The sole consideration for future studies would be in terms of drawing lessons from them. But most important lesson from them would be to develop analytical tools for negotiating agreement for cross border management of energy. We think that any treaty, any agreement, like negotiating between two countries on any other matter, it tends to differ from issue to issue and energy is entirely a different ball game in this regard and perspectives have to be different.

Win-win Approach

Professor Sridhar Khatri advocated changing our approaches to energy study from traditional national perspective, which is seen to be largely influenced by the concept of zero-sum game instead of a win-win game.

He suggested that the basic model is known as the Medusa model. In a sense, what is possible for one country could be advantageous to another. And also what is again beneficial at the regional level could be more beneficial if it is looked at only from the national level. This approach would be to look at it from a broader perspective that again benefit sharing could also be developed. This would again emphasise looking at it from a perspective of energy co-

operation as a common potential, identifying ways in which energy policy could be harmonised through sharing of information, experience, technology and also involve both the private and public sectors, without limiting to public sector only.

Growth Zone

We should examine the energy issue on the basis of economies of scale, where development of energy resources might contribute to the creation of a regional growth centre. The best example is the Kionsai region in Japan. If you look at Kionsai, it is essentially the 7th largest economy in the world. And in China, the GDP per capita in Sangzan is around US\$5695 compared to the whole of China, which is only US\$317. Growth zone contributes substantially to the country's economy and growth. If the growth zone happens to be cross-border and involves many countries, it can also boost up the economy. And here also energy is an important component. I'd say the same theory has been again with the growth triangle applied to South East Asia, involving Indonesia, Malaysia and Thailand around Medan Penang and Phuket area. Also the possibilities that I mentioned when we talked about the Brahmaputra Meghna Ganges basin. The prospect of looking at it in terms of growth zone, involving other areas and including energy as the main vehicle of this type of development is something that is again possible to examine and necessary to consider.

One of the essential elements in looking at a growth zone is also to concentrate on specific projects. We need to identify the specific projects that are doable, easy and necessary and can be implemented within a given short period of time so that some of the schemes can again be implemented within an acceptable time frame.

Regional Politics

Without giving due consideration to the political aspect the energy situation and problems in South Asia cannot be discussed. A Nepalese cannot understand why gas export is a controversial issue in Bangladesh. Even among the energy experts there is very little information sharing and we know very little about why and what the local intricacies are.

Why the pipeline prospect among Iran-Pakistan-India has not been exploited? What are the reasons that the surplus energy of Pakistan cannot be sold to India? Is it a pricing problem or what? What are the real problems behind this? These are the problems that need to be tackled at the political level.

Information Sharing

Information sharing is an important component in the process of understanding regional politics. Any study looking at this dimension should focus from two angles. The first is the internal limitations of countries themselves. The second is the scope for problem solving at the regional co-operative level.

Internal limitations, for example, may include the inability of the state to develop a clear-cut national energy policy that might be reflected in the lack of confidence in dealing with energy issues with another country. It may be due to poor data collection or poor data interpretation. In terms of gas possibilities, how much reserve you have and in politics also there is uncertainty about what the returns would be.

The second factor here is, in terms of energy issue, a mechanism that a country uses as a welfare subsidy for its people, because there are very few other things they can provide. But this is the question that you have to explore in making projects commercially more viable. Why cannot states do it that way? It is a question related to poor management.

Poor Monitoring

Poor monitoring needs to be looked into. This is again related to wastage, proliferation, loss of energy in transmitting, etc. These are all internal limitations countries face. We have to have a comparative study on this component among all the countries in the region before they can reach solutions more clearly.

The other aspect of the scope of problem solving lies at the co-operation level. In terms of problem solving, the basic point is information sharing and experiences that can help to overcome internal national weaknesses.

Data Bank

There is a need to create a data bank on energy matters. We need all the people to sit down together here so that we can get at least basic information. We need to know what other people are doing so that we don't duplicate things. But the data bank factor is one of the essential components looking at future energy possibilities in South Asia, which would include, for example, supply and demand factors. It is needed to examine, in clear technical terms, how the flow projected growth rate of each country can be met given the energy requirement. No comparative studies have been done at this level either.

Joint Planning

The fourth factor is in terms of looking at possibilities of studies or finding mechanisms that would encourage or arrange for joint planning of major projects possible. Planning is an important ingredient for any form of regional co-operation in the energy sector, as in other sectors. Now there are certain difficulties in planning in many areas. One is not sure whether or not one is using the proper planning technique. Secondly, again there are errors involved in projection and the fact that there might be errors, which might be very costly in terms of project in energy, is really very frightening. We also have the problem of data collection and analysis and also the measurement of costs and benefits. It is not only cost and benefits but also the benefits of non-co-operation that need to be considered.

Ability of a Restrictive Economy to Fit into a Global Framework

The ability of a restrictive economy to fit into a global, rather regional, framework should be looked into. That is the ability to make short-term economic sacrifices for long-term gains. And also the ability for getting support from developed nations and multinational companies in terms of bringing in investment. This means that developing is basically strengthening your own capabilities.

Confidence Building Measures

Since there is an accepted fact that there are political hindrances towards co-operation, may be it is time that we have some form of confidence building measures so that certain understanding

among countries or confidence building initiatives are taken within the region. It is time to take some small projects, which will instil a sense of trust and confidence, which may eventually have a multiplier effect.

Energy Security

The security of energy is related to confidence building. For example, Bangladesh may not feel secured because we are talking about resources that are going to deplete fast and you may not have something in return. But in terms of hydropower that is a resource that does not deplete immediately or even in the long run. Even, it is an on-going scheme. But there is also insecurity involved in terms of manoeuvrability and the fact that you might not get initially good returns on any agreements you may have. Security is another very important aspect, which cannot be ignored.

Discussion

Growth Zone

Dr. Upali Wickramasinghe sought clarifications of the two approaches mentioned by Prof. Khatri. One is regarding the river-basin type of framework that has been applied in East Asia and other countries in the past several decades. The other is growth zone. There are merits and demerits of both these systems. Promoting the growth zone approach Dr. Wickramasinghe said that proximity played a very big role in economic development. As per one of his own calculations, 30 per cent of the variance of the world growth rate can be explained by using proximity as one variable. So that has lots of implications for regional co-operation, regional development, as well as what Professor Khatri suggested.

Balance of Benefits and Developments

Dr. Upali Wickramasinghe noted that in one of his research works he had identified modalities of co-operation that contain 3 principles-- one being a win-win situation, another gradualism and the third being equity of benefits and balanced development. He emphasised that we need not only the win-win situation but also the balance of benefits and developments.

Bangladeshi Gas Export Pricing

Regarding export of Bangladesh's gas, Mr. Azimuddin Ahmed raised a question. Whose gas will be exported? Of the total onshore and offshore gas, which is coming from Sangu for the first 5 years, 79% belongs to Shell and 21% belongs to Bangladesh. After that 53% belongs to Shell and 47% belongs to Bangladesh. So far, Unocal project is concerned with the first 5 years 66% gas belongs to Unocal and 34% belongs to Bangladesh. After 9 years, 34% belongs to Unocal and 66% belongs to Bangladesh. So, whose gas is going to be exported? This question needs to be addressed first when the question of export is raised.

Global Environment Issues

A participant added that no matter what hydro-potential South Asia has, the energy economics of the region will continue to remain dependent on fossil fuels for a long time. Having understood that, we need to address the global environment issues in a more focused manner than we so far discussed in the forum. We should take into account the greenhouse gases. India

is largely dependent on coal. Pakistan has found a large deposit of coal, which they are also considering using in the long-term future. We need to identify that we have to have regional co-operation in using energy resources, whatever sources they come from, so that we can put energy-environment issue at work that would be beneficial to all the countries of the region. We also can think about using nuclear energy. Regional energy co-operation should be looked through environmental issues and we should take a unified approach like the Kyoto Conference.

Political Aspect

Dr. Ejaz Hossain distinguishing difference between distribution and transmission losses of electricity said that technical losses and non-technical losses are entirely different. In discussions, the distinctions should be made clear. In technical efficiency loss, lots of studies have been done but little has been implemented. The forum should not go for purely technical aspect of energy. Rather, it should talk about the sectorised dimension of the energy issue. One of it is the political issue. The project to bring gas from Iran and Turkmenistan is a vastly political issue.

True Co-operation and Energy Security

Advocating true regional co-operation Dr. Ejaz Hossain said that true co-operation can enhance energy security, which is an important aspect that should be studied carefully. Energy security issue is an expensive issue for developing countries like ours, but for developed countries it is easier for them. One of the simplest policies of energy security performed by developed countries is stocking oil. Oil stock for 3-months for developed countries is a huge amount. Developing countries cannot afford it. As, for example, in Bangladesh if there are disruptions in oil balance, the total transportation system of our country will collapse, since we do not have our own domestic oil. We import total usage of oil. But India can. They have their own oil. So they can run for some days but not for long time. So this aspect also should be studied. Therefore, we will be able to get some energy from some common energy pool in crisis moments. We can create a pool to stock energy for at least one month for the region.

Data Bank

Dr. Ejaz Hossain re-emphasised the need for having a data bank on energy and said that the Asian Energy Institute Forum was trying to build that. However, we should not just collect data, it should be accompanied by some analyses. Another important aspect is capacity building. We really need to emphasise this.

Study Methodology

Dr. Ejaz Hossain inquired about the methodology of the study. Researchers will basically conduct the studies. When a project is being implemented, it goes through 3 levels. The researchers are the first level technicians. They bring up the issues, on which further report is generated. The people who are Independent Consultants further take up this thing. They produce the pre-feasibility study of the report. Next come the consulting firms, who actually build the dam or project. So we need to understand these levels of work.

Dr. Debapriya Bhattacharya said that the first level of the study was being done through this workshop. Unocal would do the level 2 and level 3 of the study. It is Ambassador Farooq Sobhan who insisted that in this forum we should identify concrete projects. Earlier, the government and now the private sector, both local and foreign firms, are doing their own studies and finding out where things can make money. How can you induce them to make money, since their problem is more irrelevant to bringing in money by using energy resource that may be used in the developmental need of the region? So exactly where we, as a level one player, can really contribute in that way?

Mr. Greg Gritters of Unocal said that when any work that Unocal puts forward for decision by the government, it is looked upon as biased. Although we believe that a study could play a vital role in putting together a format for evaluating cross border energy projects and then also to serve as a guideline on how to proceed with work. Whether it is a pipeline from Iran or Pakistan to Delhi or whether it is a hydro-power project from Nepal or Bhutan to India, or Gas pipeline project from Bangladesh to India, the studies provide a framework/format for the government to use, to say that they have followed a consistent supply and demand analysis done by an unbiased body. Secondly, when it comes to determining the incentives, it is better to have an independent body rather than someone who is biased towards gas supply or someone who is biased towards customers. An independent body can look on both sides and say--yes, these are the incentives for both the customer and the seller". Finally, the road map for good framework for price setting, probable ways to negotiate the policies and legal framework to be borrowed can be provided by independent bodies.

Mr. Greg Gritters noted that such a study is very useful. Then somebody, an investor or country, can pick this up and say now we are following unbiased procedures. A body like this with regional contacts and with no vested interests of the group as a whole would be very useful and helping governments to make decisions in evaluating proposals like the ones Unocal has put forward.

Ambassador Farooq Sobhan noted that this workshop did not intend to undertake projects. Instead the group was trying to identify projects that are already on the table and are doable. A group like us can take a holistic view, comprehensive view of all aspects of these problems and arrive at a conclusion. He adds, five years ago in the very first meeting of Foreign Secretaries where he was present, the subject of energy co-operation was discussed. After 5 years, very little has been done. What are the reasons that the progress is so slow? In January 1998 we had a meeting in Dhaka with the Prime Ministers of Bangladesh, India and Pakistan along with businessmen, where gas export through pipeline and electricity corridor were mentioned by the Prime Minister of Bangladesh. But after three years zero progress has been made in both government and private sectors although both agreed on several points. So why did we make such a decision that cannot be implemented? Energy can be a very profitable sector in the region because many win-win situations are available.

To understand this, an objective analysis is needed on the basis of our discussions. Also, we need to look from the prospects of potential investors to see what are the things we need to put together to make things happen. We need to address the issue of regulatory framework. Why is the subject of Asian Highway and Asian Railroad not moving forward? At the end, we need to

get a matching of customs procedure. Matching of certain formalities in the border can make this happen.

Emphasising the creating of at least a good databank on the energy sector, Ambassador Sobhan said that profiles of all the existing and proposed projects should be fed into the data bank. Then identify which are the projects that are doable in the first phase, then look into the issues of financing these projects.

The Asian Development Bank (ADB) is still firmly of the view that future regional co-operation really rests in doing something concrete and tangible in the energy sector and in the transport sector and they are willing to back this up with serious money. We have to create the political climate. One of the exercises of such a forum is to influence policymakers and to share some of our conclusions made in the end of the studies.

There are at least five parallel initiatives in the energy sector underway. One is led by Dr. Sainju. Another by SARI (South Asian Regional Initiatives). Another one is under the SAARC umbrella. This inception workshop on energy allowed doing some brain storming. The idea was also to get some kind of up-to-date state of play on priority of each of our countries in the energy sector, and to look at the energy profile and energy supply-demand situation. All the participants emphasised energy co-operation.

Chairman of the session, Mr. Azimuddin Ahmed, citing examples of Bangladeshi moves on regional co-operation, said these failed because these were not realistic.

Concluding Session

The Executive Director of CPD, **Dr. Debapriya Bhattacharya**, summed up the workshop in the Concluding Session that was chaired by Co-Convenor, CASAC, **Ambassador Farooq Sobhan**.

Sustainable Development as the Goal of Regional Co-operation

Dr. Amulya Reddy said if one worked for energy on a regional basis, one would come out with more cost effective planning than if one worked on an isolated country basis. We start discussion on policy making without setting goals and without outlining strategies. But goals, strategy and policies are hierarchical and it is necessary to specify all three things. Goals are objectives that should be stated in one paragraph or one or two sentences. Strategies are broad plans to reach that. Objectives require one-page. Policies are very detailed courses of action to implement the strategies. Then if you jump into policies without setting goals, and outlining strategies, then policies would not have any context.

Dr. Reddy said that a publication titled “Natural Gas Options for Bangladesh” suggested 3 main options for Natural Gas of Bangladesh: 1. Export, 2. Use of Natural Gas for meeting industrial and domestic energy requirement in Bangladesh, 3. Production of electricity.

The question is how does one choose amongst these three options. Unless a goal has been defined, one cannot choose between options. There are three goals that you can think of: 1. Economic growth measured by GDP, 2. Environmental goal for the emission of CO₂ , 3. Sustainable development.

Again, sustainable development has got 4 components:

1. Economic efficiency

2. Equity (Poverty alleviation and basic need)
3. Self-reliance, empowerment
4. Environment

Dr. Amulya Reddy added that one cannot choose from these 3 options of natural gas of Bangladesh unless you specify in advance what you are chasing after. What is the goal of regional co-operation this forum is thinking about? The goal should be sustainable development with the component of economic efficiency, equity, empowerment and environment. This links up with poverty in the backdrop of the enormous resources in the region. Sustainable development should be the goal that would guide our efforts with regard to energy for regional co-operation because this group believes in equity and people.

End Usage of Energy

Dr. Reddy noted that there has been very little discussion of the end usage of energy. We have primarily been concerned with supply issues. Dr. Sainju in his presentation expressed his concerns about demand management as being an important aspect. The presentations had a very strong supply-bias and that reflects an old paradigm for energy that existed 20/30 years ago. Whether the whole focus was on increasing supply and not bothering about efficiency, which energy use and who are the beneficiaries of the energy.

The new paradigm for energy emphasises the services that energy provides. This means that one should look at not only supply of energy but also at efficiency when energy is used. One also has to look at who are the end users of energy. This is something that has not been emphasised in this workshop. This refers to the people below the poverty line in rural areas.

Efficiency and Energy Growth

Dr. Reddy observed that the question of efficiency is very important because it decides the energy GDP elasticity. It was mentioned that if you want 6% GDP growth then you have to pump in 9% growth in energy. That is based on the assumption that the efficiency will remain the same as at present. If, however, energy is used in a more efficient way then there will be a type of decoupling growth in GDP, as mentioned by several people and which is very important.

Energy Pre-conditions for Regional Co-operation

“What are the necessary and sufficient conditions for energy as an important instrument for regional co-operation”, asks Dr. Reddy. He answers, the necessary conditions include that each country involved in the co-operation abandon the goal of self-sufficiency. They have to think of inter-dependence, not dependence. And when you talk about inter-dependence you have to think of two situations. One situation is that where two countries, A and B, develop their energy systems in an isolated manner. In the other situation, two countries develop their energy systems in a co-operative manner.

Agreeing with Dr. Ejaj Hussain that the cooperative approach is better than the isolative approach, Dr. Reddy noted that one has to construct a scenario whether the countries develop their system in a co-operative way or in an isolative way. The cooperative way is more cost-effective way than the isolative way. In other words, it is a positive sum game and there is a win-win situation. These are the necessary conditions.

Political Support

Dr. Reddy observed that several of the participants mentioned that political support is also required. This brings up the whole question of what is the role of groups such as this and where does the political support come into the picture. And there have been several formulations of how to go about this. There are three important phases: 1. Analysis, 2. Advocacy, 3. Action.

As far as analysis is concerned, it has to be excellent, rigorous, completely transparent and reviewed by peers. And the power of analysis depends on how excellent it is, how rigorous it is, etc. Analysis is something that can be contributed by groups such as this.

After the analysis is over, then comes the advocacy phase and in this phase the academicians have to overcome our shortcomings. One of the most important shortcomings is that by writing scholarly papers we think that our job is done. It is not done at all. That paper should reach decision-makers-- not merely the current secretaries to the governments. We have to see that it is disseminated as widely as possible and make sure it reaches the civil society who will, in turn, put pressure on the political representatives.

Objectives of the Workshop Rehashed

Dr. Debapriya Bhattacharya said that all the papers presented here served the first objective of the workshop that we wanted to update ourselves on the state of play, knowledge. The house should decide what would be the fate of these papers. In many ways, they are very rich and they should be made accessible.

The second objective of the workshop was to exchange information on the ongoing and parallel exercises. The country reports in some ways brought out very empathetically the position of project portfolios in terms of energy activities that are in the pipeline, that have already been installed, what is being anticipated and what were the projects which were once abandoned.

There is a need to enlist the research that had taken place. He suggested that the SAARC Secretariat and Dr. Sainju might help the group in this regard by his dual activities under SACEPS and SANEI.

Data Bank

Dr. Debapriya Bhattacharya said that there are many people who created e-mail based networks. It is not known whether there was any energy network or energy study network.

Review of projects

When we look at the information exchange part, which includes demand/supply, transmission issue, regulatory framework, it also takes care of the project concern which was coming up quite strongly and finally it came out that we need to generate some confidence building projects. That's why it should include both a review part of some of the major projects and also those that have been aborted also should be taken into account.

The other approach is that instead of an exchange approach, we focus on regional co-operation. We go straight ahead and hit the collusion activity of the entire project and analyse it. On the basis of the analysis we come to a conclusion and again put on the table, discuss and go further. Concrete listing and evolving a typology might identify the generic problems. The

first generation problem was that we really could not go much forward. But the second-generation problem that is taking place in each of our countries is putting them in the context of the policy reform and how to relate them. The forum will have to choose between these two. All that we discussed here will not necessarily be selected for the study.

Referring to Dr. Reddy's comments on end-use and demand management aspect, Dr. Debapriya Bhattacharya said that these fell into the impact level. He agreed that the goal is sustainable development. Here again we are making an assumption that if we really increase our installed capacity in generation part it will automatically lead to more energy, industry, intensive economy, more developmental growth and subsequently to poverty alleviation. Whether there is a different way of approaching is another debate.

Approaches of the Study

Dr. Debapriya Bhattacharya noted that the issues in the workshop have never been looked from a regional perspective, because the studies were not designed from the beginning to have a regional approach. This time we'll try to do it from a regional perspective.

Dr. Bhattacharya mentioned that it would be very good if the study was made multi-disciplinary or at least inter-disciplinary. Two persons will be working together, one, a social scientist, the other, a technical person. The idea is to have a team approach. The third is, one should put this team for working on specific issues; for example, thermal power, or gas or hydropower, etc. So, one from one country along with another colleague from another country of two different specialisations will take up an issue, work for six months and deliver a report on that with intensive communication through e-mail and possibly exchange of visits between them.

Dr. Ejaz Hussain added that preparing country based reports and then making synthesis of those is absolutely useless. If we can put it through in some co-operative manner, the study will be more relevant, up-to-date and will contain the regional perspective in more concrete and specific ways.

National Policies and Policy makers

Prof. Mahendra Lama said that besides the 4 level of activities on which we have to do some kind of intensive studies if we have funds and the time, we have to keep in mind some specific points. First, there is a very strong need to study the policies of government, which should include some hints on how to co-ordinate some of these policies and how to harmonise some of these policies.

Besides our own capacity building, we need to build the capacity of our policy makers. We need to build capacities of our politicians. Up to a large extent, we need to build the capacity even of our private sector.

Data Bank

Prof. Mahendra Lama observed that as far as information is concerned, we were all very dependent on either government sources or on the private sector. Why cannot we try to adopt some fresh approaches to this and try to build their capacity? Why projects have not been implemented, why transborder trade has not taken place, is it because of the mindset? We need

to build very solid, strong information and database and we must give some adequate hints about fresh approaches. This database must indicate why one should follow just the Bhutanese model, or India-Nepal model or why not follow some fresh approaches.

Prof. Mahendra Lama said that lots of projects had been identified. In Nepal, hundreds of projects have been identified and, in some cases, feasibility studies have been done. But most of these projects are not being implemented. In our study, if we rehash what has already been identified, then we will not be able to contribute anything new.

In this connection, we need to pick up major projects like Sankosh project from Bhutan, or Pancheshwari project from Nepal that are likely to transform the energy sector totally. These should be analysed from our perspective. We can give the regional perspective about Mohakali or Sankosh project or Iran-Pakistan-India-Bangladesh gas pipeline project of our own.

Prof. Mahendra Lama further observed that there is a total absence of institutional linkages. The Gas Authority of India Ltd. has no links with Pakistan, or with Bangladesh. A study in this regard should be undertaken in the light of the realities. Our methodology should include very extensive consultation and very intensive interactions with the policy makers, investors and, to a large extent, with the politicians and other stakeholders.

Political Commitment

Emphasising the need to undertake a study on political commitment in the region, Mr. Imran Hossain MP observed that the bottom line of the problem is that any decision, in whatever form, that is to be taken boils down to political commitment. If political commitment is absent then whatever suggestions might come out of this seminar may not be of any use at all. Now, from the political commitment point of view, what we are going to do or what we should do may be stated in the final analysis in summing up the workshop.

The interaction among governments and the understanding among the political elements of different countries in the region need to be reinforced or brought to a situation, where we could come to a political decision or an economic decision or whatever decision we need for regional co-operation in the energy sector.

Vision Document

Ambassador Farooq Sobhan suggested the next workshop could cover the following:

Try and prepare a vision document. One of the purposes of this document would be to address the issue of political commitment. This vision document would try and provide to the governments, as a suggestion, what could be the way forward for our countries in this region, in terms of their co-operation in the energy sector. Recommending Dr. Reddy's approach to be incorporated in the vision document, Ambassador Sobhan said that we could move three steps and finish with suggestions on policies that need to be adopted. We should look at the collaborative effort in preparing such a document, where some of the very distinguished experts who are present here would give their inputs.

Regional Agenda on Energy Co-operation

Ambassador Farooq Sobhan said that, in line with Prof. Mahendra Lama's suggestions, a paper should be drafted to scrutinise some of the projects which we could consider to be of critical

importance in taking forward the whole regional agenda on energy co-operation. And as an annexe to this we could list perhaps half a dozen of these projects. This document could provide a useful summary of the projects that are identified and are on the table. This paper should cover the cost of non-co-operation, as well as the win-win situation aspects.

Data Bank

Ambassador Farooq Sobhan observed regarding data compilation and collection and institutional network that, while Pakistan and India had some organisations building database, we do not have such institutions in Bangladesh. CPD could play the role of an institutional nucleus. SAARC should take the responsibility of creating the database. He said that if the SAARC Secretariat took the responsibility the forthcoming meeting of the technical committee on energy would have some relevance.

There is another project that is still at the primary phase. This project will set up a data bank on South Asia Regional Co-operation using the Information Technology available. In particular, design web page, which could be interactive, and we'd then place whatever information we have on data on the energy sector, which could then be accessed, including some of the very useful information that has been presented to us here during the past two days. If this could be an interactive process, then it also can enable us to keep in touch with what is happening elsewhere in the region on this sector.

Ambassador Farooq Sobhan said that the SAARC Secretariat is capable of producing a good paper on some of the on-going initiatives in the area of regional co-operation, tracking what various NGOs are doing. We can request the SAARC Secretary General to collate and prepare a document that we could then collaborate on and which could be presented at our next workshop that would give an up-to-date state of play on various initiatives in the energy sector in this region.

It is important that we keep track of parallel initiatives in the region and may be we can call upon the SAARC Secretariat and we'd be happy to co-operate with such an effort. At our next workshop, we could then have also a document or paper, which would be presented to us giving us enough up-to-date state of play. Not only on what is going on but, equally important, on what has happened in the past.

Our efforts should be more successful, useful, practical and, above all, something which could be used to motivate and influence policy makers as well as the civil society. We really need to address a wide range of constituency of press. It's very important that we have the media and press with us.

Indigenous Private Sector

Mr. Aziz Khan of Summit Group emphasised promoting the indigenous private sector to make regional co-operation meaningful. He observed that the indigenous private sector has not been able to take significant part in the privatisation process in the region. How much the indigenous private sector will be able to take part in regional co-operation remains a question. Energy as a vital infrastructure can play a pivotal role and lead us in bringing about co-operation among regional countries. But the long-term goal of each of these countries or the development of each of these countries should come from their own private sector.

Besides, he added, regional co-operation may not have had materialised because there has not been a shift from the tribal mentality to today's globalisation. If we get above it we can get more co-operation. One of the aspects the policy should take into consideration is that there is a regional policy on or regional energy vision of how to incorporate local people with it. This would also address some of the fears and apprehensions that come up with regional co-operation.

Focusing on the lack of government support for indigenous investors, he said the local companies are not able to invest abroad. The indigenous investors must operate under regulations that the foreign investors do not face. For example, for us there is no capital account convertibility. In this regard, Dr. Debapriya Bhattacharya noted that the paradox of economics is that by theory ours are capital deficit countries. In a capital deficit country, the returns on capital are supposed to be the highest in this country. Under normal circumstances, a capital deficit country is not supposed to allow others to invest. If it is not happening then something must be wrong somewhere within the economy, in terms of its functioning, governing or regulations or demand. That has to be also remedied. Apart from the mobility of capital issue, I think there is a fundamental issue that is to be verified that the returns are not coming as they should at a global level or regional level.

A participant going further in this regard said that in any international tender for setting up a power-plant in Bangladesh they would require the company bidding for the project must have at least two times or three times capacity under their management or under their ownership to bid in that project. Therefore, basically we are saying that no Bangladeshi can take part in such a project because Bangladesh private sector never had experience in producing electricity. So, therefore, in one shot you've barred not only the Bangladeshis taking part in the tender but also in subsequent tenders. At any time, in infinity, there would not be any capacity build-up by the private sector in producing electricity in Bangladesh. Fortunately, the Rural Electrification Board allowed them to a very small project of 10 MW. They would allow companies, which have invested Tk. 5 million in other sectors. Today we can set up a financial institution that takes in deposit from people if it is headed by General Manager of a scheduled bank or something as Chief Executive Officer, former General Manager of a nationalised bank.

Mr. S K M Abdullah added that Bangladesh is giving a lot of tax-free benefits to foreign investors but local investors are not getting these benefits. Dr. Upali Wickramasinghe added that same is the case with Sri Lanka. The Sri Lanka Board of Investment has been notified about this inconsistency, which is the reason why investment is low in Sri Lanka. Also, foreign investors are given so much incentives and sometime to such a large extent that there is corruption. Some of the companies have registered under BOI Act for getting subsidies. These things are present in many countries.

Dr. Debapriya Bhattacharya observed that there was a consensus in the session that we do some kind of a project specific review. It may not be possible to work on network and tax data, as we won't be able to sustain it.

Dr. Debapriya Bhattacharya expressing his excitement regarding the vision document said that one will have to get around it one way or another at to how to put together a team that can jointly work on that.

Dr. Debapriya Bhattacharya noted that the third issue that needs to be taken up is policy reform and harmonisation or the review of the policy of what is going on all over. ‘Shall we do a demand-supply analysis on a regional basis?’ he asked.

The following three things have come out of the discussions:

1. Review of the projects that are already on the table and under consideration and pick up a couple of really impacting ones.
2. Need for a policy review
3. Analyse demand and supply situation along with the dynamic perspective.

CASAC would look forward to continue working with CPD. We see a hope that everybody here shared the view that will be shared with the policy makers of their own country. Dr. Debapriya Bhattacharya expressed the hope that the Technical Committee on Energy will finally take off and show some results and have a standing committee of SAARC.

List of Participants
(In alphabetical order)

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<i>Jamal Uddin Ahmed</i>	Former Deputy Prime Ministry
<i>Maj Gen. Jamil D. Ahsan</i>	Director General, BISS
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<i>A.H.M. Shamsuddin</i>	Chief Geologist, UNOCAL
<i>Rehman Sobhan</i>	Chairman, CPD
<i>Farooq Sobhan</i>	Co-Convener, CASAC and Former Foreign Secretary, Government of Bangladesh
<i>Abu Taleb</i>	Former Secretary, Government of Bangladesh
<i>Dago Tshering</i>	Ambassador of Bhutan in India
<i>Upali Wickramasinghe</i>	Economist, SAARC Secretariat

Journalists

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<i>Julfikar Ali</i>	Muktaknatha
<i>Yunus Ali</i>	BSS
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