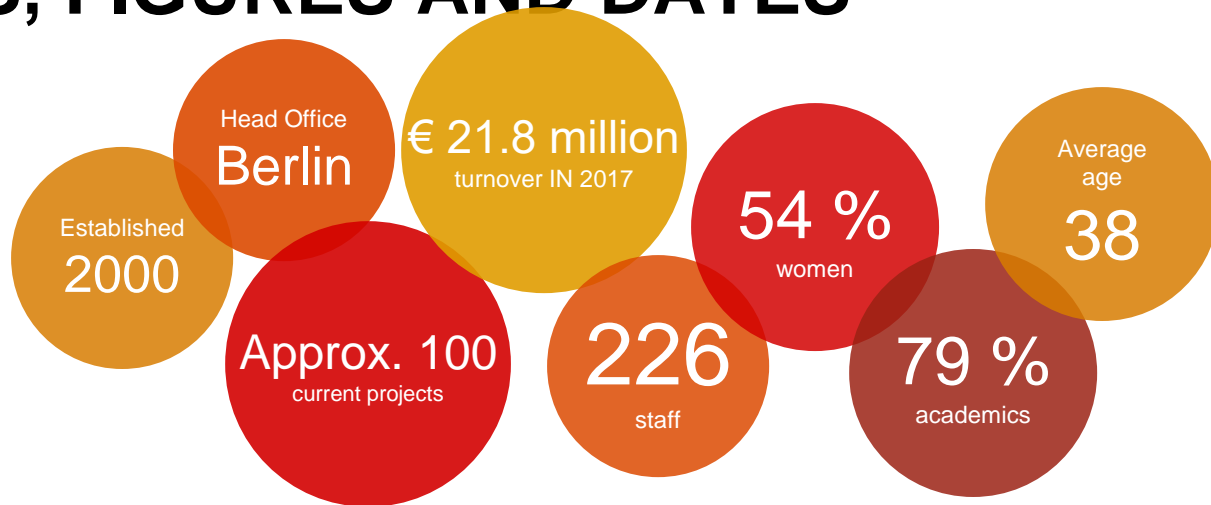


Stephan Bowe, 20.09.2018, Dublin

# BLUEPRINT FOR AN IRISH GREEN GAS REGISTRY

# GERMAN ENERGY AGENCY FACTS, FIGURES AND DATES



## dena in dialogue in 2017:

- 4.5 million page visits on dena websites
- Distribution of 170,000 publications
- Over 2,700 printed articles and around 830 articles in online media
- Around 5,600 visitors to dena events

# OUR EXPERTISE IN GREEN GASES



# DIPL.-ING. STEPHAN BOWE



## Senior Expert Bioenergy

- Environmental Engineer (TU-Berlin)
- @ dena since 2010



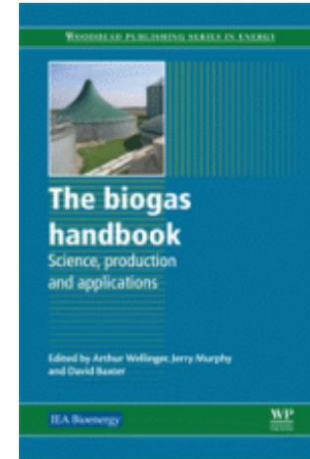
## Establish & operate Biogasregister Deutschland

- International registry cooperations (DK & AT)



## Article in „The Biogas Handbook“ / IEA Bioenergy Task 37

- Woodhead Publishing Series in Energy: „Market development & certification schemes for biomethane“



# DOES IRELAND NEED A GREEN GAS REGISTRY?

## ➤ Ireland has a national vision for a low carbon energy system

- Green gas production a substantial contribution option

## ➤ Support & obligations for green gases in Ireland

- RHI support planned for the future

## ➤ RED II / revised Renewable Energies Directive

- National registry for green gases required in case of government support for green gases
- Mass balancing inside the gas grid („consignment“)

## Definitions & requirements for Guarantees of Origin

# MASS BALANCING INSIDE THE GAS GRID



**Consignment-by-consignment basis**



**Input-output**



**Physical delivery vs. Mass balancing vs. Book&claim**

# ELEMENTS OF A GUARANTEE OF ORIGIN



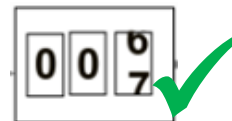
## Proof of Origin

- Which green gas production plant did this green gas originate from?



## Proof of Amount

- How much green gas was produced/used?
- When was it produced/injected?



## Proof of Quality

- Sustainability criteria? GHG-Value? Plant size? ...



# THE GREEN GAS CERT PROJECT

## ➤ Project Output

- Certification System
- Registry Blueprint
- 2 Stakeholder Workshops:  
Present outcomes to stakeholders

➤ See more at [www.greengascert.ie](http://www.greengascert.ie)

## Project facts

➤ Project duration: Apr '17 – Apr. '18

➤ Financing



➤ Consortium



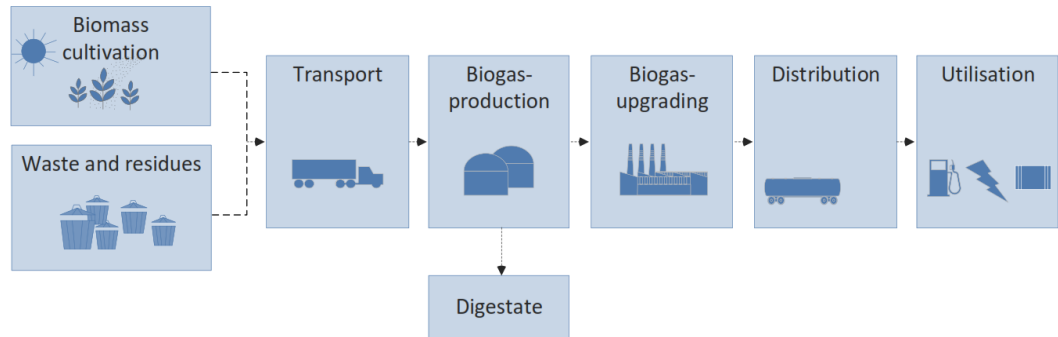


# CERTIFICATION SYSTEM (1/2)



## DBFZ

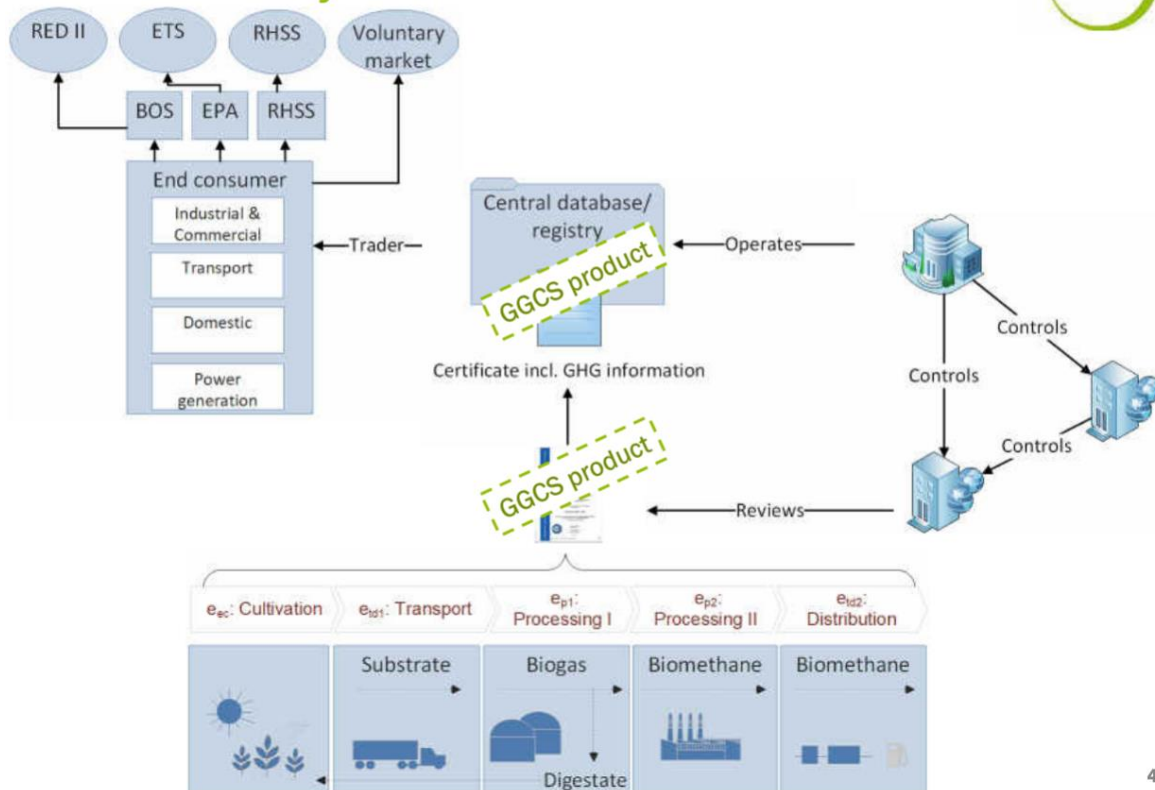
- Calculation tool
- Pilot certificate
- According to RED



$$E = e_{ec} + e_l + e_p + e_{td} + e_u$$

$$- e_{sca} - e_{ccs} - e_{ccr} - e_{ee}$$

# CERTIFICATION SYSTEM (2/2)



Allocation of co-products

Allocation of emissions between biomethane and digestate

Calculation of allocation factor

Unit biogas, t/dry kg	20.4
Unit digestate-dry, t/dry kg	2.8
Mass biogas, kg	200.0000
Mass digestate, kg	21.70000
Allocation factor	0.90

90.2 % of the emissions for cultivation, transport and biogas production are allocated to biomethane

Emissions from cultivation:	0.00	g CO <sub>2</sub> eq/t FM	x 0.90	0.00
Emissions from land use changes:	0.00	g CO <sub>2</sub> eq/t	x 0.90	0.00
Emissions from biogas production:	0.70	g CO <sub>2</sub> eq/t FM	x 0.90	0.63
Emissions from biogas processing:	0.20	g CO <sub>2</sub> eq/t FM	x 1	0.20
Emissions from feedback transport:	0.00	g CO <sub>2</sub> eq/t FM	x 0.90	0.00

What is the final use of the biomethane?

Transportation fuel  
 Generation in CHP  
 Combustion in boiler

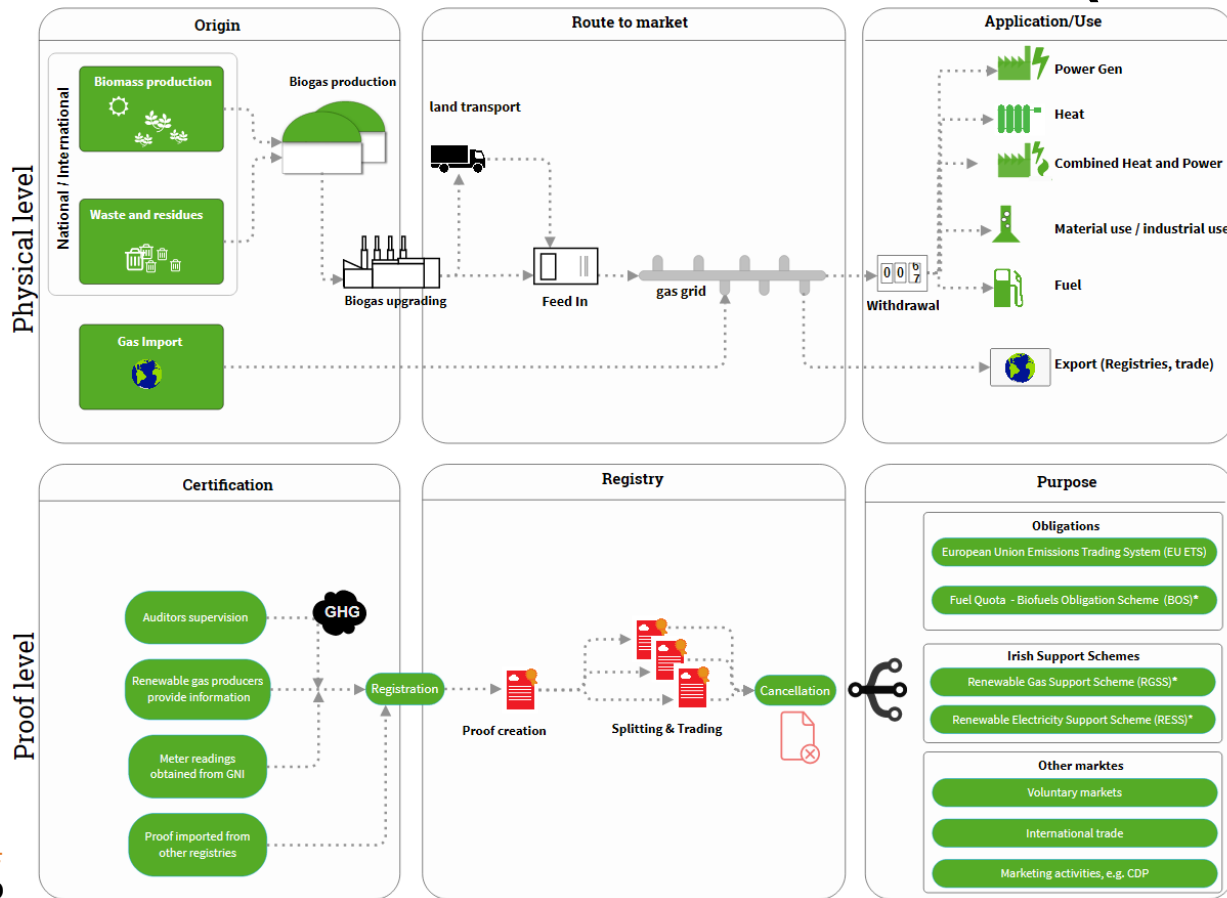
Calculation of GHG savings from biomethane use pure fossil fuel use

Emissions from biogas, gCO <sub>2</sub> eq/t biogas	0.63
Fossil fuel comparative, gCO <sub>2</sub> eq/t fossil fuel	0.63
GHG savings, %	50
Minimum GHG savings, %	50

GHG saving =  $\frac{e_{fossil} - e_{biogas}}{e_{fossil}} \times 100 = 50\%$

GHG saving criteria fulfilled

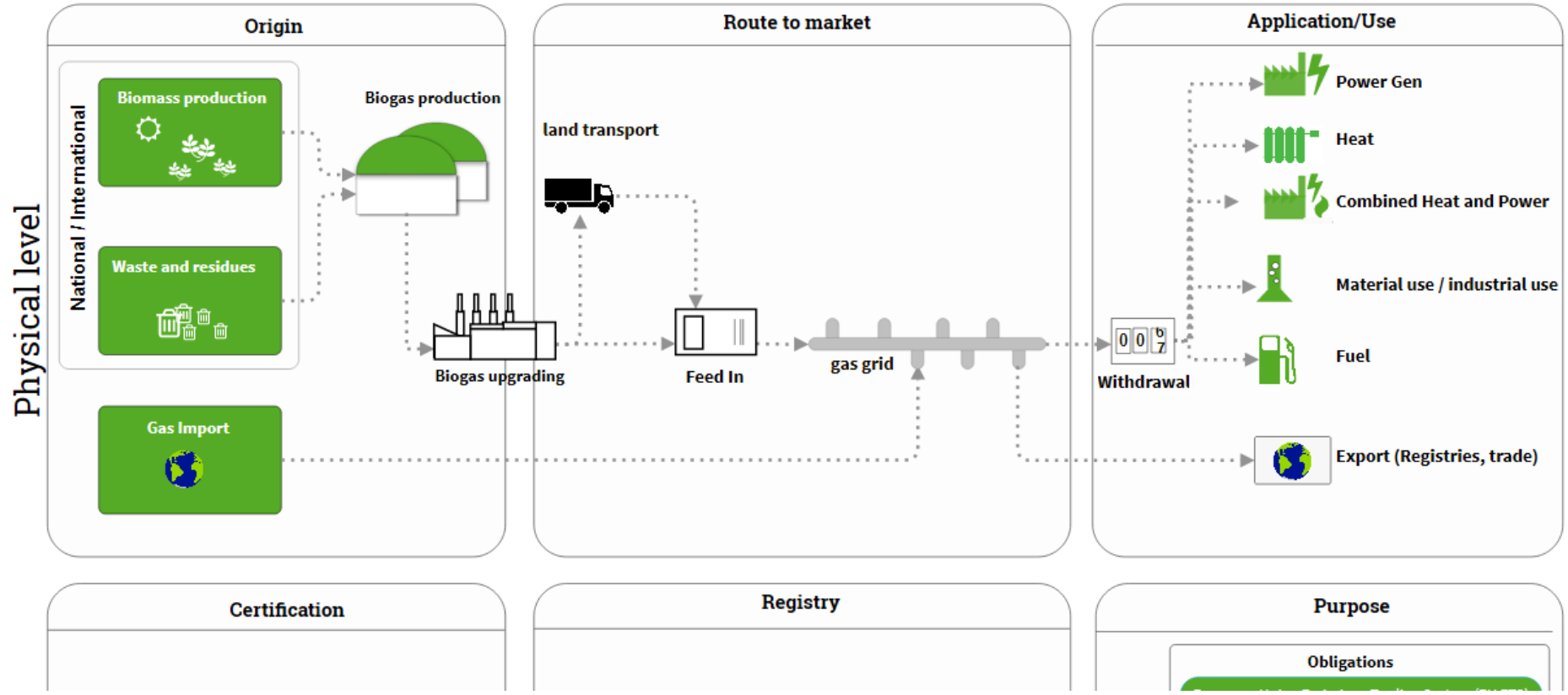
# GREEN GAS REGISTRY BLUEPRINT (IRELAND)



\* schemes contribute to RED-targets and therefore require the processes to comply with RED requirements

# GREEN GAS REGISTRY BLUEPRINT (IRELAND)

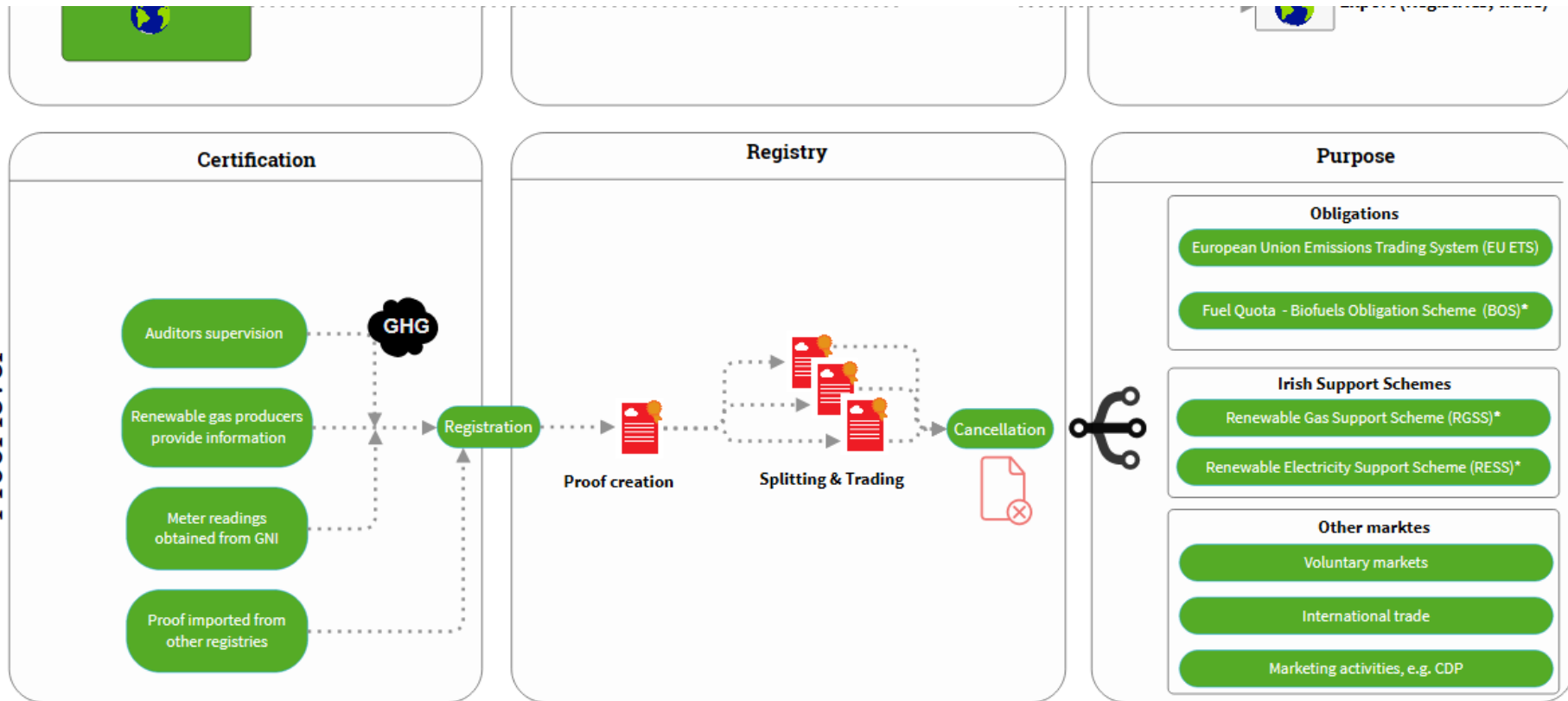
## PHYSICAL LEVEL



# GREEN GAS REGISTRY BLUEPRINT (IRELAND)

## PROOF LEVEL

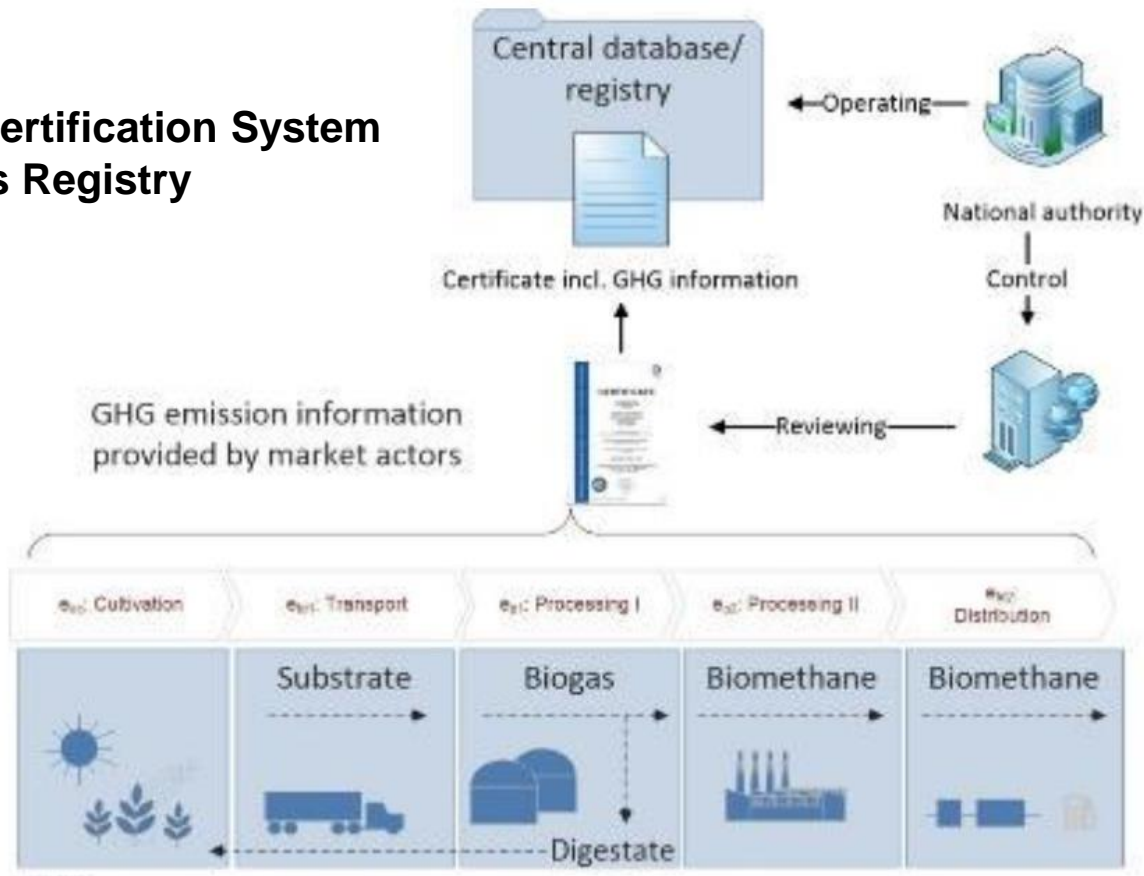
Proof level



\* schemes contribute to RED-targets and therefore require the processes to comply with RED requirements

# CERTIFICATION SYSTEM & REGISTRY

## ➤ Coordinated Certification System and Green Gas Registry



# CONCLUSIONS

## Ireland is ready for biomethane

- National vision
- Industrial & agricultural potential

## RED II sets framework for green gas support

- Green gas registry concept has been drafted in the GGCS Project
- Certification system blueprint may support legislative process

## Ireland needs a green gas registry as soon as government support for green gases is established

# THANK YOU FOR YOUR ATTENTION.

Stephan Bowe

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[www.dena.de](http://www.dena.de)