the coal. But it all depends on the distance at which coal is available. We want gas to be used to the maximum capacity. But it depends on the quantity of gas available. Not only that, besides the availability, the Department of power has got certain schemes, in addition to the projects to be commissioned, which will be implemented as soon as clearance from the Ministry of Petroleum is received.

SHRI MADAN PANDEY: Mr. Speaker, Sir, in reply to a separate question, the hon. Minister had stated that cost of production of thermal power unit is 85 paise and that of hydel power is 35 paise. Gas is cheaper than these two. A number of gas based fertilizer plants and power projects are coming up at different places in Uttar Pradesh. A large quantity of gas goes waste there. The hon. Minister had furnished these figures in this House. Arrangements should be made at the earliest to utilize this gas. May I know whether there are proposals under the consideration of the Government to set up gas based power projects in eastern districts, especially in Gorakhpur, where industries are not being set up due to shortage of power.

SHRIMATI SUSHILA ROHTAGI: We are making efforts in this direction. There is H.B.I. pipeline to take gas from one part of the country to the other. It will ensure development of the country, particularly of Eastern Uttar Pradesh where it is most needed. The Government is taking all these aspects into consideration before arriving at a decision. Combined cycle gas programme is also under consideration in order to take full advantage of the gas. It will be in the interest of the country. We will get 50 per cent additional benefit from it. Efforts are on to implement schemes in Uttar Pradesh, particularly in that part about which the hon. Member has made a reference.

[English]

Setting up of Tidal Power Station in gulf of Kutch

*285. SHRI DHARAM PAL SINGH MALIK:†
SHRI M. RAGHUMA REDDY:

Will the Minister of ENERGY be pleased to state:

(a) whether Government have assessed the potential of power generation from tidal waves;

(b) if so, the outcome of such assessment;

(c) the estimated cost of power generation from tidal waves vis-a-vis the conventional methods of thermal and hydro-electric power generation;

(d) whether Government have formulated any plan to set up Tidal Power Station in the Gulf of Kutch;

(e) if so, whether such plants are to be set up in other places like Bay of Bengal etc.; and

(f) if so, the details thereof?

THR MINISTER OF STATE IN THE DEPARTMENT OF POWER IN THE MINISTRY OF ENERGY (SHRIMATI SUSHILA ROHTAGI): (a) to (f). A Statement is given below.

STATEMENT

(a) to (f). The Central Electricity Authority has undertaken studies and investigations to assess the techno-economic feasibility of a tidal power project in the Gulf of Kutch which envisages an installed capacity of about 900 MW. There is no proposal at

present to set up a tidal power project at any other location. it is estimated that the cost of tidal power generation at the proposed project in the Gulf of Kutch will be about 85 paise per unit. The average costs of generation from conventional hydro and thermal power projects, based on projects recently cleared by the CEA, are as under:-

Hydro: 35 to 60 paise per unit.

Thermal: 50 to 85 paise per unit.

SHRI DHARAM PAL SINGH MALIK: Sir, the hon. Minister has given the reply that the estimated cost of tidal power generation at the proposed project in the Gulf of Kutch will be about 85 paise per unit, and in the same reply the Minister has stated that from hydro the cost will be about 35 to 60 paise per unit and from thermal it is estimated at 50 to 85 paise per unit.

I want to know from the hon. Minister what is the estimated cost of power generation from the wind and solar systems and if the cost of power generation from the wind and solar systems is low in comparison to hydro and thermal system etc., whether the pace of programme of power generation from these systems of wind and solar is being increased in the country.

THE MINISTER OF ENERGY AND MINISTER OF COMMUNICATIONS (SHRI VASANT SATHE): Sir, as far as wind is concerned, the cost estimated is about 80 to 90 paise and solar at present — if we take in absolute terms it is much costlier because we have not yet been able to tap the solar energy on commercial basis, but experiments are being tried. If you take the cost at the production level, then the solar cost is nearly Rs. 2 and more than the thermal cost. We have to consider the cost delivered i.e., the cost to the consumer. If that is considered, then we find that solar energy can become comparable and competitive, and we are trying to establish now a 30 MW electricity solar plant in Rajasthan. The scheme is being worked out.

SHRI DHARAM PAL SING MALIK: My second Supplementary is this.

May I know from the hon. Minister whether power production can be increased by 500 MW and coal worth 30 million tonnes can be saved through full exploitation of new indigenously developed technology? (*Interruptions*).

SHRI VASANT SATHE: Sir, basically the question was relating to tidal energy. I agree that by using tidal energy, we will be able to save coal, because at the coastal side particularly, it is very difficult to transport coal all the way from the place where coal is available. That is why, if we can use tidal energy — we have a project which will give about 900 mega watt worth of power in Kutch region by tidal wave. When that fructifies, the cost will be more or less the same — 80 paise on transport of coal and use of coal will be saved. I agree with the hon. Member.

SHRI D.P. YADAV: Sir, production of energy is an important aspect and I must thank the Minister and the Ministry for a coordinated and overall development of energy system in the country. But the transport of energy, i.e. transmission is a very important factor, since the loss involves 30% at the other end. What are the special measures and research that you are undertaking, more particularly in super-conductivity so that transmission cost is saved, at least? What is your programme—tecnological and technical advancement programme—for transmission of electricity, particularly through the system like super — conductivity etc.

SHRI VASANT SATHE: As far as transmission losses are concerned, today the average transmission loss is about 21 to

23%; 50% of it is theft. We have made Central laws, States also have made laws to save it. And this theft is possible only when there is collusion. We want to take firm action; State Electricity Boards must take firm action about this matter.

As far as the technical losses are concerned, I agree with the hon. Member that with new technological advances like super — conductivity, the technical losses will come down very sharply and our nation is, in fact, one of the advanced countries in the world, in the field of research in super — conductivity. I am sure it will be a great boon to this area of transmission of power.

SHRI MATI SUSHILA ROHTAGI: Regarding the particular step which the hon. Member has asked, I would just like to specify. this is one of the special areas which attracted the attention of the Department and we have studied that one per cent reduction i ntransmission distribution loss comes to about Rs. 450 crores, which can easily be used for setting up a super thermal power project. Therefore, recently we have introduced a scheme which would give special awards not only to the Chairman or to the Board, but to the people who are at the grassroot level or any organisation or individual who can come out with any innovative schemes and suggest ways by which losses can be kept low. We hope, this would have some effect on it.

SHRI P.K. THUNGON: Energy is very important so far as our country is concerned and on that depends our industrialisation. Has any proper study been made by the Ministry concerned about the resource we have like tidal waves and also hydel projects which are more economical and which should be given priority. May I know from the hon. Minister, what is the per unit generation cost through tidal resources, and what is per unit generation cost from hydel project which we have plenty in mountain areas, in the Himalayan region. What is the present per unit generation cost through coal and per unit generation cost through gas?

SHRIMATI SUSHILA ROHTAGI: The Central Electricity Authority, in the past survey report, have evaluated and examined the various potentials of hydel and gas and also of the tidal wave. We are thinking of developing energy from the ocean also. We have about three coast sites in the country where we can generate a tidal power of about 8,000 MW. But we are concentrating only in Kutch just now which can yield about 900 MW. We have reached two stages on that. About the seco nd stage, we will receive the report by the end of March and the final report by the end of September. The design and the contract will take place in the third.

About the hydel, we have about 84,000 MW potential in the country of which one-third is in the North-East. But we have not been able to tap much of it. Only about 12% of the hydel has been tapped and the other 6% is on the way. At the end of the Plan, we will be in a position to tap about 18%. Hydel generation is definitely cheaper. It comes to about 35 paise per unit.

As regards coal, cost is slightly more. It may vary depending on the distance of a plant from where it is carried from 50 to 90 paise.

Gas costs about Re. 1 and the tidal wave is about 85 paise, also high.

PROF. P.J. KURIEN: Coming back to the tidal energy, some countries like France developed tidal technology to generate energy at lower cost. The hon. Minister has already mentioned about it. I would like to know whether your Ministry is in touch with the latest technology in those countries and whether you would like to have joint ventures with those contracts so that technology can be used here to produce cheaper electricity

from tidal energy.

SHRIMATI SUSHILA ROHTAGI: We are in touch with other agencies also. The tidal plant is expected to be set up in Kutch. We had consultation with an expert from France. He was here and he has been the plot also. The first largest plant at present is in France and we are in constant touch with them and we are keeping in touch with all the other research institutions in the country and outside.

An international symposium was held in London about two years ago Our people participated there and we find that more or less it is the same. India also has the technology and if there is any fluctuation at the highest point, I shall find out.

SHRI VASANT SATHE: I may add to this. Very recently just a fortnight back, we had a Conference of experts on tidal energy which was attended by experts from France, UK, Canada and other countries of the world and it was a very useful Conference where inter-action has taken place in the tidal energy.

Foreign tie up Agreements

*287. SHRI BRAJAMOHAN MOHANTY: Will the Minister of INDUSTRY be pleased to state:

(a) whether Government have examined the stipulations of agreements, being entered into by our producers with foreign concerns and foreign tie ups;

(b) whether some of the agreements are very much restrictive of our exports; and

(c) if so, the details thereof and the reaction of Government thereon?

THE MINISTER OF STATE IN THE DEPARTMENT OF INDUSTRIAL DEVELOPMENT IN THE MINISTRY OF INDUSTRY (SHIR M. ARUNACHALAM): (a) Foreign Collaboration agreements entered into between Indian entrepreneurs and their foreign collaborators are not being taken on record by the Government at present, but are required to be filed with the Reserve Bank of India. However, the foreign collaboration approval granted by Government is to be made a part of the agreement.

(b) and (c). Foreign collaboration approvals are subject to a standard condition that exports shall be permitted to all countries except where the foreign collaborator has existing licensing arrangement for manufacture. In the latter case, the countries concerned shall be specified.

SHRI BRAJAMOHAN MOHANTY: PART (B) of my question has not been answered property. Let me come to the answer given. There is prohibition of exports to countries other than those covered by the agreement in regard to the licensing arrangements, collaboration for existing licensing arrangements and manufacture. Even other countries also export only to collaborators and provisions are there in the collaboration agreement. That means exports should be done through them. There are agreements and exports are restricted to certain type of products. Then there is prohibition on the use of trade marks for exports. Not only that. There is charging of higher royalty rate. So, various types of restrictions are incorporated in these agreements. It is not a question of any single agreement. There are a number of agreements. The Reserve Bank of India has analysed and submitted the report. My question is: What is the reaction of the Government? The Government does not seem to bother about it. The fact is that the Government does not approve such agreements and yet agreements are entered into. It is against our interests and to the very policy of the Government in this regard.