

GOVERNMENT OF INDIA
MINISTRY OF SCIENCE & TECHNOLOGY
Department of Science & Technology
FLY ASH UNIT (FAU)
Technology Bhawan, Room No.17 B,
New Mehrauli Road,
New Delhi – 110 016

**Subject:- R&D and technology development/ application in Fly Ash area –
INVITATION OF PROPOSAL**

BACKGROUND

The focused efforts for development of Fly Ash utilization / safe management technologies were started by Department of Science and Technology, Government of India during 1994 as Fly Ash Mission (FAM). The utilization of Fly Ash during 1993-94 was one million tonne only as against a generation of 40 million tonne. The concerted efforts during the Mission Mode period (August 1994 – March 2002) turned around fly ash from a “waste material” to a “resource material”. Utilization of fly ash increased to the level of 22 million tonne per year. A number of technologies were developed, demonstrated in the field along with user agencies, standards and specifications were prepared/updated and statutory measures were also taken during the said period. The concerted effort / activities were participated by major stakeholder agencies from: R&D, academia, industry, power producers, Ministries / Departments and other Governments agencies of Central / State Governments, Regulatory bodies as well as user agencies. It also lead to a number of initiatives by all, of their own as well as with support and guidance of Fly Ash Mission. Fly ash was added as a new discipline for research and management at many institutions/agencies and was strengthen/enlarged at many others.

The fly ash activity, after Mission Mode Project period ie. 31st March 2002 was named as “Fly Ash Utilization Programme” (FAUP) and the fly ash utilization rose to 60 million tonne during the year 2006-07. On the other hand fly ash generation in the country increased to the level of 130 million tonne per year.

The increase in fly ash utilization from one million tonne during (1993-94) to 60 Million tonne level is though quite satisfying but the quantum of un-utilized fly ash also increased from 39 million tonne per year to 70 million tonne per year. Further, it is projected that coal would continue to remain the major source of energy for power generation in the country. The estimates prepared by Ministry

of Power as well as Planning Commissions upto the year 2031-32 indicate that the coal requirement and generation of fly ash during the year 2031-32 would be around 1800 million tonne and 600 million tonne respectively.

On one hand, the management of such a large volume of fly ash and mitigation of its likely impact on environment as well as demand on land for deposition/storage is a mammoth task, on the other hand the fly ash has been proved to be a useful material for a number of applications with potential to conserve valuable minerals, substitute materials inter-alia protection of environment by decreased mining activity and reducing CO₂ generation being produced during a process of production of materials that can be substituted by Fly Ash. Thus, there lies a challenge to convert the threat to an opportunity

Fly Ash also holds potential to improve the physical health of agriculture soil, provide micro nutrients and as a result increase the yield of cereals, oil seeds, pulses, cotton, and sugarcane etc. by 10-15%, vegetables by about 20-25% and root vegetable by about 30-40% waste lands, degraded lands as well as problematic soils such as Saline – Alkali soils, Alkali saline impermeable (salt pane) as well as eroded soils even in arid zones can be successfully reclaimed by application of fly ash.

Further, in addition to the above said applications, fly Ash can substitute up to 66% of cement in construction of dams. Technologies are also at the verge of entering the market for manufacture of cementing material as well as fly ash bricks with fly ash contents as high as 90%.

In view of the above, it has been decided to provide an increased impetus and thrust to already being supported R & D and technology development activities including up gradation / preparations of new standards / specifications, policy issues, disseminations of information and knowledge etc. in the area of fly ash. In addition fly ash technology / know how transfer/application and facilitation mechanisms are also to be developed and facilitated that would inter-alia undertake capacity building at all levels of stakeholder agencies.

The new focus and thrust to fly ash activities would be provided by Fly Ash Utilization (FAU), the Department of Science and Technology (DST) in, addition to continuing the on going fly ash related activities initiated under the earlier programmes.

INVITATION OF PROPOSAL:

Proposals are invited under the following seven schemes from the interested agencies for financial support by FAU, DST for development and implementation

of technologies/know-how towards large scale/high value utilization and eco-friendly & commercial handling of fly ash.

SCHEME - 1. R&D, technology development and application by “not for profit” agencies i.e. public funded and charitable organisations:

Project eligibility:

R&D, technology development and application related project proposal that addresses to one or more of the following:

- (i) exploration/development of new application of fly ash.
- (ii) improvement in the existing technology(ies).
- (iii) beneficiation/processing of fly ash to enhance its usability
- (iv) environment friendly/economical management and application of fly ash.
- (v) development of further insight into the behaviour and properties of fly ash.

Applicant eligibility. Any of the following is eligible to apply:

- (i) Public funded R&D Institution/body that meets any of the following criteria.
 - Registered with DSIR.
 - R&D centre/facility approved by State/Central Govt.
 - Central/State Govt. approved universities/deemed Universities / college / autonomous institution.
- (ii) Any agency / individual having the patent/patent applied for in the proposed area of work.*
- (iii) Registered society/Trust/NGO/Section 25 Company, etc. set up for non-profit objectives.*
- (iv) Any industrial unit or user agency or a stakeholder agency having considerable interest in the proposed programme when makes a joint proposal along with any of the above said eligible body/agency.

Note: * Copies of Article & Memorandum of Association as well as Balance sheet and Profit & Loss Account for the last 3 years are required to be submitted alongwith applicable registration certificates.

Expense heads eligible for funding :

Basic R&D infrastructure & facilities should be available with the institutes/body. The following can be supported under this programme.

- (i) incremental infrastructure development.
- (ii) consumables & glass ware
- (iii) project staff
- (iv) required domestic travel
- (v) technical books & materials
- (vi) participation in technical seminars & conferences of relevance etc.
- (vii) project Monitoring Committee (PMC) meeting expenses.
- (viii) miscellaneous & sundry expenses for project work.

Expense heads that are not eligible for funding:

- (i) Land & Building
- (ii) Computers for general purpose
- (iii) Vehicle
- (iv) Regular man power of the institute etc.

Processing of proposals:

The proposals received would be refereed to three experts and processed through peer review & PAC mechanism.

Duration of each project: Generally 2-3 years

SCHEME – 2 Programme for R&D and technology development by industry or business institutions/bodies:

Project eligibility:

R&D and technology development project proposal that addresses to any of the following:

- (i) exploration/development of new application of fly ash.
- (ii) improvement in the existing technology(ies).
- (iii) beneficiation/processing of fly ash to enhance its usability
- (iv) environment friendly/economical management of fly ash.
- (v) development of further insight into the behaviour and properties of fly ash.

Applicant eligibility: Any of the following is eligible to apply:

- (i) In-house R&D facility registered with DSIR.
- (ii) R&D centre/facility approved by State/Central Govt.
- (v) Any agency / individual having the patent/patent applied for in the proposed area of work.
- (vi) Any industrial unit or user agency or a stakeholder agency having considerable interest in the proposed programme when makes a joint proposal along with any of the above said eligible body/agency or body/agency eligible under scheme-1.

Expense heads eligible for funding:

Basic R&D infrastructure & facilities should be available with the institutes. The recurring expenses such as the followings can be supported under this programme upto 50%.

- (i) consumables & glass ware
- (ii) direct project staff
- (iii) project related domestic travel
- (iv) project related technical books & materials
- (v) Project related participation in technical seminars & conferences of relevance etc.
- (vi) Project Monitoring Committee (PMC) meeting expenses.
- (vii) Miscellaneous & sundry expenses for project work.

Note: Expenses to be incurred at any by the collaborating agency(ies), if any, eligible under scheme-1, can be supported upto 100%.

Expense heads that are not eligible for funding:

- (i) Land & Building
- (ii) Capital requirement
 - (i) vehicle
 - (ii) Regular man power of the agency etc.

Processing of proposals:

The proposals received would be refereed to three experts and processed through peer review & PAC mechanism.

Duration of each project : Generally 2-3 years

SCHEME - 3. Collaborative programme with Central Government Ministries/Depts./Agencies:

Project eligibility:

- (i) exploratory/new technology development
- (ii) improvement in existing technologies
- (iii) setting up of pilot plant or field demonstration/
large scale application of available technology
- (iv) capacity building in the user industry

Applicant eligibility:

- (i) Central Government Ministries/Depts./
Agencies such as MoP, MoEF, CPCB,
CEA, ICMR, ICAR,DAE etc,
- (ii) Central Government Power Producing
Agencies such as NTPC, DVC, NHPC
- (iii) Central Government fly ash user Ministries/
Departments/Agencies such as, MoUD, MOSRTH,
Min. of Coal, Min. of Mines, Min. of Agriculture, Min.
of Waste Land Development, NHAI, CPWD, Coal
India etc.
- (iv) Any of the eligible body under scheme-1&2, when
makes a proposal alongwith any of the above said
eligible agencies.

Expense heads eligible for funding:

The following can be supported under this programme by equal sharing between the collaborating Government parties;

- (i) incremental infrastructure development
- (ii) consumables & glass ware
- (iii) direct project staff
- (iv) project related domestic travel
- (v) project related technical books & materials
- (vi) project related participation in technical seminars & conferences of relevance etc.
- (vii) Project Monitoring Committee (PMC) meeting expenses.
- (viii) miscellaneous & sundry expenses for project work.

Expense heads that are generally not eligible for funding:

- (i) land & Building
- (ii) capital requirement
- (iii) vehicle etc.

Processing of proposals:

The proposals received would be refereed to three experts and processed through peer review & PAC mechanism.

Project duration: generally 2-4 years.

SCHEME - 4

Collaborative programme with industry

Project eligibility:

- (i) exploratory/new technology development
- (ii) improvement in existing technologies
- (iii) setting up of pilot plant or field demonstration/large scale application of available technology
- (iv) capacity building in the user industry

Applicant eligibility:

Any industrial unit having considerable interest in the proposed programme should make a joint proposal alongwith any of the agency/body eligible under schemes 1, 2 & 3,

Expense heads eligible for funding:

The following can be supported under this programme

- (i) Incremental infrastructure development at public funded R&D institution.
- (ii) consumables & glass ware
- (iii) direct project staff
- (iv) project related domestic travel
- (v) project related technical books & materials
- (vi) project related participation in technical seminars & conferences of relevance etc.
- (vii) Project Monitoring Committee (PMC) meeting expenses.
- (viii) Miscellaneous & sundry expenses for project work.

Expense heads that are generally not eligible for funding:

- (i) land & Building
- (ii) capital requirement
- (iv) vehicle etc.
- (v) Permanent staff of R&D institution and the collaborating industry.

Processing of proposals:

The proposals received would be refereed to three experts and processed through peer review & PAC mechanism.

Funding Mechanism:

- (i) Incremental infrastructure development at public funded R&D institution - 100% by DST.
- (ii) Recurring expenses – 50% by industrial partner and 50% by DST.

Project duration: Generally 2-4 years.

SCHEME -5

Development of technology/know-how transfer & capacity building centres:

Existing organizations working in technology related areas would be facilitated to develop & nurture group/centre for technology/know-how transfer & capacity building in the area of Fly Ash.

Creation of new institutions/organizations is not aimed at. No support would be provided for land & building etc.

Support would generally be for man power, infrastructure development such as computers, audio-visual system, development and conducting technical short courses/training programmes, recordings, travel, incidental expenses, contingencies & institutional overheads.

Each group centre would be required to undertake the following:

- (i) The agency (centre) would be a hub/nodal agency for one or more areas of fly ash utilization/safe management (depending upon it's areas of work/expertise) to provide guidance and facilitate adaptation of technology/know-how by the industry/user agency.
- (ii) The nodal agency (centre) to also organize at least 2 nos. of short term technical courses/training programmes for the following, in it's expertise area(s) of fly ash utilization/safe management.

- Fly ash producer's i.e. Thermal Power Plant Executives.
- User industries/agencies
- Consultants/faculty
- Pollution Control Boards/Committees, BIS and Centre/State Govt. facilitating & regulating agencies etc.

(iii) To organize at least 2 nos. of seminars/conferences/technical meets etc. for dissemination of information and also to facilitate & support students for fly ash activities/project works.

SCHEME – 6

Preparation of “Base line Paper for each of the major area of fly ash utilization/safe management” including TF/TA exercise for that area.

The baseline paper is to bring out

- (a) The current status of R & D and Technology in the select major area of Fly Ash Utilization / management in the country and abroad.
- (b) Status and impact of current level of technology implementation by the industry/user sectors. Impact on aspects such as social, environment, employment generations, conservation of natural resources industrial growth and income generation etc. are also to be covered in sufficient depth.
- (c) Structured and systematic technology forecasting and assessment exercise may be undertaken regarding R & D and technology development as well as their application in field and likely impact on various parameters as detailed in earlier points.

Scenario building up for next 5, 10 and 15 years may be undertaken.

- (d) Suggested plan of action, including mobilization of required inputs such as man power, other resources, policy measures etc. for maximization of Fly Ash Utilization and gains there off.

SCHEME – 7 Development of “fly ash data base” alongwith a specialized library for fly ash publications.

- (a) Development, maintenance of database and specialized library for fly ash publications / literature including servicing of users. It would cover all areas of Fly Ash Utilization, safe disposal and R & D as well as Fly Ash generation and experts database.
- (b) Focus would be on Indian data and information.
- (c) The database and specialized library are to be user friendly.

FLY ASH UTILISATION/SAFE MANAGEMENT AREAS:

The proposal should be categorized under any of the following areas of fly ash utilization/safe management:

1. Cement & Concrete
2. Building Materials (other than cement & concrete)
3. Hydro Power & Water Resources
4. Geotechnical applications
5. Agriculture
6. Mining Sector
7. Value added applications
8. Handling & Transportation
9. Design & Management of Ash Ponds

SUBMISSION OF PROPOSAL:

The proposal is to be submitted in the format available at DST website (www.dst.gov.in)

The details of the schemes as well as format for submission of proposal are available at DST website (www.dst.gov.in) [see – applications invited: “R&D and technology development/application in fly ash area” under announcements in what is new].

10 hard copies of the proposals alongwith a soft copy in Word format CD may be sent to:

Dr. Vimal Kumar, Scientist – G, and Head, FAU, Room No.17B, Technology Bhawan, Department of Science & Technology, New Mehrauli Road, New Delhi – 110 016

For clarifications if, any write to: FAU-DST@nic.in or above Address.

NOTES:

- (i) The proposal received upto 10th of May 2008, would be processed in the 1st batch during May-June 2008.
- (ii) Proposals received thereafter, would be considered during August 2008 (2nd batch) and December 2008 as 3rd batch.
- (iii) During subsequent years, the proposals would be processed in two batches/year i.e. during January/February (proposals received between August to December) and July/August (proposals received during January to July).