International Centre for Integrated Mountain Development (ICIMOD)

Request for Proposal (RFP)

to

Install an ICIMOD-supported agriculture crop residue pelletisation plant in the Terai region of Nepal

Project:

Agricultural Residue Utilisation via Pelletisation for Air Quality Improvement

Office Address: Dhapakhel-5, Lalitpur, Nepal

Date of RFP Issue: 2nd June 2025

Deadline for submission of RFP: 20th June 2025

Terms of reference

to

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1. Introduction

The Hindu Kush Himalaya (HKH) region stretches 3,500km across Asia, spanning eight countries – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan. Encompassing high-altitude mountain ranges, mid-hills, and plains, the zone is vital for the food, water, and energy security of up to two billion people and is a habitat for countless irreplaceable species. It is also acutely fragile, and vulnerable to the impacts of the triple planetary crisis of climate change, pollution, and biodiversity loss.

The International Centre for Integrated Mountain Development (ICIMOD), based in Kathmandu, Nepal, is an international organisation established in 1983, that is working to make this critical region greener, more inclusive and climate resilient. For more information, read our Strategy 2030 and explore our website.

ICIMOD has partnered with the Punjab State Council for Science and Technology (PSCST), India, to implement the project 'Agricultural Residue Utilisation via Pelletisation for Air Quality Improvement' in the Indo-Gangetic Plain, as a technology partner.

PSCST, an autonomous society under the State Department of Science and Technology, is serving as the state-level node for the Department of Science and Technology (DoST) under the Government of India and as a think tank for the Department of Science, Technology and Environment of the Government of Punjab, India.

2. General Background

The Indo-Gangetic Plain (IGP) and surrounding regions face severe environmental issues due to the annual open burning of agricultural crop residues, particularly in the months of October and November, which is the rice paddy harvest season. Local farmers burn substantial amounts of paddy straw stubble to prepare the fields for the next sowing season quickly, as this saves costs and time, but causes significant pollution. Although this burning is a localised action, its effects are widespread, impacting the entire HKH region. Specifically, a fourth of the human population, vast biodiversity, livestock, and even natural resources affected by adverse environmental, socio-economic, and health consequences. In the IGP regional countries, which include Bangladesh, India, Nepal, and Pakistan, such actions were banned through policy and law enforcement. Despite this, farmers persistently adopt this practice.

Agriculture crop residue burning releases several types of harmful pollutants into the atmosphere, with profound consequences for human health. A report from the Indian Council for Agricultural Research (ICAR) published in 2021 revealed that open burning of one metric tonne of paddy straw releases 13kg of particulate matter ($PM_{2.5}$), 60kg of carbon monoxide (CO), 1460 kg of carbon dioxide (CO_2), 0.2 kg of sulphur oxides (SOx), 3.5 kg of nitrogen oxides (NOx). Within the IGP region, about

one hundred million metric tons of agricultural crop residues are burned annually, while India alone burns ninety-two million tons of crop residue (Bhuvaneshwari et al., 2019), releasing vast amounts of pollutants and harmful gases. Likewise, a number of fossil fuel-based industries operate within the IGP region, including brick kilns and cement factories. Such types of industries are also responsible for releasing diverse types of pollutants, including PM, SOx, NOx, CO, CO_2, and black carbon (BC), contributing significantly to environmental pollution. Thus, collectively, air pollution in the region is further intensified and these pollutants can easily travel across borders, significantly impacting human health and the environment within the IGP region.

Evidence shows that prolonged exposure to the smoke and pollutants from crop residue burning can lead to or worsen respiratory conditions such as asthma and bronchitis and can cause chronic heart disease and lung cancer. Additionally, the pollutants cause severe irritation of the eyes, throat, and skin in the demographic of the IGP region, especially among children, the elderly, and pregnant women, who are more vulnerable and exposed to these health impacts.

To address this, ICIMOD has initiated a novel approach that involves harvesting agricultural crop residues, which are otherwise burned in the fields by the farmers. This is to encourage farmers to adopt alternative crop residue management techniques involving a combination of education, support, and additional revenue-generating opportunities, producing clean and renewable energy. This initiative aims to create pellets from surplus agricultural crop residues for industrial use, thereby curbing crop residue burning, substituting the use of fossil fuels (completely or partially) in industry. This is to reduce pollution and greenhouse gas emissions from both open burning and industrial fossil fuel use.

ICIMOD is seeking a qualified partner to collaborate on the agriculture crop residue pelletisation project. This partner should have the capacity to set up a pelletisation plant, produce sufficient biomass pellets from locally available agricultural crop residue, mostly paddy straw in the Terai region of Nepal, and supply the product to consumers or end users. In parallel, ICIMOD will support its partner, providing partial seed funding for the pellet plant setup, along with the necessary technical support. This activity has been undertaken under the Action Area: Air and the Intervention: Air Pollution Mitigation.

3. GESI responsive

A high priority for ICIMOD is engaging women in agriculture and crop residue management through pelletisation, as an integral part of mainstreaming gender equality and social inclusion (GESI) into the project. To ensure the agricultural crop residue pelletisation process is inclusive and equitable, we propose integrating GESI principles. This involves empowering women and disadvantaged groups through economic opportunities and inclusive decision-making. We will ensure equal access to resources, provide tailored training programmes, and advocate for enabling policy approaches. This approach aims to enhance participation and leadership, to contribute to the equitable sharing of the benefits of sustainable energy, and to foster a more inclusive and resilient agricultural sector.

4. Objective

To identify a competent partner capable of establishing a suitable agricultural crop residue/paddy straw pelletisation facility, producing agricultural crop residue pellets for end users.

5. Scope of work

The purpose of this RFP is to invite applications from potential entities to establish a pellet manufacturing unit to initiate biomass pellet production from paddy straw in collaborative support with ICIMOD. The applicant should have the knowledge and skills of industrial production and market development. Thus, the scope of work for Applicant(s) includes but is not limited to:

- **Pelletisation facility:**
  Applicant(s) should be capable of setting up an entire pelleting plant for agricultural crop residue, mostly paddy straw, with a minimum production capacity of 500 kg pellets per hour [0.5 ton per hr (TPH)] and ensure its sustainable production. Applicant(s) should strictly adhere to the pellet's minimum technical specifications shown in Table 1 in this document.
- **Managing the resources:**
  Applicant(s) should ensure the full functionality and operation of the pellet plant with available, competent, and sufficient human resources, and well-trained operators and maintenance staff.
- **Feedstock for pelletisation:** Applicant(s) must focus on the use of paddy straw as the primary feedstock material for the pellet production, while in the absence of such raw material other crop residues can be used as convenient.
- **End-use:**
  Pellets produced by the Applicant(s) must adhere to the defined pellet specifications and be used by industries or enterprises (small and medium enterprises, (SMEs)/ Micro Small and Medium enterprise, (MSMEs) to substitute 100% fossil fuel usage or in co-firing, substituting the coal/fossil fuel partially.
- **Partnership commitment:**
  Applicant(s) should commit to at least 2 years' partnership with ICIMOD for the pellet production and supply to diverse types of industries and enterprises.
- **After-sales service and support:**
  Applicant(s) must keep an inventory of the minimum spare parts required for regular maintenance and troubleshooting to reduce interruptions due to machine downtime.

6. Technical performance of the pelleting plant

Applicant(s) should be able to meet the required technical standards of the pellets and have the capacity to produce the specified quality and outputs of agricultural crop residue pellets. It is mandatory to meet the minimum standard of non-carbonised pellets as outlined in Table 1, which must be supported by a test report conducted in accordance with the standard procedures from a recognised accredited testing laboratory following internationally accepted testing methods (preferred ISO standards).

Table 1: Quality of the agricultural crop residue pellet

S.N.	Parameters	Specification
1	Base material/feedstock	Agricultural crop residues (Base material or feedstock shall only be crop residues such as paddy straw; crop residues which produce oil during pulverisation are excluded)
2	Production capacity	0.5 Ton Per Hour (TPH)
3	Length of a pellet	10–25 mm
4	Diameter	Preferred 10–15 mm (but must not exceed 25 mm)
5	Bulk density	>600 kg/m^3
6	Fines (small particles from pellet processing) (%)	<5%
7	Gross calorific value (ARB*)	Not less than 2800 Kcal/kg
8	Moisture content (ARB*) (%)	Preferred: < 8.5 % or not exceeding 14 %
9	Ash (ARB*) (%)	Preferred: < 5% but not exceeding 20%
10	Particle size distribution	After crushing and pulverising < 5mm
**ARB: as-received basis*		

7. Finance

ICIMOD will provide partial financial support and the necessary technical assistance to the selected Applicant(s) to facilitate the establishment and operationalisation of the required pelleting plant. Details of the technical and financial support provided shall be outlined in the contract.

8. RFP document

The Applicant(s) are expected to examine all corresponding instructions, forms, terms, and specifications contained in the solicitation documents. Proposals must offer services for the total requirement of documents. Failure to comply with these documents will be at the Applicant's risk and may affect the evaluation of the proposal.

If the Applicant(s) need any further clarification about this RFP, please send your queries to the email address: **consultancy.int@icimod.org**

At any point in time prior to the deadline for submission of the RFP, ICIMOD may, for any reason, whether on its own initiative or in response to a clarification requested by the Applicant(s), amend the RFP documents; ICIMOD will notify the interested parties about any amendments prior to the deadline.

9. Eligibility criteria

Interested Applicant(s) must meet the following criteria to be eligible for consideration:

- Must be a registered company or firm with knowledge of the pelletisation of biomass, including agricultural crop residue and other biomass on a production scale.

- Must demonstrate financial capacity for the investment needed for the installation, commissioning and inventory of the minimum required spare parts of the pellet plant.
- Must install at least one pelletisation unit specifically for the paddy straw pelletisation, though the applicant already owns another pelletisation unit.
- Must agree to use paddy straw as the primary feedstock in pellet production while it is available.
- Must be willing to abide by ICIMOD's production target and end-use guidelines for at least 2 years.
- Must agree on the payment modality of ICIMOD while receiving the seed funding.

ICIMOD shall select and award the contract to the Applicant(s) based on the assessment which best meets the above criteria.

10. Submission requirements

Interested Applicant(s) are requested to submit their RFP, including the following details:

- **A cover letter** expressing interest in providing specific services to ICIMOD.
- **Company profile:** Including company background and years of experience in the manufacturing/production sector.
- **Technical proposal:** The form annexed with this document requesting the information should be duly filled up.
- **Project timeline:** Estimated time required for installation and commercial commissioning of the pellet plant.
- **Organisation profile:** Applicant(s) are requested to provide detailed information of their organisation, including company registration and VAT certification.

11. Validity of the application

The Applicant(s) shall submit their application, which shall remain valid for up to six months after the application deadline. ICIMOD may solicit the consent of the Applicant(s) for an extension of the period of validity of the response, if required. In the event any Applicant(s) refuse to extend the response validity as requested by ICIMOD, ICIMOD shall terminate the processing of their respective responses.

12. Evaluation

The Applicant(s) will be assessed in two stages. Based on the submitted technical proposal, the applicant's capacity and understanding of the subject matter, the Applicant(s) will be shortlisted for the second stage screening. Based on the highest cumulative scores obtained in the technical proposal assessed out of one hundred score points, the Applicant(s) will be shortlisted. Shortlisted Applicant(s) will be required to give a detailed presentation on their proposed plan to install a pelletisation unit. Based on the quality of their proposal and planning, one APPLICANT scoring the highest score based on the criteria will be selected to proceed collaborative initiative with ICIMOD.

13. Costs and expenses towards the response to the RFP

The Applicant(s) shall be responsible for all costs associated with the preparation of the application and execution of the documents related to this RFP. ICIMOD shall not be responsible in any way for such costs, regardless of the conduct or outcome of the selection process.

14. Modification and withdrawal of the proposal

The Applicant(s) may withdraw the proposal after submission, provided that the written and signed confirmation notice of the withdrawal has been received by ICIMOD prior to the deadline specified for the submission of the proposal. Otherwise, no proposal shall be revised or withdrawn in the interval between the deadline and the expiration of the proposal validity specified by the Applicant(s) in the submitted proposal.

15. Timeline and deliverables

The Applicant(s) should propose the main and sub-activities for the proposed task, milestones, and delivery date to achieve the project output.

Deliverable	Number of Months	YEAR/QUARTER					
		2025		2026			
		Q3	Q4	Q1	Q2	Q3	Q4
Pelleting plant set up of the sustainable feedstock supply chain	3						
Installation, test production of crop residue pellets, capacity building, feedstock and pellet supply chain set up, and strengthening	6						
Pellet production (minimum 500MT/year) from agricultural crop residues and ensure its end use, creation of the biomass pellet value chain and support; demonstration during the stakeholders' visit organised by ICIMOD.	Till June of 2026						

16. Proposal submission

The Applicant(s) are required to submit the soft copy of their complete RFP via email to **consultancy.int@icimod.org by 5 PM (Nepal Standard Time), 20th June 2025**, and each page of the response should be duly stamped and signed by the authorised signatory in whose favour the power of attorney is issued.

17. Ethics

The Applicant(s) will be required to take all the necessary actions to handle the collected data responsibly (see ICIMOD Data Policy) to ensure data privacy, anonymity, and confidentiality. The Applicant(s) must adhere to the in-country regulations while executing the project.

A. Our commitment to the prevention of sexual harassment

ICIMOD is committed to the prevention and redressal of sexual harassment in the workplace and promoting the welfare of children, young people and adults and expects all staff, consultants, and volunteers to honour this commitment. ICIMOD will do everything possible to ensure that only those who are suitable to work within our values are selected to work for us.

B. Confidentiality/non-disclosure

All material issued in connection with this RFP shall remain the property of ICIMOD and shall be used only for the purpose of this exercise. All information provided shall be either returned to ICIMOD or securely destroyed by unsuccessful applicants at the conclusion of the procurement exercise.

During the performance of the assignment or at any time after expiry or termination of the agreement, the Applicant(s) shall not disclose to any person or otherwise make use of any confidential information which they have obtained during this agreement relating to the partner organisation/ICIMOD, the respondents, or otherwise. The Applicant(s) are required to sign a non-disclosure/confidentiality agreement as part of their undertaking of this work.

C. Intellectual property, copyright, and ownership of all prepared information

The Applicant(s) shall retain all rights to pre-existing (background) intellectual property or materials used by the Applicant in the delivery of this study. All arising intellectual property, ideas, materials, processes, or processes formed in the contemplation, course of, or as a result of this study should be passed to ICIMOD without restriction.

The Applicant(s) shall warrant that all arising intellectual property, materials and/or products produced in pursuit of this study shall be original and shall not infringe on any third party's claim. All technical or business information, in whatever medium or format, originated, collated, or prepared by or for the Applicant(s) in the contemplation, course of, or as a result of this assignment shall be transferred to ICIMOD without restriction on completion and shall not be used by the Applicant(s) for any other purpose without the express written permission of ICIMOD.

Copyright of all arising documents, data, information, or reports produced by the Applicant(s) under this agreement shall belong to ICIMOD and the Applicant(s) jointly and will pass to ICIMOD without restriction. Any knowledge products produced by ICIMOD, such as documents, data, information, and reports, shall solely belong to ICIMOD and may not be used by the Applicant(s) for any other purpose other than in conjunction with this assignment, without the express written permission of ICIMOD.

ICIMOD reserves the right to accept or reject any or all RFP/proposals received without providing any reason whatsoever.

18. (The covering letter should be on the Letterhead of the Applicant)

Date: ……..

To, ……..

Sub.: Technical proposal for collaboration with ICIMOD in the agriculture crop residue pelletisation project as a partner.

Dear Sir,

We, the undersigned …….. **(Insert the name of the 'Applicant')** having read, examined, and understood in detail the RFP, we confirm that neither we nor any of our parent company/affiliate/ultimate parent company has submitted a response directly or indirectly to the previously mentioned RFP other than this response.

1. We accept the RFP issued by ICIMOD, as amended. To signify our acceptance, we have signed, stamped the technical proposal, and enclosed it with our response. We confirm that the provisions of the RFP will be binding for us.
2. We have submitted our response strictly as per the provisions and formats of the RFP, without any deviations, and without mentioning any assumptions or notes.
3. We hereby agree and accept that the decision made by ICIMOD with respect to any matter regarding or arising out of the RFP shall be binding for us. We hereby expressly waive all claims with respect to the RFP process. We confirm that there are no litigations or disputes against us which materially affect our ability to participate or function under the obligations of the RFP.
4. Details of the contact person:

   Name :
   Designation :
   Address :
   Contact numbers :
   Email ID :
5. We are enclosing herewith the entire application containing duly signed formats in electronic format sent via email to ICIMOD as per the RFP for ICIMOD's consideration.
6. We confirmed that our response is consistent with all the requirements for submission as stated in the RFP and subsequent communications from ICIMOD, if any.
7. The information submitted in our application is complete, strictly as per the requirements stipulated in the RFP and is correct to the best of our knowledge and understanding. We would be solely responsible for any errors or omissions in our submitted application.
8. We confirm that all the terms and conditions of our response are valid for acceptance for a period of six months from the submission deadline.

We confirm that we have adhered to the organisational values and norms and have not taken any actions that could be deemed unlawful. We understand that you are not bound to accept any response you receive.

Yours sincerely,

[Name, designation, and signature of authorised person]

19. Information to be submitted by Applicant(s)

Annexe: Technical proposal

S. N	Detail	Remarks			
1	**General detail**				
	Name of organisation				
	Organisation's address				
	Contact details of the organisation and representative *[Name/Email/Phone/Mobile Phone]*				
2	**Pellet facility and Market**				
	a. Address of the proposed location				
	b. Do you have sufficient space available for the pellet plant and storage facility?	☐ Yes	☐ No		
	c. Why do you plan to install the pellet plant?	☐ To use in own industry			
		☐ To commercialise pellets in residential			
		☐ To commercialise pellets in small and medium enterprises			
	If using pellets in your own industry, what is the type of industry and type of fuel you are currently using?	Type of Industry: _____			
		☐ Coal			
		☐ Firewood			
		☐ Furnace oil			
		☐ LPG			
		☐ Rice husk			
		☐ Others			
	If commercialising the pellet, what type of industries or enterprises are you targeting?	☐ Brick kiln/ceramic			
		☐ Hotel/restaurant			
		☐ Boiler/furnace operating industries			
		☐ SME's/ MSME's			
	d. How much amount, industries or enterprises are willing to pay per kg of pellet fuel?	☐ < NPR 10-15	☐ NRP 15-20	☐ > NRP20	☐ No Idea

S.N.	Detail	Remarks				
3	**Technology - general**					
	a. What type of pellet machine are you planning to install?	☐ Piston press	☐ Flat roller press	☐ Others		
	b. What is the production capacity of the pellet plant you are planning to install (tons per hour)? (Minimum plant capacity of 500kg per hour, required to install)?	☐ 0.5-1 TPH	☐ 1-3 TPH	☐ Above 3 TPH		
	c. What size pellet are you planning to produce?	☐ < 8mm	☐ 8-15 mm	☐ Above 15 mm		
4	**Agriculture crop residue collection**					
	a. Are you comfortable producing pellets using paddy straw as feedstock?	☐ Yes	☐ No			
	b. What other type of crop residue are you planning to use to make pellets?	☐ Rice husk	☐ Wheat straw	☐ Sugar cane waste	☐ Industrial waste crop residue	☐ Other crop residues
	c. How far is the raw material?	☐ 0-5 km	☐ 5-10 km	☐ 10-20 km	☐ >20 km	
	d. How are you planning to manage the raw material for pellets?	☐ Self-harvesting	☐ Aggregators / Mediators	☐ Farmers bring to the factory	☐ Collect Industrial byproducts	
	e. What would be the state of feedstock for pellets?	☐ Loose	☐ Bale			
5	**Experience and Capacity**					
	a. Do you have experience in product manufacturing and distribution?	☐ Yes	☐ No			
	b. Are you capable of procuring and installing the pellet plant with partial ICIMOD funding?	☐ Yes	☐ No			
	c. How much are you planning to invest in the pellet plant installation?	☐ < NPR 5 million	☐ NPR 5-10 million	☐ NPR 10-20 million	☐ > NPR 20 million	
	d. What other support are you looking for from ICIMOD other than partial funding?	**Please mention briefly.**				