CTCN
CLIMATE TECHNOLOGY CENTRE & NETWORK

CTCN Technical Assistance
Request Submission Form

Please fill in the form in the grey spaces, by following the instructions in italic.

Country:	*Viet Nam*

Date	*November 12, 2014*

Title	Bio-waste minimization and valorization for low carbon production in rice sector

Contact information:

Please fill in the table below with the requested information. The request proponent is the organization that the request originates from, if different from the National Designated Entity (NDE).

	National Designated Entity	**Request Proponent**
Contact person:	Mr. Le Ngoc Tuan	Mr. Tran Van Nhan
Position:	Director, Division of Science, Technology and International Cooperation	Director
Organization:	Department of Meteorology, Hydrology and Climate Change , Ministry of Natural Resources and Environment of Viet Nam	Vietnam Cleaner Production Centre (VNCPC)
Phone:	+844 37956868 (ext 1079)	+844 3868 4849
Mobile:	+84 989433888	
Email:	lengoctuan@gmail.com	vncpc@vncpc.org
Postal address:	No. 10 Ton That Thuyet, Ha Noi, Viet Nam	Hanoi University of Science and Technology No.1 Dai Co Viet Street – Hai Ba Trung, Ha Noi, Viet Nam

Geographical focus:

{Select below the most relevant geographical level for this request:}

☐ *Community-based*
☒ *Sub-national*
☐ *National*
☐ *Multi-country*

Geographical focus on rice producing areas

Theme:

{Select below the most relevant theme(s) for this request:}

☐ *Adaptation to climate change*
☒ *Mitigation to climate change*
☐ *Combination of adaptation and mitigation to climate change*

Sectors:

The rice sector in Viet Nam represents one of the most dynamic and economically important agricultural production system in the country. The request deals with the energy and environmental issues the rice sector is facing.

Problem statement *(up to one page):*

High abundance and availability of rice husks as organic material:

- Drying-dehusking-milling are crucial post-harvest activities in the production of rice. Around 20% of the initial weight of the paddy remains in form of husks. With an estimated production of 44 million tons of paddy rice in 2013, approximately 7 million tons of rice husks are available (or to be disposed of if unutilized) in terms of a potentially usable biomass, taking into account that a maximum of 15-20% of this amount is valorized within the rice mills, mainly for the drying process.
- Rice husk is generally under- and unsystematically used or often dumped and burned. Rice husk represents an enormous potential in terms of organic material to be used as energy source. Recent development showed clearly, that in Vietnam and also in other Asian countries, the systematic economic valorization of rice husks has become key to boost productivity and tackle environmental issues at the same time.

Growing demand of energy for Vietnamese industry:

- Although GDP growth has slightly slowed down during this year, Viet Nam's economy outlook for 2015 is considered to be very solid and positive. It can reasonably be assumed that energy demand will follow the same trend.
- Along with the economic development goes a significant and visible change in technology standards. The Socio-Economic Development Plan (SEDP 2011-2015) was pushing the Vietnamese economy towards an increasing share of higher value-adding activities, mainly in the second and third sector. At the same time the SEDP 2011-2015 set out targets to strengthen environmental protection and to mitigate and prevent the adverse impacts of climate change.
- Moreover, there is a pressure on Viet Nam to invest, adapt and to step in a broader competition with other Asian countries. This will only be possible by increasing the product quality, competitiveness (mastering the level of production costs and the level of resource consumption). This calls for a continuous modernization of the equipment and thus for a growing demand for investment. The recent main focus lies on controlling and increasing product quality.
- A large part of Vietnam companies depend on coal as source of thermal energy. In this context Viet Nam finds itself in a particular situation, because all coal reserves are concentrated in the north. Due to the geographical peculiarities of the country, domestic coal supply from the north to the south is expensive. Furthermore Viet Nam will have to increase coal imports considerably, since domestic supplies will not cover the overall energy demand. This situation will make Viet Nam depend more and more on international markets and thus expose Vietnamese companies to price volatility.
- The combination of future energy price development (in particular coal) and greater competition due to a more open economy has created a continuous and growing pressure on companies to increase efficiency and profitability, thereby making a strong case for improving resource productivity. This applies in particular for companies with energy intensive production processes and calls for exploring alternatives, such as domestic renewable energy resources inlcuding rice husk.

The Vietnamese Government started to define legal policies on renewable/alternative energy:

- The government started to create the necessary enabling conditions for transforming biomass into energy. Even if currently there are no direct subsidies, the political environment is favorable for biomass conversion projects.
- Decision 2149/QD-TTg by Prime Minister: Objectives and targets concerning recycling, reuse and energy converted from solid waste: By 2015: 60% / By 2020: 85% / By 2025: 90% / By 2050: 100%
- Decision 1208/QD-TTg by Prime Minister: Approval master plan for power development in the period of 2011-2020 with a vision to 2030. Objectives and targets:
  - Increase the share of renewable energy in total commercial primary energy from 3% in 2010 to 5% in 2020 and 11% in 2050;
  - Increase the share of electricity generated from renewable resources such as wind and biomass from 3.5% of total electricity generation in 2010 to 4.5% in 2020 and 6% in 2030.

New strategy of the Ministry of Agriculture and Rural Development for the Vietnamese rice sector:

- A new strategy of the Ministry of Agriculture and Rural Development implies, that the rice mills have to take over more direct responsibility for the rice farming itself, providing support to the farmers (fertilizer, logistics, know how) and buying paddy directly from farmers.
- According to this new policy, rice millers have to reach progressively a level of 50% of on-site paddy drying by 2020. This new policy impacts directly the current supply chain model of exporting milling factories and put some short term pressure to invest in new rice-husk based dryers to be able to reach at least 50% of inside paddy drying by 2020.
- The benefits generated by this policy:
  - A better sourcing of the paddy when selling on the international market, thus a better product quality.
  - More cooperation between the millers and the farmers.
  - This moves the rice mills into a much stronger position to become the key actor and coordinator for the entire reuse cycle of rice husk, as the paddy drying system does not use more than 20-30% of the rice husks available, valorizing the high volume of left-over becomes attractive (conversion into briquettes or pellets to facilitate transport and sell it to companies as alternative fuel to substitute mainly coal).

High relevance of bio-waste conversion with a high national scaling-up effect:

- In this overall context, projects of bio-waste conversion into thermal energy - particularly substituting coal- are relevant and realistic.
- Developing industrial rice husk based paddy drying system with high efficiency dryers is a good approach to lower energy consumption, with attractive economic and environmental prospects.
- Developing rice husk briquetting value chains with the remaining husks for substituting coal in industrial processes have been identified as good and feasible option to provide low carbon and sustainable energy source.
- The support from the CTCN would allow unfolding the potential of bio-waste conversion projects with a relevant and concrete impact and with a high potential of scaling-up effect in the rice sector as well as for thermal energy demand in other sectors.

Past and ongoing efforts *(up to half a page):*

- There are various programs to mitigate climate change, essentially from the Ministry of natural

resources and environment.

- International technical cooperation project such as that of the joint global UNIDO-UNEP Resource Efficient for Cleaner Production (RECP) Program support the rice sector by exploring opportunities for improved resource productivity and reduced pollution intensity. In the context of that work, so far "low hanging fruit" measures have been implemented in several rice milling companies, with almost no investment needed, leading to an immediate benefit in terms of energy savings documented to amount to 5-7% of the total electricity consumed. This overall improvement of the energy efficiency and management has created confidence among the companies, thereby allowing the proponent to better understand the specific context, future strategy and needs. This basis allowed proposing additional high-impact measures requiring investments in technology and system implementation. In fact some companies have started considering far-reaching investment programs for upgrading their production facilities. Companies expressed needs for technical assistance for implementing biomass conversion technologies.
- A market study on biomass valorization for thermal energy in Viet Nam is on-going with the objective to get more insights into the range of products, prices, potential user and client groups, technologies and also business models that are relevant. A CTCN intervention would be instrumental in pursuing and concretizing these opportunities.

Assistance requested *(up to one page):*

{Please describe here the scope and nature of the technical assistance requested from the CTCN and how this could help address the problem stated above and add value vis-à-vis the past and on-going efforts. Please note that the CTCN facilitates technical assistance and is not a project financing mechanism.}

- According to information gathered from the on-going and past studies and consultations related to biomass conversion into thermal energy (with a focus on rice husk),
  - only 30% of the rice husks are currently used as fuel for drying paddy rice or other product drying processes;
  - a large percentage of rice husk (estimated to more than 50%) can potentially been converted into thermal energy. Thus, there is a large potential for new or existing companies to produce rice husk briquettes or rice husk pellets to facilitate the transport and selling it as an alternative combustion material to large range of SMEs or even for exportation. On a national level, the main barrier seems to be the market acceptance: On the one hand side these products are to some extend new, in particular for large-scale industrial use. On the other hand combustion facilities (such as e.g. boilers) need to be technically upgraded and adjusted. Finally also the remaining ashes have to be managed properly or further valorised, e.g. for silica production.
- Therefore developing a business case goes far beyond of introducing a piece of technology only. The technology aspect cannot be separated from the context. The variety of technologies has to be applied according to the different client groups and products (briquettes, pellets etc.). These technologies can range from local manufacturing up to the more sophisticated industrial production of pellets, mainly used for export.
- In conclusion assistance is requested on technical level (e.g. for optimizing and selecting the appropriate technology options for paddy drying, briquette production and combustion) as well as for identifying business development strategy for industrial use or exportation, with the ultimate objective of unlocking investments.

Expected benefits *(up to half a page):*

- The technical support available to support decision and investment in selected enterprises. Song Hau Food Company and An Giang Food Company, 2 state-owned milling companies located in Can Tho City and in An Giang province in the South of Viet Nam, have expressed keen interest and engage in early consultation. Contact has been established and data are available.
- The main impact resulting from the CTCN technical assistance will be the scaling-up of resource efficient and cleaner production improvements by demonstrating and promoting measures within other enterprises in the sector.
- The potential impact in terms of climate change mitigation of scaling-up such measures is illustrated by the fact that a company producing e.g. 10'000 tons of rice husk pellets or briquettes per year (e.g. Song Hau Company) can avoid an equivalent of 18'000 tons of CO_2-emissions each year, if it substitutes coal.

Post-technical assistance plans *(up to half a page):*

{Please describe here how the results of the CTCN technical assistance will be concretely used by the applicant and national stakeholders, to pursue their efforts of resolving the problems stated above after the completion of the CTCN intervention (list specific follow-up actions that will be undertaken).}

The approach described above can be applied to an estimated 100 further similar milling companies in Viet Nam. This would include to further assist the Vietnamese industrial sector in general to pursue the restructuring triggered by government policies: technology selection, optimization and implementation combined with support to investment and access to financing.

Key stakeholders:

{Please list in the table below the main stakeholders who will be involved in the implementation of the requested CTCN technical assistance, and what their role will be in supporting the assistance (for example, government agencies and ministries, academic institutions and universities, private sector, community organizations, civil society, etc.). Please indicate what organization(s) will be the main/lead counterpart(s) of CTCN experts at national level, in addition to the NDE.}

Stakeholder	Role to support the implementation of the assistance
Ministry of Natural Resources and Environment of Viet Nam	Main counterpart; oversight; M&E
Ministry of Agriculture and Rural Development	Accompanying restructuring of rice sector
Vietnam National Cleaner Production Centre	Technical assistance
Rice millers, early movers and others	Uptake and implementation of measures and

	investment
UNIDO	Coordination and synergies with on-going activities
CTCN	Provision of technical assistance and support investment
Asia Development Bank	Advice and facilitation on investment
Global Environment Facility	Support in implementing environmental agreements

Alignment with national priorities *(up to half a page):*

Please refer to "Problem Statement" above, where the key elements of the national context as well as some legal policies and strategies on renewable/alternative energy legitimize this request.

Development of the request *(up to half a page):*

This request stems from on-going work in the context of the global joint UNIDO-UNEP RECP Program focusing on waste minimization for low carbon production. The activities undertaken have allowed identifying significant potential. Information, data, and background are available to jumpstart a CTCN intervention and strive for high impact measures.

Communication between the NDE and the CTCN team has taken place on this request to deliberate on appetite and opportunities.

Expected timeframe:

24 months, starting in 2015

Background documents:

UNIDO - Resource-efficient and low-carbon industrial production.
http://www.unido.org/fileadmin/user_media/Services/Environmental_Management/Contacts/Contacts/RECP Programme Flyer April 2010 (2).pdf
VNCPC: http://vncpc.org/en/project/industrial-waste-minimization-for-low-carbon-production/
Governmental policies and strategies (see respective sections above)

Monitoring and impact of the assistance:

{Read carefully and tick the boxes below.}

☒ By signing this request, I affirm that processes are in place in the country to monitor and evaluate

the assistance provided by the CTCN. I understand that these processes will be explicitly identified in the Response Plan in collaboration with the CTC, and that they will be used in the country to monitor the implementation of the CTCN assistance.

☒ I understand that, after the completion of the requested assistance, I shall support CTCN efforts to measure the success and effects of the support provided, including its short, medium and long-term impacts in the country.

Signature:

NDE name: Le Ngoc Tuan

Date: 01/7/2015

Signature:

THE COMPLETED FORM SHALL BE SENT TO THE CTCN@UNEP.ORG

Need help? The CTCN team is available to answer questions and guide you through the process of submitting a request. The CTCN team welcomes suggestions to improve this form.

>>> Contact the CTCN team at ctcn@unep.org