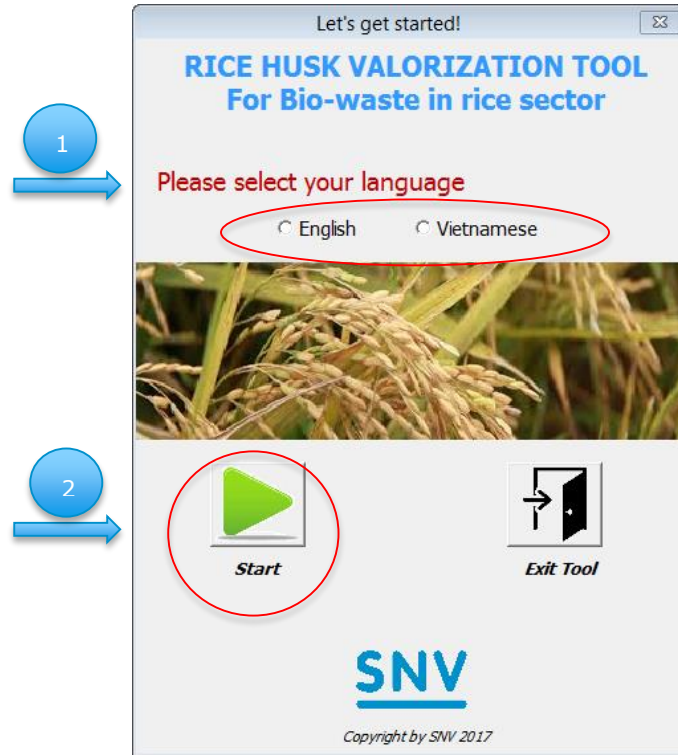


INSTRUCTION OF VALORIZATION TOOL

HƯỚNG DẪN SỬ DỤNG CÔNG CỤ HỖ TRỢ

Step 1: Open the Tool and select your language and click to Start button which lead to a main interface screen.

Bước 2: Mở Công cụ và chọn ngôn ngữ sử dụng rồi kích vào nút Bắt đầu để dẫn tới giao diện chính của Công cụ.



Step 2: In this interface you can click 'Start' button to go to Data Entry section.

Bước 2: Kích vào nút 'Bắt đầu' trong phần giao diện này để tới phần Nhập dữ liệu.



Step 3: Data Entry - In this section you should follow the bellow steps:

- Enter data into white cells: company information, milling operation parameter.
- Click to 'Data analysis' button to assess a current milling in your company.
- Click to 'Next' button to go to 'Process' section.

Bước 3: Nhập dữ liệu - Trong phần này cần làm các bước sau để nhập dữ liệu:

- Nhập các dữ liệu vào ô màu trắng: thông tin công ty, các thông số hoạt động xay xát.
- Kích vào Nút 'Phân tích dữ liệu' để đánh giá tình trạng xay xát tại công ty;
- Kích to Nút 'Tiếp' để dẫn tới phần Phân tích các yêu cầu trong hoạt động xay xát.

1. CURRENT SITUATION IN USING RICE HUSK

Company name:
 Company address:
 Contact details: Tel. Email:
 Filled in by:
 Position:

1. Milling operation
 Annual fresh paddy throughput ton/year Brown rice purchase ton/year Calculated husk production ton/year

2. Current use of rice husk
 Husk used for drying ton/year Husk for briquetting ton/year Husk for other purposes ton/year
 Amount sold as raw husk ton/year Husk for pelleting ton/year Calculated amount not used ton/year

3. Value at mill gate
 Average husk price VND/kg Briquettes price VND/kg Pellets price VND/kg

Step 4: Drying section - In this section you can follow the bellow step:

- Select Yes/No depend on your company demand about extending of drying /densification system.
- Enter data into white cells.
- Click to 'Next' button to go to 'Drying section'/'Fuel section' which analysis and provide a feasibility technology.

Bước 4: Phần công nghệ sấy - Trong phần này cần làm các bước sau:

- Chọn lựa Yes/No tùy theo nhu cầu của công ty về việc mở rộng hệ thống sấy.
- Nhập các dữ liệu vào các ô màu trắng.
- Kích vào nút 'Tiếp' để tới phần Công nghệ sấy/Công nghệ sản xuất Nhiên liệu cho việc phân tích và lựa chọn Công nghệ sấy phù hợp.

2. ASSESSMENT OF PADDY DRYING CAPACITY REQUIREMENTS

2.1 Overview of milling operation

Annual fresh paddy throughput	20,000 ton/year	Account for	8%	total of brown rice processing
Total brown rice purchased	150,000 ton/year	Account for	92%	total of brown rice processing
Calculated brown rice paddy ratio	750 %			

Share of milling processing

- 8% Annual fresh paddy throughput
- 92% Total brown rice purchased

2.2 Assessment of paddy drying capacity requirements
 Q1. Do you want to mill more paddy? YES NO

2.3 Assessment of new drying capacity

Q1. How much more paddy do you want to mill? 75,000 ton/year

Q2. How much spare drying capacity do you currently have? 0 ton/day

Q3. How many days per year do you dry paddy? 75 day/year

Q3.1 How many hours per day? 22 h/day

Q4. Enter your own value or keep recommended value:
 Q4.1 Calculated drying capacity per hour 1000 ton/day
 45.5 ton/h

2. ASSESSMENT OF PADDY DRYING CAPACITY REQUIREMENTS

<< BACK HOME ?

2.1 Overview of milling operation

Annual fresh paddy throughput	20,000	ton/year	Account for	8%	total of brown rice processing
Total brown rice purchased	150,000	ton/year	Account for	92%	total of brown rice processing
Calculated brown rice paddy ratio	750	%			

Share of milling processing

2.2 Assessment of paddy drying capacity requirements

Q1. Do you want to mill more paddy? YES NO

2.3 Determination of the amount of husk available for fuel production

Q1. Please enter in the table how much husk you want to explore for valorization:

Type of husk usage	User provided data on husk usage (ton/year)	Enter the amount that you would like to explore (ton/year)
Drying	1,000	1,000
Briquetting/Pelleting	0	2400
Sold as raw husk	2,400	0
Other purposes	0	0
Non valorised	0	0
Total	3,400	2,400

Fuel densification technology

NEXT >>

Step 5: In the ‘Drying section’/’Fuel section’ you can use the function buttons (Next, Back, Analysis, etc...) to access each page.

Bước 5: Trong phần lựa chọn công nghệ Sấy/Công nghệ sản xuất nhiên liệu các nút chức năng (Tiếp, Quay lại, Phân tích,...) có thể được sử dụng để truy cập các trang.

3. PADDY DRYING TECHNOLOGY

<< BACK NEXT >> HOME ?

1. Baseline

2. Technology

3. Investment Plan

4. Operation Cost

5. Breakdown

6. Evaluation

7. Impacts

8. Market

9. Report

1. Paddy Drying

1.1 Technology description

Rice husk is burnt in a furnace and supplies heat to a paddy dryer. Chemical energy in the rice husk is converted to heat energy which is used to dry paddy. Efficiency of the furnace in drying system is usually from 50 to 65%, depending on types of furnace and suppliers. Flue gas from the outlet of the furnace mixed with ambient air is sucked in to the drying bin and pushed through the paddy layer. The drying air temperature is controlled by adjusting the rice husk feeding rate manually or automatically.

1.2 Rice husk furnace technology

Rice husk furnaces, such as the inclined grate manual-fed furnace and the automatic non-grate furnace, have been researched and developed in recent years. The rice husk furnace is selected based on efficiency, quality of flue gas (clean), heat capacity, nature of operation (manual or automatic), investment cost, and energy cost. There are two types of rice husk furnaces that are popularly used in Southeast Asian countries, which are small-scale in nature. These are the inclined ...[click to see more](#)

1.3 Paddy drying technology

Drying reduces grain moisture content to a safe level for storage or milling. It is the most critical operation after harvesting a rice crop. When rice is harvested, it will contain around 25% moisture. High moisture level during storage can lead to grain discoloration, encourage development of molds, and increase the likelihood of attack from pests. It can also decrease the germ ...[click to see more](#)




Fig 1: Inclined grate RH furnace




Fig 2: Automatic RH furnace

<< BACK NEXT >>

Enter data into white cells or use default data value by click to ‘Load default data’ button.

Nhập các dữ liệu vào các ô màu trắng hoặc sử dụng các dữ liệu có sẵn bằng việc kích vào Nút ‘Tải dữ liệu mặc định’.

3. Investment and Financing plan

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NEXT >



3A. User provided data and baseline data collection for analysis

3.1 Overview of data provided, if incorrect go back to the previous page

Amount of brown rice to be replaced by paddy	<input type="text" value="0"/>	ton/year	New paddy drying capacity required	<input type="text" value=""/>	ton/day
Amount of fresh paddy to be purchased	<input type="text" value="0"/>	ton/year	Hourly drying capacity	<input type="text" value=""/>	ton/h
Estimated amount of dry paddy	<input type="text" value="0"/>	ton/year	Estimated extra husk production	<input type="text" value="0"/>	ton/year
			User provided husk price	<input type="text" value="0"/>	USD/kg

3.2 Data entry on mill operations

Q1. How much do you pay to your workers?

Unskilled worker	<input type="text" value="25,000"/>	USD/ton	Miscellaneous (% reserved for fringe benefits)	<input type="text" value="10%"/>
Skilled worker	<input type="text" value="25,000"/>	USD/ton		

LOAD DEFAULT DATA

CLEAR DATA

Q2. What is the typical value of the following products at the mill gate?

Brown rice	<input type="text" value="12,000"/>	USD/tg	De-husking price	<input type="text" value="150"/>	USD/tg
Fresh paddy price	<input type="text" value="8,000"/>	USD/tg	Broken rice price	<input type="text" value="3,000"/>	USD/tg
Grade 1 rice price (10% broken)	<input type="text" value="17,000"/>	USD/tg	Drying service cost	<input type="text" value="180"/>	USD/tg
			Ash price	<input type="text" value="100"/>	USD/tg

LOAD DEFAULT DATA

CLEAR DATA

Q2. Financial parameters

USD/USD exchange rate	<input type="text" value="22,770"/>	USD	Discount rate	<input type="text" value="5%"/>
			Interest rate on loans	<input type="text" value="5%"/>

LOAD DEFAULT DATA

CLEAR DATA

Q3. What is the electricity tariff?

Normal hour tariff	<input type="text" value="1,453"/>	USD/kWh	Calculated average tax	<input type="text" value="1,527"/>	USD/kWh
Off-peak tariff	<input type="text" value="934"/>	USD/kWh			
Peak hour tariff	<input type="text" value="2,637"/>	USD/kWh			

LOAD DEFAULT DATA

CLEAR DATA

Next to choose Yes/No for valorization of remaining husk to produce fuel. After that click to 'Next' button to go to 'Fuel section' for analyzing and selecting of densification technologies or directly access to Outcome of the Tool.

Tiếp tục lựa chọn Có/Không sử dụng phần trấu còn lại cho việc sản xuất nhiên liệu. Sau đó kích vào Nút 'Tiếp' để tới phần Phân tích và lựa chọn công nghệ sản xuất Nhiên liệu hoặc tới phần Tổng hợp kết quả.

9. Conclusion and summary

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Go to Top page



9.1 Recommended technology

Column dryer

9.2 Rice husk balance

Rice husk balance

Production

Current production	<input type="text" value="3,348"/>
Amount produced by new investment	<input type="text" value="2,500"/>

Sum

Total amount not valorized ton/year

Current usage

Currently used for drying	<input type="text" value="2,000"/>
Additional amount required for drying	<input type="text" value="733"/>
Husk for briquetting	<input type="text" value="0"/>
Husk for pelleting	<input type="text" value="0"/>
Amount sold as raw husk	<input type="text" value="1,348"/>
Husk for other purposes	<input type="text" value="0"/>
Sum	<input type="text" value="4,081"/>

Do you wish to explore this amount to briquettes or pellets?

YES NO

NEXT >

Step 6: Similar to step 5

- Use function buttons (Next, Back, Analysis, etc...) to access each page
- Enter data into white cells or can use default data value by click to 'Load default data' button.
- At the 'Market selection' section you should click to 'Go to Next' button to go to Summary section.

Bước 6: Tương tự như ở bước 5

- Sử dụng các nút chức năng (Tiếp, Quay lại, Phân tích,...) để truy cập các trang.
- Nhập các dữ liệu vào các ô màu trắng hoặc sử dụng các dữ liệu có sẵn bằng việc kích vào Nút 'Tải dữ liệu mặc định'.
- Ở phần lựa chọn thị trường bạn kích vào Nút 'Tiếp' để tới phần Tổng hợp.

8. Market selection

Suppliers: Domestic (selected), Importing

→ Select technology from list





No.	Company name	Address	Website	Comments
1	Nhat Phu Thai Co.,Ltd	Road 06B, Hoa Khanh IP, Lien Chieu Dist., Da Nang City	http://www.mavepcutrau.net/	Manufacture & supply: 2 type briquetting machine: screw press (180kg/h, 350kg/h và 700kg/h) and india technology of piston press (1000-1800 kg/h)
2	PBP industrial Jsc.,Co	Road 6, Lien Chieu IP, Hoa Hiep Bac Ward, Lien Chieu Dist., Da Nang City	http://www.pbp.com.vn	Pelleting machine: vertical and horizontal press type with range capacity 300-2000 kg/h
3	MTC Manufacturing Technology Co.,Ltd	202 Nam Ky Khoi Nghia, Ward 6, Dist. 3, Ho Chi Minh City	http://www.mtcmac.com/	Briquetting machine: piston press type (1200-1500 kg/h)
4	Bac Viet Star Mechanical Enterprise	Hamlet 7A, Xuan Tien Commune, Xuan Truong Dist., Nam Dinh pro.	http://www.mtcmac.com/	Briquetting machine: screw press type (180-220 kg/h and 300-350 kg/h)
5	Phuong Quan manufacturing & trading Co.,Ltd	Road 9A, Hoa Khanh IP, Lien Chieu Dist., Da Nang City	http://www.phuongquan.com.vn	Briquetting machine: screw press type (200kg/h and 700kg/h) and piston press type (300 kg/h and 500 kg/h) Pelleting machine: 700-1000 kg/h and 1800 kg/h

TYPICAL CUSTOMERS

- Boiler
 - Steam generation
- Food processing
 - Distilleries
 - Bakeries
 - Canteens
 - Restaurants
 - Drying
- Textile process house
 - Dyeing
 - Bleaching
- Agro-product
 - Tobacco curing
 - Tea drying
 - Oil milling
- Clay products
 - Brick kilns
 - Tile making
 - Pot firing

Step 7: Outcome of the Tool will be linked from last section and you can print to PDF file by click to 'Print' button.

Bước 7: Kết quả phân tích và lựa chọn giải pháp công nghệ sẽ được link từ các phần trước và bạn có thể in ra báo cáo định dạng PDF bằng việc kích vào Nút 'In báo cáo'.

OUTCOME OF THE RICE HUSK VALORIZATION ASS					
Version of tool applied 1.2					Date: 16/Jun/17
1 Company details					
Company name:	Song Hau food company				
Company address:	Lot 18, Tra Mac Zone 1,				
Contact details:	Tel.:		Email:		
Filled in by:					
Partition:					
2 Milling operation and new capacity					
Annual fresh paddy throughp	20,000	ton/year	New paddy throughput	95,000	
Brown rice purchase	150,000	ton/year			
3 Investment in additional paddy drying capacity					
<i>Not applicable</i>					
4 Valorisation of remaining husks					
a Amount of husk available	2,400	ton/year			
b Recommended technology	Screw die extruder				
c Capacity	500	kg/h	Pay-back period	0.29	years
d # units	3		NPV (5)	3,676,708	kVND
e CAPEX	359,775	kVND	IRR	3.45	%
f Loan size	(120,225)	kVND	OPEX	746,417	kVND/year
			Value of product	1,500	VND/kg
			Gross profit margin	573	VND/kg
5 Overview					
a Total investment	359,775	kVND	b Total loan amount	(120,225)	kVND
	15,800.40	USD		(5,279.97)	USD
c Profit over the first 5 year	6,210,772	kVND/year			
	272,761.2	USD/year			
6 Impact assessment					
a Net CO2 emission reduction	5,557	tCO2/year			
b Full-time jobs created					
Unskilled labour	2.38	man/year	Income from labour	91,429	kVND/year
Skilled labour	0.79	man/year	Income from labour	38,095	kVND/year
7 Recommendation					
<p>a Investment in additional paddy drying capacity The evaluation is based on generic data and actual costs may differ. The recommended technology is a simple evaluation based on the best financial case. There may be conditions under which the technology is not the best, for example flat bed dryers require more space and if that space is not available column dryers may be a better option.</p> <p>b Valorisation of remaining husks The evaluation is based on generic data and actual costs may differ. It provides however an indication which technology can yield the highest return on investment.</p>					
DEVELOPED BY		SUPPORTED BY		FUNDED BY	
					
					

Note! In each section you will see  a help button which let you know how to use this Tool.

Ghi chú! Trong mỗi phần sẽ có nút  Hỗ trợ để hướng dẫn bạn cách sử dụng Công cụ này.