

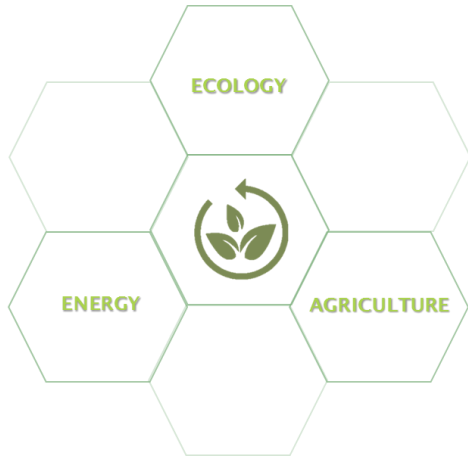
# BIO – CCUS/CCUS potential in Croatia

## Short overview

Innovation Fund expert group:  
Refining sector workshop

Brussels, September 2019





BI refinery

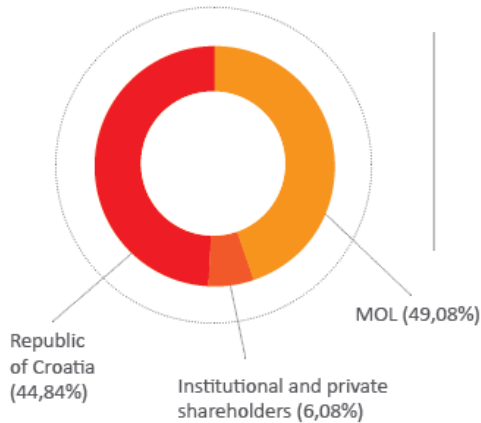
***Introduction***

***General about the Biorefinery project***

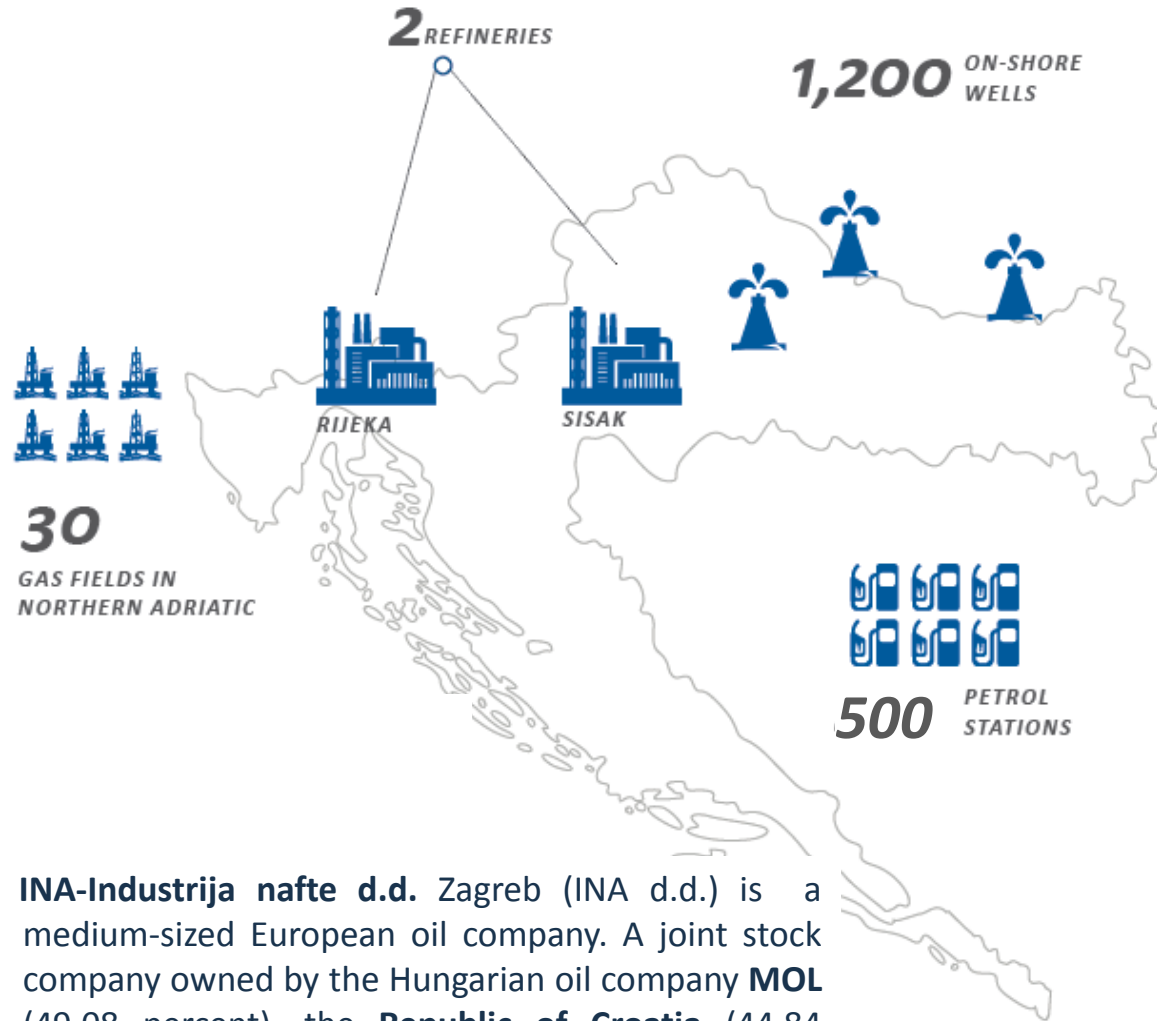
***General about the BIO-CCUS and CCUS project***

## OWNERSHIP STRUCTURE

INA's share capital is divided



s  
er



212.000  
Service stations'  
daily users

Since 2008 close to  
**EUR 3 bn**  
have been invested  
in core businesses

4,2 Mt  
Fuel sales

10.782\*  
EMPLOYEES IN  
INA GROUP

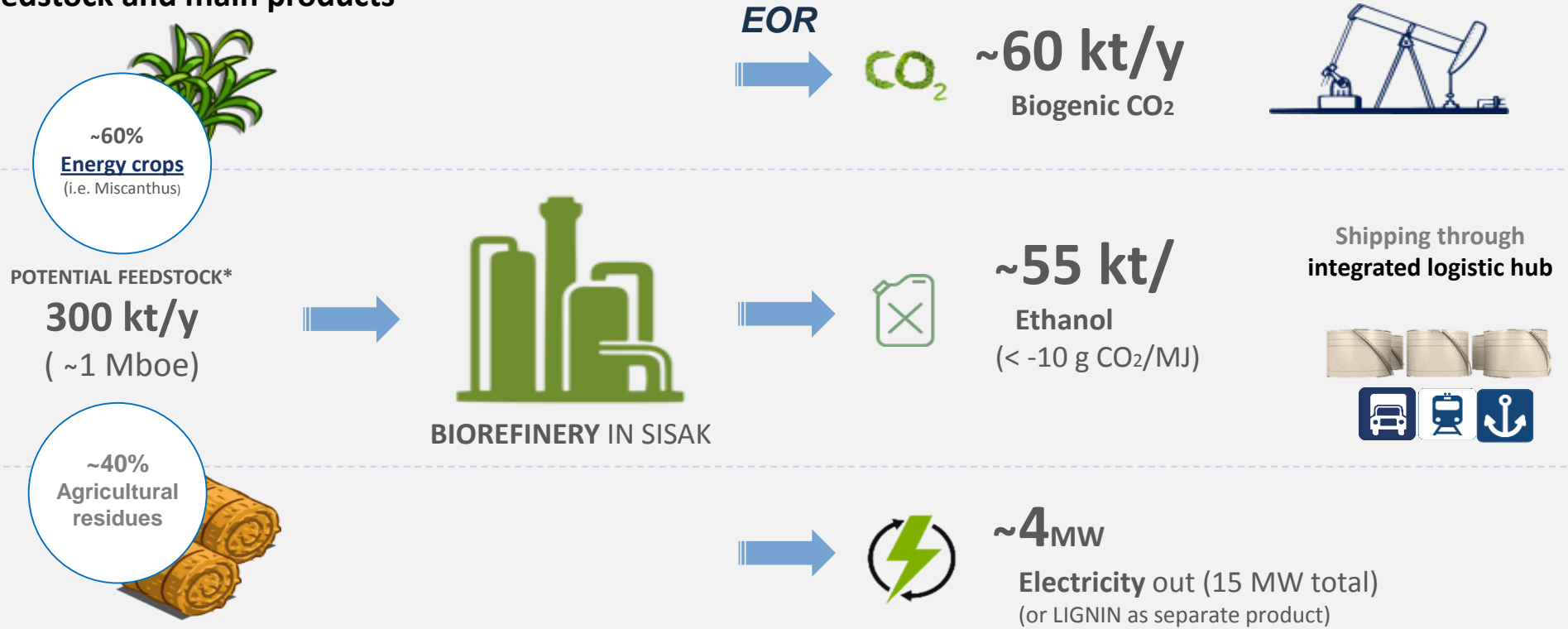
EBITDA  
EUR 425 mn

ANNUAL  
REPORT  
2017

INA-Industrija nafte d.d. Zagreb (INA d.d.) is a medium-sized European oil company. A joint stock company owned by the Hungarian oil company **MOL** (49.08 percent), the **Republic of Croatia** (44.84 percent) and **institutional and private investors** (6.08 percent).

# General about the Biorefinery Project

## Feedstock and main products



\*Depends of technology\*

## Social impact – Employment estimation



\* 350 FTE

# Four pillars of Biorefinery project

## Technology



### Options for the future (2G sugar platform):

- Bio-based chemicals,
- Bio-based polymers,
- Bio-Jet, Bio-diesel,
- BIO-CCUS (large scale).



### Project GRACE:

- INA is a partner on EUR 15 mn project financed through BBI.
- From biomass to high value added products (biofuels, chemicals, polymers, ...)
- Partners: Leading Universities in EU, Novamont, AVA BioChem, Addiplast, INRA, ...

## Agriculture and Rural

**Holistic approach** of Biorefinery project together with innovative technology and low CO<sub>2</sub> footprint makes it flagship project on EU level.

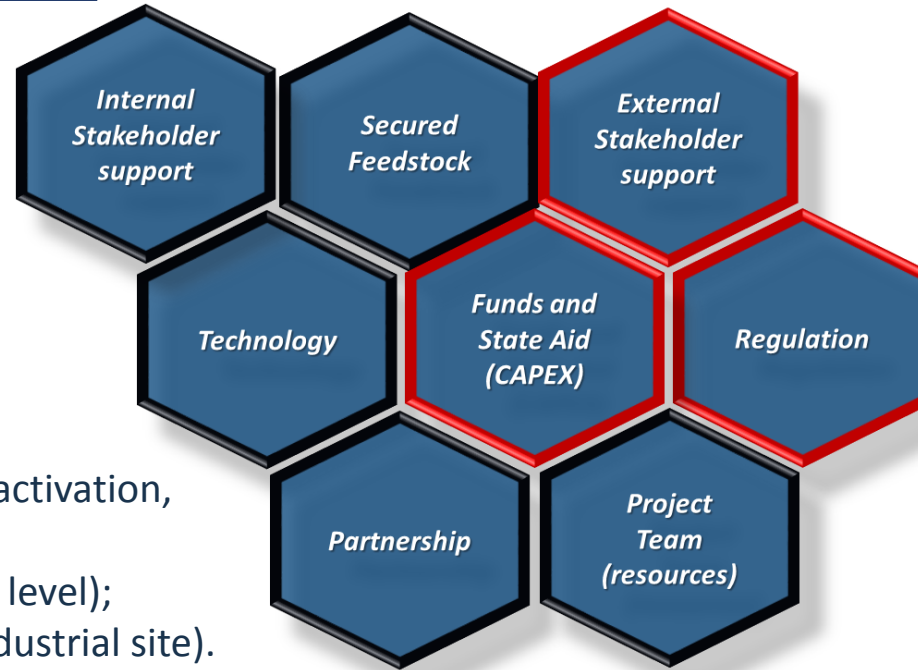




# Biorefinery project key enablers

## Three most important enablers:

1. Feedstock (Abandoned land activation, Miscanthus cultivation);
2. Regulatory environment (MS level);
3. Financing (agriculture and industrial site).



Importance



Stakeholders

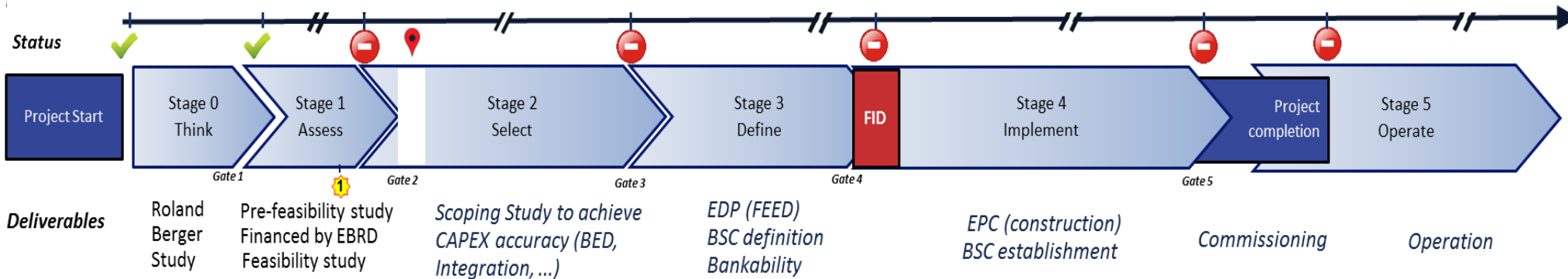


External  
State/EU

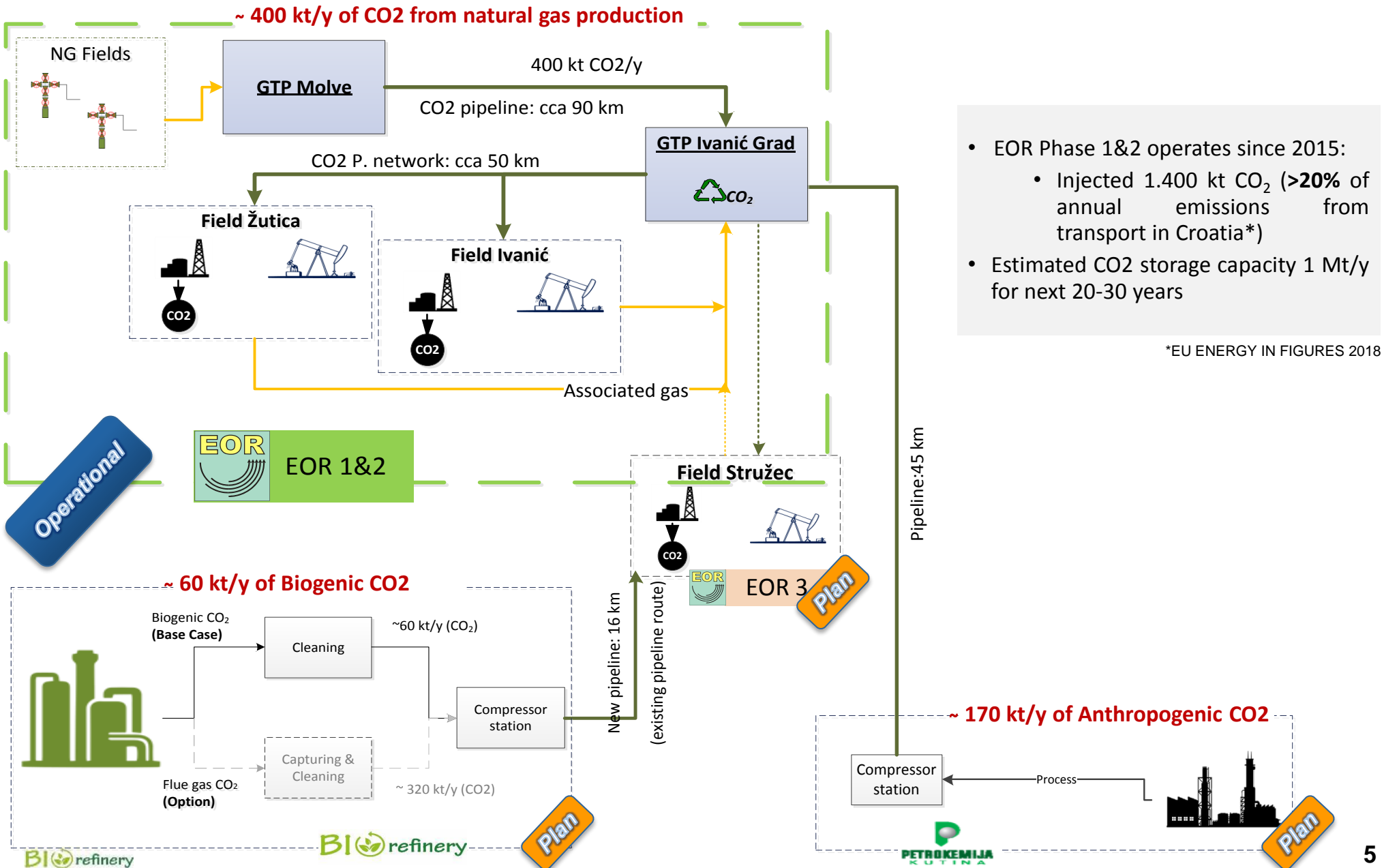


Internal  
INA/MOL Group

## Project development



# General about the Project: BIO-CCUS and CCUS



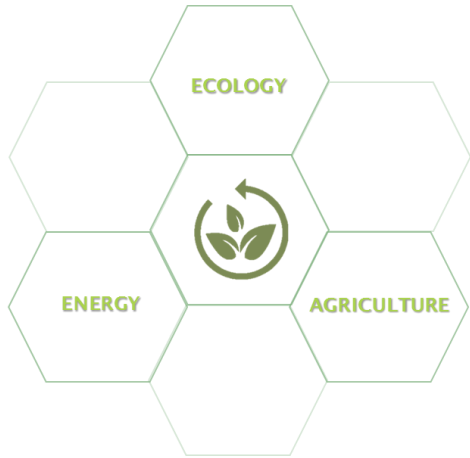
- EOR Phase 1&2 operates since 2015:
  - Injected 1.400 kt CO<sub>2</sub> (>20% of annual emissions from transport in Croatia\*)
- Estimated CO<sub>2</sub> storage capacity 1 Mt/y for next 20-30 years



# THANK YOU!

*INA  
Miscanthus  
field,  
Rugvica.  
12/2018*





BI refinery

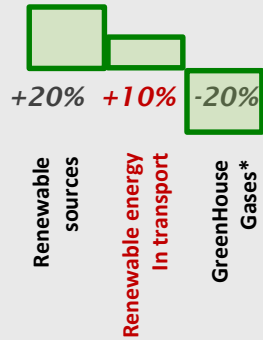
BACK UP SLIDES



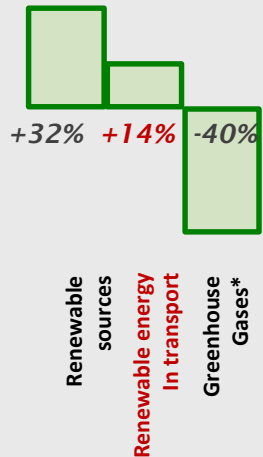
## Backup slide: Biofuels



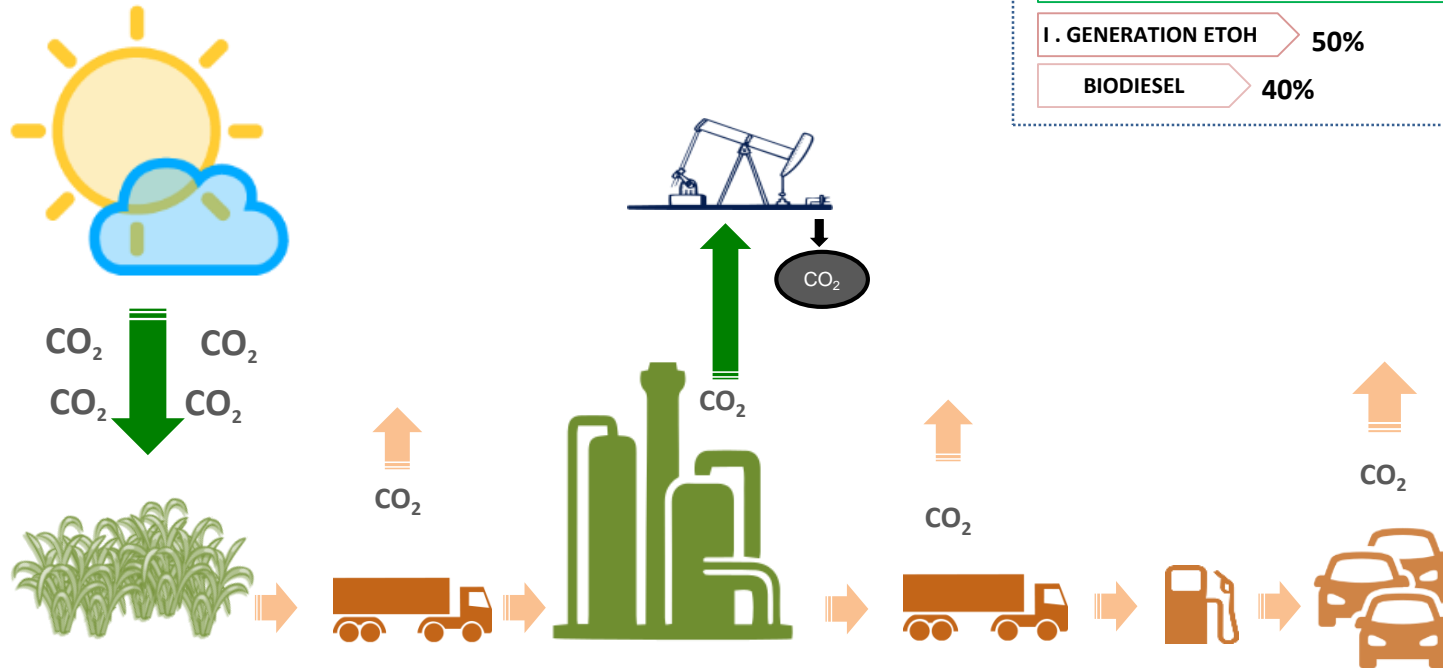
### EU 2020 TARGETS



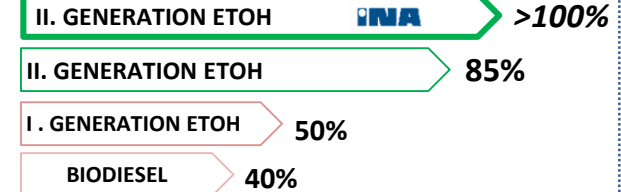
### EU 2030 TARGETS



\*from 1990 level



### Greenhouse Gas Savings



*Emissions from different motor fuels on LCA basis (illustrative):*

Gasoline (fossil): ~80 g CO<sub>2</sub>/MJ  
(~ 2,5 kg CO<sub>2</sub>/l gasoline)

Ethanol (bio 1G): ~40 g CO<sub>2</sub>/MJ  
Ethanol (bio 2G): ~15 g CO<sub>2</sub>/MJ  
Ethanol (INA 2G): ~ -10 g CO<sub>2</sub>/MJ