-changing Trends in Parliamentary Deliberations on Science and Technology Policy

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In this paper an attempt has been made to throw light on the governance of Parliament on the policy issues of science in the making of S&T policy of the country. This has been studied through an examination of the S&T related issues deliberated at various forums of the Parliament. An overall view of the nature and trend of S&T issues deliberated in the Parliament reveals that throughout the years, since independence, almost all types of S&T related issues have been taken up for discussions at various forums of the Parliament. The issues have ranged right from the significance of the role of S&T in the fulfillment of various socio-economic objectives, resources for the development of S&T, priority areas for research, social environment for research in the research institutions, technology development capabilities, strength of linkages between the industry and the research institutions, technology development and its utilization, international co-operation in S&T, etc. However, it has been observed that the proportion of discussions on various S&T policy-related issues deliberated over the period of time, since independence, have not remained static throughout, but has shown variations in the trend of S&T related issues discussed. Henceforth, in this paper, changing trends in the S&T related issues deliberated in the Parliament have been studied by considering: (i) The course which the developments in S&T have adopted, since independence, (ii) The political structure and the party in power having its specific ideology for the development of science along with the commitment of the political leadership to the role of science in the fulfillment of socio-economic objectives of the nation. The study, in turn, has suggested for various reforms in the Parliamentary institutions: (i) For the more effective participation of Members of Parliament in the Parliamentary deliberations on S&T related issues, and (ii) In influencing S&T policy decisions of the government in the larger interests.

1 Introduction

The worldwide knowledge expansion, rapid advances in information technology, a globalizing economy, rising standards of education, the change from industry-based to service based employment, and some of the other fundamental structural shifts confronting society have led people expressing their concern about the ability of the governments in meeting their expectations. The broad question raised in the present times is whether conflicting and complex demands on government are becoming more complex, more frequent and more urgent. Perhaps it is more important to ask whether the rate of change in society is changing the very nature of government and the role of elected representatives. The basic objective of the joint UNESCO and Inter-Parliamentary Conference on Science, Culture and Communication, held in Paris from 3 to 6 June 1996 was to enable participants to identify the major world challenges arising due to the increased developments in science and technology (S&T).

Also the Members of Parliament in Parliamentary democracies are more frequently being challenged as to their personal performance, or to that of their party or of their government. The questions confronting Members of Parliament include: (i) Are they, as elected Members, both individually and collectively becoming more able or less able to identify and satisfy public expectations? (ii) Are their skills and attitudes and the resources available to them are keeping up with the growing and changing community demands? (iii) Are the processes and structures of government becoming outmoded? and (iv) Or can they adopt quickly enough to meet current expectations and still sustain democracy?

Political scientists and scholars are spending much of their time and energies on such questions. Advo-
cates of the New Public Management reforms to governance suggest that performance measures will help improve both the efficiency of the government and the ability of the legislature to scrutinize the public policies. The new accountability tools at the disposal of legislators include: Performance indicators, Benchmarking, Service standards, Citizen charters, Business plans, Better audit and Evaluation. Lindquist discusses that this proposal will not, of course, remove the tensions and contradictions that will always animate accountability scrutinizing networks. However, Paul Thomas points out that better information systems would help to better educate legislators, citizens, interest groups, journalists, and academics about the organisations and programmes they are going to scrutinize.

Various studies empirical and academic, examining the role of Parliament in the affairs of science exhibit that Parliament in India and in other Parliamentary democracies exercise little influence on major legislation and have no effective control over S&T policies of their respective countries. Studies conducted to examine the institutional mechanisms and other facilities made available to the Members of Parliament for participation on the policy issues of science brings out that Members lack the authentic sources of information on S&T and there is lack of facilities for analysing and interpreting complex issues on S&T. Most Members complain that process of priority determination begins in the executive arenas long before it comes to the Parliament. A study carried out in NISTADS to examine the factors affecting participation of Members of Parliament in S&T policy formulation revealed a general feeling of disinterest among MPs in the affairs of science. A majority of MPs perceived: (i) Lack of public pressure on S&T issues, (ii) Lack of adequate importance accorded to S&T issues by the political parties, (iii) Inadequate opportunities and facilities as the major constraints in raising S&T issues in Parliament and (iv) Lack of interest of MPs in S&T issues is also evident from the nature of S&T issues discussed by them in and outside the Parliament. In fact, science dominated issues are given low priority among the overall discussions held in the Parliament.

However, of late, the scholarship in the US has stressed the importance of deliberations in legislative decision making. After many years of scholarly neglect, there is a resurgent emphasis on how discussions of the merits of public policies affect legislative behaviour. Indeed, Joseph Bessette 1994 offered a frontal challenge to the predominant bargaining model of Congressional decision - making arguing that Congress is better described as a deliberative institution where legislatures pursue some conception of the common good. Deliberations also figure prominently in contemporary normative evaluation of the US legislatures. Writers frequently stress that careful deliberation is one of the key principles that ought to guide legislative decision – making. Whereas, legislatures are judged in terms of the extent to which they promote deliberations, and finding that they fall short, are often linked with proposals for reform. A wide variety of reform measures ostensibly aimed at promoting deliberations have been advanced, among these measures are the number of committee assignments which set aside time for broad floor debate on major issues at the beginning of each legislative session. It is yet to be ascertained whether such scholarly studies are available for promoting more relevant S&T policy related deliberations in the Parliament.

2 Objectives

The present study attempts to examine the deliberations at the Floor-of-the Indian Parliament to visualize the role of these deliberations in the policy issues of S&T. In this context the study focuses on the following aspects of the deliberations in both the Houses (Lok sabha and Rajya Sabha) of the Parliament:

(i) Nature of S&T policy related deliberations in the Parliament.
(ii) Shift in the nature and trend of S&T issues deliberated.
(iii) Whether the deliberations are true representatives of people's problems involving S&T related issues.
(iv) Whether the issues deliberated in the Parliament have its impact on the S&T policy of the Government.
3 Methodology

Taking questions and debates on S&T policy issues as indicator of interest shown by the Members of Parliament in the development of S&T the questions and issues on S&T related matters discussed at the Floor-of-the-House have been content analysed. The content categories of policy issues on S&T have been identified and used for analysis of questions and queries on S&T related matters deliberated in the Parliament. The years covered in the study include, since 1947 to the present times.

4 Pre-election Era

In India, governmental concern about development and promotion of science has been mainly a post-independence phenomenon. Before independence, India had only a skeleton organizational structure of science. Soon after independence, the Indian National Congress Party that worked for national independence, adapted itself to face political competitiveness and compulsions of the parliamentary democracy. During that period, there were two possible alternatives for the development of S&T. The first alternative was presented by M K Gandhi. He emphasized the need for the development of indigenous resources and considered modern technology as evil which would lead to monopoly in the hands of a few. Gandhian philosophy was based on the fact that a village should be developed as a self-supporting unit of society. Gandhi imagined that for any country to remain independent, it must rely on its own resources and indigenous skills. 13

The second alternative was due to Jawahar Lal Nehru who favoured the development of modern S&T and regarded industrialization to be the quickest path for achieving self-reliance, keeping in view the scarcity of resources in the country. Ultimately, Nehru succeeded in implementing his ideas. He was the major force in setting up the political and social tone for the development of S&T in India. During the period 1947-51, there was no well-defined plan for the development of science. Only those problems were taken up which needed immediate attention. Eminent Indian scientists like Dr Homi Bhabha, Dr S S Bhatnagar and Dr M N Saha received encouragement and political support from Nehru; these scientists later on significantly contributed to the development of science. Dr Bhabha strongly advocated the need for the development of atomic power as a major source of energy. Consequently, in 1948, the Atomic Energy Commission was established, headed by Dr Bhabha. Dr Bhatnagar was made the head of the Council of Scientific & Industrial Research.14

5 Post-election Era

Congress Party Under the Leadership of Jawahar Lal Nehru (1950-1964)

Since the Congress had won first Lok Sabha elections with two-thirds majority, the ideologies of the Congress were dominated by Nehru, he being at the helm of affairs. During the first three Lok Sabha periods, commanding three-quarters majority, the Congress dominated the activities in the Parliament. In such an environment, there was little incentive for the opposition MPs to influence government policies. For instance, prior to the Second General Election, the Praja Socialist Party (PSP) had in its program a well-articulated alternative approach for choosing technological basis for India’s socio-economic development. By the early sixties, the PSP discarded S&T from its political programmes as alternative science policy seemed to be irrelevant in gaining more votes.15

During the period between 1952 and 1965, science was declared officially to be crucial to the Congress government’s ‘industrialisation program’. The government’s commitment in this direction was made explicit in its Scientific Policy Resolution of March, 1958, which stressed the urgent need for the mobilization of scientific and technical personnel to meet the requirements of the program. Being a leader of the ruling party, Mr. Nehru was himself interested in the development of science and had been considerably impressed by the Soviet Russian experiment, he laid emphasis on the planned utilization of the scientific resources and discoveries for the rapid industrialization of the country. Thereby, the process of planning in India was initiated in 1952
under the directive of the Prime Minister Nehru. In the successive Five-Year plans, he gave due consideration to the development in the various fields of S&T.16

A Ministry of Scientific Research and Cultural Affairs was established in 1958; it lasted until 1963 and became a focus in the Lok Sabha of discussion about the government's role in the development of science. During this period, Members of Parliament generally shared the enthusiasm of the government for the promotion of science and supported the program of expansion of governmental research establishments. In 1951, the total central governmental expenditure on scientific research was Rs 47 million; by 1965-66 it had increased to Rs 791 million, an increase of nearly seventeen-times over a 15 y period.17

In the 50s the Parliamentary deliberations on S&T related issues were broadly directed towards the development of S&T in the different socio-economic areas. Moreover in the discussions Members were inquisitive to know about the way developments in S&T would meet the socio-economic needs of the people at large. MPs raised issues under different socio-economic areas viz. energy, health, natural resources, communication and defense. However, the Parliament was more concerned with issues like exploration, development, and utilization of natural resources. R&D programmes pertaining to food, agriculture, health and nutrition featured prominently in the questions asked. Another major area covered was transfer of technology and utilization of technologies through various collaborative agreements and manpower training programmes for industrial development of the country during that period.18

In the early 60s, the Floor deliberations on S&T related issues included the implementation of programmes directed towards providing enlarged facilities for training of personnel in different branches of S&T through deputation of Indian scientists and engineers abroad, visits of foreign experts and science education programmes in the universities. The other issues of prominence included: Strengthening research facilities in existing institutions and creating research institutions in the newly emerging areas of S&T. The issues were raised basically to meet the objective of self-reliance in S&T. A few questions pertained to science in rural areas in connection with the setting up and functioning of 'Vigyan Mandir's'.19

During the first three Lok Sabha periods, the Members of Parliament belonging to both the ruling party and the opposition parties were generally not critical about the developments in S&T. However, they were more interested in knowing about the policies and programmes of the government for the development of science and its application. Most of the questions raised during the period were basically to seek information from the government about the way science was being conducted in the country. At times, MPs supported the development in the frontier areas of S&T. For instance, during the discussion on the demand for grants for the Department of Atomic Energy (DAE), one of the Congress party Member, opined that20:

"The peaceful use of atomic energy has got a great future and the development of atomic energy would play a great role in fulfilling the aims of Science Policy Resolution. Also, it is of utmost importance to build up a scientific base by way of training technical personnel in the field of atomic energy".

Whereas, Socialist party Members urged the government and the DAE to:

"Make the best possible efforts to find out ways and means of producing electricity and power with a view to relieve the country of this famine of energy".

The Science Policy Resolution (SPR) put on the table of the Lok Sabha by Nehru was debated and was passed on 01 May, 1958 with the consent and agreement of all the members of Lok Sabha. V P Nayar, Member of the United Front of Leftists, opened the debate on the SPR and observed:21

"The Science Policy Resolution of the 04th March, is indeed, welcome, although, I consider that it is belated. In 1948, when the Government of India came out with an Industrial Policy Resolution, it was the time that the Government of India would have come out with a policy like the one which they have now given to us. After the 1948 resolution on Industrial Policy, we have
had two plans. They were drafted, discussed at length, debated and accepted as final. But we find that the plans could not succeed to the extent desirable or to the extent we expected, because government did not have a science policy on the basis of which they had to work out the plans”.

The leader of Communist Party in the House, offered some what similar comments:

“I welcome this Science Policy Resolution even though I would have been happier if this kind of resolution had been formulated by government earlier. It is precisely worded, suggestive and important document, and we are happy that now there is a definite statement by government in regard to the harnessing of science to the task of reconstruction of life and society in this country.”

Whereas, a socialist Member remarked:

“I welcome the SPR not only because it will make it possible for us to fulfill the plan but because it will bring about the change in the mentality of our people. I am very much disgusted when I find people still harboring some age-old faiths, age-old attitudes which are contrary to the demands of the day. Therefore, when we want that the SPR should be adopted in this House, it is not enough to adopt it here. But it must be presented to the people, the outlook that it contains must be carried over to the people and a whole generation will have to be raised which believes in the tenets which are incorporated in it.”

The final words on the debate came from Nehru:

“I am glad that it interests the House and I earnestly hope that the government will be able to live up to this Resolution and will have the support of the House.”

However, during the period a few intellectuals from the opposition benches watched the growth of science closely and questioned the way it grew. For instance, Saha, though a close associate of Nehru and also a Member of Congress during the independence movement, showed his strong disappointment with the way the S&T was being developed in India after independence. He showed his strong disappointment with the way various policies of government in the areas of education, industrialisation, health, etc., had developed in the pre-election era. This led him to leave the Congress. As an independent Member, in the Parliament (1952-57), he always stressed for the autonomous character of scientific organisations and for giving freedom to scientists in undertaking the research work. Moreover, he was of the view that before building-up of infrastructure for the development of an area viz. atomic energy, relevant and appropriate expertise be created. In this context, he believed in strengthening of base of scientific research in universities.22

Another independent Member in the second Lok Sabha, Inder Malhotra, an agriculture scientist, showed his deep concern for the conditions of the research workers in agriculture in the government laboratories. He pointed out that the agricultural scientists were among the lowest paid scientists in the country. He was the prime mover of the 1962 resolution on the working conditions of the government employed scientists. The resolution was put before the House because by the suicide of M N Joseph, a foreign trained agriculture scientist. The controversy generated by the suicide in the House and outside led to the modification of scheme of ‘scientists pool’ for scientists returning from abroad. It was made independent directorate and was delegated wider terms of references in order to provide facilities to the foreign returned scientists. The main function of the ‘pool’ is to provide temporary placement for scientists coming back to India after their training abroad till they are able to find suitable employment for themselves.23

A few other influential Members of the Communist Party strongly criticised the industrialization strategies of the government, specifically the industrialization through foreign collaborations. During that period, issues regarding the progress made in the implementation of Science Policy Resolution of 1958 were debated more frequently in both the House of the Parliament. For instance, a Congress party Member with the consent of about one-fifth Members of the House, moved the following Resolution in the Rajya Sahha in 1964.24

“This House is of the opinion that government should appoint a committee consisting of Members of Parliament and experts to inquire into the report on the progress made in the implementation of the SPR of the Government of India of 1958, with particular reference to scientific research undertaken in
He assured that this Resolution was moved with the best of motives to help the government to find out the cause of non-implementation of the Resolution.

A CPI Member, welcomed this resolution and said:

"The progress of the country, today, depends on the advancement of S&T and no party of any political persuasion in the country can aspire to take the country forward without paying the utmost attention to the problems of S&T. Therefore, this matter should be discussed in an utterly non-partisan and constructive manner."

Moreover, he suggested that the following changes should be incorporated in the S&T development programme of the country:

(a) Formulation of an overall plan for scientific research in various branches of S&T;
(b) Creation of a Science Policy Commission;
(c) Creation of an All India Science Survey;
(d) Promotion of scientific education in schools, colleges and universities;
(e) Promotion of scientific outlook among the masses through mass media;
(f) Setting up of five working groups of scientists on: (i) Atomic Research; (ii) CSIR, (iii) Defense Research, (iv) ICMR, (v) ICAR; and
(g) Allocation of funds for scientific research.

During the early years of independence under the Prime Ministership of Nehru up to three consecutive Lok Sabha periods when Science had yet to prove itself in the face of severe problems faced by the country. There was a healthy environment for science to grow and flourish, since the leader of Government and the Parliament, Nehru, himself was impressed by science and the Parliament was equipped with committed nationalists of freedom struggle movement viz: M N Saha, S S Kothari, Acharya Kripiani, Smt Sucheta Kripiani, Dr C D Deshmukh, Lal Bhadur Shastri, Gulzari Lal Nanda, Maulana Abdul Kalam Azad, Sardar Vallabhbhai Patel, and many others. Henceforth, tremendous resources were devoted in expectation of solution to most of the problem faced by the country. In such an environment, the Parliamentary concern for science in the floor deliberations was limited to making inquiries about the expected role of science in the fulfillment of various goals of the society.

**Congress Party Under the Leadership of Indira Gandhi (1964-1977)**

During the elections for the Fourth Lok Sabha, The Congress(R) led by Indira Gandhi returned to the House securing 55.4 per cent of the total seats. Thus the Fourth Five-Year Plan was prepared under the direction of Mrs Indira Gandhi. The main objectives of the plan were to: (i) Integrate industrial research with program of industrial development, (ii) Achieve greater coordination at the inter-laboratory level, and (iii) Evaluate research programmes at different levels.26

When Mrs Indira Gandhi took charge of the office of Prime Minister, the building up of the scientific and technological structure had reached a stage
where it could have led to achieve the goals of the nation. However, a feeling that the indigenous R&D system did not have much impact on the society, gave rise to a public debate on the performance of Indian science. Consequently, a shift in the perception of MPs about the role of scientific research and technological developments was noticeable. As, there were more debates, discussions and questions relating to the socio-economic gains from the indigenous R&D efforts and through the technologies being imported from abroad. There were several queries about the progress made in the implementation of SPR. Members also inquired about the steps taken by the Government in streamlining the role of science in achieving socio-economic goals of the society. To quote such an instance, a few Members belonging to the Communist party raised a joint question addressed to the Minister of Education and Youth Services, inquiring:

(a) Whether government are thinking of sending scientists from national laboratories to 'live with' industry in order to know the problems of industry?,

(b) Whether there is any proposal that the study of production based science should be pursued instead of curiosity based science? and,

(c) If so, what steps government intends to take in this direction?

The reply of the concerned Minister Dr V K R V Rao was encouraging as he informed the Members that in order to bring the national laboratories/institutes and industries closer steps were being taken to identify 50 or 60 important industries and to associate each one of the national laboratory/institute with one or more of these industries. In this context, a Committee had been constituted under the Chairmanship of Member (industry) of the Planning Commission and representatives of chemical industry, engineering, industry, planning Commission and the chairman of FICCI and Industry. The terms of reference of the Committee included: (i) Providing guidelines to the national laboratories/institutes in planning programmes, (ii) To identify major areas of importance, and (iii) To co-ordinate the research activity of national laboratories/institutes with the public and private sector industries.

Another Congress Member raised a query addressed to the Minister of Science, asking:

(a) Whether science popularization is the fundamental factor influencing the pace of economic development.

(b) If so, what steps have been taken to achieve that?

The reply of the Minister confirmed the views of the Members as he envisaged that scientific attitude is among the factors that accelerate the pace of economic development of a country. Whereas the steps taken to popularise science included financial assistance to individuals and societies for publishing popular science writings, popular film shows, and exhibitions and improving S&T at school stage.

In the area of agriculture development, Members while showing their satisfaction at the significant increase in the food grain production (Green Revolution period) through improved agriculture implements, fertilizers, high yielding varieties of seeds, etc. the Members stressed that to keep up with the higher rate of growth of the agriculture produce there is a dire need for a good agarian structure, irrigation and a scientific management of water and soil which are wanting in the country. The dry land farming techniques should be extended to all the rain-fed areas and this should not be kept restricted to a few pockets. As regards cropping pattern the Members expected that such crops should be grown which suit the nature of the soil as also the environment of the area.

Indira Gandhi period was also marked by the change in the political environment at different levels viz. (i) Rapid erosion of one party dominance, (ii) The emergence of strong regional parties, (iii) Spread of culture of mass politics in the affairs of science coming out of closed politics, and (iv) Restructuring of the very structure of science. Moreover, under the conditions of landslide victory of the ruling party the MPs in the opposition groups
found more response to their inquiries and critical comments. Thus, under the new political conditions, many Parliament review Committees were appointed to scrutinize the working of various science departments. For instance, in 1968, the Sarkar Committee, an all party ad-hoc Parliamentary Committee was appointed by the government to look into the overall working of CSIR, and, in particular, to make an assessment of the utilisation of the grants to it by the government. The Sarkar Committee, unlike other Committees of the Parliament, had the liberty to listen to the individual scientist’s grievances about the CSIR management without any intervention of senior official of CSIR. The impact of the recommendations of the Sarkar Committee is reflected within the working of CSIR during 1972-74, some of the changes which had taken place are listed below:

(i) A compact Governing Body of CSIR was constituted which as been meeting frequently.
(ii) A decentralized internalized management was introduced at the level of both the Governing Body of CSIR and the Executive Committees of its laboratories.
(iii) The CSIR Headquarters was restructured laying greater emphasis on its technical component, namely; science planning, technology utilisation, technical manpower, extramural research and international collaboration in S&T.

A few active Members of the ruling party, expressed their views about the developmental strategies by participating in the deliberations inside and outside the Parliament. For instance, a pressure group formed in the party by Krishan Kant, a member of the Indian Scientific and Parliamentary Committee and the editor of its journal, ‘Science in Parliament’, provided a common forum for the parliamentarians and scientists to exchange views on the developments in S&T. A group of science interested Members of the ruling party actively participated in the discussions on various issues of S&T. They were consistent supporters of increased financial outlay for the scientific institutions. An influential Congress party Member H C Mathur, was appointed as one of the five members of the Administrative Reforms Commission, which went into the working of various scientific departments.

Such discussions reveal that almost all the political parties were aware of the lacunae in the implementation of policies for S&T. In view of that, all political parties provided various alternative strategies for the development of science in their election manifestos (1971). While at one end of the political parties spectrum the Swatantra party wanted import of foreign technology as a basic element of development, at the other end the communist party of India gave priority to economic independence and democratization of science. The Congress talked of preparing a S&T plan to concentrate resources in priority areas, and involving scientists in the decision-making machinery.

In the same year, Congress led by Indira Gandhi won the elections securing absolute majority. Thus the ideologies of the Congress for the development of S&T prevailed. The Prime Minister, Indira Gandhi, was also conscious of the then existing problems of science policy which she expressed in her address to the Committee on S&T. She pointed out that there was need for a fundamental change in the existing approaches to the management of scientific and technological institutions.

In the Fifth Five-Year Plan, for the first time, a comprehensive S&T plan was incorporated as an integral part of the socio-economic plan of the nation. This was in the form of a paper ‘An Approach to S&T Plan’ brought out in 1973. The paper dealt with various national problems which included:

(i) How to use S&T for national development?
(ii) How to develop national S&T capabilities?
(iii) How to take benefits of S&T to rural people?
(iv) How S&T is essential for the building up of scientific temper and removing superstition.

An examination of the Parliamentary deliberations in the early 70s reveals that there was unanimity among Members belonging to different political
ideological groups raised issues relating to enhancing indigenous S&T development capabilities in making the country self-reliant. In this context, a group of Members, all belonging to the Communist Party, pointed out various problems relating to scientific and technological development of the country. They were critical of the industrialization through foreign collaboration. Taking part in the discussions on the demands for grants for S&T in April, 1972, they argued that industry was largely foreign oriented and that for achieving self-reliance the following recommendations of the Sarkar Committee should be implemented:

(a) The licensing machinery of the government should be used as an effective instrument for promotion and utilization of indigenous research.
(b) Foreign collaboration should, as far as possible, be restricted to outright purchase of know-how without any obligation to purchase the related design, engineering or the entire plant from abroad if it is available in India.
(c) Industry should be permitted to import know-how only if it agrees to invest sufficient funds either in its own R&D units or in research laboratories in the country.

Members also pointed out that the utilization of processes developed in the CSIR laboratories was far from satisfactory. Thus, efforts should be made by the government to narrow the gap between the research in laboratories and the requirements of actual production units in the industry.

At times, Members cutting through party line raised queries such as:

(i) Whether the appeal made by the government to Indian scientists abroad to bring them back has failed?
(ii) Whether the reasons for the poor response from these scientists have been analyzed?
(iii) If so, what are the reasons?

Some of the Socialist Party and Swatantra Party Members also raised questions on various issues of science policy. A Socialist MP, Samar Guha, with a background in nuclear physics, was particularly interested in the affairs of the Department of Atomic Energy. In his speech on the subject, he brought to the attention of the government the urgent need for thorough parliamentary scrutiny and debate on R&D taking place in the area of atomic energy. He felt that it was necessary to apply the normal test of cost-effectiveness to evaluate the benefits of investing so heavily in this area of research. Though the opposition Members at times raised various critical issues and stressed for alterations in the policies for the development of S&T, however, it had no significant effect on the major policies of the government.

During the period the development of new areas of scientific research and development had its impact on the nature of discussions in the Parliament. As comparatively more questions were raised on issues like the socio-economic relevance of R&D in the emerging areas of development viz. the space research, telecommunication, and electronics. In the area of space research the initial queries related to introduction of courses in space engineering and rocketry in the universities. There were several questions relating to the role of Satellite Communication System in the solution of various socio-economic problems including illiteracy. The launching of the first Indian Satellite was unanimously appreciated by the Members of Parliament. In a statement made by the Prime Minister Indira Gandhi on the occasion, she expressed:

“This outstanding achievement the first by a developing country, marks yet another milestone in our efforts to harness the benefits of modern S&T for national development. Apart from their purely scientific objectives, research and technology involving the peaceful uses of outer space, can contribute significantly to the solution of economic and social problems.”

The other issues which attracted the attention of the Members of Parliament till mid 70s included: causes and consequences of environmental pollution, exploitation of natural resources, etc. Questions pertaining to government policy regarding bringing Indian scientists back from abroad came up repeatedly for discussions. The Members criticized the Industrialisation through foreign collaborations several times. MPs stressed for thorough par-
Parliamentary scrutiny to find out what benefits have been obtained by investing so heavily in the advanced areas of R&D.41

Janta Party Under the Leadership of Morarji Desai (1977-79)

In 1977, Janta Party won Lok Sabha elections with 297 seats out of a total of 542 seats. The Janata Government was coalition of Socialist Party, Jana Sangh and a group of former Congress MPs. Its election manifesto, therefore, reflected mix of ideologies grouped together at one place. The election manifesto of the party envisaged that:42

(i) The Gandhian values of ‘antlyodya’ and austerity must be accepted and implemented if the vicious circle of the poor becoming poorer and the rich, richer is to be broken.

(ii) The benefits of S&T should reach all our people. It is not opposed to advanced technology but it firmly believes that this can be harnessed to our needs only if we employ appropriate technology, simple or sophisticated, that is compatible with the environment and, while maximizing employment, will yield optimum socio-economic benefits in the circumstances that prevail in the country.

(iii) There must be shift from capital intensive to employment orientated technologies, which are conducive to decentralized operations in the field of credit and marketing. Appropriate measures will have to be taken to demarcate areas of differential technology and to provide for statutory reservations of spheres of production for small scale and cottage industries.

Morarji Desai took charge of the Office of the Prime Minister when the Fifth Plan was in operation. He introduced the concept of rolling plan in the system of planning. In the sixth plan that is annual plan 1978-83 as marked by the Janata Government, integrated ruler development programmes were given high priority. While replying to a question raised in Rajya Sabha regarding steps taken by the government for promoting research in appropriate technology for rural areas, Morarji replied that:43

Since Janta was conglomeration of different ideological groups, there was no unified will and coherence in the thinking and outlook of the ruling party and government. Even though the leaders of various groups constituting the ruling party conducted several meetings devoted to the task of unifying the party on various issues, these efforts turned out to be sterile exercises. The result was that the Indian science received a temporary setback. For instance, the decision to re-organize CSIR was taken by the leader of the party, Moraji Desai, in a meeting of the secretaries, to which the DGSIR, who also held the rank of a secretary to the government, was not invited. The Decision to re-organise CSIR was based on the recommendations of the Administrative Reforms Commission (ARC) report on scientific departments. Desai had been personally responsible for the organisation of the ARC and setting up of a study team on scientific departments. The report of ARC emphasized that the autonomous research organisations be made more accountable to the respective administrative Ministries. He implemented the recommendations of ARC once he got the chance to do so.44

The coming up of the Janta Party in the late 70s thus gave a different direction to the development process being followed by the earlier governments. Gandhian philosophy after 40s for the first time found its expression in the political ideology of the Janata party. The translation of their ideologies into operational policies had its impact on the nature of deliberations on S&T issues in the Parliament.

Members of the opposition, more specifically the Members of the Congress Socialist Forum, raised objections to the dismantling of CSIR and the diversion of almost all the scientific research towards developing technologies for the rural areas and neglecting developments in sophisticated areas of research. The Members of the Congress (I) were also concerned about the frustration developed in the scientific community because of certain alterations in the policies of the government.

An analysis of S&T issues deliberated in the Parliament in the late 70s exhibit that in, areas like exploration, development and utilization of energy and natural resources dominated the scene. The obvi-
ous driving force was the challenge posed by the energy crisis. There was noticeable increase in the number of queries regarding the programmes of introducing S&T in the rural areas. The proportion of queries into the space research, nuclear energy programmes and issues relating to communication technologies raised in the late 70s were higher compared to that in the early 70s. This is obviously due to the advances made in these areas during the period at international level and the intention of the government to develop national capabilities in these areas.45

Apart from raising questions on the existing national problems like brain drain, technology transfer, manpower utilisation, functioning of research institutes and environmental pollution, Members raised specific issues. For instance, Samar Guha stressed upon the Atomic Energy Commission (AEC) to prepare literature describing protective measures against neutron bomb. While CPI Members enquired about the status regarding the exploration of oil and gases in the country.46

During this period, there had been increasing number of questions and discussions on the operations of Multi-National Corporations (MNC) in the Parliament. During the Budget Session of Parliament, in the year 1978, Members raised questions regarding MNCs profit making activities through unauthorized excess production. In this context, the issue of expansion of foreign drug companies was raised and discussed during the half-hour discussion in the Lok Sabha in March 1978. The issues deliberated included:47

(i) Increase in capacities beyond the licensed limit.
(ii) Production of unlicensed items.
(iii) Violation of export-import regulation act.
(iv) Violation of FERA rules.

A Marxist Member of the Parliament, M Ramamurthy, raised strong objection to the decision of the government for importing technology through a multinational corporation for the manufacture of thermal turbines through BHEL-Siemens agreement.

In his speech in Rajya Sabha, he stated that such an agreement is a great threat to the independent development of scientific and technological capabilities in the country. He impressed upon the Parliament and the government to stop the agreement with Siemens. Following this debate, the issue was discussed several times in the Parliament and was also highlighted in various public forums. Because of the strong opposition, the final decision of the government was kept in abeyance.48


The experience of using S&T for rural development and for the uplift of the down-trodden brought to surface the fact that problems of the rural areas cannot be solved through the use of outdated S&T. Further, in addition to finding technical solutions, the latter require to be integrated with social conditions and economic constraints, besides requiring a proper delivery system. Consequently, the need for long-term and basic research interposing natural and social sciences was felt.

As a result, S&T component of the Sixth Five-Year Plan, laid a greater emphasis on fundamental and basic research, in addition to giving attention to immediate problems and finding their solutions with available knowledge. Considerable effort was proposed to be directed to long-term problems and their solutions, by generating necessary knowledge and technological capabilities.49

Further, three new dimensions were also incorporated in science policy as a result of past experience, and emerging needs. These were connected with the problem of safeguarding environment, factors, arising out of interaction of S&T with society and the development of an information system and its use in decision making. As a result of these perceptions, policies were evolved taking these into consideration and major changes were effected in the infrastructure of S&T. New agencies and departments were created to undertake responsibility and promote research in newer areas of Science and Technology greater resources to back research with time-targeted objectives were provided.
In order to give clear guidelines for technology developments, especially for the growth of indigenous technology and for the acquisition of technology from outside the government issued a Technology Policy Statement (TPS) in 1983. The TPS provided a framework for achieving technological self-reliance. The Prime Minister reiterated in the Lok Sabha that the Government's Policy aimed at achieving self-reliance and development of indigenous technology. She, however, clarified that there were certain areas where the country might have to resort to import of technology in order to keep pace with advances in other countries.

During the period, even though, there was reversal of the policies adopted by the Janta government and there were attempts to bring S&T in line with socio-economic planning. The people science movement which was initiated in the 60s and gained momentum in 70s got further strengthened in the 80s. These science movements influenced by diverse political ideological groups demonstrated the impact of mass politics in science. In this atmosphere, there was pressure on the different political ideologies represented in the Parliament to raise issues such as the role of modern science in the development process, neglect of cottage and small scale artisan based industries by the formal science institutions, role of science in the areas of education, health, housing, sanitation, etc.

During the period the MPs expressed their keen interest in the issues concerning development, upgradation and management of technologies in various sectors of economy viz. energy, industry and agriculture, etc. A sector-wise categorization of these questions reveal that maximum questions were raised for the development of technologies of the energy sector followed by questions on technologies of industrial sector, agriculture, space and telecommunications, and defense. Development and upgradation of technologies in the energy sector have received the maximum attention of the Members. This is probably due to the escalating cost of importing crude oil and petroleum products and also due to the depletion of indigenous natural resources of energy.

Government policy of import of technology and its implementation had been criticized by the MPs. They expressed concern at the government's policy of allowing liberal import of commodities like soda ash, cocoa, etc., which is adversely affecting the indigenous industry as it is unable to compete with cheaper imported materials. In some of the questions MPs asked as to why the government had gone for foreign collaborations when similar technologies were available indigenously. They also made inquiries as to how far the imported technologies in different sectors would utilize the already available technological capabilities in infrastructure building, in generating potential for foreign exchange earning. MPs asked about the relevant policy instruments and the mechanisms of indigenising imported technology. They also inquired as to how far the imported technologies were being assimilated and diffused in the prospective sector as a complementary to achieve technological self-reliance. Occasionally, stress was laid on appropriate technology choice which could generate maximum employment and gets transmitted and diffused in short duration over a large number of people.

In agriculture sector, animal husbandry, health and nutrition, Members were keen to know about the progress made by various government research institutions in developing newer technologies and the commercial application of such research results. In the sector of space and telecommunication, MPs expressed their concern at the unsatisfactory growth of telephone/telecommunication facilities prevailing in the country. MPs also inquired about the indigenous capability of producing electronic telephone exchanges. MPs were keen to know the health policy of the country. They inquired from the government regarding the setting up of mobile health centers and other primary health centers in backward districts.

Members were keen to know about the R&D programmes of various core sector industries with particular reference to steel, cement, textile, paper, coir, etc., for attaining import substitution and for making the plants commercially viable. Questions were also raised proposing selective import of tech-
nologies and equipments for modernization of the outdated textile mills, steel plants, etc. MPs were also concerned about the need for developing small-scale sector with particular reference to Khadi and village industry, for providing employment to the rural poor. They also inquired from the Minister concerned about the steps taken by the Government to protect the small scale sector so that it does not suffer from the competition of more sophisticated imported technologies. Also, the problems of upgrading the traditional technologies and the adapting of modern technologies in a manner that they are consistent with the development objectives were discussed.

Apart from Question- Hour, MPs used other Parliamentary privileges like half-an-hour time, special debates, Budget Session, etc., for pointing out various lacunae in the policies of the government. In such forums they have made assessment of imported technologies for making better choices. Also, MPs have suggested for programming and budgeting of research themes for mobilization of national resources in the priority areas of scientific and technological development. They critically commented on the government policy of liberal imports with its possible consequences. For instance, Parliament took up ‘half-an-hour’ discussion in April 1981, on the topic of selective import of technologies in the health sector.

Parliament had another half-an-hour discussion in March 1982 with the objective of development of technology for increased capacity utilisation. In the general Budget Discussion for the year 1982-83, MPs were generally critical about the budget outlay. Members were of the opinion that the “budget reflected a greater tilt towards the monopolists, the capitalists, the business tycoons”. They stressed upon the government that for the developmental programmes the country should not rely more and more on commercial borrowings of private capital from the US and from various US dominated international funding agencies. Indrajit Gupta (MP) emphasized that simple increase in the quantum outlay is not necessarily going to help the common man. He pointed out that the budget is not operating out of altruistic motives. It reflected the interests of large industrial houses. Also there was a pressure of the growing foreign collaborations. These things added up together with the policies of liberal imports are bound to adversely affect the interests of common man.

There was an important discussion in the Parliament on “The Need to Develop the Indian Ocean in Different Aspects”. Inderjit Gupta suggested the government must lay down its national marine policy. The main thrust of such a policy has to be in the field of fishing operations. The country should also design a policy on shipping which could chalk out program for tapping natural resources from the sea viz., oil and natural gas, as there is neither real policy nor any legislation on exploitation of off-shore oil and natural gas.

Congress Party Under the Leadership of Rajiv Gandhi (1984-89)

After assassination of Indira Gandhi, country went for Eighth General Election of Lok Sabha. Congress party won the elections with absolute majority. Thus the plan and programmes of development adopted during the period were in line with the ideologies of the Congress party. The objectives of the Seventh Five-Year plan continued to be growth, equity and social justice, self-reliance, improved efficiency, and productivity. In addition, emphasis was on growth in food production and increased employment opportunities. A mission-oriented approach was adopted to technological development, with a view to fostering S&T efforts in selected sectors through organised links between various implementation sectors and by introducing a sense of urgency to complete the task in a time targeted manner. The process of liberalization of the economy, initiated in 1980, accelerated during this period. The import of technology was allowed on a selective basis for upgrading and modernization the existing technology as well as making indigenous R&D internationally competent.

During the Prime Ministership of Mr Rajiv Gandhi the process of liberalization of import of technology initiated in early 80s was further accel-
erated. During the period the public interest in the affairs of science got further impetus by the joining of specialists, intellectuals, social and political agencies and groups through popularization of science and through evolving alternative development models which resisted the hegemonic action in the interest of society. The proportion of such issues representing the will of the people on the affairs of science in the Parliament correspondingly increased during the period. Consequently, there had also been perceptible change in the orientation of the S&T issues discussed. Proportional increase has been observed in the issues pertaining to utilisation, dissemination, and impact of developments in S&T compared to the issues relating to developments in S&T.

To such questions the Members were critical about the way the developments in S&T are catering to the demands of certain sections of society at the cost of masses. The primary concern of such issues was to direct developments in S&T to serve the masses. In these questions the Members were concerned about issues such as development of simple technologies for rural areas, development of modern information technology for rural people, up-grading of rural telecommunication network, and computerization of rural areas. Members also inquired about the action taken by the government on its proposed policy of providing power to the Gram Panchayats thereby involving village people in the formulation and implementation of development programmes of the rural areas.

Various issues were raised where there was emphasis on establishing linkages between the traditional knowledge system and modern S&T, wherein modern knowledge can provide means of reviving and upgrading the indigenous knowledge which has deep historical, cultural and social roots. The issues in the Parliament on these aspects included development and utilisation of indigenous system of medicine, agriculture, and up-gradation of local skills. There was resistance by the Members of various political ideologies over the installation of big industrial projects and dams thereby demanding traditional and cultural community rights over land and allowing the local people to safeguard the natural environment through their local world-view and traditional knowledge systems.

During the period under study, a significant amount of environment related information transacted in both the Houses of the Parliament in response to the questions raised at different forums of the Parliament. In such issues the concern of the Members broadly ranged from: causes and consequences of eco-degradation, planning and assessment for environment protection, environment clearance of the industrial projects, enforcing laws to curb further deterioration of environment, policies and programmes for land management and water management, mobilization of resources for developing environment friendly technologies, environment conservation programmes through education and awareness.

Technology Mission issues were also given considerable importance by the Members. There were questions on technology development issues belonging to different technology missions in different areas of development. Proportionately Members were more concerned about accelerating self-reliance in edible oils following literacy program. Technology mission issues concerning rural drinking water and dairy development and better communication issues also drew the attention of Members. MPs had also proposals for other areas, which according to them may also be given prior attention. Most questions on technology mission were raised by the ruling party Members only few questions were raised by the Members belonging to different political parties.58

National Front Party under the leadership of V P Singh (1989-90)

The National Front party won the Ninth Lok Sabha elections and formed the government under the leadership of V P Singh. National Front was a coalition party which was formed by getting together of Members of various political parties, viz. Janta Party, Lok Dal and Samajwadi party in 1989 (ref.59). Consequently, the approach to planning and priorities in S&T were re-oriented. The main thrust was laid on rural development and action plan was drawn
by the Ministry of Science & Technology in line
with the broad commitments made by the party in
its manifesto. In this context, some of the major
programmes launched related to land use, manage­
ment of water resources, and poverty alleviation.

However the party could not sustain for long with
V P Singh as leader of the government. The Na­
tional Front was replaced by Janta Dal Party in No­
vember 1990 with Chander Shekher as Prime Min­
ister till the Tenth General Elections of Lok Sabha,
in 1991. During this short duration the party could
not make much impact on the S&T policies. How­
ever, during the period the term of science council
to the Prime Minister which completed its term in
February 1990 was not renewed.

Congress Party Under the Leadership of

The Congress party won the Tenth Lok Sabha
elections by getting about 41 per cent votes and
formed the government under the
Congress party after taking charge of the govern­
ment embarked upon a massive program of
globalising country’s economy leading to structural
and functional reforms in the industrial policy and
consequently in the technology policy of the coun­
try. While announcing the globalisation programmes
the party leadership stated that the government have
initiated for reaching fiscal and financial reforms in
view of the gravest crisis faced by the Indian
economy and also assured that these reforms were
in conformity with the promises made in their elec­
tion manifesto. It was also assured that the govern­
ment was determined to follow the Nehruvian lines
without any deviation and continue the war on pov­
erty.60

In the 90s under the Prime Ministership of Mr P
V Narasimha Rao, there had been a drastic shift in
the economic policy and thereby in the technology
policy of the country. A radical shift in the strategy
of the government for pushing the country into the
international stream of highly competitive environ­
ment came under scathing review by the intelligen­
tsia and the different ideological groups in and out­
side the Parliament. The pressures enforced by the
developed countries to persuade the developing
countries (including India) to open their markets for
trade and services to perpetuate dominance on the
developing countries through agreements, declara­
tions, and negotiations had/have its repercussions on
the parliamentary deliberations.

A review of the Parliamentary deliberations in the
early 90s exhibit that there have also been propor­
tional increase in the global issues on S&T discussed
in the parliment. These issues are mostly concerned
about the governments policy of free flow of capi­
tal intensive foreign technologies, de-regulations,
privatization, and exit policy in the public sector.
In such issues, Members belonging to various op­
position parties reacted to the unrestricted freedom
of multinational companies which are bound to af­
flect Indian industries making them subservient to
the imperial capital and the Indian people be sub­
jected victims of neo-colonial exploitation. Whereas,
other members demanded that agro-based and small
scale Industries may be provided protection from
multinational companies and other domestic private
companies.61

The New Industrial Policy statement read out by
the Finance Minister on 24th July 1991 generated
heated debate in the Parliament. There had been
lengthy discussions during the General Discussions
on Budget (1991-92) and Discussions on the demand
These issues repeatedly came up for discussion at
various other forums of the Parliament. During the
discussions, the Members of Parliament were inquisitive to know from the government the details of the proposed changes in the Industrial Policy. Members of almost all parties raised various issues regarding different aspects of the policy ranging from
globalisation of R&D, foreign capital investments,
de-regulations, role of NRIs, domestic private in­
vestments, and exit policy in public sector. In al­
much all the discussions on these issues the Mem­
bers were keenly interested in knowing the exact
details of the proposed policy and the way it would
be implemented.62
The ruling Congress Party Members were the most vocal followed by the opposition Members belonging to BJP. By-and-large the Congress Members welcomed the new policy options pertaining to globalisation of R&D and foreign capital investments. However, a few Members expressed concern on the issue of exit policy for public sector units. The Members of BJP expressed their disapproval of the changes, particularly regarding opening doors to foreign investments and government proposal for closing down of public sector units. The Members strongly disapproved the proposal of the government regarding de-regulations in industry and increased equity participation of foreign capital. Almost all Members cutting across party line strongly opposed closure of state owned public sector units.

The other issues of international relations in S&T included inquiry from the government about the consequences of signing GATT agreement, India’s position in the Rio declaration on the global environment pact and other issue of bilateral, and multilateral foreign technological collaborations. India’s signing of GATT agreement was a subject of extensive debate in the Parliament. Most Parliamentarians cutting across party line were critical of certain major changes affecting the country, more specifically, on Intellectual Property Rights including product patents pertaining to pharmaceutical, agriculture, and chemical sector. The cancellation of the agreement for Cryogenic Engine Technology by Russian Space agency under the US threat was a subject of concern for the Members of Parliament. Members were also concerned about the Rio De Janeiro declaration on global environment development strategies, and India’s position on the subject.

There had been a more pronounced shift in the perception of MPs about the role of S&T in the fulfillment of various socio-economic goals of the society. There had been recommendations to involve voluntary organisations for the advancement of people action and rural technology by different institutions and societies for rural development. There had also been several issues of dissemination of scientific knowledge through creating Krishi Vigyan Kendras, setting up of district S&T centers in the country for implementation of various action plans in the rural areas. Members had also stressed for creating infrastructure for imparting scientific and technological education in local languages. In this context, proposals were made to research organisations to bring out popular writings about their achievements in different local languages.

The issues of revival of traditional knowledge in its different aspects and its upgradation through modern scientific knowledge have shown subsequent increase. There had been several questions where Members have proposed for the development of Ayurvedic system of medicine, scholarly studies in vedic education, mathematics, astronomy, and to explore and revive the wealth of indigenous knowledge. There had been inquires in the Parliament about the projects financed for computer based education and research work in Sanskrit language and the infrastructure created for the same.

**United Front Party Under the Leadership of Deve Gowda and I K Gujral (1996-98)**

The constitution of Eleventh Lok Sabha, in June 1996, headed by a thirteen party coalition, the United Front Party, established the fact that the agenda of once broad based national political parties have lost its credibility in view of the regional and state level claims through the emergence of various local political parties at the national scene. However, the coalition Government headed by Deve Gowda, united to the manifesto of Common Minimum Program. The program though covered a wide range of issues; accorded high priority to rural development, drinking water, communication, primary health care, and housing.

In an environment where majoritarian governments have given way to coalition governments with repeated re-alignment of political parties, there has also been change in the national and inter-national scenario of the role of science in the fulfillment of national goals. The changes affected at various levels have their reflections on the nature of S&T issues raised and discussed in the Parliament.
For instance, greater representation of peripheral local and regional political parties at the center has led to prominence of inquiries, questioning the role of science in fulfilling the requirements of the remote regions of the country. The present day issues of distant regions are more broad based and policy oriented, as compared to those raised in the past. For instance, in the area of health, the Members were inquisitive to know whether any survey has been conducted to study the infant mortality rate in various states both in urban and rural areas, the results achieved and the measures contemplated in the health programmes.66

Members belonging to different states inquired about the role of advancement in the areas of telecommunication, electronics, and information technology in benefiting the masses. In this context, the questions raised included inquiries about the expansion of TV network in the remote parts of the country and the children programmes telecast on TV channels to popularise distant education, plans of the government for expansion of infrastructure network for electronic media in rural areas, capacity of TV transmitters and whether government is going to increase their capacity. As regards solar energy program the Members were concerned about the state-wise financial assistance provided by the central government for the solar energy program and whether government had fixed any target for the implementation of these programmes.67

The other issues which dominated during the period included the issues relating to the globalisation policy of government of India (adopted in 1991) in view of its relevance in the fulfillment of the sectoral priorities. For instance, Lok Sabha Members cutting through party-line raised a question to the Minister of Agriculture, whether agriculture sector has been benefited by the implementation of the economic reform measures and what has been the increase in the annual rate of production through the availability of imported inputs at a more competitive prices.68 While spelling the direction of development in the country during the Motion of Confidence in the Council of Ministers the leader of opposition in Lok Sabha, Atal Bihari Vajpayee stated that though the country allows competition; controls and restrictions be kept to the minimum, however, the economic reforms and liberalization should have transparency.69

BJP Under the Leadership of Atal Bihari Vajpayee (1998-onward)

The General Election to the Twelveth Lok Sabha also resulted in yet another fragmented verdict in March 1998, when President of India, K R Narayanan invited the leader of the largest party Atal Bihari Vajpayee of the BJP to form the government. The BJP and its 13 allies though contested elections on their respective election manifestos, however, prepared the ‘National Agenda’ on which there was consensus among its allies. In the National Agenda the leader of the ruling party committed to: (i) Continue the process of economic reforms (with foreign direct investment only in the core sector) with thrust on removal of poverty and employment; and (ii) Give greater stress to internal liberalisation, carefully analyzing effects of globalisation. The Agenda assured India’s interests at the World Trade Organisation (WTO) by adopting a confrontationist approach.70

However the Twelfth Lok Sabha has emerged, even as a more diverse structure having representation of more than fifty-five political parties. More over about 50 per cent of the Members are new entrants to the Parliament without any past legislative experience, maximum being in the BJP party followed by Congress (I) party. The structural changes have also been accompanied by the changed environment with those in the opposition occupying the central position and vice-versa.71

An overall view of the S&T related deliberations in the Parliament by the present times makes it obvious that the role of the science in the development has become an established fact in the minds of most Members of the Parliament. There have been various inquires by the Members about the accumulated wealth of the scientific knowledge available in the country in the form of S&T capabilities, development of scientific establishments, S&T parks, expenditure on S&T in the country,
programmes of the National Committee on Science and Technology (NCST) for the development and popularization of science, and extra-mural research funding scheme. Apart from the queries about the S&T capabilities acquired by the country, the Members were also concerned about the excellence attained in different areas of R&D and its applications for the users.

There has also been ever-growing awareness and consciousness among the Members about the consequences of environment pollution. There has also been perceptible change in the nature of environment related issues deliberated in the Parliament as compared to the issues raised in the previous years. Presently, there are more queries relating to the policies and programmes of forest protection and eco-development and the results achieved by various environment development funds.

During Vajpayee government’s period, the proportion of the nuclear policy related issues acquired prominence as the Members were highly sensitized over the nuclear tests conducted by Indian scientists at Pokhara in Rajasthan in May 1998. There were various controversial issues raised in both the houses after the nuclear tests. There were varying queries on the after effect of the these tests, steps taken to neutralize the negative effects of these blasts, India’s future nuclear policy and the steps being taken to resolve the controversial issues relating to testing of the nuclear weapons. While other Members though were appreciative of the capabilities of the Indian nuclear scientists, however, were equally concerned about the application of nuclear research results in other socio-economic areas.

The Trade-related Intellectual Property Rights (TRIPS) agreement of the WTO signed in 1995, became an issue of Members contention in the recent past. In this context the members showed their discontentment over the issue as to why India signed the TRIPS agreement in 1995 without taking approval of the Parliament. The Members showed their disagreement over the contents of the TRIPS agreement and suggested for amendments before signing it. These include: (i) To defer acceptance of TRIPS for further 10-15y, (ii) Patent rights, wherever granted, should be for 5-7y of 20y, (iii) Product Patent should be permitted in selected areas to protect the domestic industry, (iv) Reduction of tariff barriers should be on reciprocal basis by mutual bilateral agreement among countries, and (v) Exchange Market rights should be on permitted with corresponding export obligations.

The Rajya Sabha Members, cutting across party lines, expressed their concern over India’s increasing instance of non-tariff and tariff barriers in global trade and asked the government to ensure protection of India’s interests at WTO. In Lok Sabha also Members belonging to different political parties joined together to inquire from the government about the steps proposed to codify and patent the flora and fauna of the country and all traditional forms of knowledge as embodied in ayurveda and unani. The controversies for the rules governing international transfer of knowledge, were also accompanied by the concern over the environment protection at the global, national and local levels.

6 Conclusions

An overall view of the deliberations in the Parliament reveals that there has been subsequent increase in the proportion of S&T policy related issues from about 3.7 per cent in 50s to about 11 per cent in 90s in the overall issues discussed during the ‘Question-Hour’ period in the Parliament. Categorization of S&T policy related issues into different socio-economic areas reveals that MPs have perceived the importance of the role of science in the development of different socio-economic sectors. However, a priority profile of S&T issues in the different sectors reveals a shift in the priorities for developing science in different periods of time. The earlier low priority areas acquiring central position, whereas the high priority areas attaining peripheral position in the different periods. For instance, area of food and agriculture, industry, health, human resource development which were high priority areas in the 50s and 60s were reduced to comparably low priority areas (Table 1, Figure 1). Whereas, area of energy, electronics, rural development acquired prominence in the late 70s and 80s.
Table 1—Sector-wise trends in the S&T related questions in Parliament (per cent)

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over the issues discussed in the other areas. Moreover, in the 80s and 90s the environment issues which had gained momentum in the late 70s occupied dominant place followed by the issues like telecommunications, bio-sciences, and science for social development.

The analysis also reveals a general increase in the widespreadness of concern for S&T issues in the Parliament. Till 80s, about 50 per cent of the MPs asked questions and raised discussions on S&T issues in the Parliament. In the 90s, their proportion increased to about 70 per cent. Whereas, about one-third of the MPs still do not ask even a single question on Science. In fact, there is a core group of MPs who have repeatedly raised questions and participated in the discussion on S&T issues held in the Parliament, though the configuration of core group has kept on changing in different Lok Sabha periods, since the inception of the Parliament, with the change in its membership. Participation of the core group in various debates, and inquiries on specific issues reflected more of their individual attitude towards S&T rather then the party ideology to which they belonged. However, there is no coherence in the core group in the form of a pressure group on 'Science in Parliament' which could influence government actions on the affairs of science.

The opposition Members are though able to point out various lacunae in the policies of the Government, but most of them do not play any active role in the formulation of national S&T policy. The role of the opposition Members is limited to promoting small alterations in the administrative policies of the research institutions through the appointment of Parliamentary Committees for the concerned science departments. Most of the time, they utilise the parliamentary forums in asking only informative questions on various issues. Occasionally, they asked critical questions and suggested alternative strategies to deal with the particular problems of S&T policy. However the views of the ruling party and, in fact, the attitude of the ruling party leader towards science prevails.

Even though there has been an increase in the number of national and regional political parties representing the views of the people on issues of S&T, however, these parties have still neither brought forth any alternative science policy for the country; nor there has been any attempt on part of the different political party groups to cut across party line and to organise themselves for an alternative science policy which is more appropriate and relevant for the nation. However, it was only during the Janta period that Members of different ideologies united together and affected changes in the course of path which science had adopted since independence. However, those ideologies could not last long. The National Front coalition party met with the same fate during the Ninth Lok Sabha period.

As far as influence of these deliberations is concerned the study reveals that the indirect influence is more than the direct one on the S&T policy of the
Figure 1—Trends in S&T questions in Parliament (Sector-wise break-up)
government. There is no suitable mechanism available to ensure that the issues discussed by MPs at various forums of the Parliament are duly recognized while affecting decisions on issues pertaining to S&T policy.

In the changed scenario of technological dynamism, when the country has adopted the policy of liberalized import of technologies to come at par with the international standards in S&T and also the country is confronted with varied controversial issues involving S&T at an international scene. Moreover, the emergence of organised public opinion is building up enough pressure on the Parliament to direct the developments in science to benefit the masses. In such situations the Parliament is confronted with a double-edged question, i.e., how to modernise without sacrificing traditions and how to preserve traditions without compromising on modernisation. Parliament, in order to prove itself relevant, responsible and true representative of the people have to bring about reforms in its institutions through the increased involvement of Members of Parliament in the affairs of science. In this context, the responsibilities of the Members of Parliament are:

- To bring more and more S&T issues for discussions in and outside the Parliament for more democratic decision-making on S&T policy issues.
- To organise discussions on S&T issues at various inter-party forums. Such forums would lead to legitimate debates on S&T policy issues.
- To bring about change in the trend of discussions on S&T issues held in the Parliament by debating these issues on non-partisan basis. This would help in creating an environment of cooperation and interest among the MPs and in putting forth various options in shaping S&T policy of the country.
- To create pressure group in the Parliament of interested MPs for influencing and directing policy decisions on S&T issues.

The following steps are suggested to the Government for making available to the MPs the facilities and resources needed for their effective participation in the deliberations on S&T policy issues:

- Time allotted for discussions on S&T issues at various forums of the Parliament be increased.
- Resources should be made available to MPs for securing expert assistance which they need for contributing effectively to Parliamentary committee meeting and discussions held at various forums of the Parliament on S&T issues.
- All political parties should be provided with funds to be used exclusively for improving the active participation of MPs in discussions on S&T issues held in the Parliament.

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