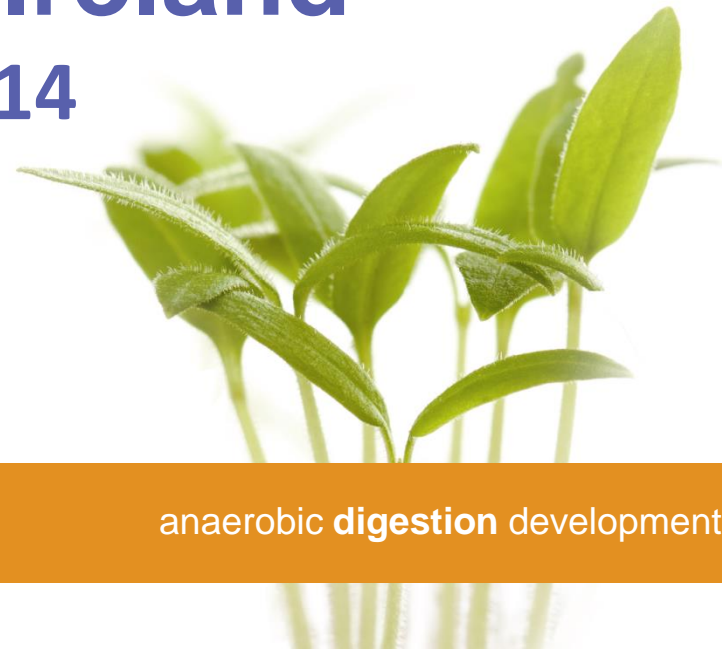


# **Practical Experiences of developing AD projects on the Island of Ireland**

**6<sup>th</sup> February 2014**



# Outline of Presentation

1. Company Overview, Benefits and Drivers of AD
2. Development of Anaerobic Digestion Projects
3. Industry Issues

# 1. INTRODUCTION - Company Overview Benefits and Drivers of AD



# Company Overview

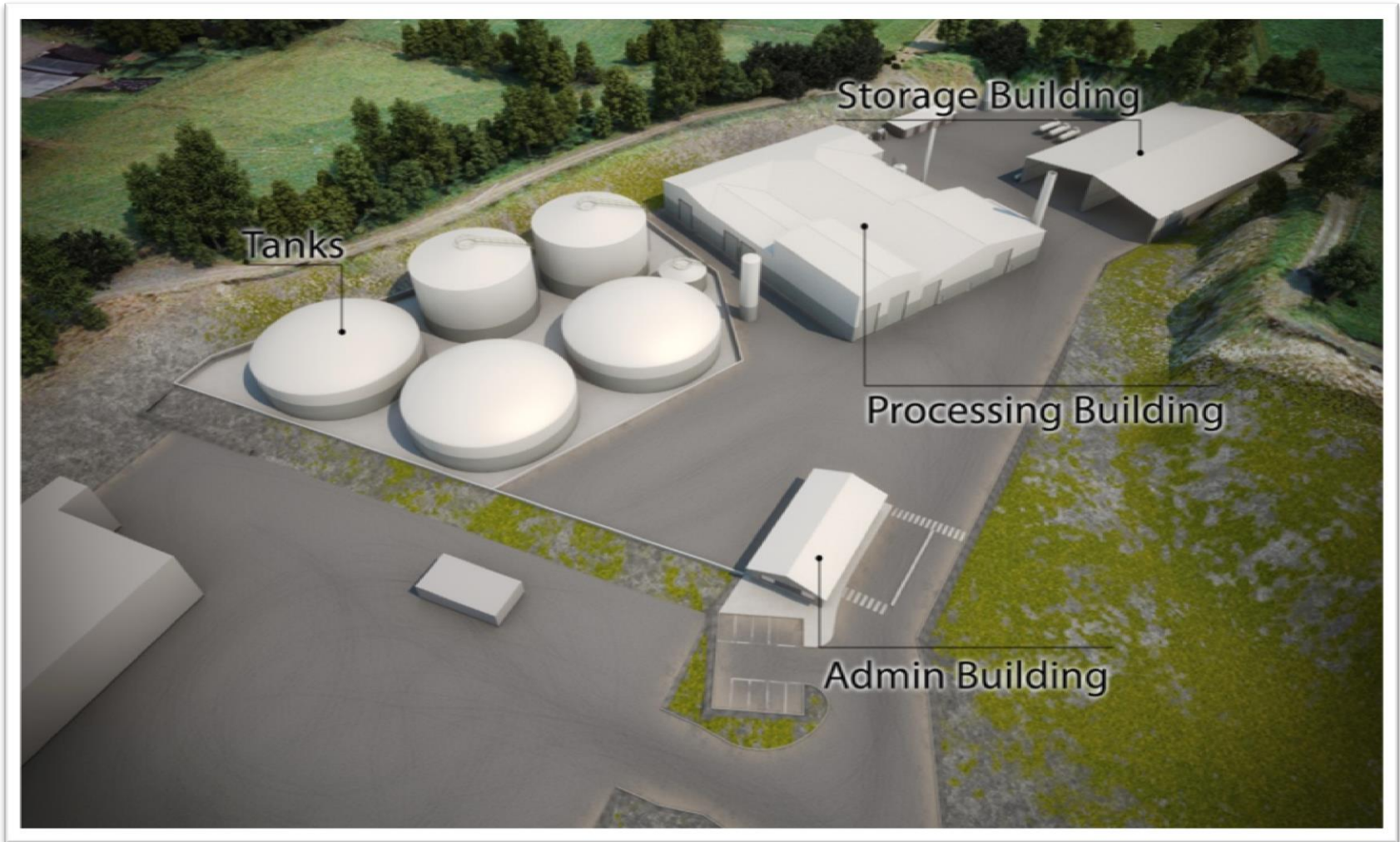
- Stream BioEnergy (SBE) was established to develop agricultural and industrial scale Anaerobic Digestion (AD) infrastructure in Ireland
- The management team has over 20 years experience of developing, financing, building and operating renewable energy projects throughout Europe
- The SBE team is very experienced in the development of renewable energy and waste projects in Ireland
- Currently in the process of developing industrial scale AD projects in Dublin and Cork
- Developing Poultry Litter AD plants in Northern Ireland
- Developing several agricultural AD plants in Northern Ireland

# Dublin Plant





# Ballymena Plant



# Benefits of Anaerobic Digestion

The use of Anaerobic Digestion technology can be beneficial for a variety of reasons including:-

- ***Landfill Directive Targets***
  - The stabilisation of organic waste enabling pathogen reduction and odour control of the material
- ***Renewable Energy and Climate Change Targets***
  - The production of renewable energy by capturing and using GHG thus preventing emission to atmosphere. A methane and carbon dioxide rich biogas is produced which can be used to produce electricity and heat
  - Reduces reliance on fossil fuels and provides security of energy supply
- ***Environmental Benefits***
  - Reduces GHG emission
  - Reduces ammonia emissions
  - Reduces odour and aerosol emissions
  - Reduces loss of nitrates and pathogens to surface and groundwater

# Government Initiatives & Drivers for AD

## Rol

- Landfill Diversion Obligations - The Landfill Directive (1999/31/EC)
- Landfill Taxes
- EC Waste Framework Directive
- Household Food Waste Regulations 2013
- Commercial Food Waste Regulations 2009
- National Waste Management Policy
- Climate Change Strategy
- Energy White Paper
- REFIT

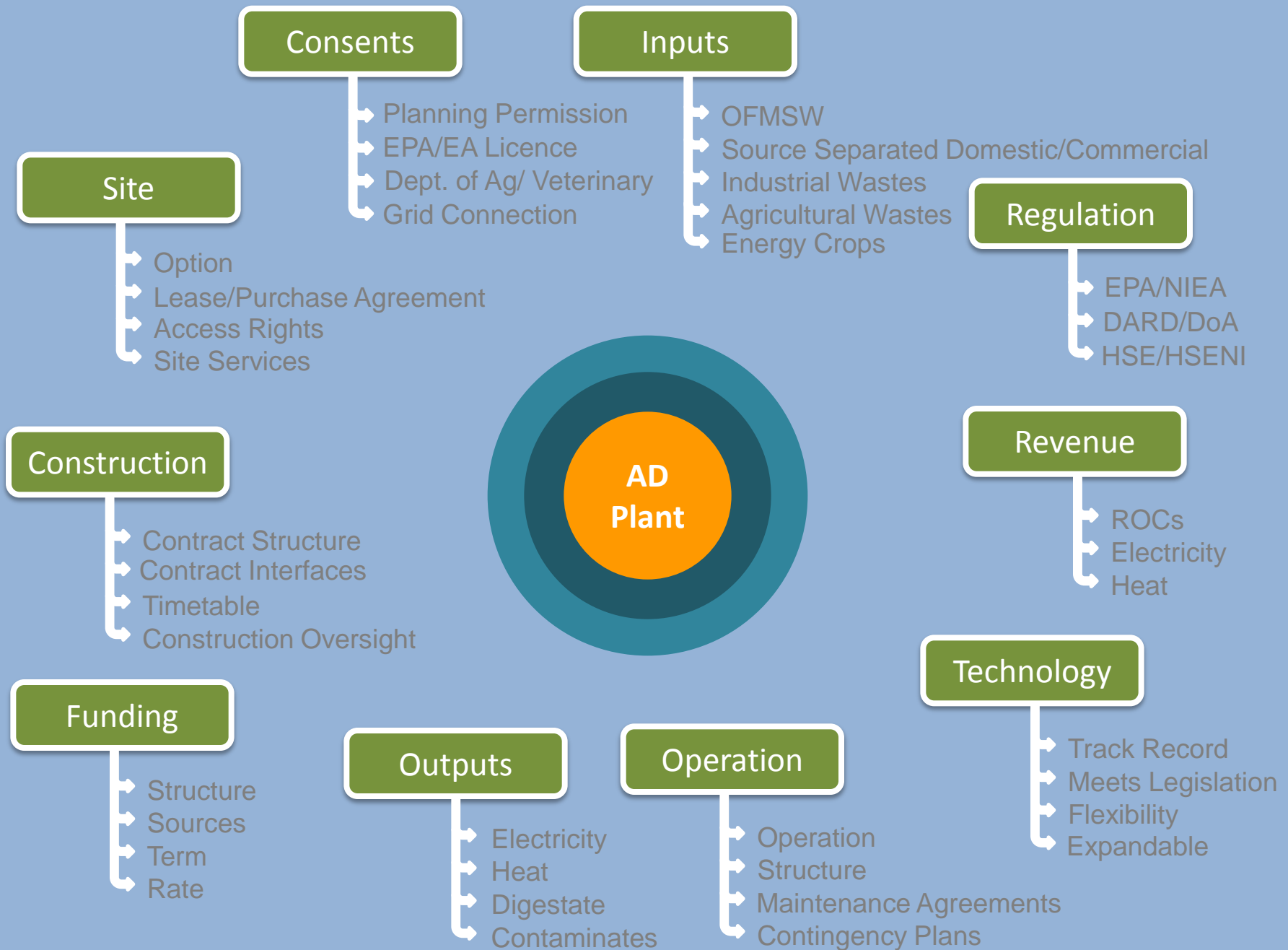
## NI

- Landfill Diversion Obligations - The Landfill Directive (1999/31/EC)
- Landfill Taxes
- EC Waste Framework Directive
- Waste Policy - Draft revised Northern Ireland Waste Management Strategy
- Climate Change Act 2008
- Renewable Energy Targets
- NIROCs

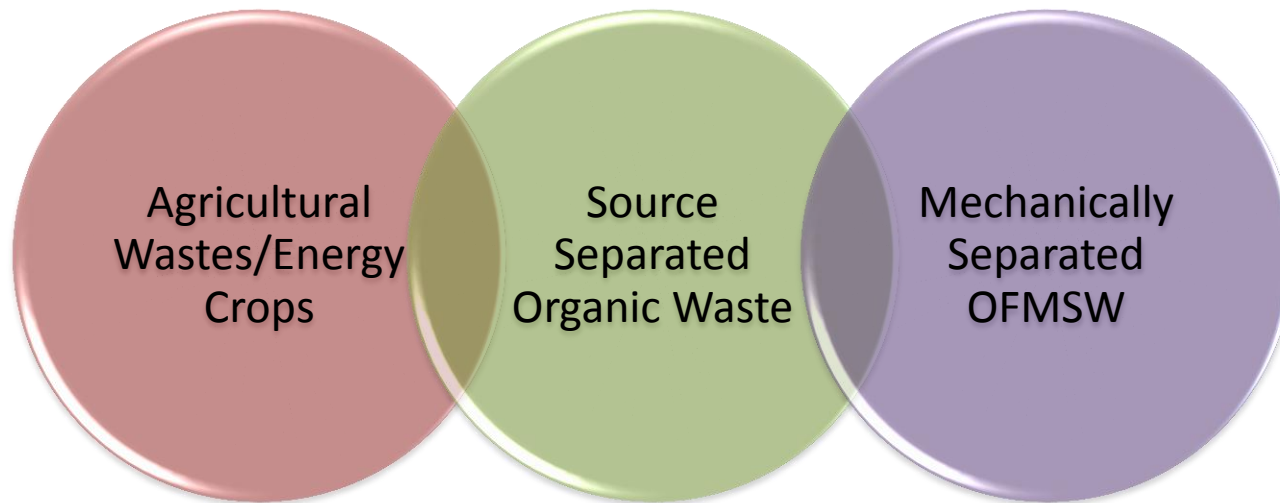


## 2. DEVELOPMENT OF ANAEROBIC DIGESTION PROJECTS





# AD Plants Divided by Feedstock



Domestic/  
Commercial  
Waste

Dry  
Recyclables

Landfill/  
Incineration

Dry  
Recyclables

Landfill/  
Incineration

Landfill/  
Incineration

Three Bin  
Collection

Two Bin  
Collection

Single Bin  
Collection

Source Separated  
Organics

Residual  
Waste

Residual  
Waste

Residual  
Waste

Mechanical Treatment Plant

Dry  
Recyclables

Organic  
Fines

Biological  
Treatment  
Plants

Anaerobic  
Digestion Plant

Composting Plant

Rendering Plant

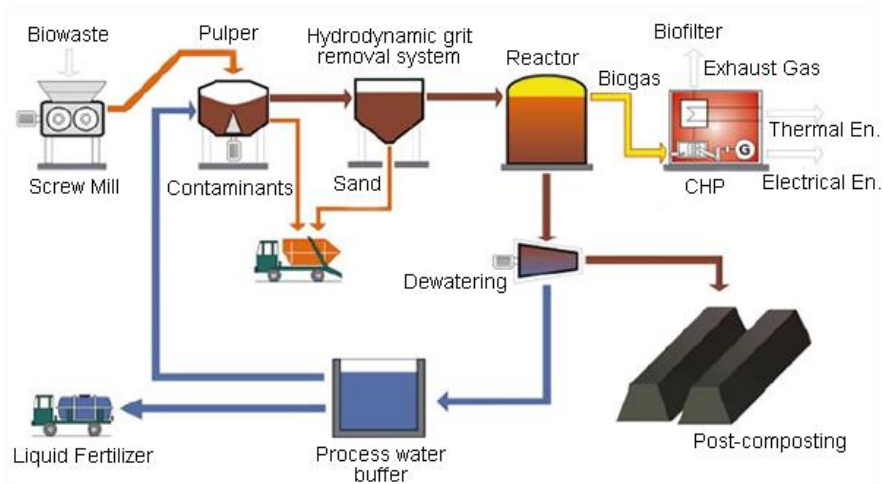
Digestate  
from SSO

Digestate  
from OF

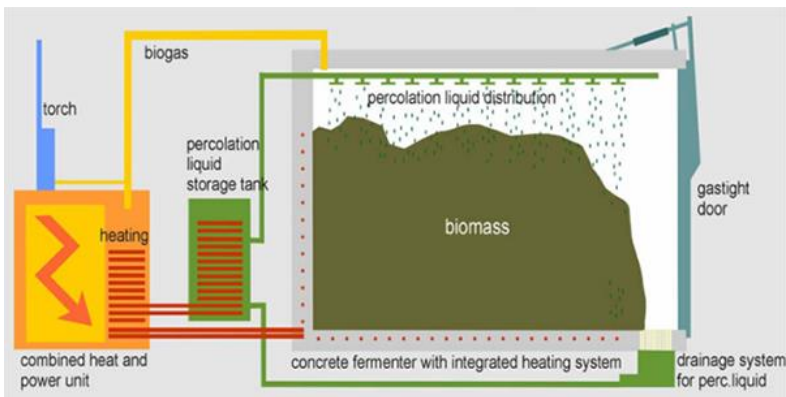
anaerobic **digestion** development

# AD Processes & Configurations

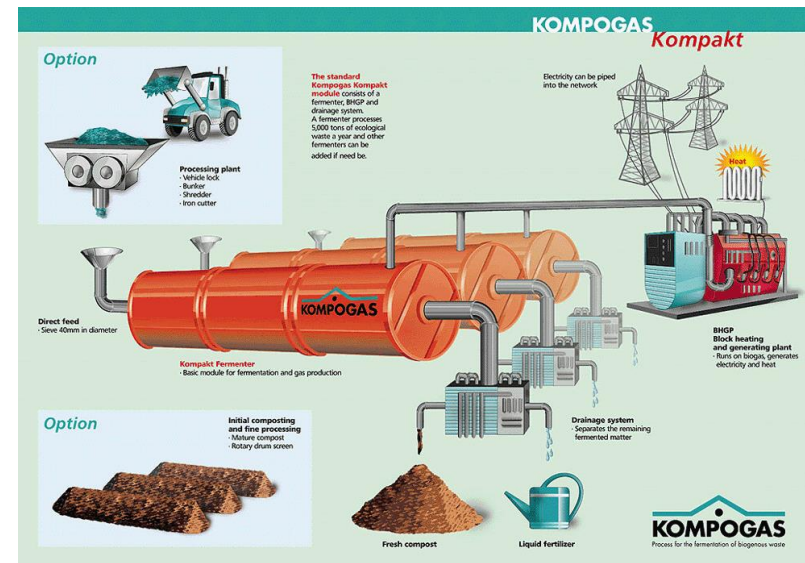
## Wet Anaerobic Digestion



## Dry Batch Anaerobic Digestion



## Dry Continuous Anaerobic Digestion



### 3. Industry Issues





## Why is there no large scale uptake in AD in NI?

- Attractive electricity payments
  - NIROCs level to be reviewed later this year
  - ROC scheme to be closed to new entrants in 2017
- Lots of plants in Planning
  - Nearly all on farm plants processing energy crops
- Time lag after incentive change
- Grid Connection very difficult/expensive
- Lack of knowledge in the sector
- MSW largely controlled by County Councils
  - Some long term contracts with composters
  - ARC21 / NWRWMG projects
- Financing environment difficult
  - Indigenous banks restricted lending
  - On Farm Projects too small for project finance
  - Equity funding is expensive

# Why is there no large scale uptake in AD in RoI?

Lots of reasons!

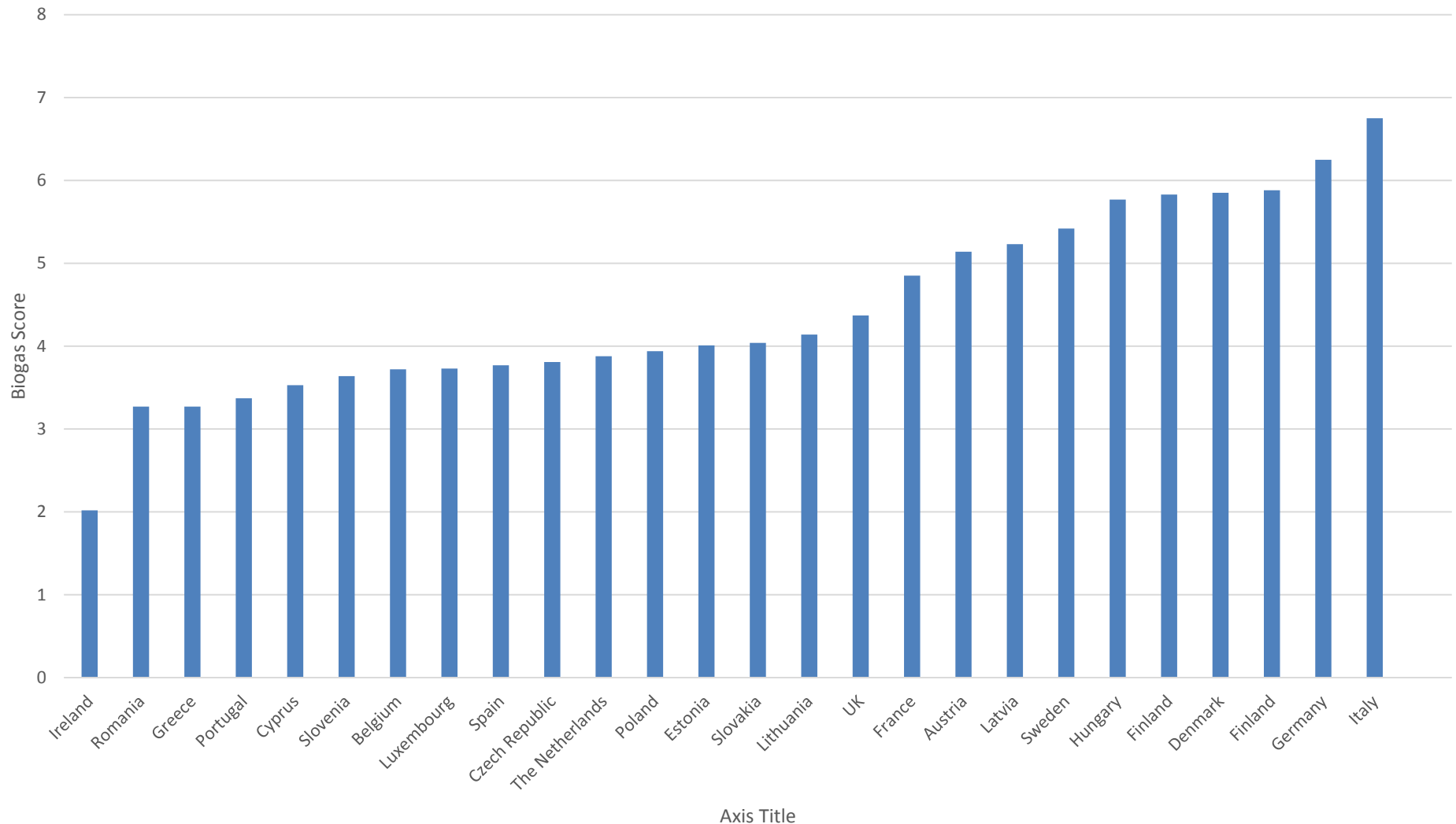
- Complex planning, licencing and consents environment
  - 5 state agencies and 3 government departments!
- Government waste policy uncertainty
  - Waste industry unstable
  - Long term contracts difficult to conclude
- Lack of knowledge in the sector
- Financing environment difficult
  - Indigenous banks restricted lending
  - Foreign lenders nervous about lending into Ireland
- HECHP difficult to achieve

But the main reason.....

- Current electricity tariffs make the returns very low

- Prepared by the Cross Border Bioenergy Working Group on Biogas technologies  
[www.crossborderbioenergy.eu](http://www.crossborderbioenergy.eu)
  - **General country profile:** Includes geographical and climatic conditions, demography and logistical infrastructure.
  - **Policy aspects:** This category includes criteria like NREAP and political will in general to develop the RES-sector.
  - **Feedstocks:** Includes the biomass availability potential.
  - **Economic conditions:** Details the price levels, subsidies, guarantees and support schemes that can affect the viability of specific bioenergy technology applications.
  - **Market attributes:** Highlights the energy market dimensions and the importance of replaceable, incumbent technologies as well as transferable logistics and access to the customer base through established networks.
  - **Regulations:** Refers to additional mandates, rules and authorisation procedures that have an impact on the stability and practicality of operations in the bioenergy industry such as efficiency standards or pollution limits.
  - **Project financing:** Addresses elements of export feasibility such as a good credit market in the country, good conditions as a target for export as reflected in the Euler-Hermes Rating for instance.
  - **Readiness for uptake:** Includes the availability of support such as industry associations and it also reflects the reality of the potential customer base in terms of suitable awareness about and willingness to adopt technology, which in turn relates to maturity of the market.

# Cross Border Bioenergy Working Group on Biogas technologies – Overall Country Score



- Prepared by the Cross Border Bioenergy Working Group on Biogas technologies  
[www.crossborderbioenergy.eu](http://www.crossborderbioenergy.eu)
  - Basic country data
  - Energy policy
  - Feedstocks
  - Economic conditions
  - Market environment
  - Regulation
  - Project financing
  - Readiness for uptake

# EU Handbook - Biogas Markets

Prepared by the Cross Border Bioenergy Working Group  
on Biogas technologies October 2012

'Scoring of the energy policies in the biogas sector'



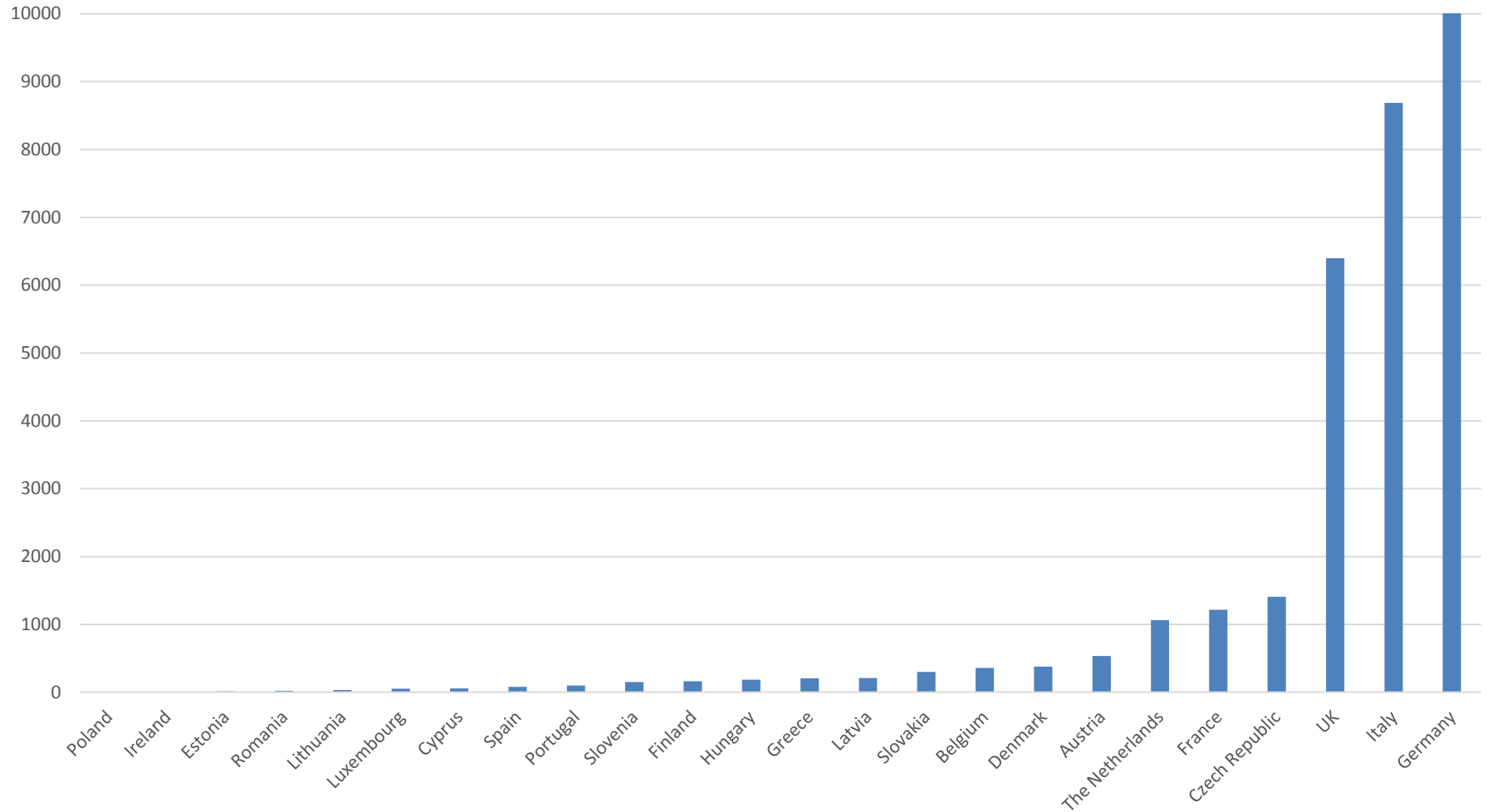


# Examples of AD feed in tariffs in Europe

| Country          | Price for electricity € per kwh    |
|------------------|------------------------------------|
| Germany          | €0.18 – 0.28                       |
| Italy            | €0.22 – 0.28                       |
| United Kingdom   | €0.18 – 0.25                       |
| Northern Ireland | €0.22 – 0.28                       |
| Austria          | €0.16 – 0.18                       |
| France           | €0.16 (30% capital grant)          |
| Latvia           | €0.15 – 0.20 (linked to gas price) |
| Czech Republic   | €0.16 – 0.18                       |
| Ireland          | €0.10 – 0.15                       |

# Electricity Generated from Biogas

Generated electricity [GWh]



# REFIT

## Changes needed to REFIT

- Change HECHP requirements for AD
  - Separate payment for heat
- Increase REFIT payment in line with other European countries
  - Either feed in tariff or premium tariff
- Drop the Cap so the same quantum of funding is required
  - No additional cost to state or electricity users
  - Some projects are better than no projects!

## Timing

- Realistically projects need to be in construction this year under current REFIT scheme to qualify
- New scheme needs to be in place before the end of the year to give stability to the market

## Grandfathering

- Projects under current scheme need the option to move to new scheme if the tariff is higher for the remainder of their support period



THANK YOU



anaerobic **digestion** development