

IMPACT SHEET • SWITCH-ASIA PROJECT
**WASTE TO ENERGY FOR THE RICE MILLING
SECTOR IN CAMBODIA**

GREENER BIOMASS TECHNOLOGY ENHANCES CAMBODIA'S RICE MILLING SECTOR



**CONVERTED RICE HUSK INTO ENERGY REDUCES
EQUIVALENTS OF CO₂ EMISSION BY 43 THOUSAND
TONNES PER YEAR**



THE CHALLENGE

In Cambodia paddy is either exported raw or processed through diesel powered engines because of high electricity prices, limited access to technology and logistics resulting into high rice prices in the regional markets. Very few rice millers have access to efficient drying and other processing technology. Access to finance is also another major problem for the rice milling sector. There is a potential to convert rice husk into energy by utilising rice husk gasifier technology. However, there exist no standards for gasification equipment making it difficult for rice mills to decide on the appropriate technology. The price of imported gasifiers is high and many millers do not trust locally manufactured gasifiers. All these factors results into higher processing cost, low quality and low volumes of production.

OBJECTIVE



The overall goal of this project is to contribute towards economic prosperity and poverty reduction and to mitigate the effect of climate change by enhancing competitiveness of the rice sector through increased uptake of environmentally responsible waste to energy (WtE) technologies.

Specific objectives of the project are:

- Promote sustainable production of milled rice through replication of existing WtE rice milling technologies, and;
- Promote sustainable transformation and consumption of rice by consolidating fragmented guidelines into a single operational industry standard with policy makers, Small and Medium Enterprises (SME's) and financial sector actors together in a multi-stakeholder platform.

Rice Miller Associations (FCRMA), government ministries especially Ministry of Mine Industry and Energy (MIME), its departments, Institute of Standard of Cambodia (ISC) and their technical and local departments in nine targeted provinces, National Polytechnic Institute of Cambodia (NPIC) and the targeted financial institutions.

ACTIVITIES / STRATEGY



TECHNOLOGY TESTING, UPGRADING AND TRANSFER THROUGH CAPACITY BUILDING

The project aims to establish a local expert centre to assess and evaluate RHG systems, its field performance, environmental and health impacts. The project will establish a training package through local institute for rice millers and technology manufacturers/ importers. Technology upgrading/ transfer and the better availability of essential business services will encourage rice industry to apply standardized RHG technology. The projects works on the supply and demand side by building capacity of 4 to 5 local SMEs manufacturing RHGs and 120 rice millers who are potential users.



BUSINESS PROMOTION AND ACCESS TO CREDIT

The project supports rice mills and technology manufacturers/ importers in business planning and the promotion of RHG technology so that they have better access to investment credit provided by the banking sector. This will be done by linking rice millers with the banks and supporting them in making the bankable calculations and business plans to install such technology through credit schemes offered by the commercial banking sector.



NATIONAL GUIDELINE AND STANDARD DEVELOPMENT

The project works towards a national standard and a licensing procedure for RHG technology and its application in the industry together with the partner government ministry. This licensing process will ensure the quality and regulate the market by encourage millers to apply a quality and regulated RHG technology.

TARGET GROUPS

The project targets WtE manufacturers/ importers, rice millers with Rice Husk Gasifier (RHG) systems and potential rice millers, the Federation of Cambodian

SCALING-UP STRATEGY



MARKET BASED TRANSACTION BETWEEN TECHNOLOGY MANUFACTURES AND USERS

The project promotes and improves market based transactions between RHG manufacturers/ importers and rice millers by enhancing their business capacity to ensure commercial viability. WtE assists existing local manufacturers/ importers by introducing upgraded technologies through training and technology transfer. These local manufacturers/ importers will be linked with 150 targeted rice mills to utilise the most appropriate technology. Manufacturers and rice millers will benefit from this as the market for WtE will grow leading to more sales and more profitable in country milling.



PROMOTING FINANCIAL SERVICE SYSTEMS

In order to link rice miller with investment capital for installation of high quality technology, the projects support rice miller to develop bankable business plans and encourages partners' commercial banks to establish special credit schemes for them. The bankable business plan in hand, availability of government regulated RHG systems and guarantee by technology manufacturers will further strengthen the confidence of banks to provide credit to targeted millers. This will result into installation of quality technology through commercial financing.



ESTABLISHMENT OF STANDARDIZED AND REGULATED RHG TECHNOLOGY

The introduction of industry standards and the annual licensing of the RHG technology will ensure the quality and environmental sustainability of the technology. The project, in close collaboration with the Ministry of Industry Mines and Energy (MIME), aims to establish guidelines for promotion of these technologies and for a licensing process that ensures the quality and regulate the technology in Cambodia in the long run.



A rice mill with 2 to 2.5 tonnes/hour milling capacity with RHG systems consumes approximately 5,000 tonnes of paddy, which is 1,933 tonnes more per year than a rice mill without RHG. Hence, introduction of this technology to 150 rice mills creates additional demand of 289,950 tonnes of paddy /year from farmers. Additionally, production cost of rice/ tonne can be reduced up to 13% less compared to the current cost.



Mr Nico Janssen,
Agriculture and Renewable
Energy Portfolio director
(SNV Asia)



RESULTS



TECHNOLOGY IMPROVEMENT AND ESTABLISHMENT OF ESSENTIAL BUSINESS SERVICES

A baseline study with information against outputs, outcomes and impacts is collected that will be used for the project monitoring and evaluation.

Development of guidelines for measuring performance indicators and environmental impact of RHG systems was carried out. A technical report with indicators on hazardous chemicals in air and ground surrounding the facility is in place. A study on existing industry standard is completed by ISC. Findings of this study are now being used to draft a policy guideline on RHG technology.



INVESTMENT PROMOTION AND BUSINESS PLANNING FOR WtE

Seven introductory workshops were conducted with 98 participants of rice millers, WtE manufactures, banks and other relevant stakeholders in the 9 target provinces to motivate projects partners in applying RHG systems.

Seven meetings with 7 commercial banks to study the banks' loan conditions and procedures and to find ways to add special loan schemes for rice millers investing RHG in their existing loan borrowing conditions and procedures were conducted. Work plans are developed with 4 potential banks to provide credit scheme for rice millers as a special loan scheme.

A total of 395 rice mills in the 9 target provinces were surveyed to map out each of their location, milling capacity, operation capacity per year, with or without rice husk gasifier (RHG) installation and their potentials to invest in RHG.

The carbon baseline/ feasibility study and the Environmental Impact Assessment study were conducted and validated to estimate level of GHG emissions. A Project idea Note (PIN) for rice millers to be eligible for the CDM projects in further is developed.



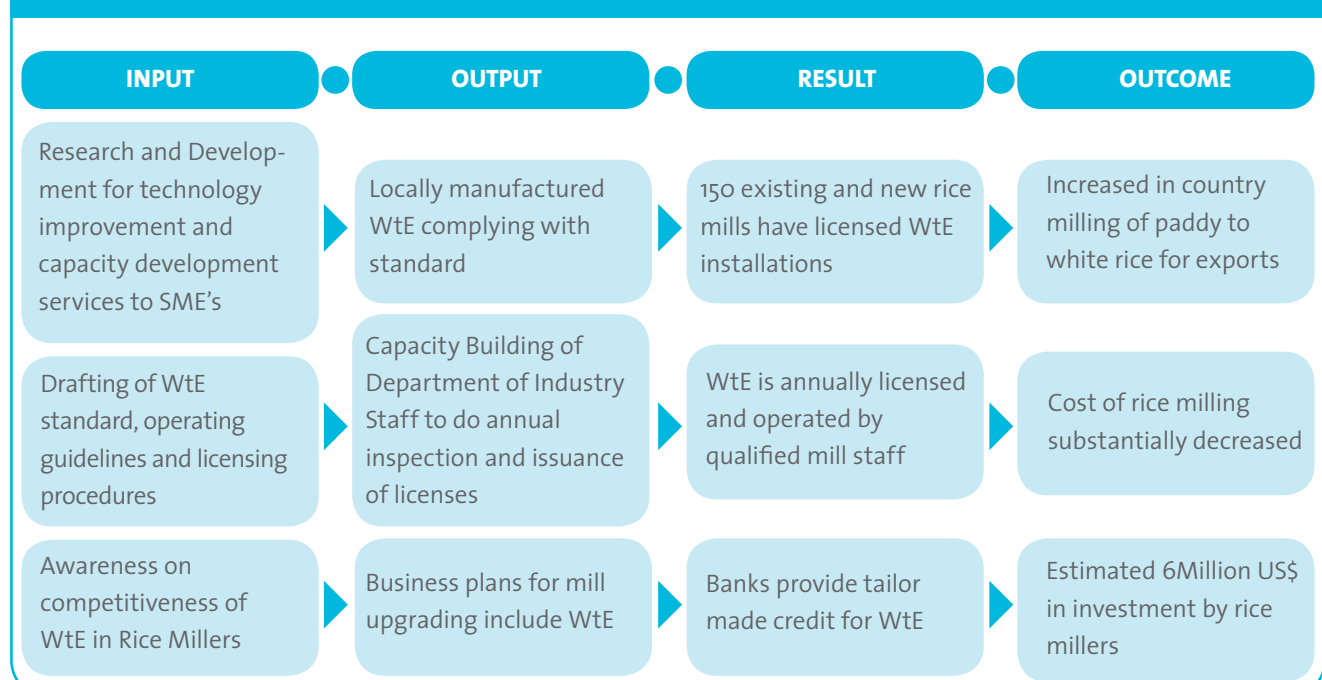
INVESTMENT ANALYSIS INITIATED

Business and investment analysis of existing RHGs in rice mills is conducted to collect information on what investment needed that creates the highest rate of return. This study provides 9 case and 3 business models for different rice mills with different operation and energy needs. This activity will also be a basis for preparing business plans for those who want to install certified RHG technology.






A survey on possible methods for effective communication to rice millers on RHG technology was designed and conducted to access an effective means of communication and publicity campaign to create demand for RHG technology in future.

A leaflet is produced for the awareness campaign purpose of the WtE project. These include 1,000 copies printed leaflets for distribution in WtE projects and a press release was published in the local newspaper.

WtE PROJECT IMPACT CHAIN



IMPACT IN NUMBERS

ECONOMIC IMPACT 	<ul style="list-style-type: none"> An estimated additional 2.8M US\$ in worker income.
ENVIRONMENTAL IMPACT 	<ul style="list-style-type: none"> 20,000 tonnes of rice husk converted into energy reducing 4.5 million litres of diesel and 43 thousand tonnes of CO₂ equivalents per year.
SOCIAL IMPACT 	<ul style="list-style-type: none"> The value adding for fragrant rice would gain by 137 US\$/ton.
ENGAGEMENT OF TARGET GROUP 	<ul style="list-style-type: none"> Partners will be enabled to provide regular service on the RHG technology and will disseminate information. Ministry of Mine Industry and Energy will establish national guidelines and regulate. Banks will provide a special credit scheme.
POLICY LINKAGES 	<ul style="list-style-type: none"> Ministry of Mine Industry and Energy will govern and regulate the national standard for RHG through its department in the provincial level.





Legend

- Eligible Asian countries for the SWITCH-Asia programme
- Non-eligible Asian countries for the SWITCH-Asia Programme

Project implementation area

- City
- Region
- Country

The boundaries shown on this map do not imply on the part of the European Union any judgment on the legal status of any territory or the endorsement or acceptance of such boundaries.

OBJECTIVES

The project promotes a platform for policy makers, SMEs and the financial sector to make a contribution to the rice milling sector by applying environmental friendly technology.

DURATION



PROJECT TOTAL BUDGET

€ 2,152,546 (EU contribution: 89%)

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PROJECT CONSORTIUM



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Development
Organisation



Federation of
Cambodian Rice
Millers Associations
(FCRMA)



National
Polytechnique
Institute of
Cambodia (NPIC)