

# Make **Millions** with "E-max" Technology



**INDIA'S FASTEST GROWING TECHNOLOGY &  
EPC COMPANY  
PRESENTATION  
TO HONORABLE DELEGATES**

**SUGAR & ETHANOL CONFERENCE 2023**



DISTILLERY & ETHANOL

**ZERO**  
LIQUID DISCHARGE

**SUGAR**  
& COGENERATION

WASTE  
**HEAT**  
RECOVERY

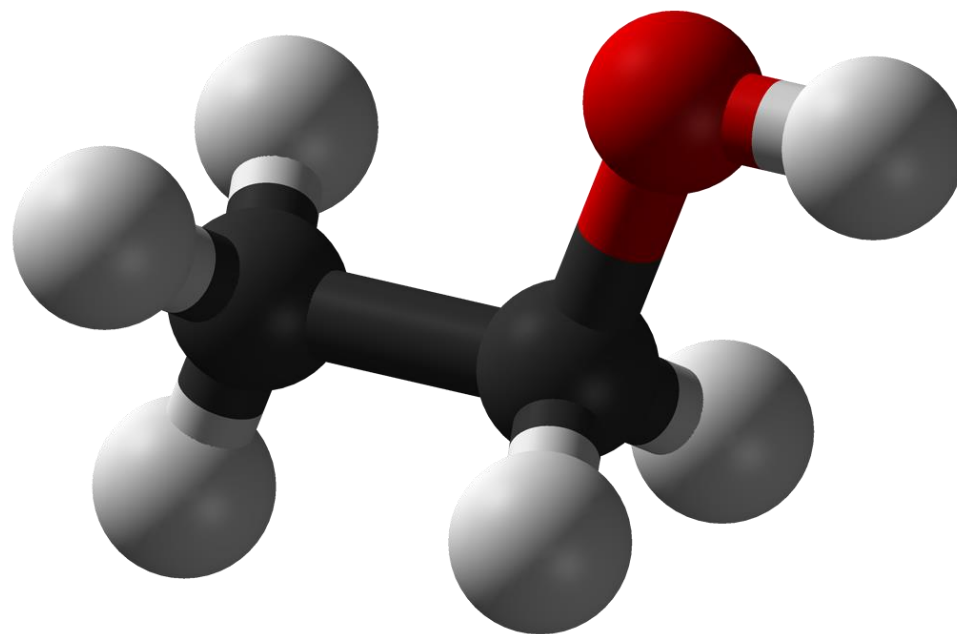
**WATER**  
& WASTE WATER

BIOMASS  
**POWER**

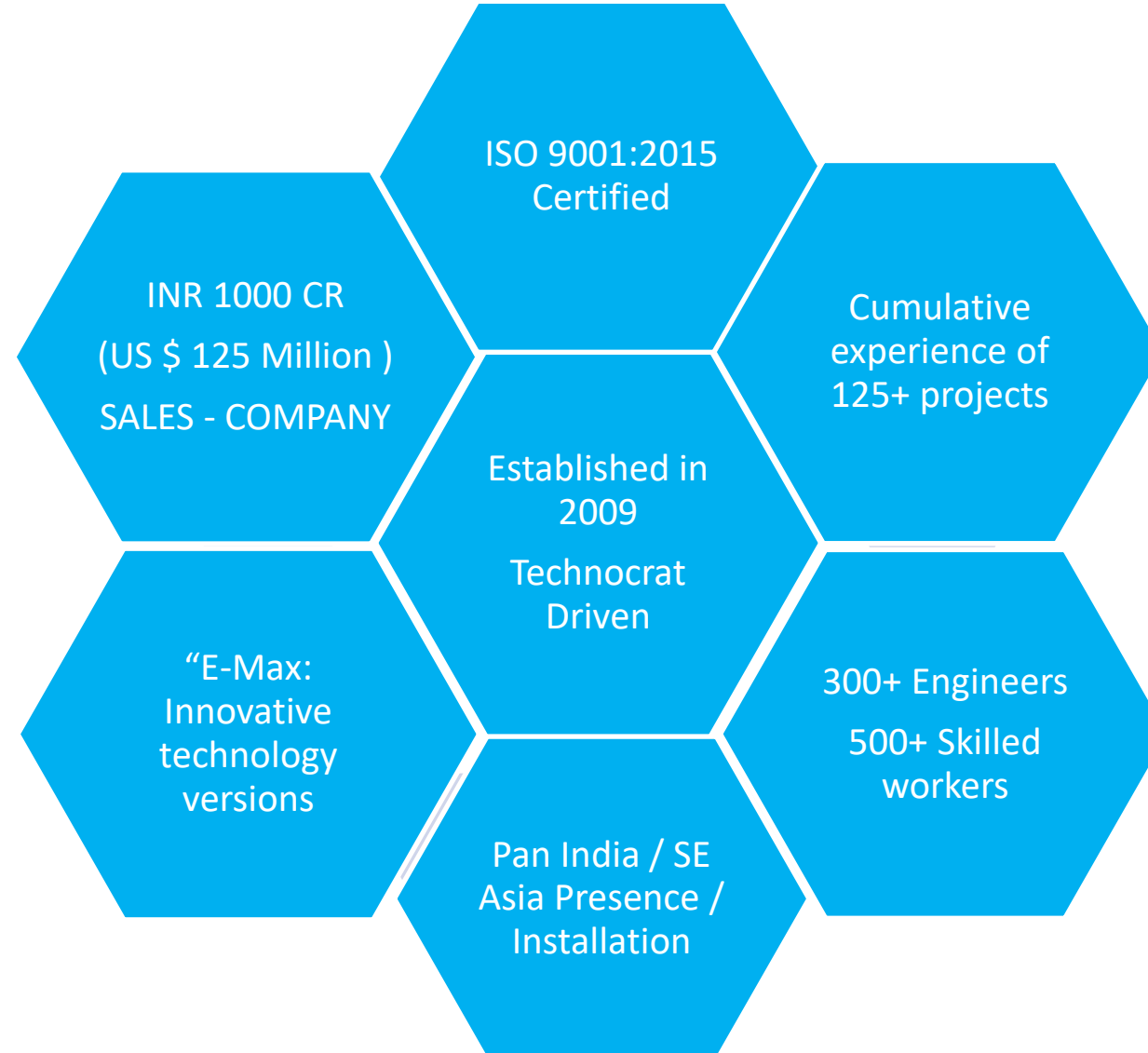
RENEWABLE  
**ENERGY**

# ethanol

$\text{C}_2\text{H}_5\text{OH}$



# ABOUT US





# VISION

To become a Global Leader in sustainable and environment friendly technologies with high energy efficiency, low water footprints and achieve net carbon zero emissions for Ethanol, Biofuel, Distillery and other process industries for a greener and cleaner world.



## Biomass Power & Waste Water



**125<sup>+</sup>**  
**PROJECTS**  
**105 COMPLETED**  
**20 ONGOING**



✉ md@excelengineering.in | ✉ sales@regreenexcel.com | 🌐 www.regreenexcel.com

**33<sup>+</sup>**  
**PROJECTS**



✉ md@excelengineering.in | ✉ sales@regreenexcel.com | 🌐 www.regreenexcel.com

# Key Highlights of "E-max" Installations

---



- India's Largest Grain ETHANOL/ENA plant – 450 KL
- India's Largest Molasses/Cane syrup plant – 800 KL
- India's Largest Syrup/Grain multi feed plant – 360 KL
- India's Largest Ethanol Dehydration Plant- 275 KL
- India's Lowest Steam Grain distillery (+Dryer) at 3.0 kg/litre
- India's Lowest Steam Molasses distillery (+Evaporation) at 2.5 kg/litre
- India's only DDGS Dryer Vapor Integrated MEE Evaporator (DVI).
- India's Only Direct PRC Vapor Driven MSDH Ethanol Plant.
- India's Single Largest DDGS Dryer- 1600 m<sup>2</sup>
- India's Largest spent wash Evaporator with 1500 m<sup>2</sup> HTA.
- India's only 365 days non stop automatic Operation of MEE
- EPC Distillery Plants with Boiler, TG, CPU, utilities and WTP etc.

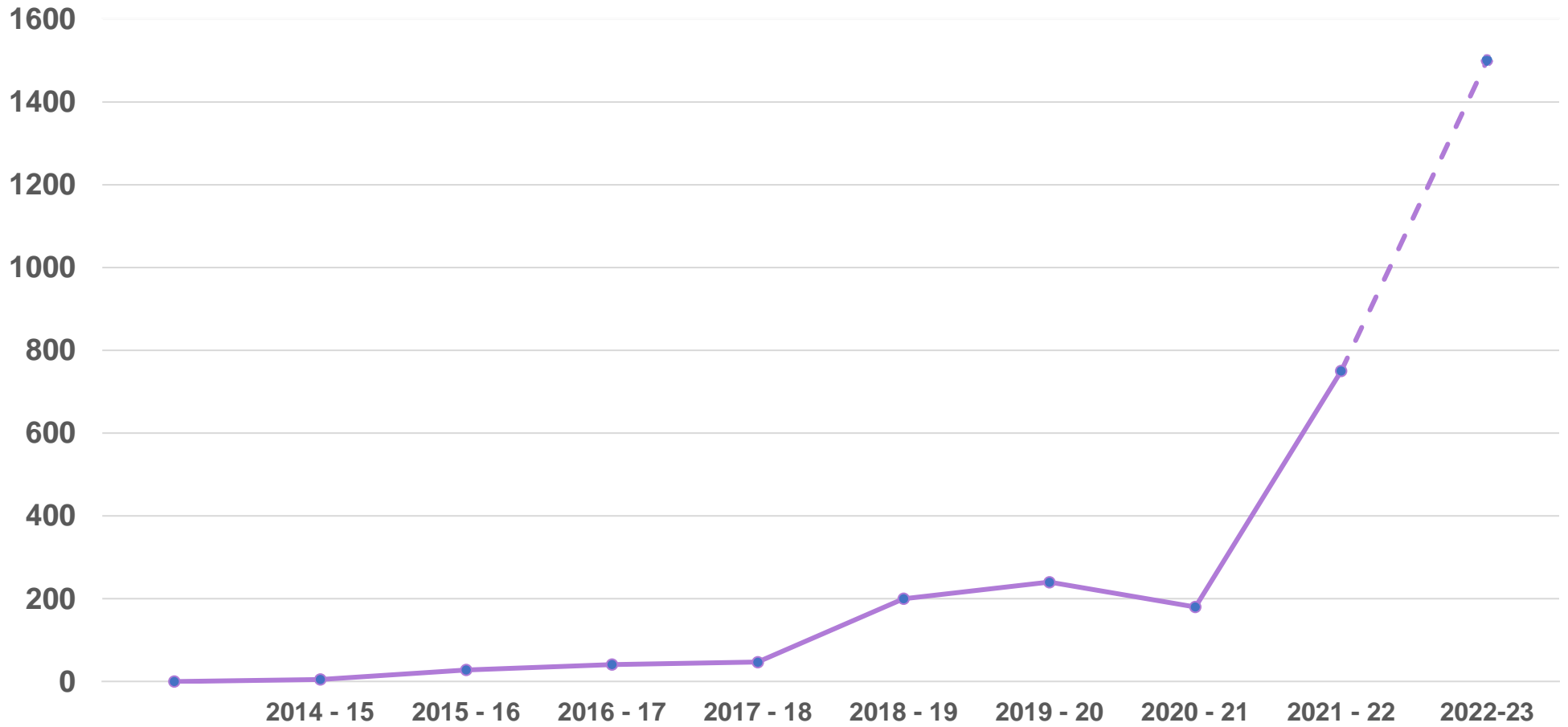


# Head Office and R & D Centre





Turnover in Cr.



Financial Year

# Manufacturing Facility

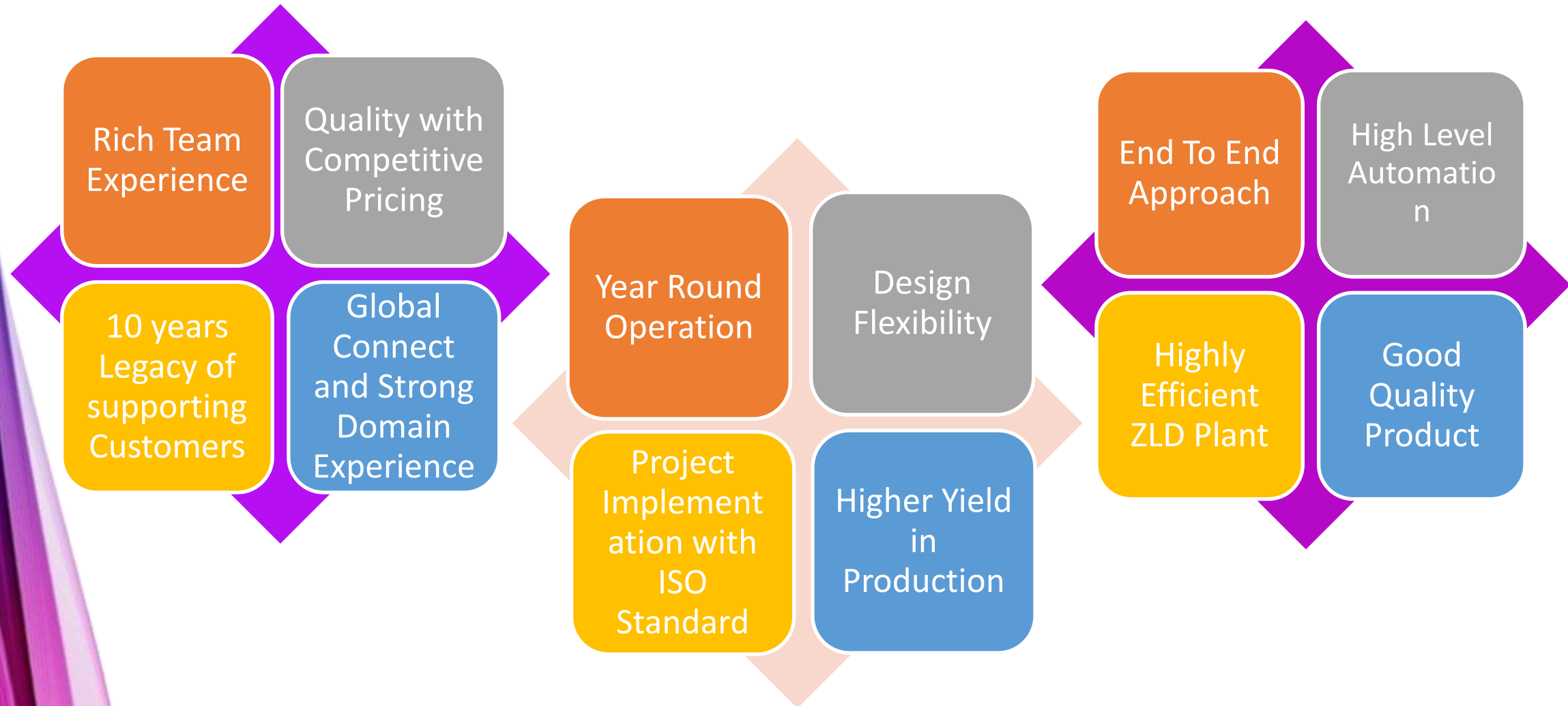


- Well established workshops in Pune, Kanpur Ghaziabad, Durgapur & Kolhapur PAN INDIA.
- 100% Inhouse fabrication Capability.
- Modern Facilities with CNC Machining drilling, bending expending, cutting, auto welding etc.
- Stage wise inspection by TUV / other TPI agencies.
- Regular Export of equipment.
- Large equipment fabrication Capability.
- More than 10000 equipment delivered.

## REGREEN EXCEL- PUNE WORKSHOP



# Why REGREEN EXCEL ?





# Actual Installation

3D  
Software





# EXCEL ENGINEERS & CONSULTANTS REGREEN EXCEL EPC INDIA PVT LTD

## ROADMAP FOR ETHANOL BLENDING IN INDIA 2020-25

NITI Aayog | Ministry of Petroleum and Natural Gas



# PETROL DEMAND

## Projections as per the 'Report of the Working Group on Enhancing Refining Capacity by FY 2040

Product/Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Motor Gasoline (MMTPA)*	27.7	31	32	33	35	36	37	39	40	41
Motor Gasoline (Cr. Litre)	3908	4374	4515	4656	4939	5080	5221	5503	5644	5785

\* Interim figures from PPAC considering growth @ 3-4% YoY(Source: MoP&NG)

\* Projection interval is for 5 years and the data has been linearly extrapolated.  
The effect of COVID pandemic and introduction of EVs are considered.



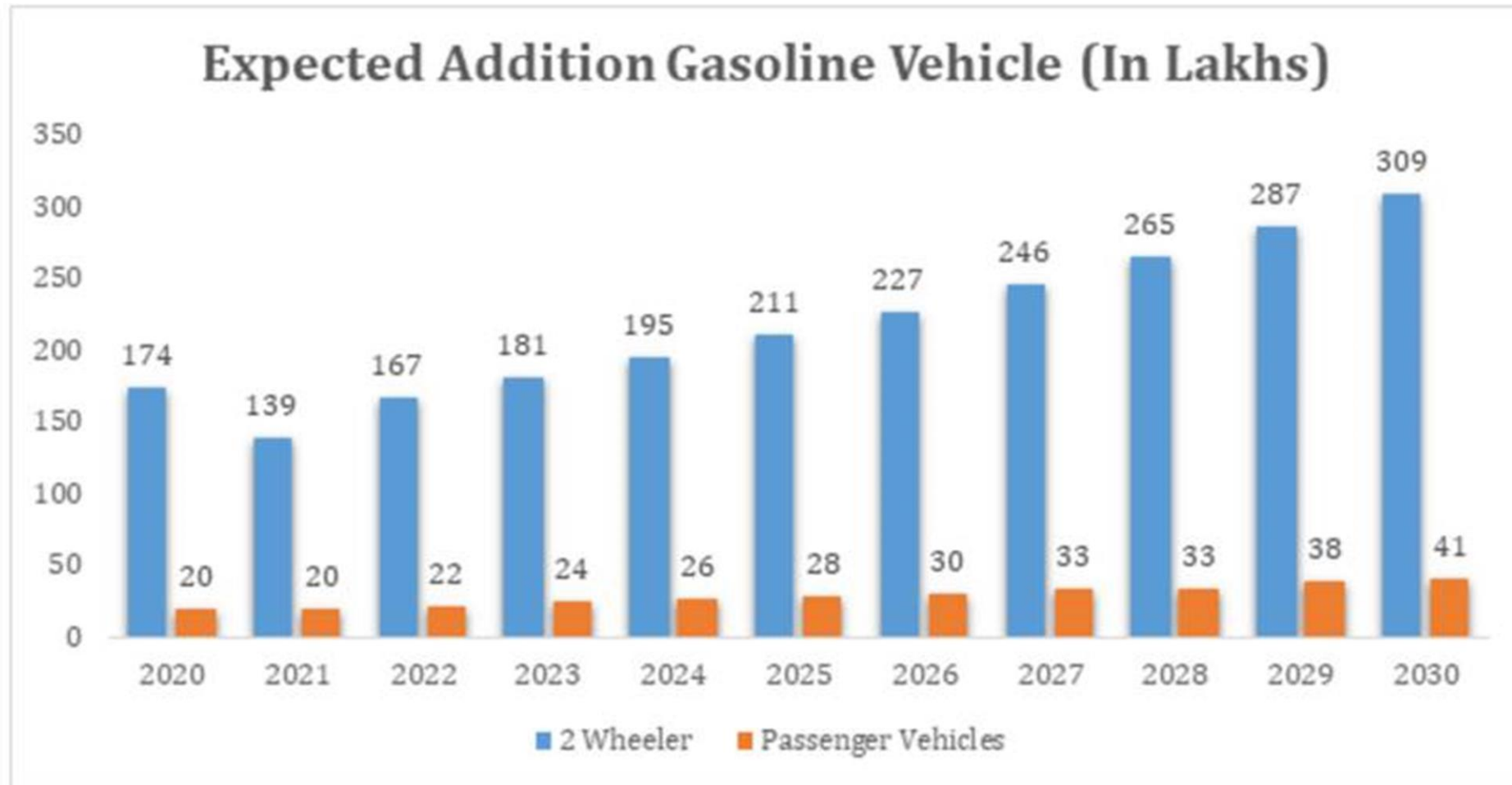
# ETHANOL DEMAND

Ethanol Supply Year	Projected Petrol Sale (MMT)	Projected Petrol Sale (Cr. Liters)	Blending (in%)	Requirement of ethanol for blending in Petrol (Cr. Liters)**
A	B	$B1=B \times 141.1$	C	$D=B1 \times C\%$
2019-20	24.1 (Actual)	3413 (Actual)	5	173
2020-21	27.7	3908	8.5	332
2021-22	31	4374	10	437
2022-23	32	4515	12	542
2023-24	33	4656	15	698
2024-25	35	4939	20	988
2025-26	36	5080	20	1016

\* The petrol projections may undergo revision due various factors like penetration of EVs, etc.

\*\* The figures are optimistic, as the E20 fuel will be consumed by new vehicles from April 2023 only. The demand for ethanol will, however, increase due to penetration of E100 two wheelers, which are now being manufactured in the country.

# PETROL VEHICLE GROWTH



# GOVERNMENT OF INDIA SUPPORT

---

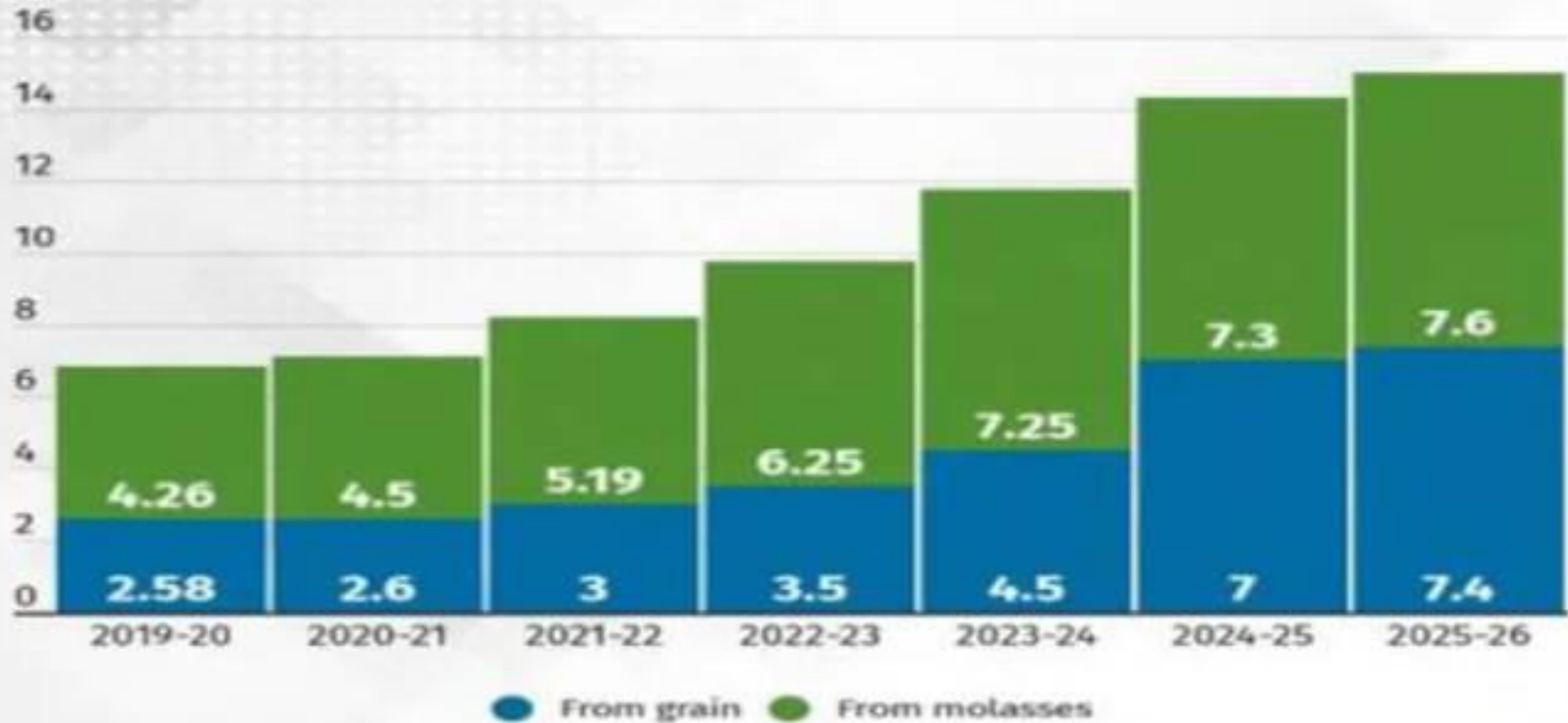


- Mandatory blending for all Petrol - target E 20.
- Increasing prices of ethanol from 2014 till date.
- Mega Expansion OMC's Blending facilities PAN India.
- Eased Environment clearances and lesser time.
- 6% Interest Subvention scheme for sugar millers & for grain to ethanol projects on CAPEX.
- Stand alone grain to ethanol project EOI permissions.
- Lending facility through banks – Heavy encouragement.
- Flex fuel automobile promotion / introduction.

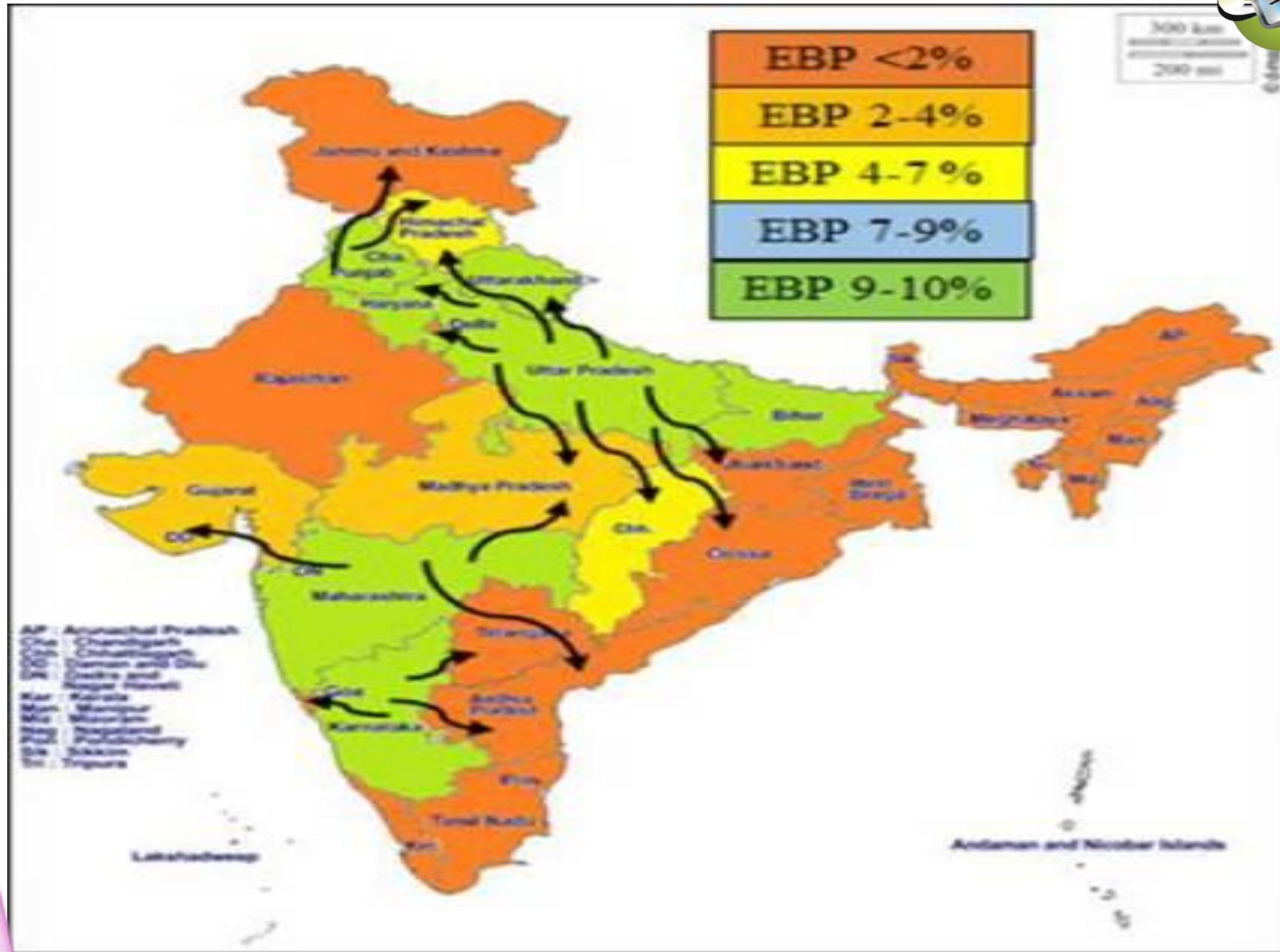




# ETHANOL CAPACITY REQUIREMENT



(in billion litres), Source: Niti Aayog



# PRICES EX FACTORY

Price Per Litre (Rs.)		
	BEFORE	REVISED
Sugar Cane	63.45	65.61
C Molasses	46.65	49.41
B Molasses	59.08	60.73
Damaged Grain	52.92	55.54
Grains from FCI	56.87	58.5
DDGS price	28	28
ENA	52	60

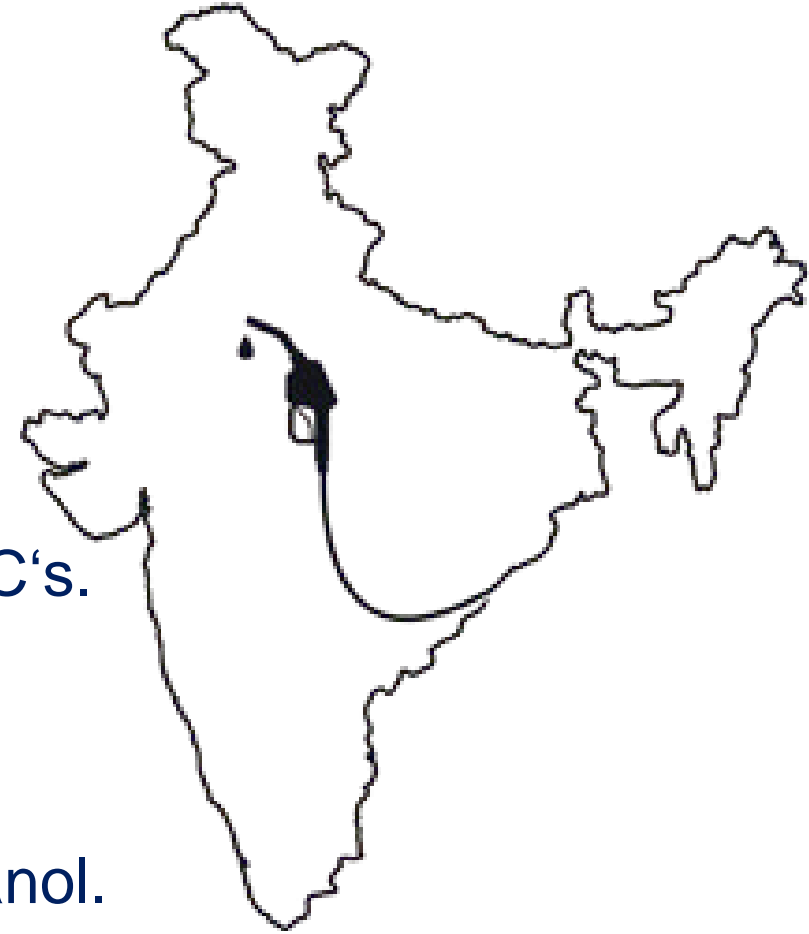




# TECHNOLOGY DEVELOPEMENT

---

- Increased demand for higher capacity plants.
- Multi feed stock and multi product plants.
- Low OPEX technology development.
- Environment friendly and ZLD plants.
- Higher safety norms and requirement of OMC's.
- Higher level of automation / less manpower.
- Diversified business groups investing in Ethanol.



# Continuous Reduction Cost of Production



***"E-max"***  
**Technology**



Raw Material - 75%

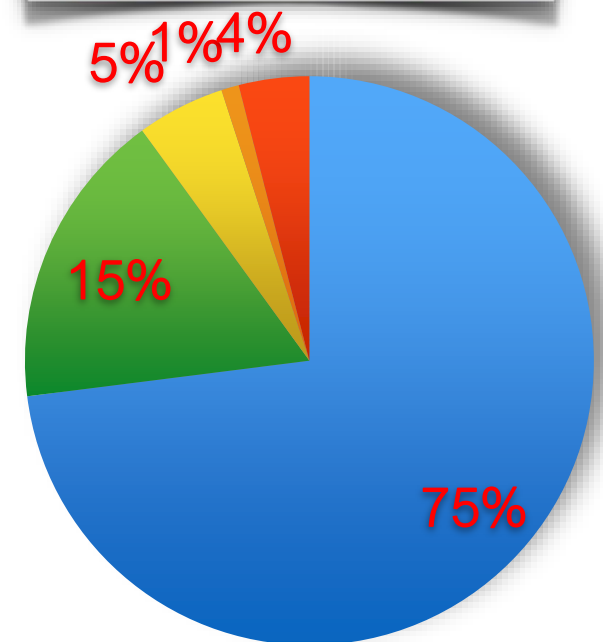
Utilities (Steam, Power, Water) - 15%

Manpower & Maintenance - 5%

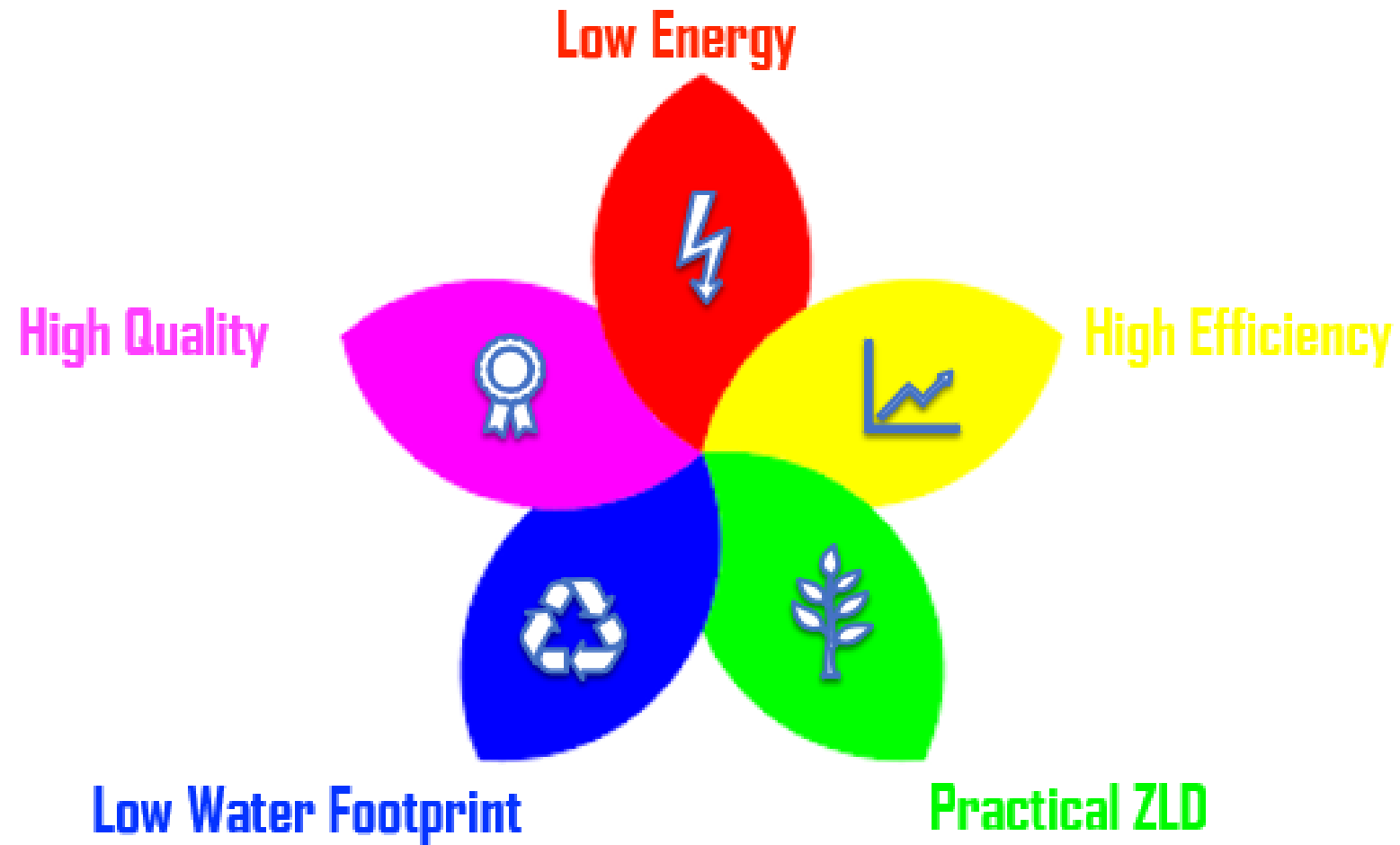
Chemicals, Yeast etc. - 1%

Interest on Capex - 4%

**ZLD** ?



# “E-max” Technology





# “E-max” Technology - Steam



## *“E-max”*

### Pre 2015

Grain – 6 kg  
Molasses – 5.5 kg

### Regreen Excel “E-Max”

Grain – 4.0 kg  
Molasses – 4.5 kg

### Regreen Excel “E-Max2”

Grain – 3.5 kg  
Molasses – 4.0 kg

### Regreen Excel “E-Max3”

Grain – 3.2 kg  
Molasses – 3.2 kg

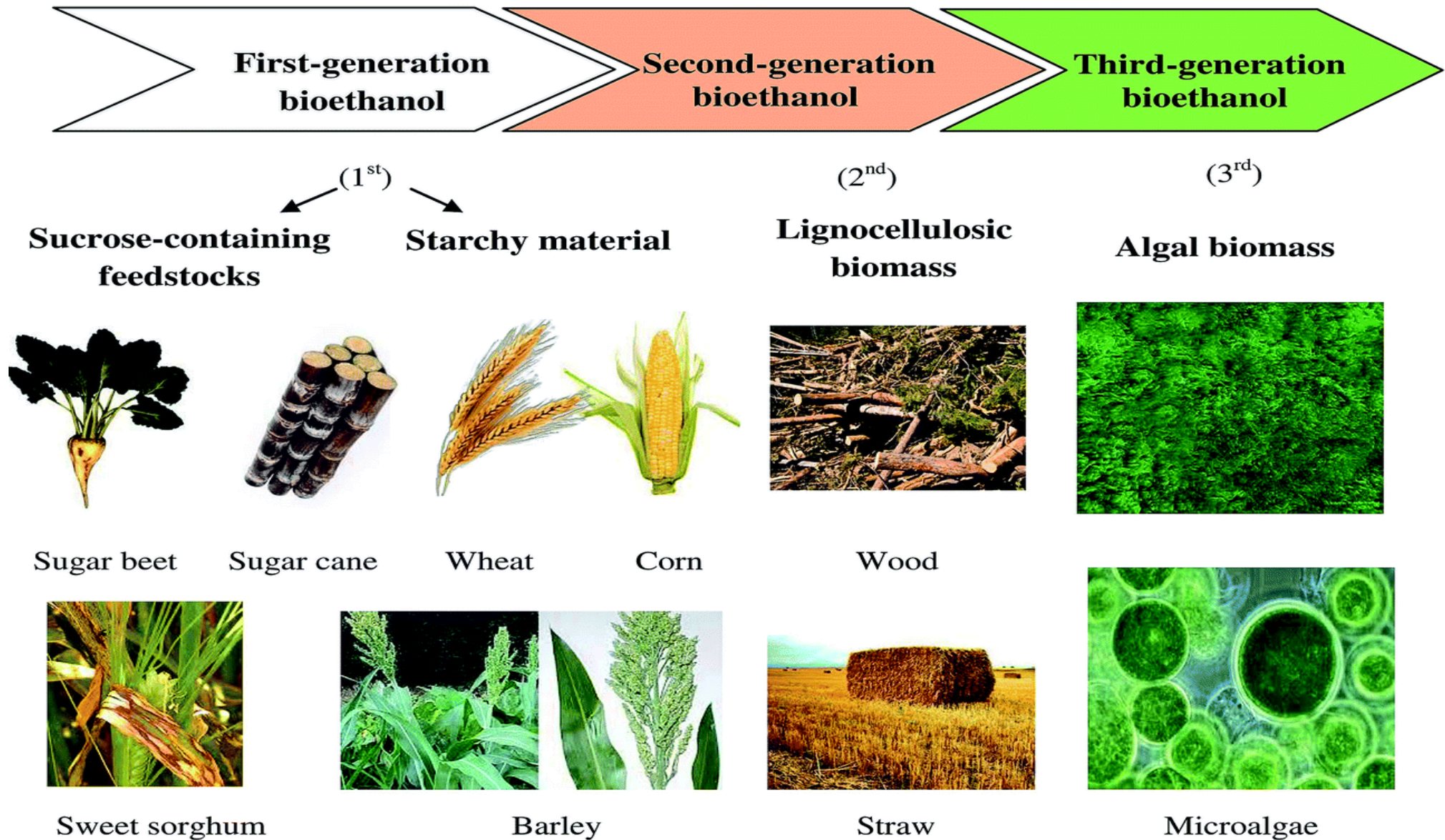
# "E-max-75" Technology Steam



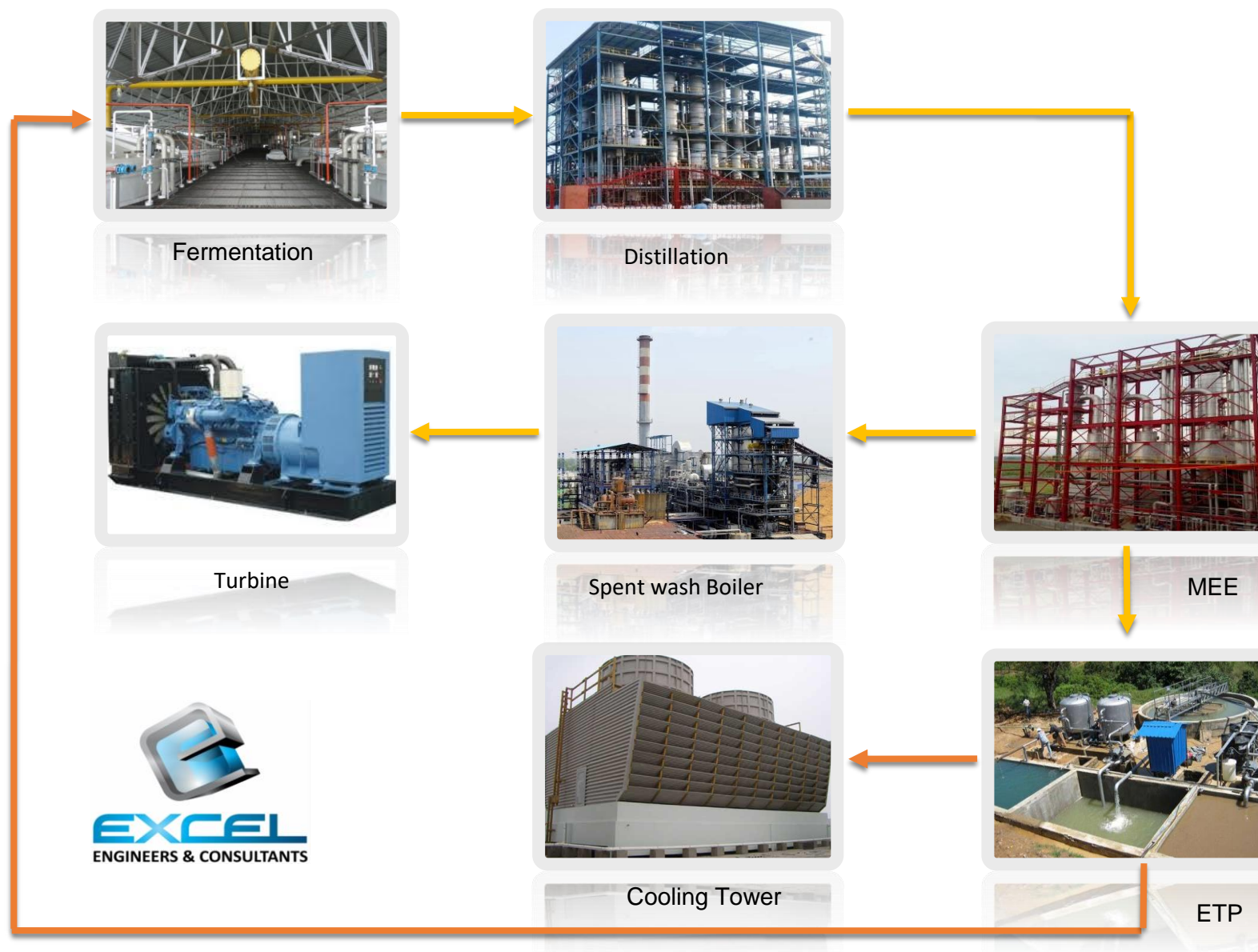
## *"E-max"75*

- Grain Performance Parameters
- Yield – 490 to 500 litres / MT BR
- Steam – 2.5 kg/litre
- Water - 2.5 times
- Electricity – 0.4 to 0.5 kwh/l

# Feed Stocks for Bio-Ethanol

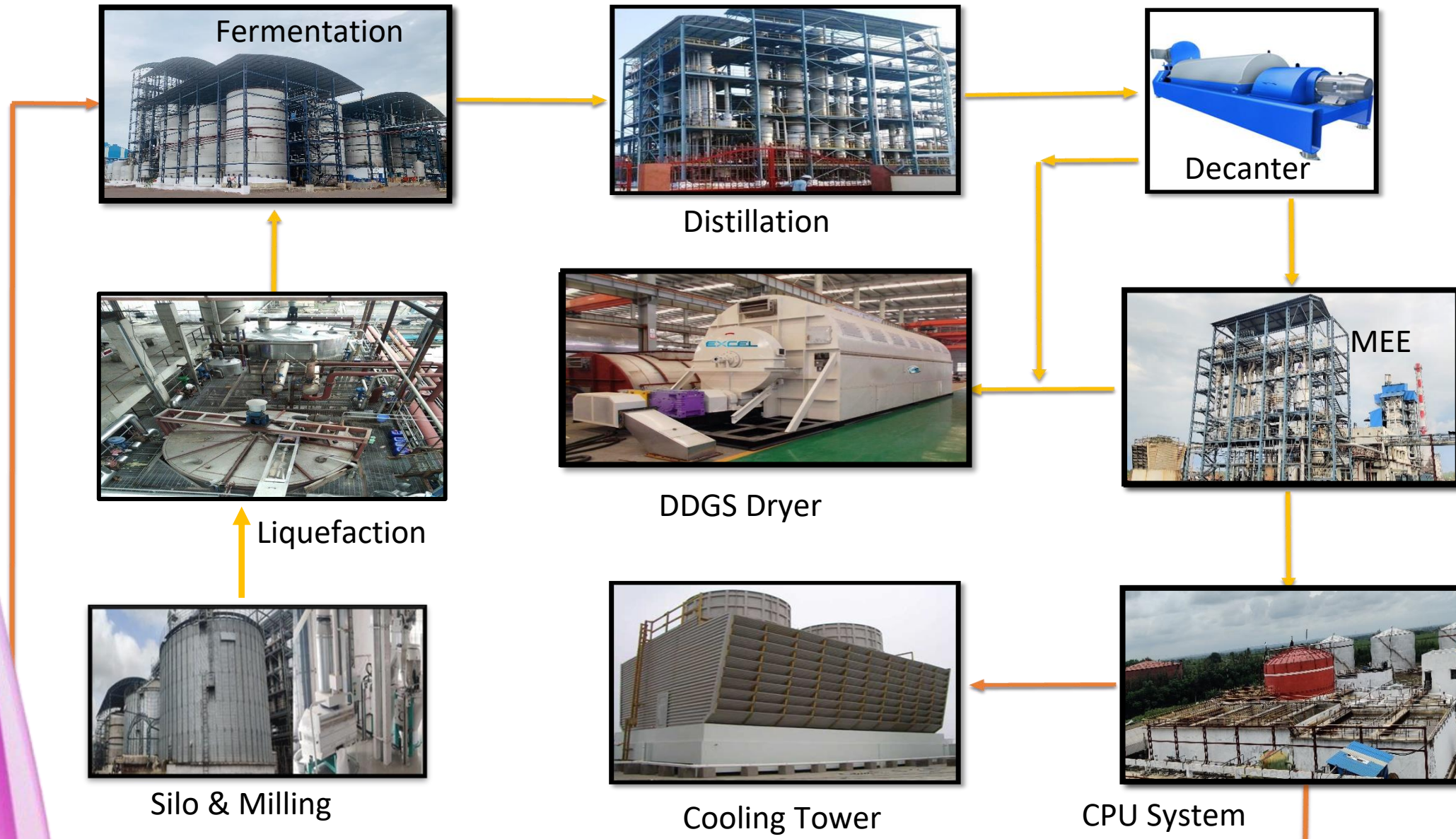






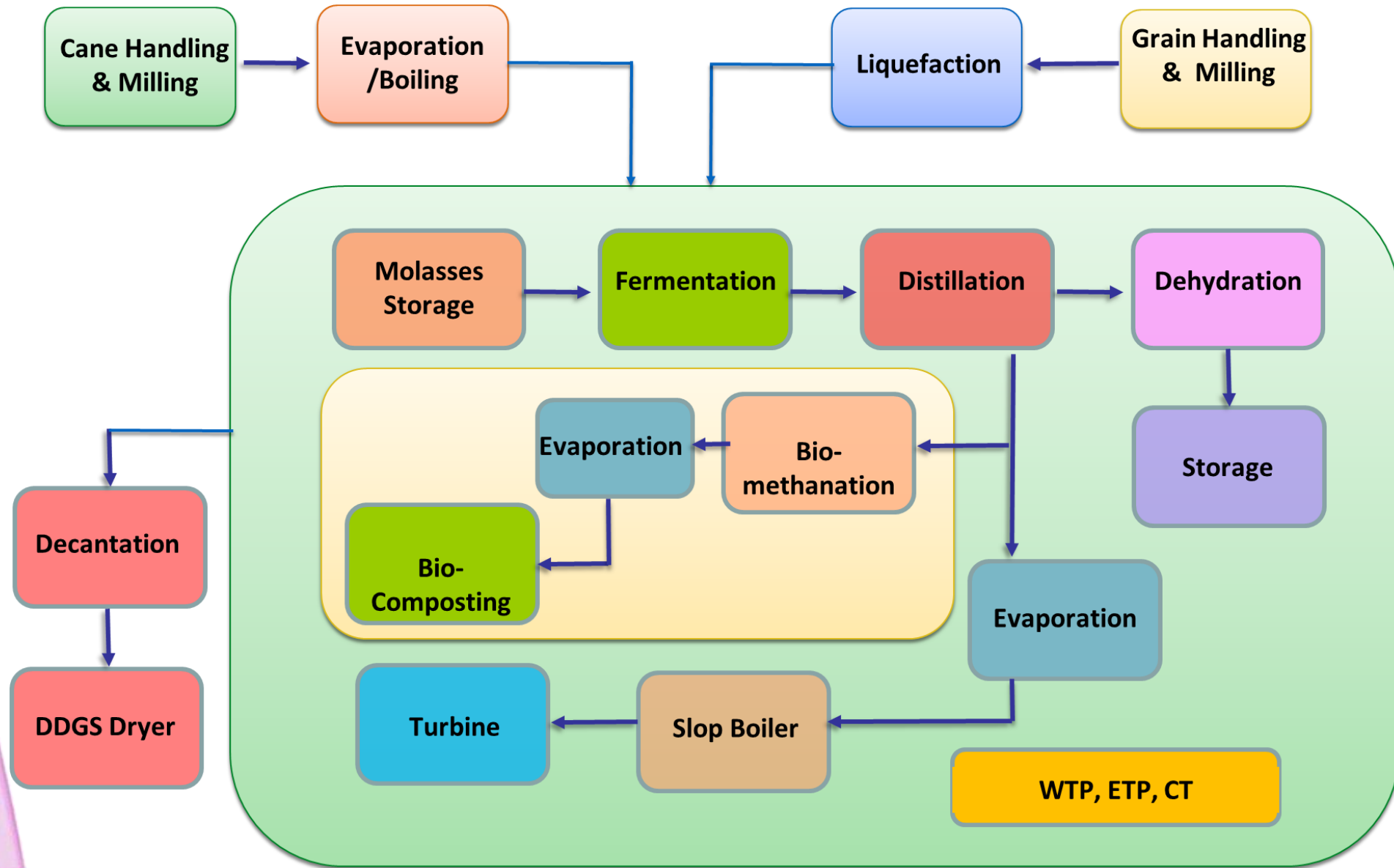
## Ethanol Production Molasses (Slop Incineration Route)

# Ethanol Production Grain (DDGS Route)





# Multi - Feed Ethanol Distillery





# Sugar cane raw material

## “Contains”

14 to 15 % w/w sugar

## “Yields”

70-80 liter Ethanol / Ton

1400 Tons / day for 100 KL

180 days a year operation

80 Tons / Hectare

2500 to 3000 Hectares land



# Sugar cane molasses raw material

---

## “Contains”

45 to 50 % w/w sugar

## “Yields”

250-275 litre Ethanol / Ton

375 Tons / day for 100 KL

150 days a year operation

From 10,000 TCD sugar mill

For 150 days



# Starch raw material – Rice / Broken Rice

## “Contains”

68 to 70 % w/w starch

## “Yields”

450-470 litre Ethanol / Ton

220 Tons / day for 100 KL

330 days a year operation

Rice - 5 – 7 Tons / Hectare

12000 to 15000 Hectares land





# Starch raw material – Corn

---

## “Contains”

60 to 65 % w/w starch

## “Yields”

380-400 litre Ethanol / Ton

250 Tons / day for 100 KL

330 days a year operation

Corn - 3.25 Tons / Hectare

20000 to 22000 Hectares land



# Starch raw material - Cassava

## “Contains”

65 to 75 % w/w starch

## “Yields”

400-410 litre Ethanol / Ton

250 Tons / day for 100 KL

330 days a year operation

Dry Cassava - 3.5 Tons / Hectare

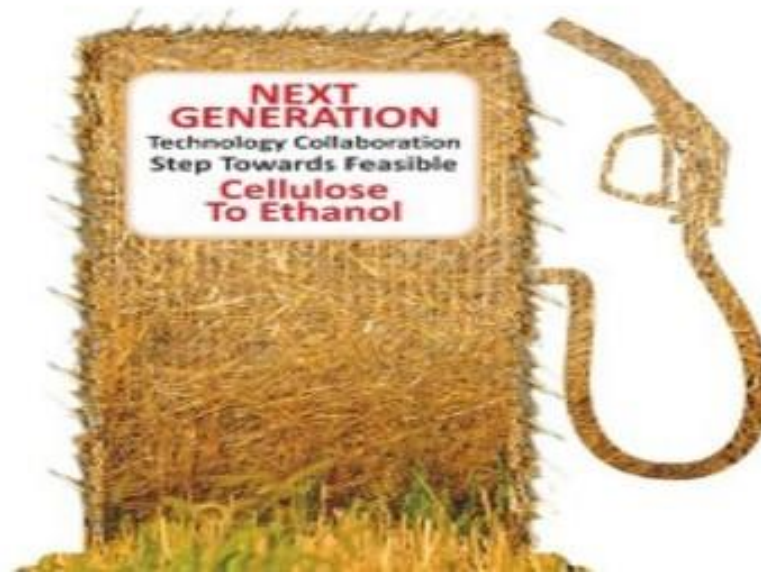
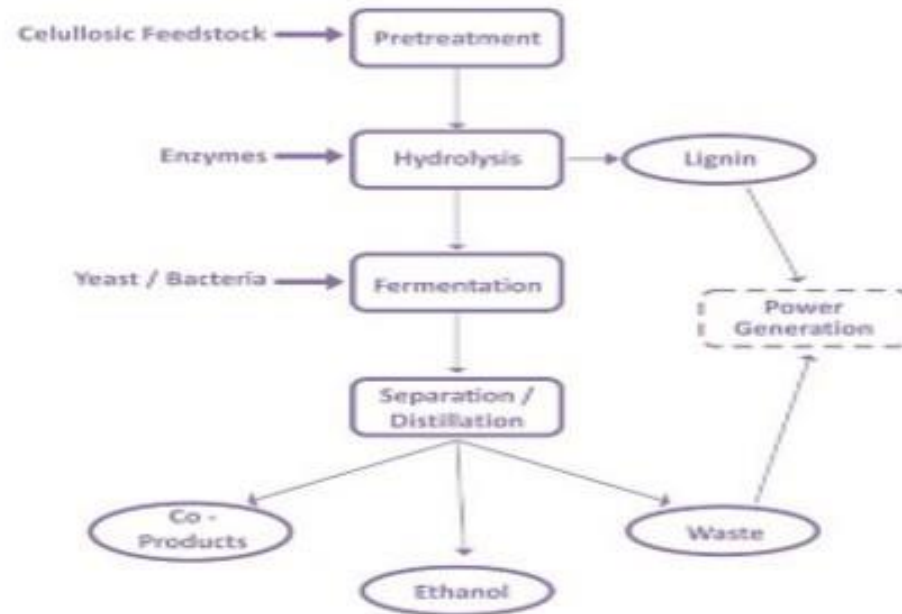
20000 to 2200 Hectares land



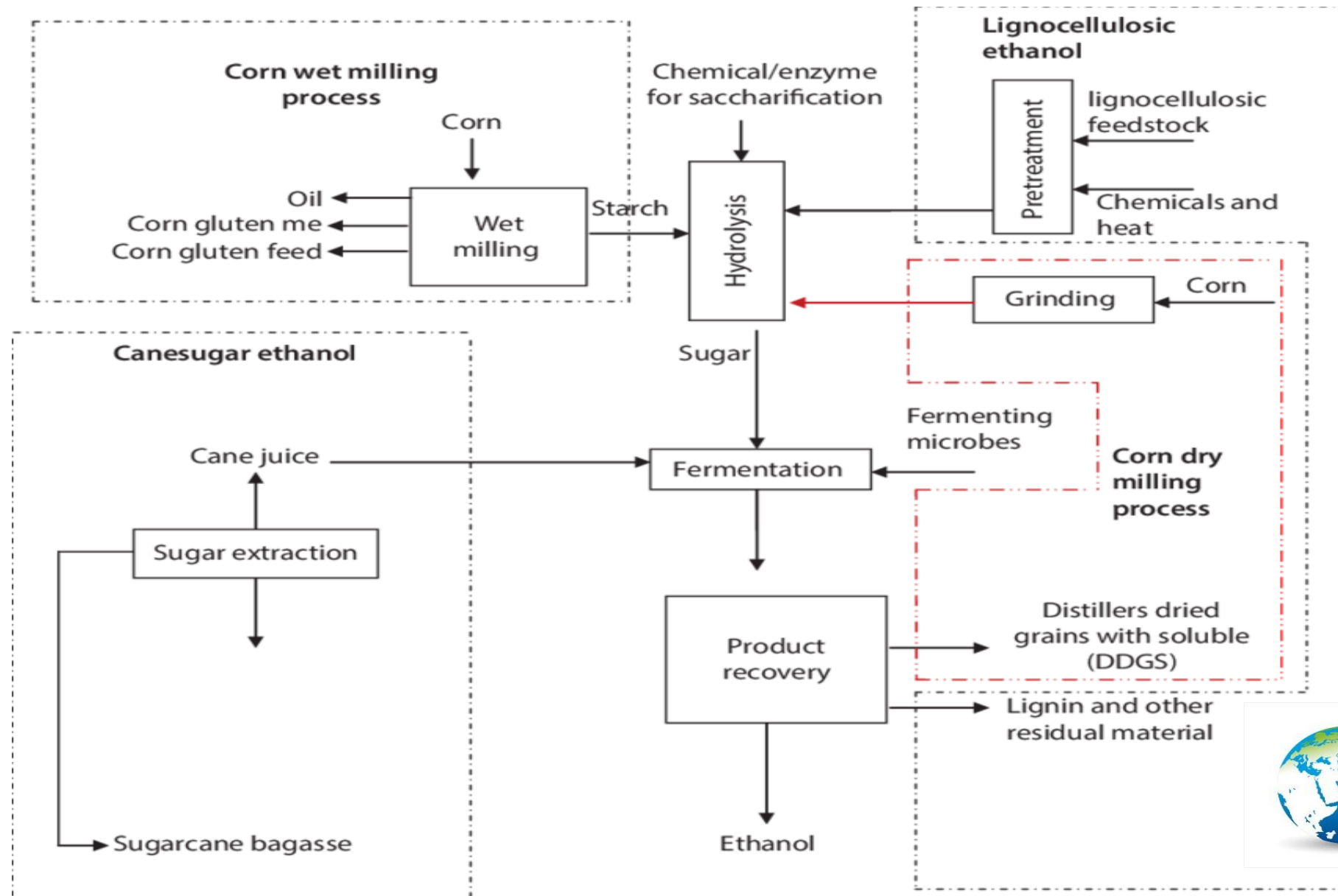
# Comparison in Different Feed Stock

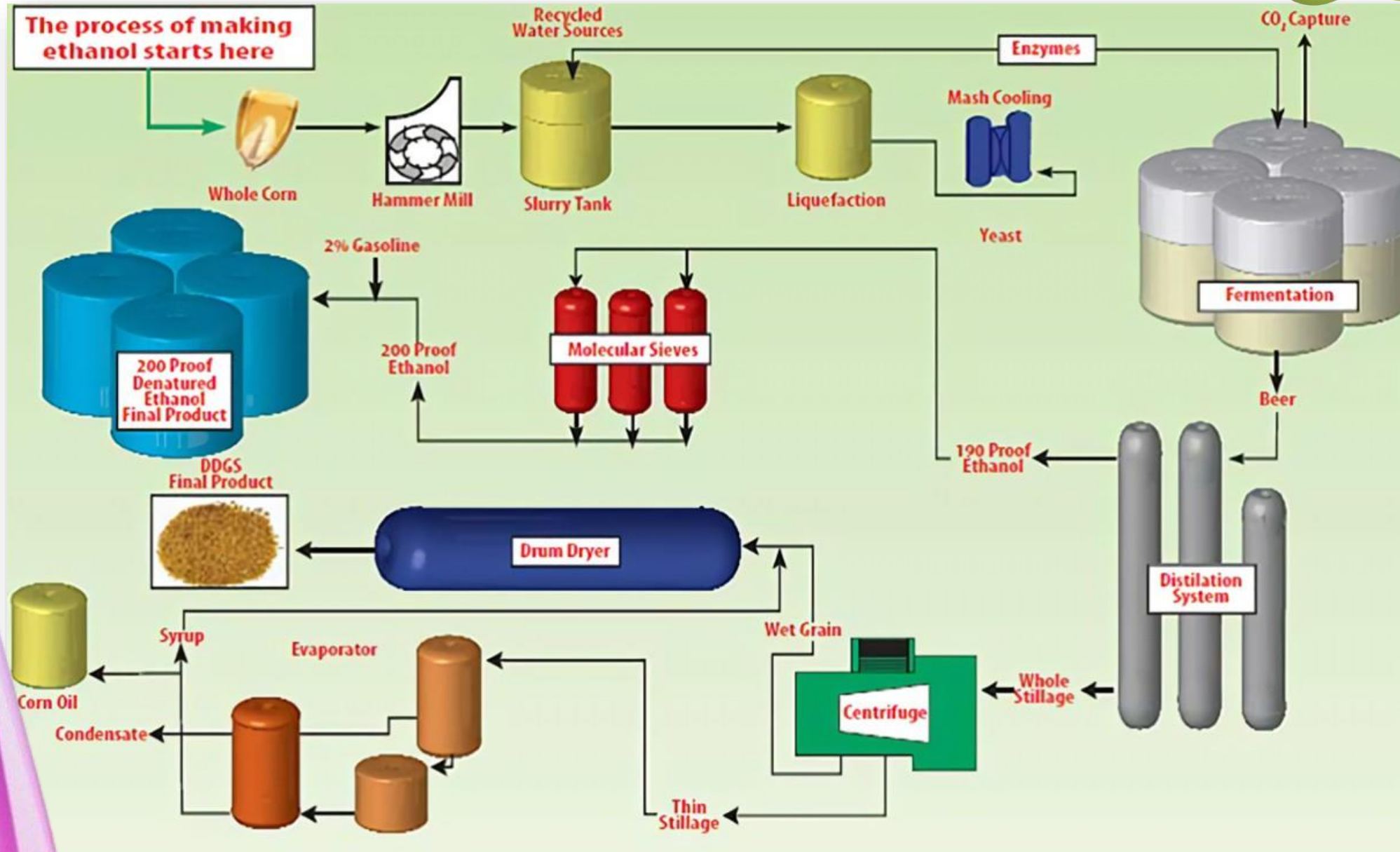
Feed Stock	Sugarcane	Sugar Beet	Sweet Sorghum
Crop Duration	About 7 months	About 5 - 6 months	About 4 months
Growing Season	Only one season	Only one season	One Season in temperate and two or three seasons in tropical area.
Soil Requirement	Grows well in drain soil	Grows well in sandy loam; also tolerates alkalinity	All types of drained soil.
Water Management	36000m <sup>3</sup> /h	18000m <sup>3</sup> /h	12000 m <sup>3</sup> /h
Crop Management	Require goods management	Greater fertilizer requirement; requires moderate management	Little fertilizer required; less pest and disease complex; easy management
Yeild Per HA	70- 80 tons/ha	30 - 40 tons	54 - 69 tons
Sugar content on weight basis	10 -12 %	15 - 18%	7 - 12%
Sugar Yield	7 - 8 tons/ha	5 - 6 tons/ha	6 - 8 tons/ha
Ethanol Production directly from juice	3000 - 5000 L/ha	5000 - 6000 L/ha	3000 L/ha





# INDIA'S FUTURE ETHANOL PRODUCTION







# Sustainability of Ethanol in India

---



- Continued Automobile's growth
- Increase in other uses for ethanol as fuel / chemical
- Large sugar industry - expansion
- Large grain farming base PAN India

Newer feed stocks and technologies

- Technical skill base and technology development

# DIVERSIFICATION

---



## Feed stocks –

- Maize / Sweet Sorghum / 2 G / 3 G feed stocks

## Applications Energy –

- Diesel Mix / Jet fuel / Electricity Generators (DG)

## Green Chemicals -

- Solvents / MEG / Plastics

## Spirits –

- IMFL and Exports

## Byproducts –

- Potash Fertiliser / DDGS / Protein / Oil / Furfural / Aroma Chemicals

# UGAR 800 KL ASIA'S LARGEST ETHANOL PLANT





# UGAR 800 KL ASIA'S LARGEST ETHANOL PLANT

---





# BALRAMPUR CHINI MILLS- 361 KL CANE/GRAIN

---





# GULSHAN POLYOLS -200 KL GRAIN





# SAVSON DISTILLERY-100 KL GRAIN





# SAVSON DISTILLERY-100 KL GRAIN





# LH SUGARS -80 KL MOLASSES





# LH SUGARS -80 KL GRAIN





# WAVE 180 KL - EPC PROJECT





# DSCL 200 KL- CANE / MOLASSES

---





# DSCL 275 KL – CANE /MOLASSES





# HERMES DISTILLERY – 120KL GRAIN





# HERMES DISTILLERY -100KL MOLASSES





# SATISH SUGAR – 200KL SYRUP / GRAIN





# GLOBUS SPIRIT-GRAIN





# PARLE BISCUITS –70KL MOLASSES





# INDIA GLYCOL – 180KL GRAIN





# MAGADH BIRLA -60KL MOLASSES



# DDGS DRYERS





# DDGS DRYER SYSTEM





# HIGH END AUTOMATION





# CSR





# CSR





ಕರ್ನಾಟಕ ಸರ್ಕಾರ



ಸರ್ಕಾರ ಇಲಾಖೆ

ಸರ್ಕಾರ ಸಂಘಗಳ ಉಪನಿಬಂಧಕರು ಹಾಗೂ  
ಜಿಲ್ಲಾ ಸಂಘಗಳ ನೋಂದಣಾಧಿಕಾರಿಗಳು  
ಧಾರವಾಡ ಜಿಲ್ಲೆ

ನೋಂದಣಿ ಪ್ರಮಾಣ ಪತ್ರ

ದಿನಾಂಕ: 16/12/2022

ನೋಂದಣಿ ಸಂಖ್ಯೆ :DRDW/SOR/571/2022-2023.

ಕರ್ನಾಟಕ ಸಂಘಗಳ ನೋಂದಣಿ ಕಾಯ್ದೆ 1960 (1960 ನೆಯ ಇಸವಿ 17 ನೇ ಕ್ರಮಾಂಕದ ಕರ್ನಾಟಕ  
ಅಧಿನಿಯಮ) ಮೇರೆಗೆ ಈ ಕೆಳಕಂಡ ವಸರನ

ETHANOL AND BIO FUEL TECHNOLOGISTS ASSOCIATION, PLOT.NO.4,  
R S No.65 K, KELGERI, DHARWAD TQ:DIST:DHARWAD DHARWAD -  
580008, DHARWAD

ಸಂಘವನ್ನು ನೋಂದಾಯಿಸಲಾಗಿದೆ ಎಂದು ಈ ಮೂಲಕ ಪ್ರಮಾಣೀಕರಿಸುತ್ತೇನೆ.

ನೋಂದಣಿ ಶುಲ್ಕ ರೂಪಾಯಿ (ಅಂಕಿಗಳಲ್ಲಿ) 500.00/-  
(ಆಕ್ಷರಗಳಲ್ಲಿ ಐದು ನೂರು ರೂಪಾಯಿಗಳು ಮಾತ್ರ) ಗಳನ್ನು ಪಾವತಿಸಲಾಗಿದೆ.

16/12/2022 ದಿನಾಂಕದಂದು ನನ್ನ ಸಹಿ ಮತ್ತು ಮುದ್ರೆಯೊಂದಿಗೆ ನೀಡಲ್ಪಟ್ಟಿದೆ.

Class of Society :GENERAL





**EBTAI**  
Ethanol & Biofuel  
Technologists Association Of India

सुजलां सुफलां वसुधैव!!

# RECOGNITIONS

- Awarded for “Excellence in Innovation in Technology Industries” by MSME Chamber of Commerce & Industry of India.
- Dr. P. J. Manohar Rao Gold Medal for “Excellence in Co-Products” at STAI’s 77th Annual convection & Sugar Expo.





# RECOGNITIONS



# Repeat Orders

---

- SVP Industries Ltd
- DSCL Sugars Ltd
- Dalmia Sugars Ltd
- Dhampur Sugars Ltd.
- NSL Group
- EID Parry (INDIA) Ltd
- Rana Sugars Ltd
- Tikula Sugars
- Godavari Biorefineries Ltd
- Balaji Sugars Ltd
- Parle Biscuit Pvt Ltd.
- Shamnur Sugars Ltd



- Mylar Sugar pvt ltd
- L H Sugar Factories Ltd.
- Globus Spirits Ltd
- KM Sugars Ltd
- Satish Sugar pvt ltd
- Natural Sugars Ltd
- Dhampur Sugars Ltd.
- Ugar Sugars Works
- Hermes Distillery Ltd
- Baramati Agro Ltd
- Uttam Sugars Ltd
- Indian Glycol



# Exports Orders & Prestigious Clientele

---



- PSC Starch Exports
- PT Molindo Exports
- San Carlos Exports
- Savson Distillery Ltd
- Dwarikesh Sugars Ltd
- Shri Basweshwara Sugars
- Magadh Birla Sugars
- Wave Industries
- Rajashree Chemicals
- Daural Sugar Works
- Agribiotech Ltd
- Bajaj Hindustan Ltd
- Navbharat Ltd



- IFB Agro Ltd.
- Hartitha Bio
- Balrampur Chini Mills
- Anjali Tai Canes Pvt Ltd
- Forever Distillery Ltd
- Rajaram Bapu SSK
- Mash Spirits Ltd
- Coastal Bio Tech Ltd
- Bokaro Distillery Ltd
- JVS Biofuels Pvt Ltd.
- NKJ Biofuels Pvt Ltd.
- VINP Distilleries

# New Orders

---

- Muzaffarpur Biofuels Pvt. Ltd
- Bharat Oorja Distilleries Pvt. Ltd
- KGS Spirits LLP
- Venky Power & Metal Ltd.
- Crystal Balaji Industries Ltd.
- Aaditri Agrotech Private Limited
- Devsristi Biofuels Pvt. Ltd.
- Tilaknagar Industries Ltd.
- Sterling Distillers LLP
- B K Builder



- Happy Niwas Pvt. Ltd.
- Greenergy Bio Refineries Pvt. Ltd.
- Chidanand Basaprabhu Kore SSKN
- Sooraj Agro Distillers Ltd.
- Seas Biotech Pvt. Ltd.
- Pratistha Spirits Ltd.
- Sahu Agro Business Pvt. Ltd.
- Daizy Agrotech Pvt. Ltd.
- Luna Chemicals Pvt. Ltd.
- Pasupathi Acrylics



# New Orders

---

- Doghat Organics
- Vasundhara
- Pernod Ricard
- Amanyas Organics
- DAPS Infra



- Shree Balaji Biofuels
- Edhas Biofuels
- Orient Ethanol Industries
- Stellar Distilleries



## CONTACT US



**Regreen Excel EPC India Pvt. Ltd.**

**"Excel House" Ashirwad,**

51, Laxman Nagar,

Balewadi, Near Balewadi Stadium, Pune-411045,

Maharashtra, INDIA

Cell: +91 966 5039921

Email: [md@excelengineering.in](mailto:md@excelengineering.in)

Web: [www.regreenexcel.com](http://www.regreenexcel.com)