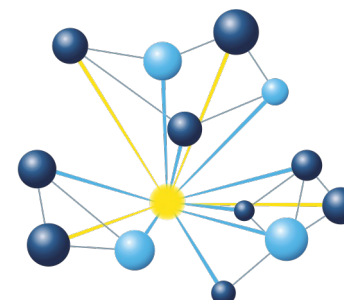




Regione  
Lombardia

Cluster Tecnologici Lombardi



**VANGUARD INITIATIVE**

New growth through smart specialisation

# Sustainable Mobility and Liquified Biomethane Demo

---

**Maurizio Bettiga and Ilaria Re**

Lombardy Green Chemistry Association

Technical coordinator of the Bioeconomy Pilot of the Vanguard Initiative for Smart Specialisation

May 18th 2022



## 2. The Bioeconomy Pilot and its demo-cases





New bio-based chemicals and biofuels pilot plants



Regione  
Lombardia

Cluster Tecnologici Lombardi



Bioaromatics demo-case	Lignocellulosic biorefinery demo-case	Liquified Bio-methane demo-case	Biopolymers demo-case
			
Creating interregional value chains to produce lignin-based aromatic molecules and innovative sustainable materials	Set-up of European value chains from lignocellulose biomass to intermediate and end-products of bulk and fine chemicals.	Enhance wide diffusion of bio liquified natural gas for sustainable transport across Europe, by advancing the state of the art of biogas upgrading	Creating interregional value chains by matching polymer market applications and new biobased technologies

VANGUARD INITIATIVE



# Our contribution to green **acceleration**

Shaping the bio-based bioeconomy as one of the most powerful tools for sustainable development

## POLICIES DEVELOPMENT AND GOVERNANCE

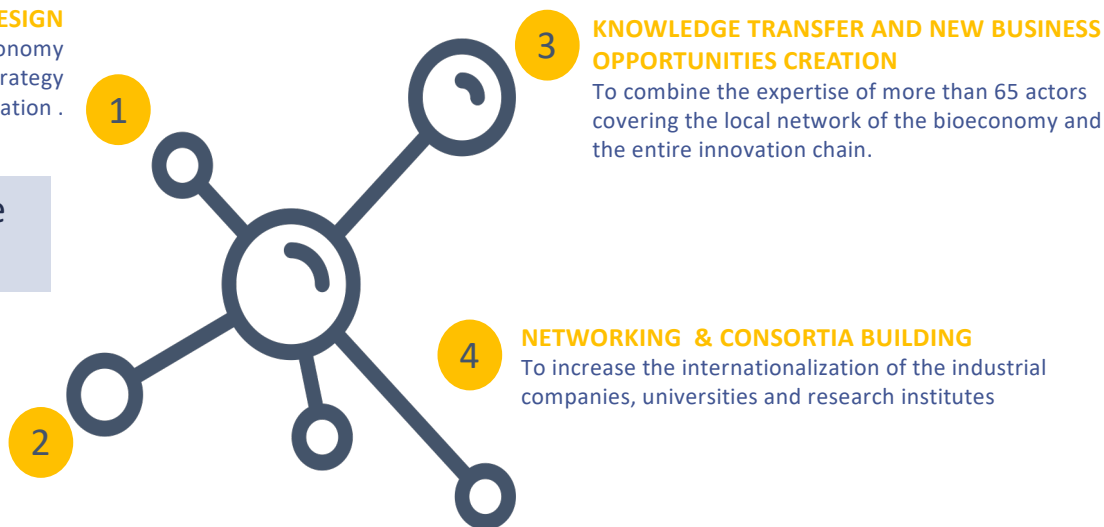
### ACTION PLAN DESIGN

To promote the establishment of a regional bioeconomy supporting the Smart Specialization Strategy implementation .



Liquified Bio-methane  
demo-case

Enhance wide diffusion of bio liquified natural gas for sustainable transport across Europe, by advancing the state of the art of biogas upgrading



## KNOWLEDGE TRANSFER AND NEW BUSINESS OPPORTUNITIES CREATION

To combine the expertise of more than 65 actors covering the local network of the bioeconomy and the entire innovation chain.

## NETWORKING & CONSORTIA BUILDING

To increase the internationalization of the industrial companies, universities and research institutes

## **BUSINESS DEVELOPMENT AND MARKET UPTAKE**

To encourage the cross-regional cooperation to bioeconomy and circular economy sectors and supporting business cases creation.



# THE CASE: Clean Truck Fuel from Waste

## SMBio-LNG - Shaping the future of Sustainable Mobility





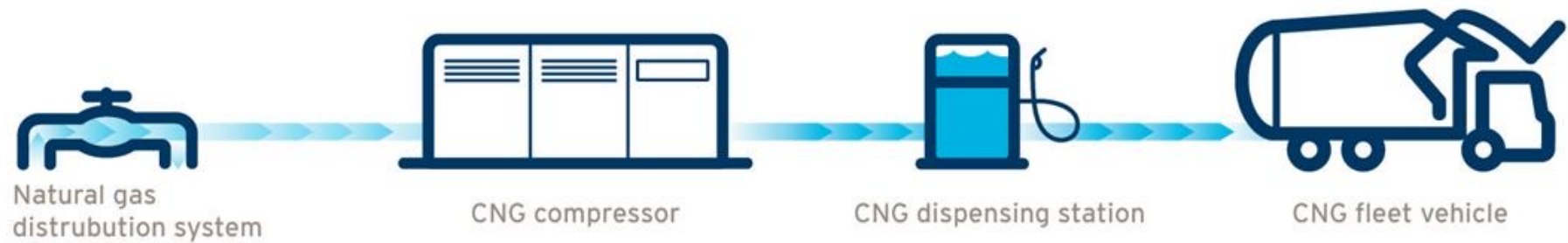
## THE CASE: Clean Truck Fuel from Waste

Create a **Value Chain** from  
production to distribution to use of  
locally produce, renewable and  
clean truck fuel





# Methane as a motor Fuel- CNG & LNG





# BioMethane from Biogas



Pictures: Air Liquide

Picture: Volvo Trucks



**(Fossile) LNG truck cut emissions**

$\text{CO}_2$  -15%

$\text{NO}_x$  -70%

PM -99%

Data: Iveco



# BioMethane from Biogas



Pictures: Air Liquide

Picture: Volvo Trucks



**BioLNG truck cut emissions**

$\text{CO}_2$  > -80%

$\text{NO}_x$  > -70%

PM -99%



# A business model for **Derisking** along the **whole value chain**

Built by Biogas Producer



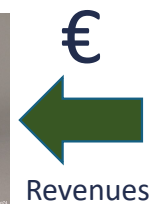
Operated by Fleet Owner



1. Construction of an **LNG** filling station **AND** creation of a fleet  
**1.5 M€ Investment**



# A business model for **Derisking** along the **whole value chain**



2. Sign a **10 years contract** at fixed price for supply of **BIOLNG**  
**2000 t/y commitment (1 -1.2 M€ equivalent)**



# A business model for **Derisking** along the **whole value chain**



€  
←  
Revenues

€  
←  
Revenues

3. Open the station to third parties and distribute the revenues



# Figures

## (In cooperation with TAF- Technical Assistance Facility)



### COSTS

LNG	45.273	56.591	67.909	79.227	90.545
CNG	17.656	22.070	26.484	30.898	35.313
bio(LNG)	265.330	331.663	397.995	464.328	530.660
bio(CNG)	103.479	129.348	155.218	181.088	206.957
<b>Total Costs of Material</b>	<b>431.737</b>	<b>539.672</b>	<b>647.606</b>	<b>755.541</b>	<b>863.475</b>
<b>Cost of Personnel (direct)</b>	<b>50.000</b>	<b>52.500</b>	<b>55.125</b>	<b>57.881</b>	<b>60.775</b>
Operators (€)	50.000	52.500	55.125	57.881	60.775
# Operator	2	2	2	2	2
FTE cost for operator	25.000	26.250	27.563	28.941	30.388
Supervisor	-	-	-	-	-
# Supervisor	-	-	-	-	-
FTE cost for supervisor	30.000	31.500	33.075	34.729	36.465
Administratives (€)	-	-	-	-	-
# of administrative	-	-	-	-	-
FTE cost for administratives	25.000	26.250	27.563	28.941	30.388
<b>Real Estate rent</b>	<b>10.000</b>	<b>10.000</b>	<b>10.000</b>	<b>10.000</b>	<b>10.000</b>
<b>Maintenance</b>	<b>4.000</b>	<b>4.000</b>	<b>4.000</b>	<b>4.000</b>	<b>4.000</b>
<b>Utilities</b>	<b>6.400</b>	<b>6.400</b>	<b>6.400</b>	<b>6.400</b>	<b>6.400</b>
<b>TOTAL DIRECT COSTS (€)</b>	<b>502.137</b>	<b>612.572</b>	<b>723.131</b>	<b>833.822</b>	<b>944.650</b>
<b>General Administration</b>	<b>10.000</b>	<b>10.000</b>	<b>10.000</b>	<b>10.000</b>	<b>10.000</b>
<b>Formazione Personale/Sicurezza</b>	<b>1.500</b>				
<b>Oneri sicurezza Impianto</b>	<b>1.129</b>				
<b>Insurance, Health&amp;Safety</b>	<b>1.000</b>	<b>1.000</b>	<b>1.000</b>	<b>1.000</b>	<b>1.000</b>
<b>Other Administration</b>	<b>1.000</b>	<b>1.000</b>	<b>1.000</b>	<b>1.000</b>	<b>1.000</b>
<b>TOTAL INDIRECT COSTS (€)</b>	<b>14.629</b>	<b>12.000</b>	<b>12.000</b>	<b>12.000</b>	<b>12.000</b>

Year 1

Year 2

Year 3

Year 4

Year 5



# Figures

## (In cooperation with TAF- Technical Assistance Facility)



### Conservative Scenario: 25 top-ups/day

#### REVENUES

LNG	73.938	92.422	110.906	129.391	147.875
CNG	7.850	9.813	11.776	13.738	15.701
bio(LNG)	137.313	171.641	205.969	240.297	274.625
bio(CNG)	14.579	18.224	21.869	25.514	29.159
<b>Revenues from sale of LNG, CNG, Bio LNG &amp; CNG for members (€)</b>	<b>233.680</b>	<b>292.100</b>	<b>350.520</b>	<b>408.939</b>	<b>467.359</b>
<i>% on Revenues</i>	36%	36%	36%	36%	36%
LNG	73.938	92.422	110.906	129.391	147.875
CNG	70.653	88.317	105.980	123.644	141.307
bio(LNG)	137.313	171.641	205.969	240.297	274.625
bio(CNG)	131.214	164.017	196.820	229.624	262.427
<b>Revenues from sale of LNG, CNG, Bio LNG &amp; CNG for customers (€)</b>	<b>413.117</b>	<b>516.396</b>	<b>619.676</b>	<b>722.955</b>	<b>826.234</b>
<i>% on Revenues</i>	64%	64%	64%	64%	64%
XXXX					
XXXXX					
<b>Other revenues (€)</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>TOTAL REVENUES (€)</b>	<b>646.797</b>	<b>808.496</b>	<b>970.195</b>	<b>1.131.894</b>	<b>1.293.594</b>

#### Costs



# Figures- Profit

## (In cooperation with TAF- Technical Assistance Facility)

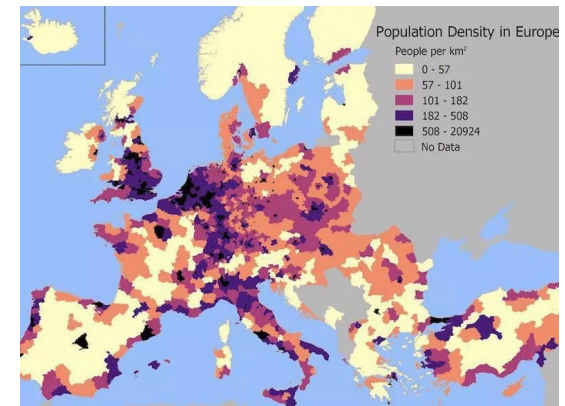
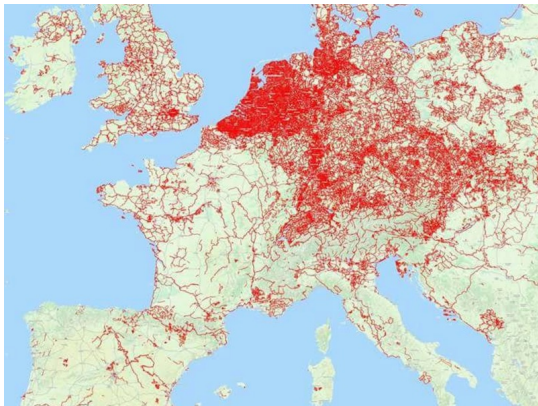


	Year 1	Year 2	Year 3	Year 4	Year 5
<b>GROSS PROFIT (€)</b>	<b>€ 144 659</b>	<b>€ 195 924</b>	<b>€ 247 064</b>	<b>€ 298 073</b>	<b>€ 348 943</b>
% on Revenues	22%	24%	25%	26%	27%
<b>EBITDA (€)</b>	<b>€ 130 030</b>	<b>€ 183 924</b>	<b>€ 235 064</b>	<b>€ 286 073</b>	<b>€ 336 943</b>
% on Revenues	20%	23%	24%	25%	26%
Amortization/Depreciation -	136 600 -	136 600 -	136 600 -	136 600 -	136 600 -
<b>EBIT (€)</b>	<b>(€ 6 570)</b>	<b>€ 47 324</b>	<b>€ 98 464</b>	<b>€ 149 473</b>	<b>€ 200 343</b>
% on Revenues	-1%	6%	10%	13%	15%
Interests and financial costs	45 000	40 500	36 000	31 500	27 000
<b>EBT (€)</b>	<b>(€ 51 570)</b>	<b>€ 6 824</b>	<b>€ 62 464</b>	<b>€ 117 973</b>	<b>€ 173 343</b>
% on Revenues	-8%	1%	6%	10%	13%
IRES	0	(1 877)	(17 178)	(32 442)	(47 669)
IRAP	0	(2 314)	(4 586)	(6 858)	(9 131)
<b>PROFIT (LOSS)</b>	<b>(€ 51 570)</b>	<b>€ 2 634</b>	<b>€ 40 700</b>	<b>€ 78 672</b>	<b>€ 116 543</b>
% on Revenues	-8%	0%	4%	7%	9%



# The way forward

**REPLICATE** the case by involving **Partners & Investors**

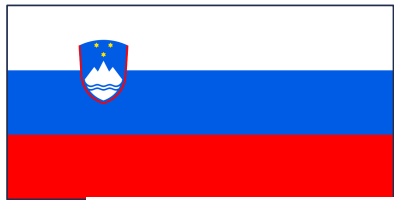




# The way forward: replication

## Extended TAF support for

# The “handbook” for Bio-LNG business replication in Slovenia



1. Current biogas and biomethane market and policy outlook in Slovenia
2. Biomethane production potential in Slovenia
3. Suggested financial model, investment estimation, and revenue potential
4. Freight fleets
5. Identification of partners and investors
6. Risk analysis

With the collaboration the Slovenian Business and Research Association (SBRA)





**The way forward: extension for impact**

## **2. I3 consortium coordination**



**Interregional Innovation  
Investment (I3) Instrument**



# The way forward: extension for impact



- Supporting the demonstration, commercialization and scale-up of interregional investments
- Interconnecting regional innovation ecosystems along S3 priorities
- Combining bottom-up S3 priorities with EU strategic priorities
- Create synergies and complementarities with EU Programmes



**Increase the competitiveness and resilience of EU value chains.**



European  
Commission



# Our Concept

## Deploy first time demonstrators for New (Bio)LNG value chains



## Where can we have an impact?

Food waste



Food logistics



Heavy Emitters



Riverine/Inland shipping





## Our Concept

Deploy first time demonstrators for  
New (Bio)LNG value chains



## Involved Regions

Lombardy (IT)

Lower Austria (AT)

Värmland (SE)

Slovenia (SI)

Apulia (IT)

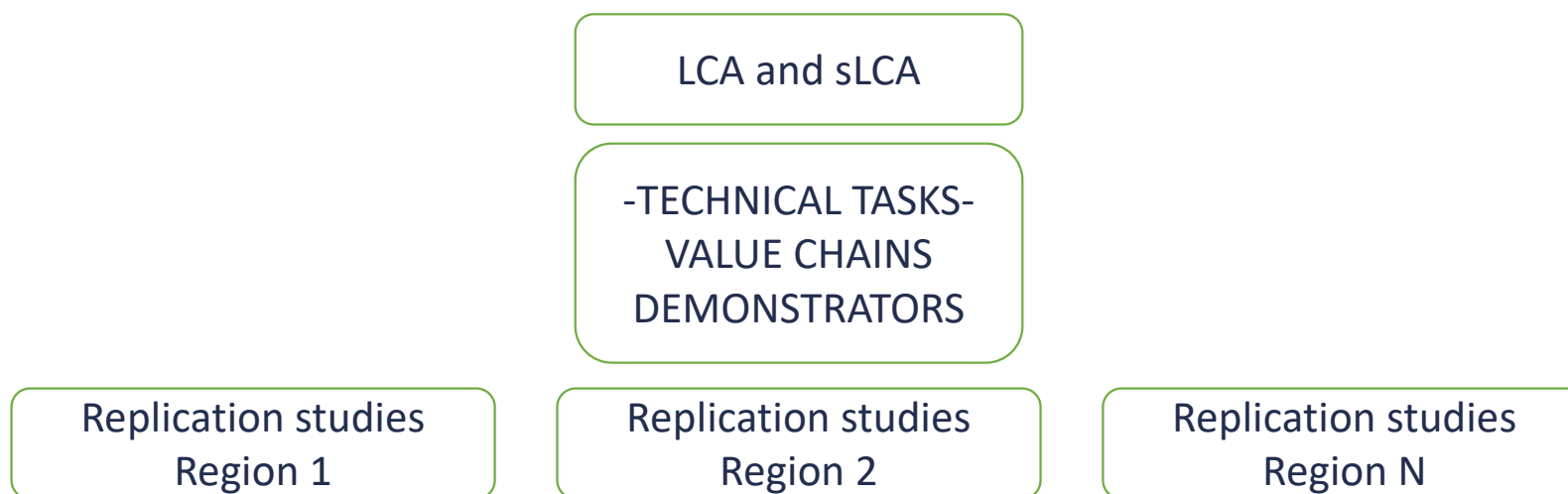
Andalusia (ES)

Baden-Württemberg (D)



# Our Concept

## Deploy first time demonstrators for New (Bio)LNG value chains





**Many thanks for your  
attention**



## **Thanks to**

**Ilaria Re** and **Martina Ferrini**, LGCA

**Matteo De Campo**, Gruppo Maganetti

**Anita Tregner Mlinaric** and **Enrico Giorelli**, Ecorys

**Maja Ferlinc** and **Drasko Veselinovic**, SBRA

**Maurizio Bettiga**

Lombardy Green Chemistry Association

e-mail: [maurizio.bettiga@italbiotec.it](mailto:maurizio.bettiga@italbiotec.it)