



Action plan for Swedish bio energy companies - Ireland -

Version 1.0

Swedish Trade Council (STC)
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This report was made by the Swedish Trade Council

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Summary market prioritization bio energy

- There is a growing global demand for renewable energies
- There are many opportunities and in order to succeed the bio energy companies have to focus and have a long term commitment on the most promising markets
- In order to shorten lead times to business for Swedish bio energy companies the Swedish Trade Council analyzed 25 selected markets
- Nine markets were identified as the most promising; Austria, Canada, Czech Republic, Ireland, Poland, Romania, Spain, United Kingdom and USA
- In the next step a deeper market analysis and an action plan for each prioritized market was conducted
- This is the action plan for the Irish market



Why prioritize?

- focus and long term commitment are essential to success

Entering a new market requires a substantial commitment in terms of time and money especially in relation to a small company's resources

Before entering a new market the following factors need to be evaluated:

- Customer demand and buying criteria
- Laws & regulations
- Business climate & culture
- Local and international competition
- Access to financing

When entering a new market the following need to be created:

- Sales & distribution network
- Local references
- Customer contacts
- Brand recognition
- Local networks (Swedish companies, sub-suppliers, consultants, politicians, etc)

Substantial scale and learning curve effects exist per country



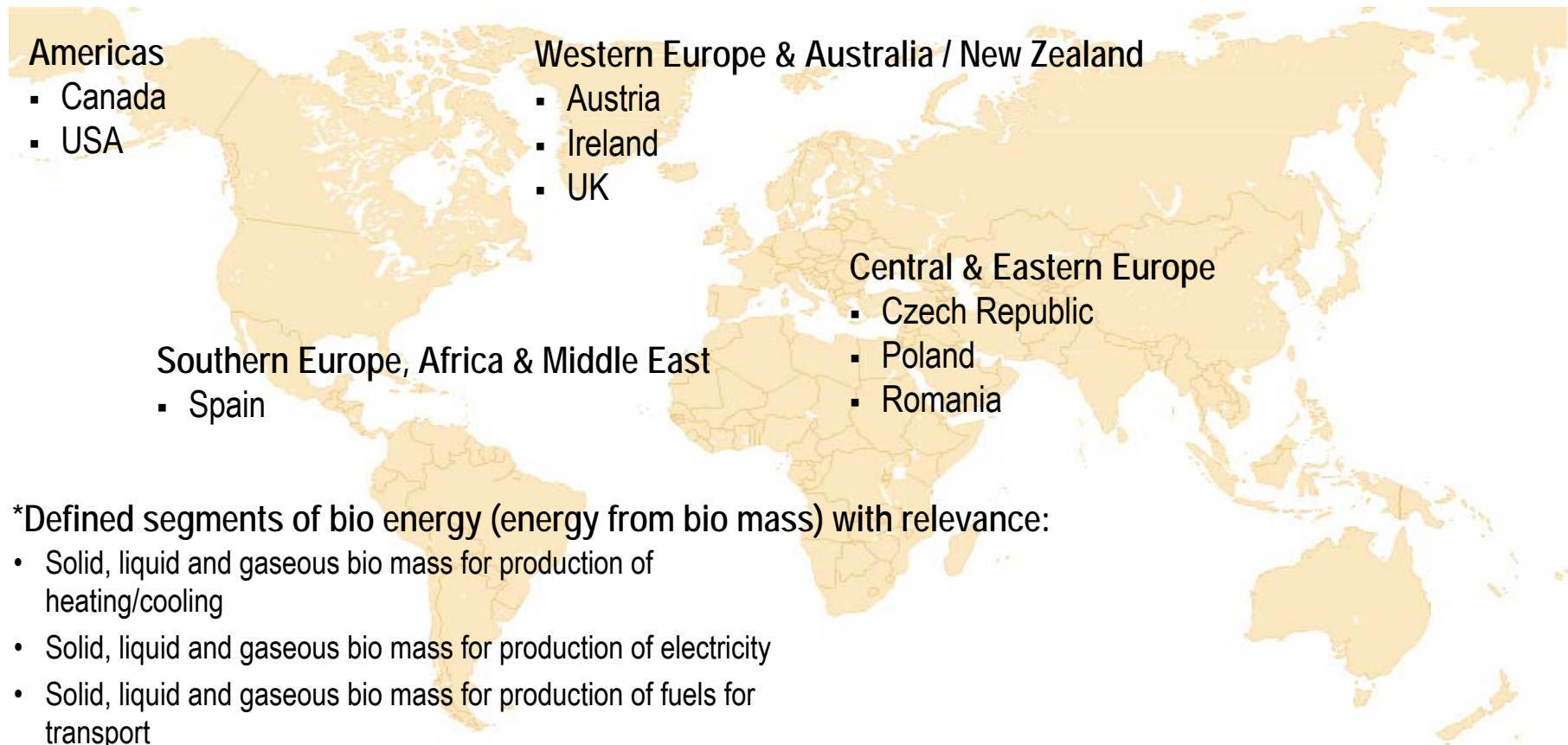
The 25 countries are found in five regions*

- identified through company preferences, industry experts, Svebio





9 geographical markets were identified for further analysis and development of an action plan in the field of bio energy*



*Defined segments of bio energy (energy from bio mass) with relevance:

- Solid, liquid and gaseous bio mass for production of heating/cooling
- Solid, liquid and gaseous bio mass for production of electricity
- Solid, liquid and gaseous bio mass for production of fuels for transport



Three tracks identified

- different characteristics for each track

"EAST TRACK"

- Czech Republic
- Poland
- Romania

Characteristics:

- New EU-member
- District heating
- Mainly public financing
- Based on opportunities waiting to be explored

"WEST TRACK"

- Canada
- Ireland
- Spain
- UK

Characteristics:

- Bio energy for transport + electricity production
- Domestic heating/cooling
- Public and private financing
- Based on demand from markets

"SPECIAL TRACK"

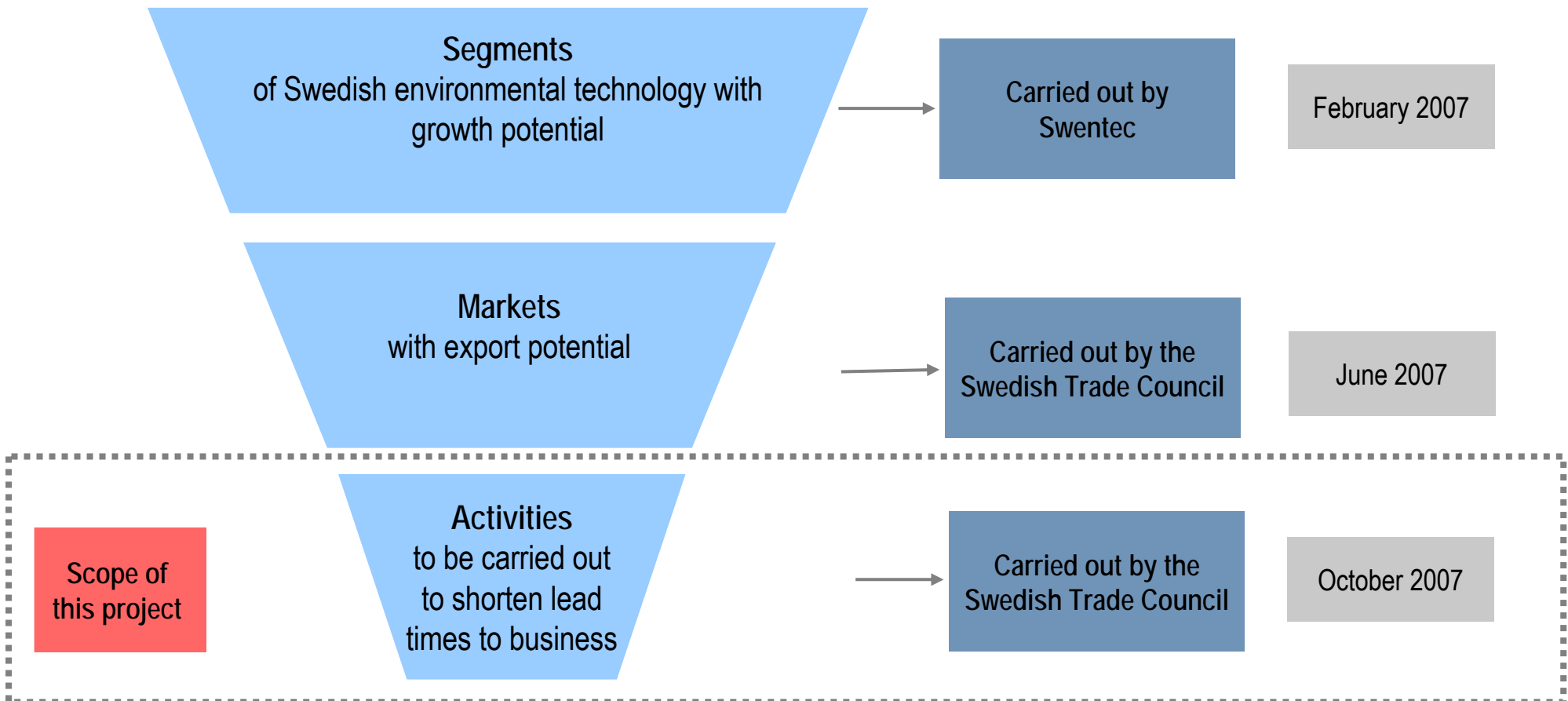
- Austria
- USA

Characteristics:

- Window of opportunity open now
- Very advanced in certain segments, i.e. bio fuels for transport
- Public and private financing
- Based on bench marking opportunities

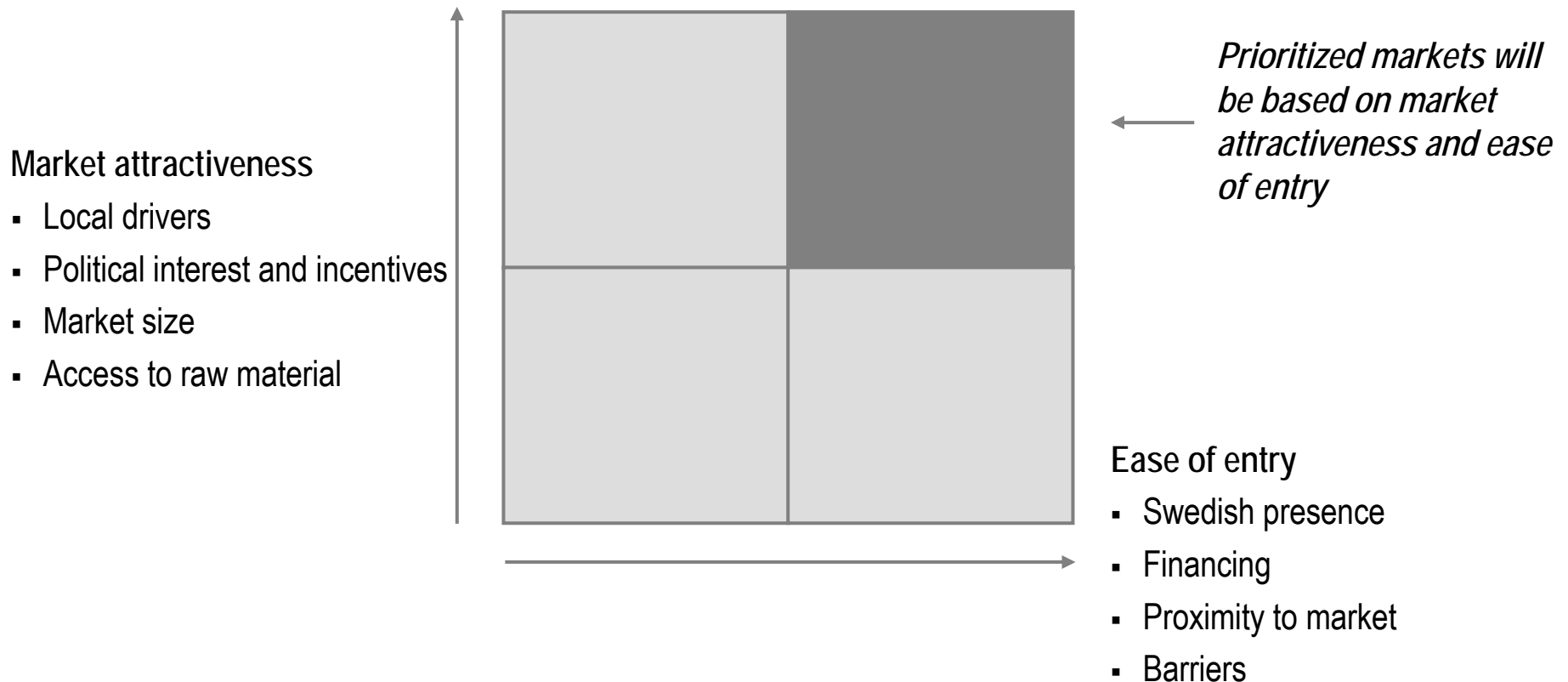


Funnel approach to zoom in on segments, markets and activities with largest potential for export



In the last report markets with most potential (market attractiveness vs. ease of entry) were identified with Svebio

- this project focuses on WHEN and HOW to enter the market



This project entails 3 segments - The company strategy needs to be adapted accordingly



Project plan: Activities

Market analysis

Activities

- Local interviews with bio energy companies, experts and organizations

Deliverables

- Answered key questions
- Local action plans for the 3 sub segments

Aggregated analysis

Activities

- Analysis of local reports and action plans
- Development of action plans for regions and or types of companies

Deliverables

- Action plans for regions and or types of companies
- Action plan for a central Swedish initiative

Seminars

Activities

- Seminars in Stockholm and Gothenburg

Deliverables

- Conducted seminars

This process will assure well founded strategies / action plans



Definitions and abbreviations

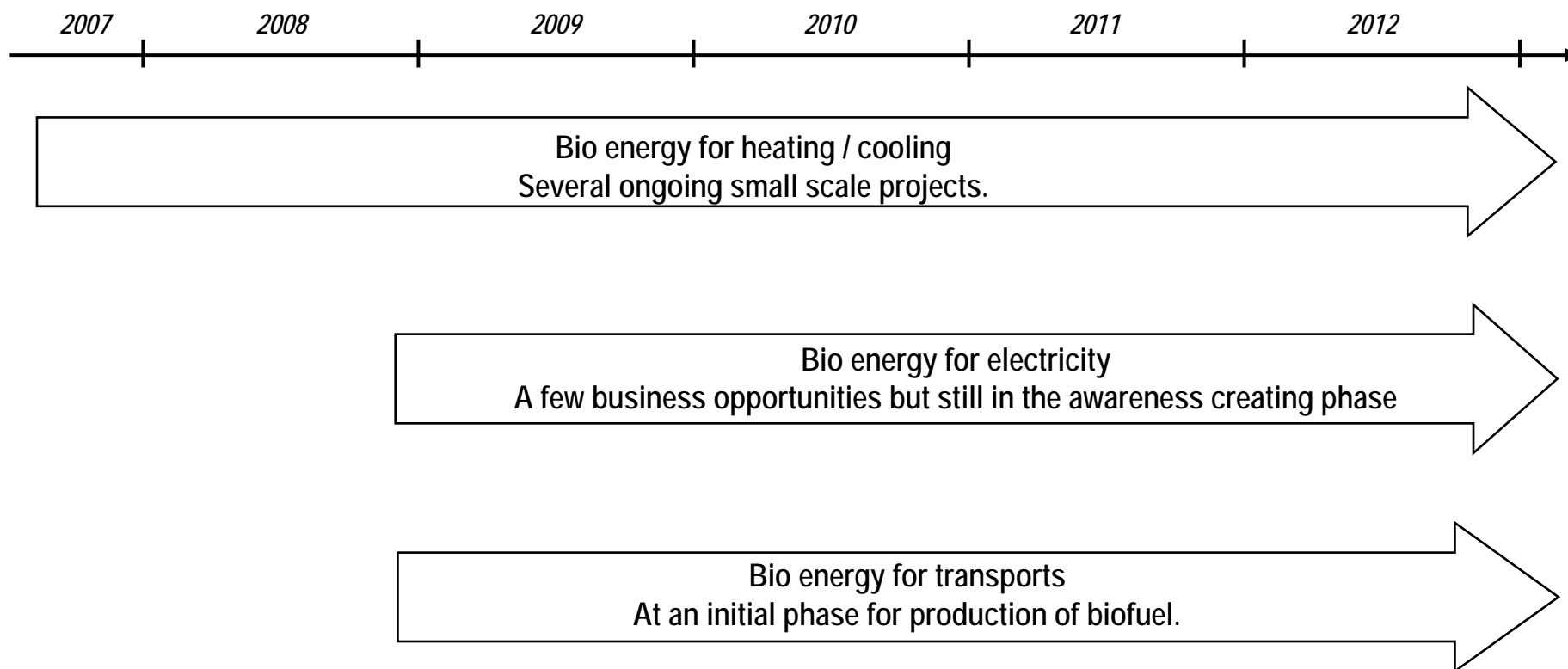
Term / abbreviation	Definition
Environmental technology	All technologies whose use is less environmentally harmful than relevant alternatives. Environmental technology are according to ETAP categorized into the following areas; air pollution control, bio energy, district cooling/heating, energy efficiency, environmental consultants, environmental training & information, hydro power, noise protection, soil remediation, solar energy technology, sustainable building, systems/control/monitor engineering, transportation, waste management & recycling, water & wastewater treatment, wave power, wind energy technology
Bio energy	Bio energy is energy from biomass. Includes solid, liquid, gaseous bio fuels for production of heating/cooling, electricity and fuel for transport.
RES	Short word for renewable energy sources, normally wind, solar, bio energy, hydro etc.
Market	In this report a market is defined as a geographical country.

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IMMEDIATE BUSINESS OPPORTUNITIES ARE TO BE FOUND WITHIN THE HEATING SECTOR..



...while the electricity and the transport sector involve smaller opportunities at present but more defined business opportunities lies further ahead as these segments mature.

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THE DEVELOPMENT OF THE BIOENERGY SUPPLY CHAIN IS STRONGLY EMPHASIZED IN IRELAND...

- Ireland is a country that today is heavily dependent on fossil fuels. About 98% of Ireland's final energy demand is produced by burning oil, peat or natural gas. Nuclear power is forbidden by law in Ireland.
- The target set for Ireland in connection to the Kyoto protocol has proved to become extremely challenging as based on current "business as usual" Ireland's emission of carbon dioxide will grow in excess of 25% between 1990 and 2010. (The limit of 13% was reached already in the year 2000.)
- Ireland's huge dependency on fossil fuels in combination with the fact that Ireland is a net importer (total energy import dependency was 87% in 2004) exposes the economy to the volatile international prices, which in turn can have negative effects on Ireland's economic growth.

- Sustainable Energy Ireland (SEI), formerly Irish Energy centre, was founded in 2002 by the Irish government as Ireland's national energy agency. SEI's core assignment is:
 - Development and deployment of renewable sources of energy and CHP
 - Reducing the environmental impact of energy production and use, particularly in respect of carbon dioxide emissions.

...to avoid a simultaneous situation as regards today's heavy dependency on imports of oil and natural gas.

GRANT SCHEMES TARGETING THE WHOLE SUPPLY CHAIN OF BIOMASS FROM CULTIVATION TO ACTUAL END PRODUCTS

DEPARTMENT OF AGRICULTURE

➤ BIOENERGY SCHEME FOR WILLOW AND MISCANTHUS

- Introduced in February this pilot scheme provides grants to landowners that covers part of the cost of establishing willow and miscanthus crops.

- Farmers that already grow willow or miscanthus can get grants of €45 per hectare. Landowners that establish miscanthus or willow crops for biomass can get 50% of the approved costs as a grant (maximum €1.450 per hectare)

➤ WOOD BIOMASS HARVESTING SCHEME

-The scheme was introduced under the National Development Plan 2007-2014 to stimulate the production of wood chip as a fuel.

- Grants are provided for mobile wood chip units (max €46.000 or an amount equivalent to 40 % of the actual cost) and self-contained chipper units (max €150.000 or 40 % of the actual cost.)

SUSTAINABLE ENERGY IRELAND

➤ GREENER HOME SCHEME

- Provide grants to Irish home owners.

➤ RENEWABLE HEAT DEPLOYMENT PROGRAMME

- Provide grants for industrial, commercial, public and community premises in Ireland.

➤ HOUSE OF TOMORROW

-Provide grants to developers for the design and construction of clusters (minimum 10) of superior energy performing housing units.

➤ PUBLIC AND COMMERCIAL SECTOR PROGRAMME

-Similar to House of Tomorrow but promote renewable alternatives within the public and commercial sector.

➤ COMBINED HEAT AND POWER PROGRAMME

- Grant scheme for small scale CHP (fossil or biomass) and large scale biomass-fed CHP

IRELAND IS DETERMINED TO DEVELOP ITS BIOENERGY FUEL SUPPLY CHAIN TO AVOID FUTURE HEAVY IMPORT DEPENDANCY

Timeline according to type of company

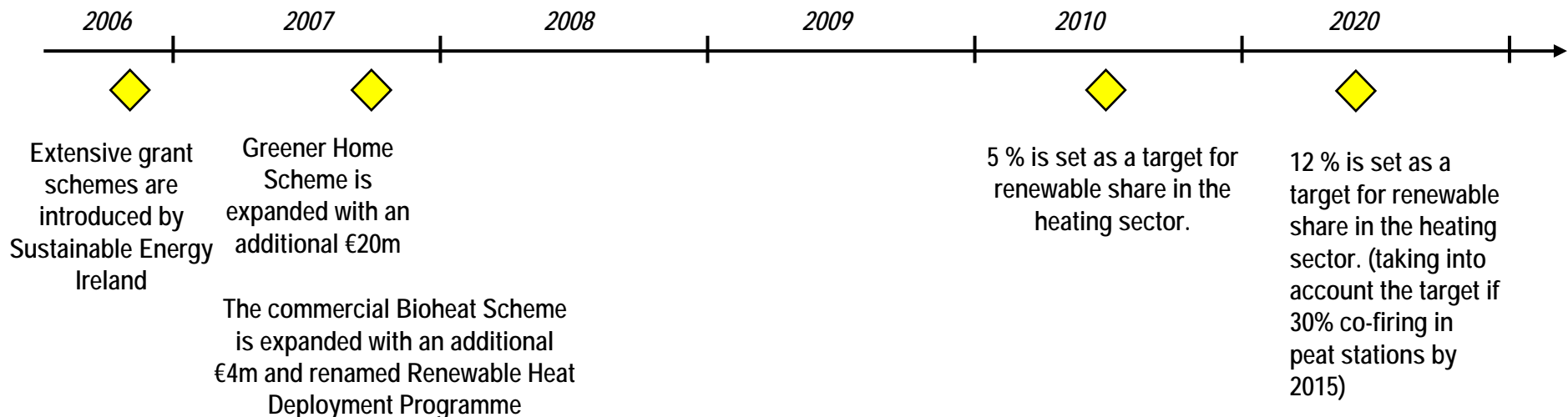
Refined products	Pellet boilers Pellets Smaller CHP plants	
Know how	Pellet production	Large CHP plants
Raw material	Wood	
	Now	2012

Time

- Ireland has a long way to go before the country has a developed bioenergy fuel supply chain.
- Grant schemes have been introduced throughout the whole supply chain from farm to end user to encourage a faster development.
- To increase the deployment of CHP a special grant scheme for smaller CHP-plants (both for fossil fuel and biomass) in commercial and industrial buildings.
- The market for larger CHP-plants is somewhat limited today due to the fact that district heating is not common in Ireland.
- A key to developing the renewable heat market is ensuring the development and up-skilling of sufficient installers to ensure that market demand can be met on a national scale.

Grants are provided for throughout the whole chain to speed up the development.

HEATING – THE MARKET FOR RENEWABLE HEATING TOOK OFF DURING 2006



Comments

- Important grant schemes pinpointing especially the private sector was introduced in 2006 (Greener Home Scheme). This schemes has been a success and was therefore extended in 2007 with another €20 million. Phase 1 has now come to an end and Phase 2 will start in October 2007.
- The Bioheat Programme offering funding to the commercial sectors for investments in renewable technologies was also extended with another €4 million.

Actions

- Swedish companies interested in the Irish market for renewable heat should take actions now.
- The Swedish Trade Council in Dublin has noticed a considerable interest in Ireland for Swedish products and solutions within the field of bio energy for heating.
- Ireland is far from having a developed fuel supply chain for renewable energy and is at present in need of fuel such as pellets and wood chip, why business opportunities also are recognized within this field.



GREENER HOME SCHEME, PROVIDING GRANTS TO IRISH HOMEOWNERS

GREENER HOME SCHEME

- Launched in March 2006 this scheme provides grant aid to individual householders for the installation of renewable heat technologies including wood pellet stoves and boilers, solar panels and geothermal heat pumps. The scheme initially involved €65m over a 5 year period, but was extended with another €24m due to the large amount of application to SEI.
- Greener Home Scheme proved to be a success with 16.000 applications during Phase 1 that was finished in September 2007. Phase 2 will open in October 2007.
- Grant aid of €1.100 to €6.500 was provided during Phase 1 depending on chosen technology. Phase 2 will provide grants between €1.000 and €3.500. The grants are intended to cover 30-40 % of the installation cost of the renewable technology.
- Biomass boilers has so far been the preferred technology accounting for 45 % of the applications to SEI, followed by heat pumps 28 % and solar technologies 27 %. (SEI statistics from January 2007, based on 13.000 applications)

Technology	Grant Amount Phase 1	Grant Amount Phase 2
Wood Chip or Wood Pellet Boilers	€4.200	€3.000
Wood Chip or Wood Pellet Stoves	€1.100	€1.000
Wood Chip or Wood Pellet Stoves with Back Boiler	€1.800	€1.800
Heat Pump – Horizontal Ground Collector	€4.300	€2.500
Heat Pump – Vertical Ground Collector	€6.500	€3.500
Heat Pump – Water (well) to Water	€4.300	€2.500
Heat Pump – Air Source	€4.000	€2.000
Solar (a maximum of 12 m ²) Flat plate/Evacuated Tube	€300m ² / €300m ²	€250m ² / € 300m ²



TWO GRANT SCHEMES FOR THE IRISH COMMERCIAL SECTOR

COMBINED HEAT AND POWER (CHP) GRANT SCHEME

- The CHP deployment in Ireland was 2.4 % in 2004. This is a low figure in comparison to other countries in the EU
- The Irish government is committed to increase the penetration of high-efficiency CHP in Ireland why a grant scheme was introduced in March 2006.
- The grant scheme involves €11m from 2006-2010 and provide grants of 40% of the costs for the feasibility study that has to be done prior to installation and then 30% of the installation cost for small-scale CHP facilities (1MW) which can be deployed in hotels, leisure centres, small hospitals, offices or commercial buildings.
- Grants are also provided for large scale CHP fuelled by biomass.

The CHP Programme aims to deliver:

- 10-15 MWe Biomass CHP.
- 100-200 small-scale fossil fuel CHP installations, generating 10-20MWe if high efficiency CHP

RENEWABLE HEAT DEPLOYMENT PROGRAMME

- Launched in March 2007, the Renewable Heat Deployment Programme provides assistance for the deployment of renewable heating systems in industrial, commercial, public and community premises in Ireland.
- This programme is an extension of the previous Bioheat Boiler Deployment Programme that was allocated €22m between 2006-2010 for installations of wood chip and wood pellet boilers. In the Budget for 2007 another €4m was allocated to include grants solar thermal and heat pumps as well within the frame of the programme.
- Grant aid is provided for up till 30% of the overall cost.

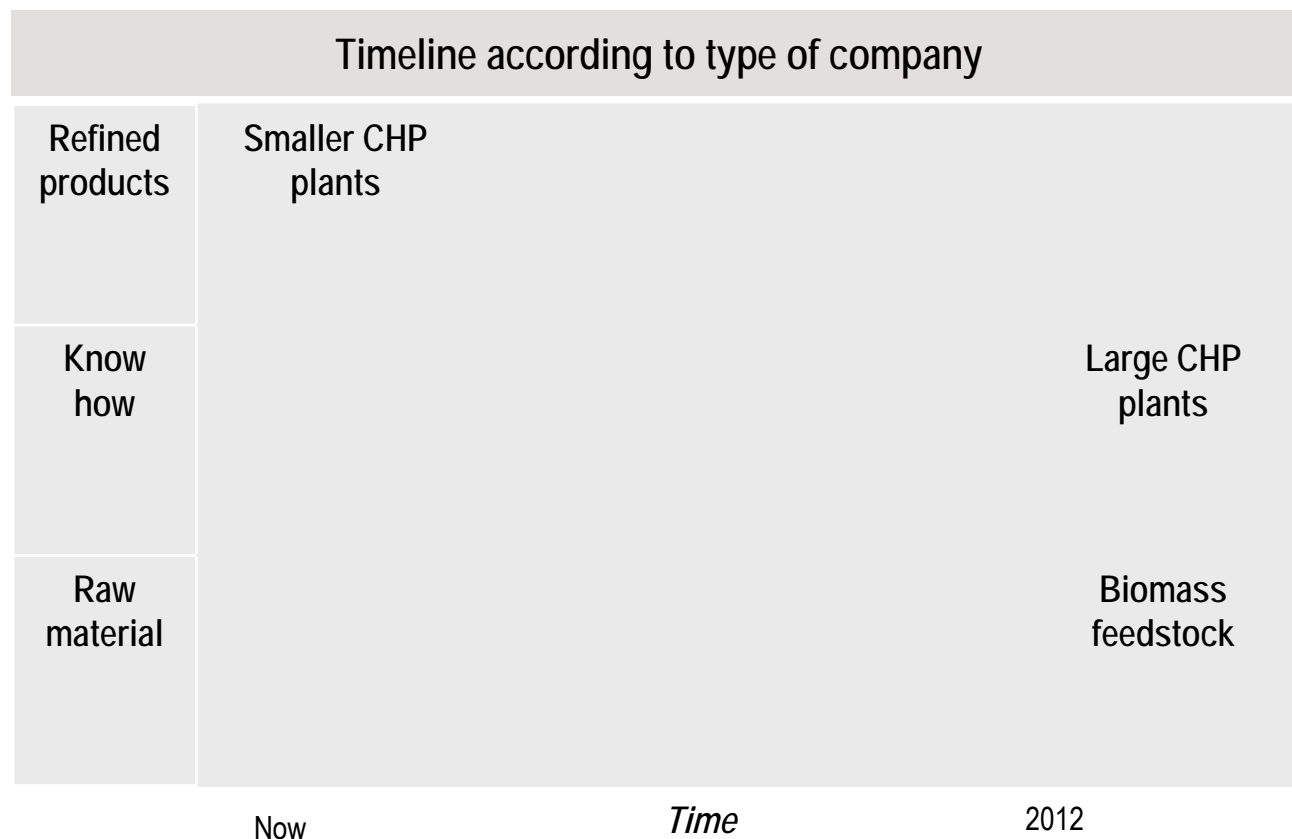
The Renewable Heat Deployment Programme aims to deliver:

- ≈ 600 installations for bioheat depending on size of project.
- Increased customer awareness and confidence in heating from renewable sources.

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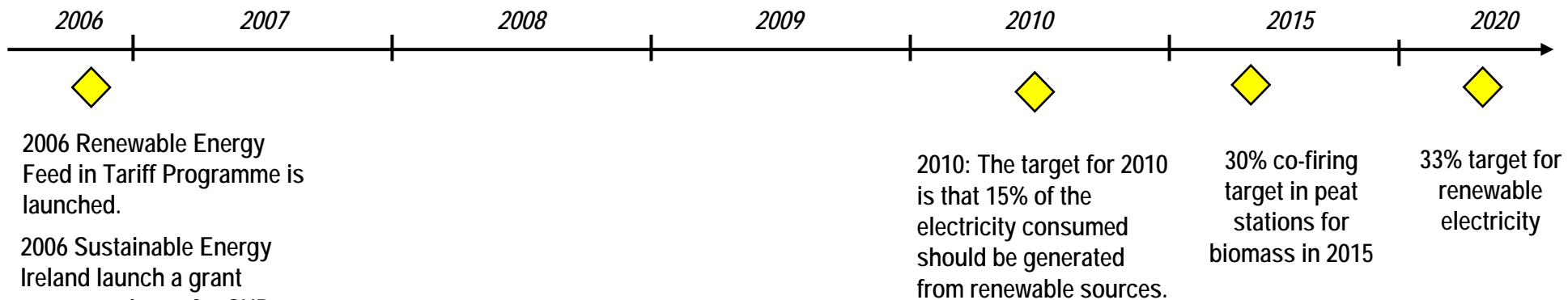
BIOENERGY FOR THE ELECTRICITY SECTOR IS AN IMMATURE SEGMENT IN IRELAND



- The focus up till 2010 will be on:
 - Improving existing technologies;
 - R&D into 2nd generation biofuels from ligno-cellulosic biomass;
 - 2nd generations biofuels demonstration plants and;
 - R&D into the biorefinery concept.
- In the medium term (2010-2020) the goal is deployment of 2nd generation of biofuels.
- In the long term (beyond 2020) Ireland aims at large scale production of 2nd generation biofuels and deployment of integrated biorefining complexes.
- The co-firing target of 30% in peat stations by 2015 is expected to create a demand boost for biomass feedstock.

The focus up till 2010 will primarily be on R&D, but the co-firing target of 30% biomass in peat stations by 2015 is expected to create a demand boost for biomass feedstock in a few years time.

WIND GENERATION IS CURRENTLY THE MOST COMMON TECHNIQUE BUT CHP IS AN UPCOMING ALTERNATIVE



2006 Renewable Energy Feed in Tariff Programme is launched.

2006 Sustainable Energy Ireland launch a grant support scheme for CHP plants.

Comments

- Wind generation is expected to deliver the vast majority of the 2010 renewable energy target.
- To encourage development of Biomass electricity the REFIT programme however provides a higher feed-in-tariff for biomass electricity.
- The 30% co-firing target in peat stations with biomass for 2015 is expected to stimulate a significant demand boost for biomass feedstock.
- A grant scheme was introduced in March 2006 to increase the deployment of CHP. In June 2007 SEI had approved 17 applications for small-scale CHP. 2 installations had so far been completed.

Actions

- The 30% co-firing target will increase the demand for biomass feedstock. Swedish companies within this field should take action.
- The Irish market for CHP is still small, but nevertheless growing. Swedish companies should follow up on applications to SEI for feasibility studies for CHP.



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IT WILL BE A CHALLENGE TO MEET THE TARGET OF 5.75% FOR 2010 PURELY FOR INDIGENOUS SOURCES

Timeline according to type of company

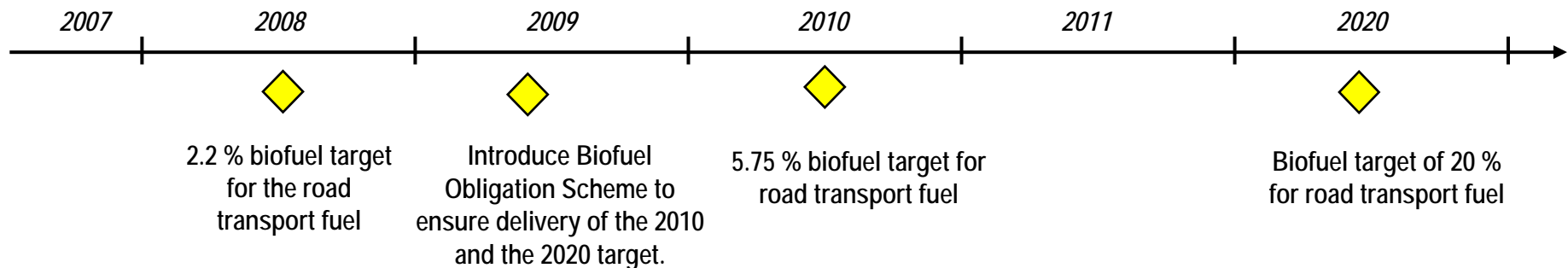
	Biofuel feedstock / Ready blended biofuel	
Refined products		
Know how	1 st generation biofuels	2 nd generation biofuels
Raw material	Land usage	Land usage
	Now	2012

Time

- The Irish market for biofuels is still immature with a recognized challenge for Ireland to achieve the biofuel target for 2010 from indigenous sources using current 1st generation biofuel technology.
- To meet the targets in the longer term production of 2nd generation technologies such as ligno-cellulosic needs to be further developed.
- Significant lead time is however expected before 2nd generation technologies reach full commercial potential.
- To facilitate the industry in developing sufficient refining, storage, distribution and supply chain logistics an obligation scheme on fuel supply companies to have an average of 5.75 % of their annual fuel sales as biofuels will be introduced in 2009 to meet the target for 2010. The same obligation will apply for the 10 % target for 2020.

To meet targets in the longer run production of 2nd generation technique needs to be further developed

THERE IS A RECOGNIZED CHALLENGE FOR IRELAND TO REACH THE TARGET FOR 2010 PURELY FROM INDIGENOUS SOURCES



Comments

- It will be an acknowledge challenge for Ireland to achieve the 5.75 % target purely from indigenous feedstock in the medium-term future as liquid biofuels can only be produced from annual crops using current (first generation biofuel) technologies.
- The 10 % target by 2020 will involve importing biofuel feedstock or ready blended biofuel.
- The Irish government sees that promotion of increased use of biofuels as a transport fuel in captive fleets such as public transport bus operators is of crucial importance in Ireland's effort to reduce the level of greenhouse gas emission and energy intensity of the transport sector.

Actions

- As Ireland will be in need of importing biofuel feedstock as well as ready blended biofuel there will be rising opportunities for Swedish companies within this field in a few years time.

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IRELAND – CLEAR FOCUS ON LIMITING CURRENT ENERGY IMPORTS

Country facts

Population:	4,2 million (2006)
GDP/capita:	€ 41,205 (2006)
GDP growth:	8,2 % (2006)
Swedish export:	6,2 Million SEK (2006)
Swedish export, growth:	4 % (2007/2006)



Bioenergy facts

Feed in tariffs:	Vary with type of Energy plant. See appendix.
RES in energy mix:	2.5 % (2005)
Available programs/initiatives:	Extensive governmental initiatives. Grant schemes for both Irish homes and industries to increase usage of renewable alternatives.
National Energy Plan:	Bioenergy Action Plan for Ireland was presented in January 2007
Available raw material:	Wood. (Currently 710.000 ha) Oilseed rape is the main energy crop.
Domestic expertise:	n/a
Environmental public awareness:	Low
Bioenergy companies present:	Janfire, Hotab, NIBE, Thermia,

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... and with nuclear power being forbidden, renewable energy sources is forecasted a bright future



LARGE INTEREST FOR SWEDISH SOLUTIONS IN IRELAND

Business opportunities

- The bioheat sector show the largest potential at present for Swedish companies. The opportunities range from supply of biomass feedstock, harvesting equipment, biofuels such as pellets and wood chip to technique such as pellet boilers.
- Within the segment for renewable electricity and in particular biofuels for transport the business opportunities are yet less obvious. However Ireland is a “slow starter but a fast runner”, the development of the bioheat sector has been rapid and therefore a lot can happen quickly within these two fields when the research and development has come a bit further.
- The deployment of CHP is low in Ireland, but larger CHP-plants and district heating is high on the political agenda, while smaller CHP-plants also are specifically targeted through SEI's grant scheme for CHP.

Challenges

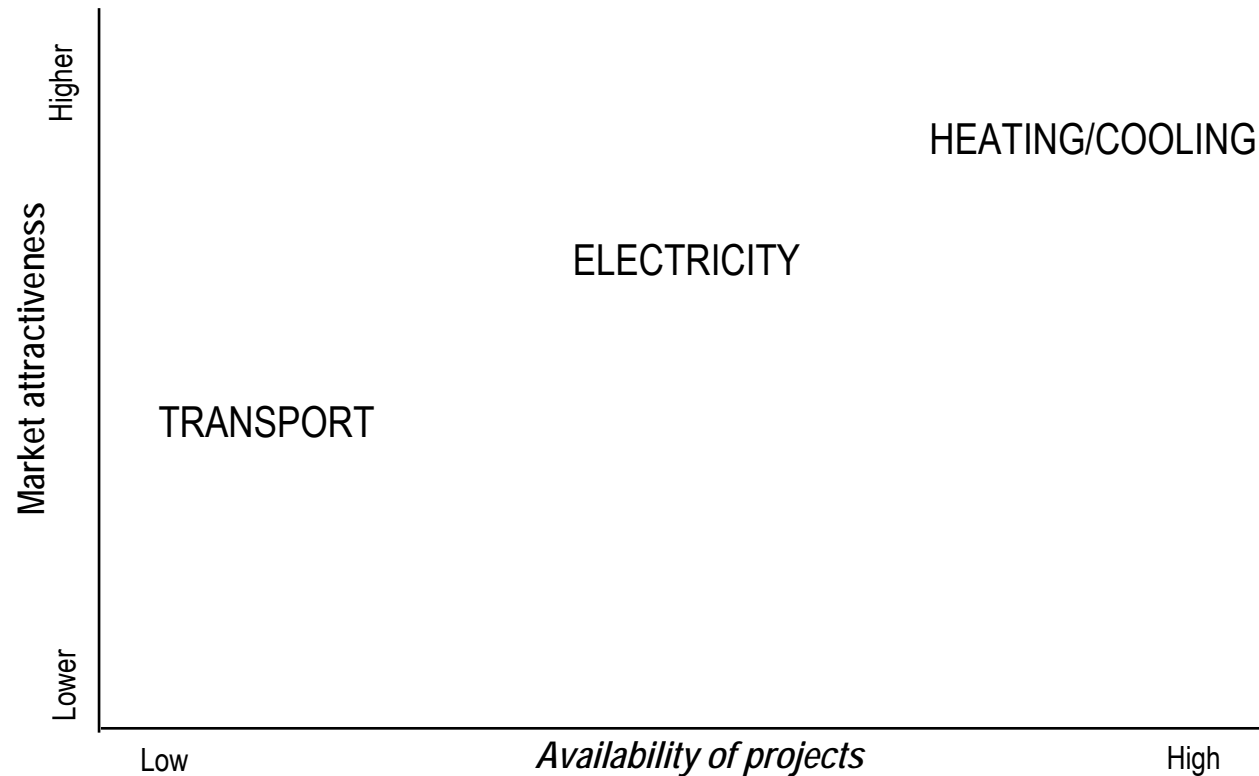
- The number of players on the Irish market within the renewable heating sector has increased significantly. The down side of this has been that so called “cowboy companies” wanted to make quick money and delivered poor service and installations.
- Initially pellet boilers got a somewhat bad reputation in Ireland due to; insufficient back-up service, poor installations and shortage of pellets supply.

Conclusion

- The Irish government has since late 1990s worked with a clear vision to increase the penetration of renewable energy on the Irish market. Several grants schemes has been introduced to underpin the development throughout the bioenergy supply chain.
- Swedish environmental solutions have very good reputation in Ireland and Sweden is seen as a benchmark which has been confirmed by several visits from Ireland to look at Swedish technology.
- Ireland has a stronger incentive than many other countries to take on the renewable energy sources as it is currently heavily dependent on imports to cover the country's demand for energy.

THE HEATING SECTOR IS THE MOST ATTRACTIVE SECTOR IN IRELAND AT PRESENT

Market attractiveness and availability of projects



- Heating/Cooling: There is an huge potential for the heating sector due to the fact that Ireland currently is heavily depending on imports for its energy supply, and specifically imports of fossil fuel. The Irish government is therefore determined to develop the bio energy fuel supply chain.
- Electricity: Renewable energy is high on the political agenda, looking specifically at the development of CHP and district heating. Some smaller CHP projects are already available, but the majority is yet to come in a few years time.
- For transport two excise relief schemes has been launched so far, one in 2005 as a pilot project and one in 2006. Business possibilities within this sector lies further ahead.

The electricity sector is immature but soon upcoming while the transport sector will need more time to develop.



THE HEATING SECTOR INVOLVES THE MOST IMMEDIATE BUSINESS OPPORTUNITIES

Indications from the market

- Heating involves the most immediate business opportunities for Swedish companies. Renewable electricity is however high on the political agenda with an emphasis on the development of CHP and district heating. The SEI are planning visits to Scandinavia and Austria together with developers to look at examples and raise the awareness of the economic and environmental advantages. Renewable transport is the most immature sector, with less obvious business opportunities in the immediate future.
- SEI is the most important organisation within the area and offer Irish companies extensive financing for related investments.
- Customers are found within both the domestic, commercial, industrial and public sector, as well as the agriculture sector. An overall challenge and need is to improve the bioenergy fuel supply chain.
- A large number of Irish bioenergy companies have started up the last few years. The great majority are distributors and/or installers and not manufacturers. The influx of international technology suppliers has been huge during the last years, especially since SEI introduced their grant schemes. Although SEI have registered many approved installers together with their foreign suppliers, many of these companies are not active to a larger extent. The market clearly indicates that there are room for more companies, but the service and quality of installations is crucial for success.

Implications

- For Swedish companies the sector indicate...
 - Significant development opportunities within heating for renewable technology suppliers, - installers and -fuel supply companies.
- For Swedish companies the indications from organisations and financing mean that...
 - SEI is a key organization for bioenergy in Ireland that can provide a lot of information about the development of the Irish whole bioenergy sector.
- For Swedish companies the indications from customers and supply mean that...
 - Wide customer base as grant aid is put in place to target all sectors. Grant aid is also put in place to develop the fuel supply chain. As there is a certain shortage of supply of pellets there is a need for imports.
- For Swedish companies the competition and complementing entities indicate...
 - Good service and installations are crucial success factors. Why it is important to make arrangements with the right Irish company.

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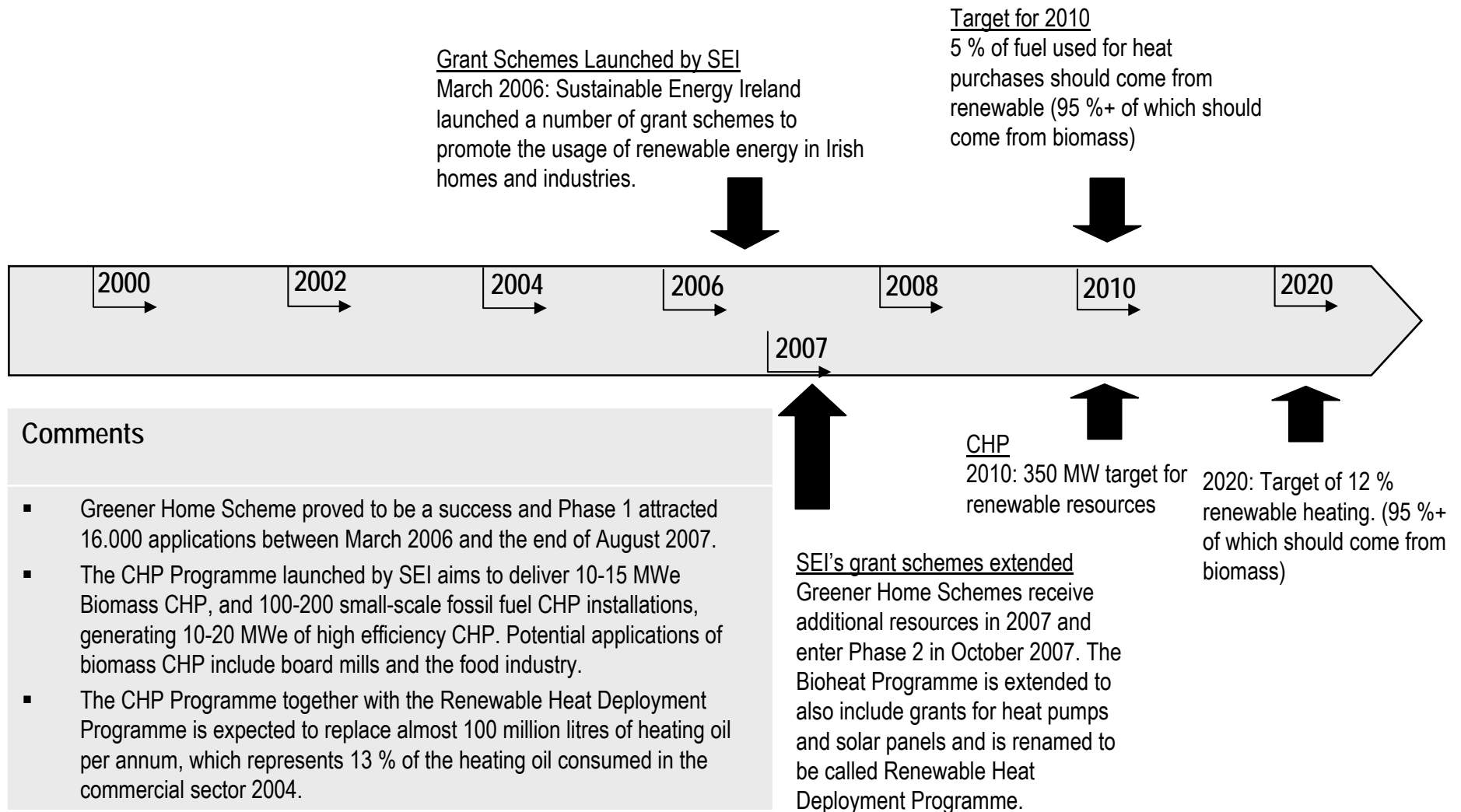
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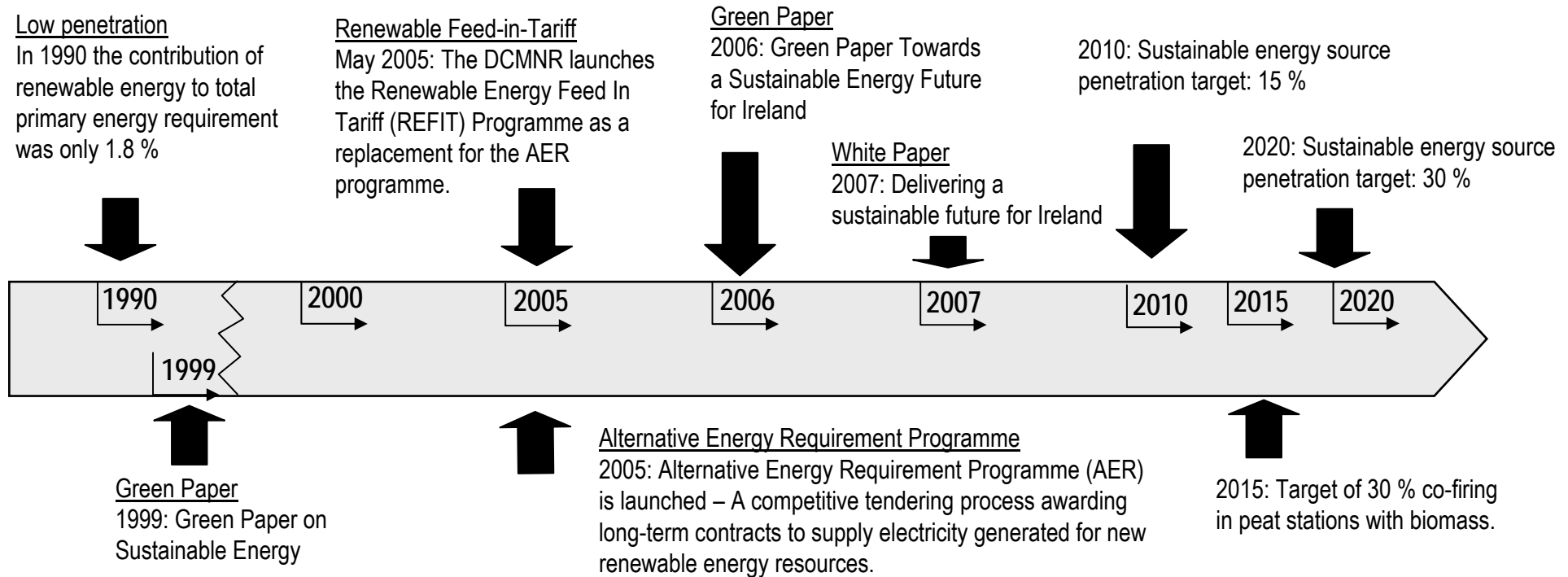
THE SECTOR FOR RENEWABLE HEATING HAS COME MUCH FURTHER THEN THE ELECTRICITY AND TRANSPORT SECTOR

Bio energy – description of the market		
Heating / cooling	Electricity	Transport
<ul style="list-style-type: none"> • Since the introduction of the grant schemes in 2006 the awareness of renewable technologies has increased significantly in Ireland • The development of the sector has just started and important investments has been rolled out for the next coming 5-year period. • The level of market growth represents a development opportunity for; 1) Suppliers of renewable technology; 2) Installers of renewable technology and 3) Companies supplying renewable fuel. • Pellet boilers proved to be the most popular technique under the Greener Home Scheme's Phase 1. 	<ul style="list-style-type: none"> • Ireland has set ambitious targets for the country and there will be certain challenges to achieve these. • The market is quite immature and the emphasise within this segment is primarily on further research to improve yields and efficiency from current technologies as well as development of 2nd generation biofuels and bio refinery research. • As Ireland has a very limited district heating system this is a constraint on the Irish market for the immediate development of bigger CHP plants. • However the development of CHP and district heating is high on the political agenda why opportunities will rise within this segment. Smaller CHP-plants are also prioritized through the CHP-grant scheme. 	<ul style="list-style-type: none"> • Since 2005 several pilot projects have been initiated. The latest received a total of 102 applications. 16 companies were granted excise relief under this scheme for production of biodiesel, bioethanol and biofuel for the captive fleet specifically. • Ireland has developed an obligation scheme that will oblige fuel distributors to achieve an average of 5.75 % by 2010. • The aim with the obligation scheme is to facilitate the industry in developing appropriate refining storage, distribution and supply chain logistics. • The market for biofuels is immature and there are recognised challenges for achieving the 2010 biofuels target of 5.75% with indigenous sources.

RENEWABLE HEATING HAS BEEN STRONGLY EMPHASIZED IN IRELAND SINCE THE BEGINNING OF THE 21ST CENTURY



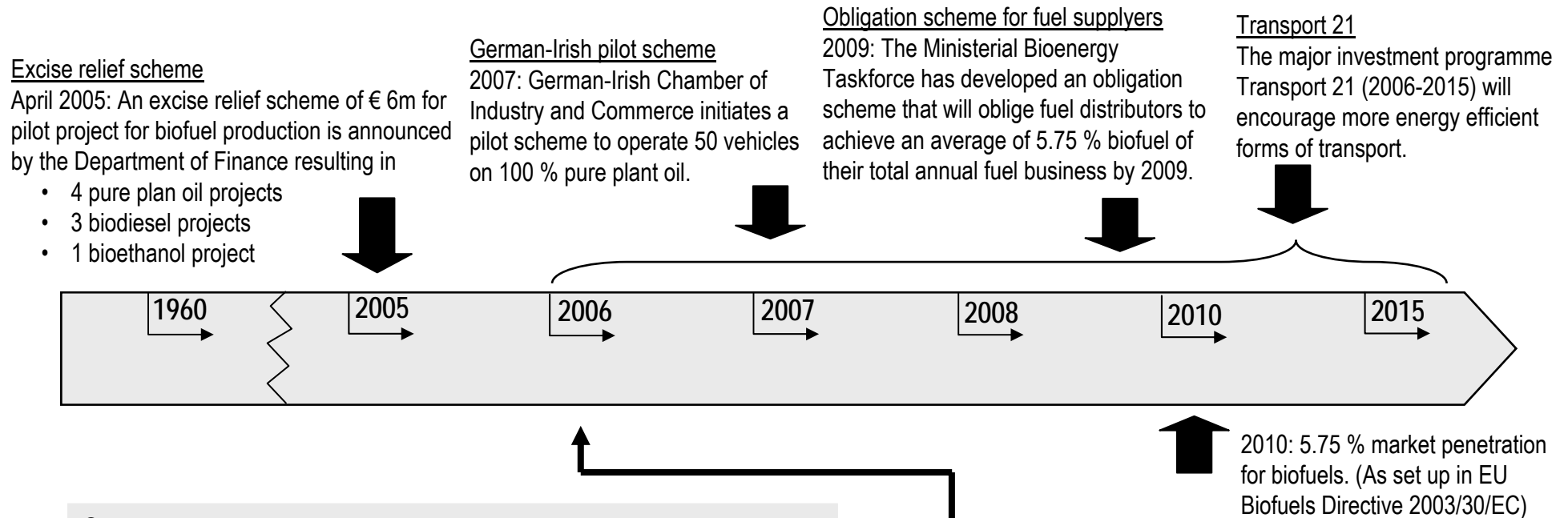
RENEWABLE ELECTRICITY CAME ON THE IRISH AGENDA IN THE LATE 1990s



Comments

- 2006 the percentage of electricity consumed deriving from renewable sources was about 8 %. However wind generation is by far the dominating technique. Very little was derived from biomass.
- Potential barriers to the development for renewable energy in Ireland include the need for a year-round supply of suitable raw material and environmental concerns from growing large amounts of energy crops close to power stations.

BIOFUEL IS A NEW EMERGING SEGMENT IN IRELAND. BEFORE 2005 THERE WAS NO REAL EMPHAZISE ON BIOFUEL



Comments

- As Ireland relies on imports for all its transport fuel requirements, the Irish government sees the development of a biofuel sector will contribute to security of supply by providing new fuel sources.
- Dublin Bus is currently piloting the use of 5 % biodiesel blend in vehicles in Dublin. This trial uses about 1.000 litres of biodiesel blend per week. The goal is to finally include all the existing fleet in Dublin to 5 % biodiesel blend and to achieve a 30 % biodiesel target for all new buses.

The Excise relief scheme is extended

2006: The excise relief schemes is extended in the 2006 Budget to a five year (2006-2010) scheme costing €200 m, together with funding to assist development of indigenous biofuel plants.

- So far 16 biofuel projects have been granted excise relief under this scheme.
- It is expected that through this scheme 163m litres of biofuel will be placed on the market by 2008. Representing 2.2% of the predicted fuel market for that year.

THE BIGGEST CHALLENGE IS INCREASED MARKET AWARENESS OF THE ECONOMIC AND ENVIRONMENTAL ADVANTAGES

Bio energy – major challenges in each field

- The market needs to be educated to understand the economic and environmental advantages of bioenergy.
- The previous underdeveloped fuel supply chain for biomass previously constituted an important challenge in Ireland. The supply chain has still not been developed to a satisfactory level, but the situation has improved. The development of the fuel supply chain is crucial to meet market demand in the longer run as Ireland aim at becoming less dependant on imports for its energy supply. Production of energy crops in Ireland is relatively undeveloped mainly due to poor profitability at farm level.
- Pellet boilers previously got a somewhat bad reputation in Ireland due to bad installations, poor back-up service and undeveloped fuel supply chain. This situation occurred as there initially were companies that started up that wanted to make quick money. However, the situation has now greatly improved.

Heating / Cooling / Electricity

- Due to a slow progress in developing a supply chain from the private sector forest reduce potential users of biomass have consequently been somewhat reluctant to invest in wood boilers.
- Many suppliers have registered as suppliers to the domestic sector. However only a few are active to a greater extent.
- District heating is extremely underdeveloped in Ireland.
- There tend to be opinions that the feed-in-tariffs provided for are too low, why little investments has been made so far within the CHP-area.

Transport

- Shortage of feed-stock for first generation of biofuels.
- Low public awareness as environmental concern until recently has been low on the political agenda.



AS IRELAND FORM PART OF THE EU EXISTING ENTRY BARRIERS HAVE MORE OF AND INDIRECT CHARACTER

Bio energy – main entry barriers

Heating / Cooling / Electricity / Transport

- In Ireland, no renewable technology is yet competitive enough with conventional fossil fuel technology and as a consequence market support is required because these technologies operate from a higher cost base than conventional (fossil fuel) technologies.
- Low market awareness and lack of education about the economic and environmental benefits of using bioenergy.
- Production of energy crops is relatively undeveloped in Ireland due to poor profitability at farm level. A large-scale transfer of land to energy crops would be dependant on adaptations at farm level and could give rise to other concerns. (Adverse impact on feed prices, additional animal feed imports).
- Underdeveloped distribution network for biofuels.

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THE IRISH GOVERNMENT TOGETHER WITH SUSTAINABLE ENERGY IRELAND ARE THE MOST SIGNIFICANT INFLUENCING ENTITIES

Bio energy – influencing entities

- Irish Government (several departments involved)
- EU / EU-directives
- Sustainable Energy Ireland
- Irish Bioenergy Association
- Bord na Mona (supplier of peat)
- Coford (National Council for Forest research and Development)
- Construct Ireland (trade magazine for energy efficient construction and renewable energy)
- EirGrid (Independent electricity Transmission System Operator)

Heating / Cooling Electricity

- Wood processing industry
- Food Processing Industry (and other potential users of the technology)
- Electricity Supply Board (ESB)

Transport

- Fuel Supply Companies (ESSO, Texaco, Maxol etc.)
- NTR Bioverda

THE EUROPEAN BIOMASS ASSOCIATION OFFERS AN INDIRECT EXCHANGE OF EXPERIENCES BETWEEN IRELAND AND SWEDEN



National cooperations

- Through the European Biomass Association (www.aebiom.org) there is a certain cooperation between Svebio and the Irish Bioenergy Association.
- Sweden is however seen as a benchmark which has been confirmed by several visits from Ireland to look at Swedish technology.

The Swedish Trade Council and Sustainable Energy Ireland has also cooperated closely in various projects to develop the exchange between Ireland and Sweden.



BIO ENERGY PROJECTS ARE OFTEN PARTLY FINANCED THROUGH THE GRANTS PROVIDED FOR BY SUSTAINABLE ENERGY IRELAND

	Private	Public
National	<p>Local private financing</p> <ul style="list-style-type: none"> • The projects are financed through local private capital <ul style="list-style-type: none"> –Developers –Industries, hotels, leisure centres themselves (often with grant aid from SEI) 	<p>Public financing</p> <ul style="list-style-type: none"> • Local authorities (County Councils and City Councils) • Office of Public Work (taking care of all public buildings in Ireland) • Public projects can also be partly financed by the government through the different grant schemes provided by the SEI.
<p>Public private partnerships</p> <p><i>NOTE: National private bioenergy projects are entitled to public funding through SEI's grant schemes. Consequently, a lot of the private project are therefore co-financed with public resources, even though these projects are not traditional PPP-project.</i></p>		
International	<p>International private financing</p> <ul style="list-style-type: none"> • As being a Western European country Ireland would receive foreign direct investments. But interviewed market players has not been able to give specific examples. 	<p>International public financing</p> <ul style="list-style-type: none"> • Various European agencies/programmes/institutions have funding sources for bioenergy projects. For example The intelligent Europe-Energy Programme, the LIFE-Programme, Framework 7, Intelligent Energy Europe and INTEREG • The Dundalk Sustainable Energy Zone was recently awarded €3,5 million within the framework of The EU Concerto Programme.

A mixture of private financing together with certain grants provided for by the SEI is most common.



There are several financing alternatives available from Sweden (1/2)

Financing alternatives for Swedish corporations from Sweden

EKN (Exportkreditnämnden)

Financing: Government authority that gives warranties in order to insure export deals and cross border investments. Such a warranty can be the prerequisite for offering the buyer credit – and can also enable better financing.

Environmental focus: Gives warranties for different types of business endeavors incl. Environmental oriented ones. Takes the environment into consideration when evaluating all business endeavors.

Geographical focus: Basically all countries, but with different levels of premiums according to the country list on the website.

Info: www.ekn.se, martin.Kallervald@ekn.se

SEK, Svensk Exportkredit (“Swedish Export Credit”)

Financing: State owned corporation that offer export financing solutions, general corporate financing, project financing, capital market transactions or qualifies consulting services Swedish companies and their international customers.

Environmental focus: Not specifically

Geographical focus: All regions

Info: www.sek.se, bo.leander@sek.se

There are entities for different needs – venture capital, credits, subsidies and warranties



There are several financing alternatives available from Sweden (2/2)

Financing alternatives for Swedish corporations from Sweden

Exportlånet ("The export credit")

Financing: "The export credit" is administrated by Almi and is a collaboration between Almi, EKN, Swedish Trade Council and Swedfund. The credit is developed to be complementary to a market and specifically for export deals. It can finance up to 90 per cent of the total capital need without a maximum credit amount.

Environmental focus: Not specifically

Geographical focus: The credit is only offered to Swedish SMEs with operations in Sweden

Info: http://www.almi.se/finansiering_export.html

Exportlånet ("The export credit")

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THE CUSTOMER BASE IS TO BE FOUND BOTH WITHIN THE PUBLIC AND PRIVATE SECTOR

Bio energy – main customers	
Heating / cooling / Electricity	Transport
<ul style="list-style-type: none"> • Hotels • Local Authorities • Office of Public Works (takes care of all governmental buildings) • Leisure centres • Industries • Private households • Any wood processing industry (joineries, board mill etc.) • The food process industry • Etc. 	<ul style="list-style-type: none"> • Captive fleets (For example Dublin Bus) • Taxi fleets • Local Authorities • The companies on which the obligation lies on, i.e. the fuel supply companies. (This is mentioned in connection to the proposed Obligation scheme for 2009, to reach the 5.75 % target.) • End customers

ELECTRICITY SUPPLY BOARD

– Owned by the Irish Government

Category	The Electricity Supply Board (ESB)
Line of business	ESB is a statutory corporation in the Republic of Ireland. It is 95 per cent owned by the Government of Ireland, with the remaining shares held by an employee share option trust. ESB Power Generation: operates 19 major power stations covering hydro-electric generation, and stations powered by coal, oil, gas and peat.
Turnover	€2 billion (2007)
Ownership structure	Owned by the Irish Government.
Investment plans	n/a
Comments	The Irish electricity market has been fully opened to competition since February 2005. ESB International's largest ever overseas investment, the 800MW CCGT plant at Amorebieta in Northern Spain, started commercial operation in 2005. ESB International also won an operations and maintenance management contract for the 2100MW coal fired plant at Manjuny in Malaysia.

BIOVERDA

– Subsidiary of NTR

Category	Bioverda is NTR's bioenergy division. NTR owns and operates businesses in biofuels and biomass.
Line of business	Biofuels and biomass
Revenue	€446,903,000 (2006)
Ownership structure	NTR is an Irish public limited company. Its shares are not listed on any stock exchange, but may be traded via the company's stockbrokers.
Investment plans	n/a
Comments	The Bioverda division of NTR plc, encompassing biogas, methane and biofuel businesses, was officially launched by NTR on the 7th March 2006. Construction has begun of the first of two biodiesel plants in Germany with 250,000 tonnes of capacity anticipated by 2008. The company's first landfill gas powerplant is also underway with 2.5 MW of power being produced from methane.



THE MOST COMMON TECHNOLOGY FOR HEATING IS BIOMASS BOILERS

Bio energy – most common technologies	
Heating / Cooling / Electricity	Transport
Today	
<ul style="list-style-type: none"> For the domestic market biomass boilers has proved to be the preferred technology during the Greener Home Schemes Phase 1. Wind power has been the most common technology up till this date for production of renewable electricity and is expected to deliver the vast majority of the renewable electricity targets for 2010 and also contribute significantly to the target for 2020 of 33%. Nevertheless, biomass electricity is being actively supported as it has the advantage that the electrical output can be regulated to match the instant electricity requirements. 	<ul style="list-style-type: none"> Biodiesel made from pure plant oil (complying with diesel standard EN590) Bioethanol Pure plant oil from oilseed <p><i>Note: That usage of biofuels is still limited on the Irish market.</i></p>
Trends	
<ul style="list-style-type: none"> The deployment of CHP is small in Ireland in comparison to other Western European countries. The development of CHP and district heating is high on the political agenda. Further growth is expected to be dominated by a small number of large units in the industrial sector combined with smaller CHP-units in hotels and smaller industries etc. 	<ul style="list-style-type: none"> Ligno-cellulosic biomass feedstock (Development of 2nd generation biofuel is seen as a key determinant in reaching the target for 2020 of 10%.

ALL PUBLIC PROJECTS IN IRELAND OVER A SIZE OF €50.000 WILL HAVE TO BE ANNOUNCED TO THE PUBLIC...

Purchasing process relative to project size and degree of public ownership

Project size	Larger	Tender process / Connections / Relations / Marketing	Tender process
	Smaller	Tender process / Connections / Relations / Marketing	Tender process or connections / relation / marketing
		Smaller	Higher
		<i>Degree of public ownership</i>	

- All public tenders in Ireland is handled according to relevant the EU Directives. In addition, public projects in Ireland over €50.000 also have to be announced on www.etenders.gov.ie
- As regards private projects, companies are generally invited to tender, why relations and marketing play an important role.
- Ireland is a small net-working society, hence good connections within the industry will provide benefits in connection to private projects and sometimes also public if the projects are of smaller size.

... but for smaller projects the public authority can approach and invite companies of their choice.

THE PUBLIC TENDER PROCESS IN IRELAND FOLLOWS THE EU NORM

- All public tenders in Ireland is handled according to relevant the EU Directives. The EU Directives recognize two tendering procedures. 1) Open – all interested parties may submit tenders; 2) Restricted – only those parties invited by the contracting authority may submit tenders.
 - All public tenders above the EU thresholds are announced in the European Official Journal and in Ireland also supplemented by advertisement on www.etenders.gov.ie
 - In Ireland all public tenders over €50.000 are announced on www.etenders.gov.ie
- As regards private projects connections and a good reputation plays an important role for doing business in Ireland. Companies are invited to tender in private projects.
 - As Ireland is a small country Swedish companies should bare in mind that rumours travel fast. A good reputation can quickly create business opportunities, while a bad reputation rapidly can have to reverse effect. It is important to tie up with the right partner, someone with good connects and a good reputation.
 - The architect has a very strong position in Ireland and is to a much greater extent involved in the actual process of choosing various products in a construction project.

For private projects connections and good reputation is very important due to the small size of the country.



THE NUMBER OF PROJECTS WILL INCREASE AS MARKET AWARENESS IMPROVES...

The public sector aims at leading the way to increase market awareness of bioenergy throughout all sectors (domestic, commercial, industrial, public)

- The Office of Public Work (OPW) that manage all the State's buildings has committed to convert within 12 months, 20 of the State's large existing buildings to bioenergy heating systems. The OPW has also included as a requirement in most new buildings that the main heat generation source should be a wood burning boiler, i.e. either pellets or wood chip.
- Some County and City Councils, such as Cork City Council, Dublin City Council, Fingal County Council and Dun Laoghaire-Rathdown County Council have taken a proactive lead as a role-model for other Local Authorities introducing significantly enhanced energy efficient standards and renewable energy conditions in their planning guidelines.
- As regards promoting an increased usage of biofuels as a transport fuel the Irish Government also see that increased usage of biofuels for the captive fleets, such as public transport bus operators, will play an important role. Dublin Bus is currently piloting the use of 5 % biodiesel blend in vehicles in Dublin.
- New building regulations will also enter into force 1st of January 2008 with stricter emphasise on energy efficiency and renewable heating. The new regulation will include:
 - A 40% improvement in energy efficiency for new homes in 2008.
 - A 40% reduction in CO2 emissions.
 - A mandatory minimum renewable energy requirement in all new homes, such as solar heating systems or biomass systems.

...while the new Irish building regulations at the same time will force new buildings to become more energy efficient.



DUNDALK DISTRICT HEATING NETWORK

- Swedish expertise has been demanded

DUNDALK 2020*

- As part of the Dundalk 2020 project it is proposed to establish a biomass fueled district heating network that will provide heat to Dundalk Institute of Technology, Louth County Hospital and O'Fiaich College.
- The Swedish Trade Council was contacted by an Irish company that will participate in the tender that was looking for a Swedish company who would be actively involved with the design and specification of the biomass district heating plant.
- Information about the project was sent out via Svebio to all its members and the Swedish Trade Council has been contact by several Swedish companies that wish to get involved in this project.

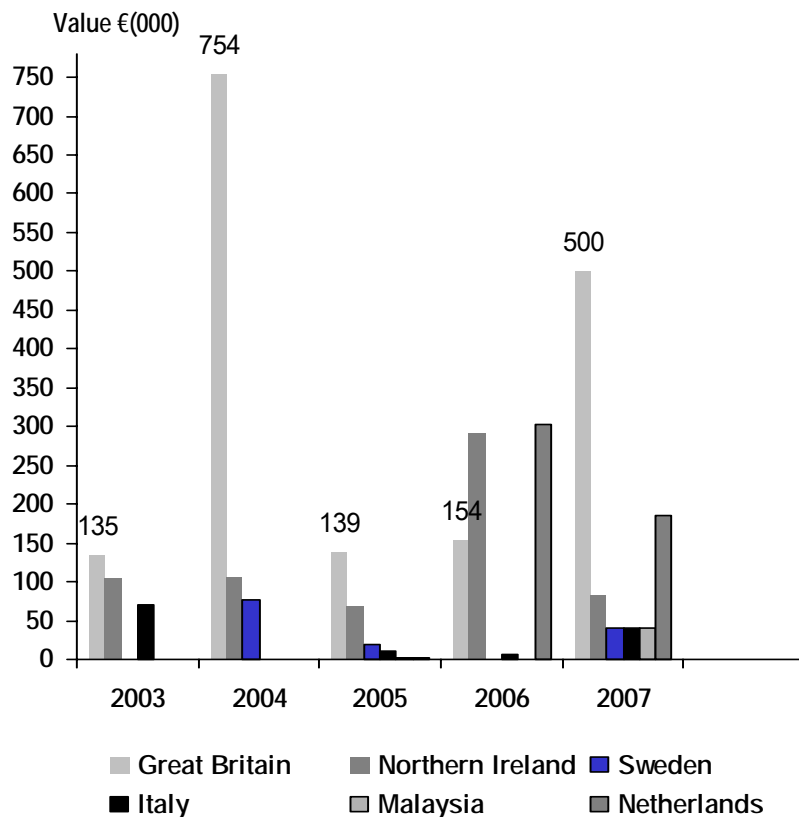
"We are fairly prominent in the power generation business all over the world in relation to construction management and project management and at the moment we are building up the renewable side of our business. However, though we might have the logistics and infrastructure to execute this project we do not have a background in biomass. What we want from Sweden is a consulting group as we do not have that type of knowledge within the company... We are looking for a company that sees this as an opportunity to target the large scale biomass market in Ireland! This cooperation would be of mutual benefit for both parties as this is a good entry possibility for the right Swedish company."

- Mr. Dereck Browne, Senior Project Manager, Shanahan Engineering



IRELAND IMPORTS MOST OF ITS WOOD FUEL FROM BRITAIN AND NORTHERN IRELAND

Imports of Wood fuel, logs, billets, twigs and faggots.



* NOTE: The Netherlands is included as a lot of products shipped to Ireland is shipped via the Rotterdam port.

Comments

- The Central Statistics Office does not offer specific statistics of the import and export of biomass. The closest match is “Import of wood fuel etc.”
- Most imports come from Great Britain and Northern Ireland. The Republic of Ireland is an important export destination for Balcas (A British/Irish wood product supplier based in Northern Ireland)
- Ireland has no noteworthy export of biomass, why no figures can be presented.
- The imports of biomass is expected to increase over the next coming years as Ireland has set ambitious targets, but yet without having a developed fuel supply chain.

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IRELAND HAS MANY INTERNATIONAL COMPANIES PRESENT WITHIN THE HEAT SECTOR SELLING THROUGH IRISH PARTNERS

Bio energy – main competitors and complementing entities	
Heating / cooling Electricity	Transport
National	
<ul style="list-style-type: none"> • Gerkros, Irish manufacturer of pellet boilers • Kedco Group, Irish manufacturer of pellet boilers, solar panels, CHP 	<ul style="list-style-type: none"> • One 51 Ltd (Bioethanol) • Biogreen Energy Products Ltd (Pure plant oil) • Greyhound Recycling and Recovery Ltd (Captive fleets) • Topaz Energy Ltd (Bioethanol) • Bioverda, Operates businesses in biofuels and biomass.
International	
<ul style="list-style-type: none"> • Biotech Energietechnik Gmbh (Germany) • Dan Trim Energi Aps (Denmark) • Gilles (Austria) • HDG Bavaria (Germany) 	<ul style="list-style-type: none"> • Conoco Phillips (EN 590)



THE KEDCO GROUP

– Irish company with manufacturing bases in Latvia, USA and South Africa

Category	Renewable energy company with business interests in the area's of biomass heating and power generation
Line of business	Operations in the areas of biomass heating and power generation. This is through the installation of domestic wood pellet boilers, solar panels, and large scale industrial systems.
Turnover	n/a
Ownership structure	n/a
Growth	n/a
Comments	The Group's business structure is split into five divisions all acting under the guidelines of the parent company. Renewable energy is the main division of the company trading under the brand names Kedco Energy and Kedco Power. Kedco Manufacturing division has bases in Latvia, USA and South Africa. Kedco Energy provide biomass heating and solar products to the domestic market - served by the company's national franchise network. Kedco Trading is the import division based in Cork and trades in biomass solutions.



THERE IS ABOUT 55 SWEDISH SUBSIDIARIES ON THE IRISH MARKET

- All bigger traditional industrial companies are present

Company	Line of business	Local position	Large projects	Contact data
ABB Ltd	Extensive range of products and services within power and automation.			ABB Ltd Belgard Road, Dublin 24 +353 1 405 73 00

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CONTACT LIST - IRELAND

Company	Contact person
Sustainable Energy Ireland	Paul Dykes, Manager
Sustainable Energy Ireland	Pearse Buckley, Project leader
Sustainable Energy Ireland	Katrina Polaski, Head of Department Renewable Energy
Sustainable Energy Ireland	Matthew Kennedy,
Department of Agriculture and Food	Mel McDonna
Department of Finance	Bill Noon
Irish Bioenergy Association of Ireland	Vichy Heslop
Department of Communications, Energy and Natural Resources	Ashley Midroody
Construct Ireland	Jeff Colley



List of used reports - Ireland

Organisation	Report
Sustainable Energy Ireland	Renewable Energy Development 2006
Sustainable Energy Ireland	Policy Incentive Options for Liquid Biofuels Development in Ireland
Sustainable Energy Ireland	Renewable Electricity to 2010
Sustainable Energy Ireland	Bioenergy in Ireland
Sustainable Energy Ireland	CHP Policy Group Report
Department of Communications, Marine and Natural Resources	Green Paper – Towards a sustainable energy future for Ireland
Department of Communications, Marine and Natural Resources	Bioenergy Action Plan for Ireland
Department of Communications, Marine and Natural Resources	Government White Paper – delivering a Sustainable Energy Future for Ireland



APPENDIX – RENEWABLE ENERGY FEED IN TARRIFS

Technology	Feed in Tariff
Large wind energy (over 5 Megawatts)	5.7 cent oer Kilowatt hour
Small wind energy (under 5 Megawatts)	5.9 cent oer Kilowatt hour
Hydro	7.2 cent per Kilowatt hour
Biomass (landfill gas)	7.0 cent per Kilowatt hour
Other biomass	7.2 cent oer Kilowatt hour