



TIPPERARY SUSTAINABLE ENERGY ACTION PLAN 2017-2020



Comhairle Contae Thiobraid Árann
Tipperary County Council





TIPPERARY SUSTAINABLE ENERGY ACTION PLAN 2017-2020



Comhairle Contae Thiobraid Árann
Tipperary County Council



Contents

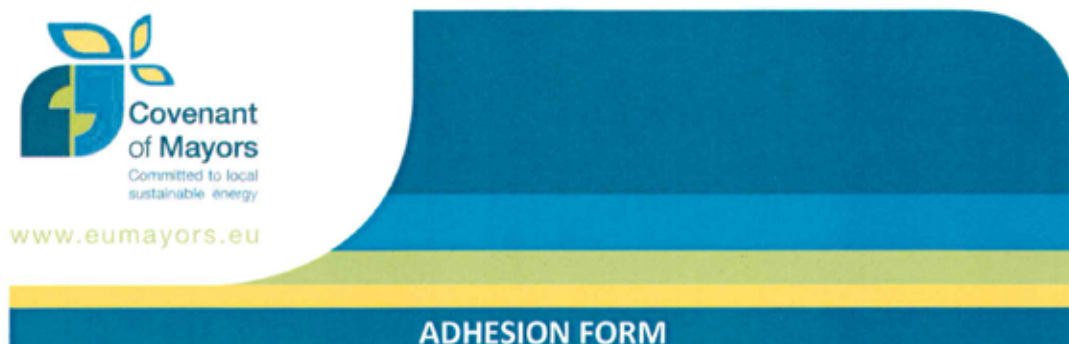
1	Adhesion Form	4
2	Introduction	5
3	Objectives	6
4	Current framework and vision for the future	7
	4.1 Regional/local Level	7
	4.1.1 Tipperary Renewable Energy Strategy 2016	7
	4.1.2 Current Plans in Tipperary	7
	4.2 National Level	7
	4.3 EU Level	8
	4.3.1 Directive 2009/28/EC (Renewable Energy Directive)	8
5	Stakeholders	9
	5.1 Teagasc	9
	5.2 North Tipperary Leader Partnership (NTLP)	9
	5.3 South Tipperary Development Company (STDC)	9
	5.4 Local Enterprise Office Tipperary (LEO Tipperary)	9
	5.5 Limerick Institute of Technology (LIT)	9
	5.6 Public Participation Network (PPN)	9
	5.7 Tipperary County Council Environment Section	10
	5.8 Tipperary County Council Planning Section	10
	5.9 Tipperary County Council Community and Economic Development Unit	10
	5.10 Tipperary Energy Agency (TEA)	10
6	Baseline Emissions Inventory	11
	6.1 Baseline Year	11
	6.2 Methodology	11
	6.3 Baseline year consumption and emissions	12
	6.4 Tipperary's 1990-2014 consumption	13
7	Actions	15
	7.1 Planning	15
	7.2 Agriculture	17
	7.3 Residential	18
	7.4 Commercial sector	21

Contents	
7.5 Renewable Energy	23
7.6 Education	24
7.7 Transport	26
7.8 Local Authority	26
7.9 Funding	27
8 Funding	28
8.1 Better Energy Communities	28
8.2 Insulate Tipperary	28
8.3 North Tipperary Leader Partnership (NTLP)	28
8.4 European Funding opportunities	28
9 Monitoring and Reporting	30
10 Communication Plan	31
10.1 Communications Channels	31
11 Conclusion	32
12 Appendix	33
12.1 Sectoral Analysis	33
12.1.1 Industry	33
12.1.2 Transport	33
12.1.3 Residential	34
12.1.4 Commercial	35
12.1.5 Agriculture	35
12.1.6 Clean Primary Energy Supply	36
12.2 SEAP Infographic	37

Table of Figures

Figure 1:	CO ₂ emissions of County Tipperary	11
Figure 2:	Baseline: Total final consumption of County Tipperary in GWh, by sector	12
Figure 3:	Baseline: CO ₂ emissions of County Tipperary in kilotonnes, by sector	12
Figure 4:	Baseline: Total final consumption of County Tipperary in GWh, by fuel type	13
Figure 5:	Baseline: CO ₂ emissions of County Tipperary in kilotonnes, by fuel type	13
Figure 6:	Total final consumption of County Tipperary by fuel type in GWh, 1990-2014	13
Figure 7:	CO ₂ emissions of County Tipperary by fuel type in kilotonnes, 1990-2014	14
Figure 8:	Total final consumption of County Tipperary by sector in GWh 1990-2014	14
Figure 9:	CO ₂ emissions of County Tipperary by sector in kilotonnes, 1990-2014	14
Figure 10:	Industry total final consumption 1990-2014	33
Figure 11:	CO ₂ emissions of industry sector of County Tipperary in kilotonnes, 1990-2014	33
Figure 12:	Total final consumption of transport sector of County Tipperary in GWh, 1990-2014	34
Figure 13:	CO ₂ emissions of transport sector of County Tipperary in kilotonnes, 1990-2014	34
Figure 14:	Residential total final consumption, 1990-2014	34
Figure 15:	Residential carbon emissions, 1990-2014	34
Figure 16:	Commercial carbon emissions, 1990-2014	35
Figure 17:	CO ₂ emissions of commercial sector of County Tipperary in kilotonnes, 1990-2014	35
Figure 18:	Total final consumption of Agricultural Sector of County Tipperary in GWh, 1990-2014	35
Figure 19:	Agricultural carbon emissions, 1990-2014	36
Figure 20:	Renewables and fossil fuel usage in Tipperary	36

1 ADHESION FORM



I, **Michael Fitzgerald, Cathaoirleach of Tipperary County Council** inform you that the **Tipperary County Council** decided at the meeting on **23rd February 2015** to mandate me to sign up to the Covenant of Mayors as part of the group so-called **Tipperary County Council**, composed of **Tipperary County Council**, in full knowledge of all commitments, in particular:

- To collectively **go beyond the objectives set by the EU for 2020**, reducing the CO₂ emissions by at least 20% within the territory covered by the group;
- to **submit a joint Sustainable Energy Action Plan**, including the results of our Baseline Emission Inventory and outlining how the objectives will be reached within one year following the official adhesion of the group;
- to **submit a joint implementation report** at least every second year following the submission of the Action Plan for evaluation, monitoring and verification purposes;
- to **organise Energy Days**, in co-operation with the European Commission and with other stakeholders, allowing citizens to benefit directly from the opportunities and advantages offered by a more intelligent use of energy, and to regularly inform the local media on developments concerning the action plan;
- to **attend and contribute to the annual EU Conference of Mayors** for a Sustainable Energy Europe.

Tipperary County Council, Civic Offices, Nenagh, Co Tipperary, Ireland.
Michael Fitzgerald, Cathaoirleach, Tipperary County Council
michael.fitzgerald@tipperarycoco.ie 03530761065000

Date, 5/5/2015

Signature

Michael Fitzgerald MCC.

2 INTRODUCTION

The science associated with global climate change has now proved well beyond a reasonable doubt that the warming of the planet's atmosphere is as a result of human behaviour, a situation that can be attributed to the fact that our economies have been predominately fuelled by carbon-intensive energy sources.

Therefore, in order to avoid the effects of global climate change, our economic interactions must be decoupled, insofar as it is possible, from emissions. Energy must begin to be used as efficiently as possible and most importantly individual behaviour must align itself with the challenges society as a whole now faces. In recognition of this fact, the EU has issued a number of directives setting out European abatement targets and the mechanisms through which these may be achieved.

However, the climate change issue seems a rather distant notion to the day-to-day existence of most individuals, to whom the idea of a warming planet represents a rather elusive concept and thus one which tends not to receive much of their attention. In recognition of this fact the purpose of this report within the broader context of the Covenant of Majors, is to localise EU energy policies, allowing for communities to provide the social capital necessary to facilitate what is fundamentally a

social movement. This document hopes to breathe life into European targets, by making them tangible to individual citizens within their communities. Citizens must now begin to assimilate their social responsibilities and adapt their consumption patterns accordingly. This document gives an outline of what sustainable energy actions are required to be completed by Tipperary.

The Tipperary Sustainable Energy Action Plan (SEAP) provides an in-depth overview of the county's emission statistics as well as a number of actions proposed to improve energy efficiency and renewable deployment in Tipperary. This document is an official recognition on behalf of County Tipperary of its responsibility to improve the environmental standards associated with its jurisdiction and a detailed action-by-action synopsis of how this may be achieved. The aim of the SEAP is to generate actions which will reduce Tipperary's emissions by 30% from the 2005 baseline year.

Progress on the implementation of this plan will be evaluated on a biennial basis up to the target year of 2020.

This report was prepared by Tipperary Energy Agency and approved by Tipperary County Council.



3 OBJECTIVES

The SEAP actions, outlined later in this report, have been devised to promote and encourage the awareness of European energy policies at a more localised level within the county of Tipperary. This is part of a broad effort across Europe to ensure that citizens are no longer detached from the macro policies implemented by vague and distant institutions, which play no part in their daily lives and therefore have little or no influence on their behaviour. In contrast, the SEAP hopes to embed these energy requirements within the social structures of community life in an effort to lean on the social cohesiveness of communities for the purpose of tackling global climate change from the bottom up.

The main objectives of the SEAP are:

- To promote and encourage greater energy efficiency in Tipperary
- To reduce Tipperary's dependency on imported energy by encouraging renewable energy developments
- To create employment through the deployment of renewable infrastructure and widespread energy efficiency upgrades
- To reduce energy poverty
- To ensure that small and medium-sized businesses are made aware of the financial rewards associated with increased energy efficiency
- To raise awareness of Tipperary's obligations and opportunities in the area of renewable energy and energy efficiency
- To foster the opportunities in energy efficiency and production in the agricultural sector
- To facilitate greater capacity building within all associated institutions



4 CURRENT FRAMEWORK AND VISION FOR THE FUTURE

Tipperary County Council has, in conjunction with the actions specified in the SEAP, a number of policies, plans and legislation that will greatly help Tipperary reach its target of reducing CO₂ levels by at least 30% by 2020. As well as the North and South Tipperary County Development Plans 2010 (as varied), Tipperary also has a Renewable Energy Strategy (RES) 2016.

4.1 Regional/local Level

4.1.1 TIPPERARY RENEWABLE ENERGY STRATEGY 2016

Tipperary County Council recognizes the need for Ireland to exploit its renewable energy resources to achieve both the national targets for greenhouse gas emission reductions and fossil fuel dependency. The RES sets out a framework so that the renewable energy potential of county Tipperary can be identified and captured in a sustainable manner while preserving the natural and built environment of the county. Tipperary County Council wishes to facilitate and drive the development of renewable energy in the region. The main renewable energy resources identified in Tipperary are:

- Bio-Energy
- Wind Energy
- Hydro- Power
- Solar Energy
- Geothermal Energy
- Micro – Generation

4.1.2 CURRENT PLANS IN TIPPERARY

- County Tipperary Local Economic & Community Plan 2015 - 2020
- Tipperary Renewable Energy Strategy 2016
- North Tipperary Development Plan 2009 (as varied)
- South Tipperary Development Plan 2010 (as varied)
- The Clonmel and Environs Development Plan 2013-2019
- The Carrick-on-Suir Town Development Plan 2013-2019

- The Tipperary Town and Environs Development Plan 2013-2019
- The Cashel Town and Environs Development Plan 2009-2015 (extended)
- The Nenagh Town and Environs Development Plan 2013-2019
- The Thurles Town and Environs Development Plan 2009-2015 (extended)
- The Templemore Town and Environs Development Plan 2012-2018

4.2 National Level

The Department of Communications, Climate Action and the Environment is responsible for creating and implementing policies in order to protect and manage Ireland's energy supply, natural resources, communications, broadcasting and postal services. The Department must ensure that all of its policies are in line with EU and global obligations. These policies are of vital national strategic importance and play a major role in underpinning the country's national economic development. The Energy section in the Department oversees the formulation and implementation of policies concerning Ireland's oil, gas, peat, electricity and renewable energy supply.

The Department strives to protect Ireland's energy supply, generation, security, affordability and sustainability and to ensure that Ireland complies with international energy and climate change policies. The National Climate Change and Low Carbon Development Act 2015, obliges government to draw up a National Climate Change Adaptation framework (NAF) by December 2017. The NAF will set out the national strategy for the development and delivery of adaptation measures in order to reduce the vulnerability of the State to the negative effects of climate change and to avail of any opportunities that may arise.

A number of other related policies are listed below:

- Capital Investment Plan 2016 – 2021
- National Biodiversity Plan 2011
- National Energy Efficiency Action Plan 3(NEEAP)
- National Renewable Energy Action Plan (NREAP)

4.3 EU Level

4.3.1 DIRECTIVE 2009/28/EC (RENEWABLE ENERGY DIRECTIVE)

The European Union agreed in 2007 the new climate and energy targets for 2020. These targets included a requirement for 20% of EU energy consumption to come from renewable sources by 2020. Ireland has a binding national overall target under Directive 2009/28/EC for renewable energy consumption of 16% in 2020. In order to achieve this target, the Irish Government has decided that 40% of electricity consumed will be generated using renewable energy sources, with targets of 10% and 12% in transport and heat respectively. The current directive is undergoing revision and will be published in early 2017 with a focus on the citizen as a prosumer.

All of the EU legislative programmes applicable to Ireland and by extension Co. Tipperary are listed as follows:

- Kyoto Protocol
- EU Air Quality Directive (96/62/EC)
- EU Floods Directive (2007/60/EC)
- EU Habitats Directive (92/43/EEC)
- Energy Services Directive (2006/32/EC)
- Renewable Energy Directive (2009/28/EC)
- Energy Performance of Buildings Directive (2002/91/EC)
- United Nations Framework Convention on Climate Change Paris Agreement 2016



5 STAKEHOLDERS

5.1 Teagasc

Teagasc is the agriculture and food development authority of Ireland and is thus a prominent organization in Irish agriculture. It is a diverse institution which provides a number of key services to the agricultural industry including training programmes, research and development, informative seminars and in-depth policy analysis. Teagasc also serves to raise awareness among the farming community of the importance of incorporating environmentally conscious practices into their business model.

5.2 North Tipperary Leader Partnership (NTLP)

NTLP is a non-profit organization dedicated to delivering a range of rural enterprise, social inclusion and community development initiatives in County Tipperary. This institution was established in 2009 and is responsible for implementing programmes and services on behalf of the state including the Better Energy Communities (BEC) programme.

NTLP is prominent in the promotion of energy in Tipperary as NTLP takes the role of project leader for the BEC programme funding in Tipperary. NTLP is key to the successful implementation of many of the actions in the SEAP and indeed for the progressive transition of County Tipperary's energy system.

5.3 South Tipperary Development Company (STDC)

STDC is a local development company that has successfully delivered rural development and social inclusion programmes in South Tipperary since 2009.

STDC offers support to a wide range of individuals and groups within the county including job-seekers, small businesses, community groups, children and families.

5.4 Local Enterprise Office Tipperary (LEO Tipperary)

The Local Enterprise Office Tipperary (LEO Tipperary) acts as a "First Stop Shop" for anyone seeking information and support for starting or growing a business in Tipperary. LEO Tipperary supports business start-ups and works to increase the job creation potential of new and existing micro and small businesses through the provision of information, advice, training, mentoring, seminars and grants in Tipperary. LEO Tipperary has a strong influence over how small and medium businesses in county Tipperary operate. LEO Tipperary's role is to inform these businesses of the economic advantages of energy efficiency.

5.5 Limerick Institute of Technology (LIT)

LIT is one of Ireland's 14 Institutes of Higher Education, with 5 separate campuses spread across Tipperary, Clare, and Limerick, with the main office located in Limerick city. LIT currently offers programmes such as environmental and analytical science and energy management. LIT has plans to further expand the number of courses tailored to the environmental sciences. Ireland's transition to a low carbon society will require an appropriately educated work force thus the importance of its third level institutions cannot be understated. LIT has shown the capacity to conduct sophisticated research in the field of energy and its continued work will be of the utmost value to the delivery of this SEAP.

5.6 Public Participation Network (PPN)

The purpose of the PPN is to encourage community participation in the policy decisions of local authorities, in order to incorporate the concerns of local citizens in the decision-making process. The PPN provides a link between the local community and local governments. The PPN also aims to address the concerns of vulnerable households for the purpose of creating a more socially inclusive community. With over 1,200 members, the Tipperary PPN can help spread awareness about Tipperary's environmental responsibilities.

5.7 Tipperary County Council Environment Section

Tipperary County Council Environment Section contributes to the National Climate Change Adaptation framework by developing a Climate Adaptation Strategy, tailored to addressing the impact of climate change adaptations on the local environment and communities.

As a signatory to the Covenant of Mayors, the Environment Section will adopt an integrated approach to climate change mitigation and adaptation. While climate change is the common goal, climate adaptation addresses the impacts of climate change and climate mitigation examines the causes of climate change. In identifying synergies and opportunities, the Environment Section as the co-ordinator of the Climate Adaptation strategy will collaborate with Tipperary Energy Agency in the implementation of the Sustainable Energy Action Plan. The action plans outlined in both strategies will contribute to assisting the local authority in incorporating climate change into future economic, social and environmental policies and plans.

The Environment Section is also the lead coordinator of the Tipperary County Council Energy Action Plan responsible for the delivery of a 33% improvement in energy efficiency by 2020.

5.8 Tipperary County Council Planning Section

Following a decision to amalgamate North and South Tipperary County Councils, Tipperary County Council was established on the 1st June 2014. At present Tipperary has two county development plans in force viz. the South Tipperary County Development Plan 2009 and the North Tipperary Development Plan 2010. A common written statement that incorporates policies and objectives of both development plans is now in place. Both development plans will remain in force until a new Regional Spatial and Economic Strategy is prepared by the Southern Regional Assembly.

The main function of the Tipperary County Council Planning Section is to promote and facilitate the deployment of sustainable communities and enterprise and to ensure the protection of the heritage and amenity of the county.

The development of a strong renewable energy sector is highly dependent on a functioning and well informed planning authority. Despite the fact that Tipperary has shown considerable renewable deployment, particularly in wind energy, there is still considerable scope for improvement in the deployment of renewable energy sources in the county. In order to provide a sufficient quality of support to the renewal energy sector, the Planning Section will provide appropriate ongoing training for its staff in this area.

5.9 Tipperary County Council Community and Economic Development Unit

The Tipperary County Council Community and Economic Development unit works in conjunction with LEO Tipperary and is tasked with the deployment of the Regional Action Plan for jobs. This body is primarily concerned with encouraging economic development and enhancing the wellbeing and quality of life of the community in Tipperary by actively encouraging entrepreneurship, community development and social cohesion. As with the PPN, the Community and Economic Development unit puts particular emphasis on the involvement of marginalized households such as low income and elderly households.

5.10 Tipperary Energy Agency

Tipperary Energy Agency is a social enterprise whose aim is to lower Tipperary's dependence on imported fossil fuel, reduce its carbon footprint while also cutting its energy costs. Tipperary Energy Agency's areas of expertise include community energy, renewable energy, energy management and energy in buildings. The social enterprise model enables Tipperary Energy Agency to provide cost effective professional services at a local, national and European level.

6 BASELINE EMISSIONS INVENTORY

The purpose of this inventory is to isolate and analyze Tipperary's energy statistics in order to provide a quantitative understanding of the county's emissions performance. This will help to determine abatement measures, which are better suited to the local area. This assessment will review Tipperary's energy consumption and carbon emissions statistics in the industrial, transport, residential, commercial and agricultural sectors. A general decline in both energy consumption and emissions in every sector analyzed can be observed. Although this represents an encouraging trend, fossil fuels still dominate Tipperary's energy mix. Thus, in each section some recommendations have been made, which if implemented, will contribute to a reduction in carbon emissions and increased energy efficiency.

In order to analyze County Tipperary's energy performance, national emissions statistical data from the Sustainable Energy Authority of Ireland (SEAI) was adjusted using information provided by the Central Statistics Office. With Ireland's 2020 targets fast approaching, the importance of mobilizing citizens at a local level cannot be understated. The SEAP is a direct response to that fact and aims to provide the information needed to improve Tipperary's carbon footprint.

6.1 Baseline Year

2005 was selected as the baseline year for Tipperary's SEAP, as this year marked the slowing down of a period of rapid economic expansion and the beginning of a new era for energy in Ireland, defined by slower economic growth and greater renewable energy production. Final energy demand is a measure of the energy that is delivered to energy end users in the economy to undertake activities as diverse as manufacturing, movement of people and goods, essential services and other day-to-day energy requirements of living. This is also known as total final consumption (TFC). Total final consumption in Tipperary in 2005 was 5401 GWh. As can be seen in Figure 1, the carbon emissions for the 2005 baseline year was 1671 kilotonnes of CO₂. A 30% reduction in carbon dioxide emissions levels from 2005 would equate to 1169 kilotonnes (kt) of CO₂. This would be an 87 kilotonne reduction from 2014 levels.

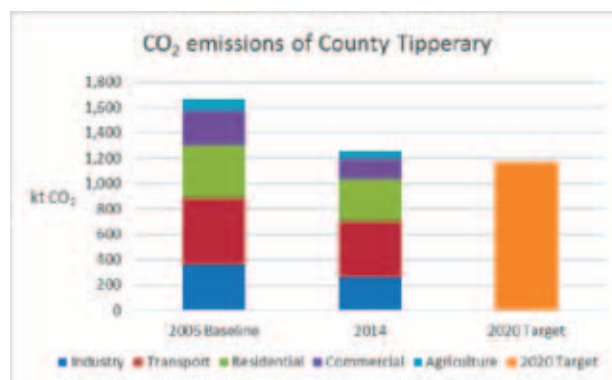


Figure 1: CO₂ emissions of County Tipperary

Note: The CO₂ emissions baseline is based on energy use only, and does not include CO₂ emissions from land use change, landfills or ruminant agriculture.

6.2 Methodology

Data was taken from the Sustainable Energy Authority of Ireland's (SEAI) annual energy balances, which detail energy consumption in Ireland. This data was broken down into the amount of energy used in each sector (industry, commercial, transport, residential and agriculture) and each fuel source (natural gas, oil, renewables, etc.). Annual employment figures were then taken from the Central Statistics Office (CSO) to find what portion of Ireland's commercial and industrial sector employees work in Tipperary. The CSO data was also used to find what percentage of Ireland's agricultural land, households and cars are in Tipperary.

The ratio of commercial sector employees in Tipperary as a percentage of those employed nationally was then multiplied by the figures for Irish commercial sector energy consumption in order to find the energy consumption for Tipperary's commercial sector. The same exercise was carried out for the industrial sector.

$$\frac{\text{Tipperary Commercial Employees}}{\text{Ireland Commercial Employees}} \times \text{Ireland Commercial TFC} = \text{Tipperary Commercial TFC}$$

(*TFC; total final consumption)

A Building Energy Rating (BER) certificate is an indication of the energy performance of a house. The average BER value nationally and for Tipperary was established from the SEAI's national database of BERs. This data shows that houses in Tipperary use 11% more energy than the national average. This figure is defined as the residential local factor. The ratio of Tipperary homes to Irish homes, on an annual basis, was then found. The fuel sources from the Irish residential sector was then multiplied by this ratio, while also accounting for the residential local factor, in order to find the energy consumption from the various fuel sources which are attributable to Tipperary's residential sector.

The ratio of the annual number of cars in Tipperary to the annual number of cars in Ireland is then multiplied by the energy balance figures for energy consumption in the transport sector. The ratio of agricultural land use in Tipperary to national agricultural land is then multiplied by the figures for consumption in the agricultural sector in order to find the agricultural energy consumption in Tipperary.

Carbon emission factors were then used to determine the carbon emissions attributable to each fuel source, for each of the five sectors i.e. Industrial, transport, Residential and Commercial.

6.3 Baseline year consumption and emissions

In the baseline year, 2005, County Tipperary consumed 1671 GWh of energy. In Figure 2, which depicts the energy consumption by sector, transport constitutes the greatest portion of energy consumption in Tipperary, followed by residential, industry, commercial, with agriculture having the lowest energy consumption.

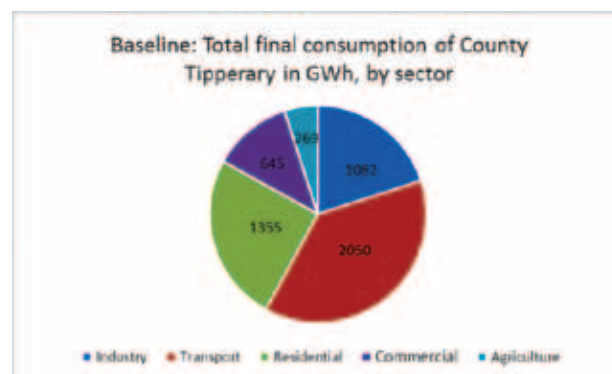


Figure 2: Baseline: Total final consumption of County Tipperary in GWh, by sector

The breakdown in terms of carbon dioxide emissions by sector can be seen in Figure 3. The sectors rank in the same order for carbon emissions as they do for energy consumption, with transport emitting the greatest amount of carbon dioxide and agriculture emitting the least. Although transport is again the highest emitter of pollutants, the proportion of carbon emissions is relatively low. This can be attributed to the fact that transport is predominately fuelled by petroleum, which is not as carbon intensive as coal or peat.

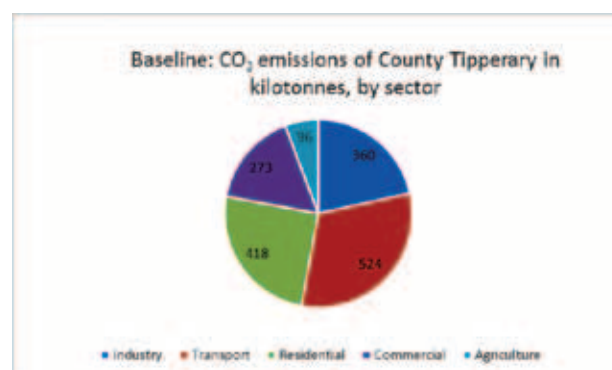


Figure 3: Baseline: CO₂ emissions of County Tipperary in kilotonnes, by sector

Figure 4 illustrates the fuel mixture in County Tipperary in the baseline year. It is apparent that petroleum based fuels make up the majority of total final consumption. The transport sector is dominated by these petroleum based fuels and most of the heating in County Tipperary is also powered by petroleum based fuels.

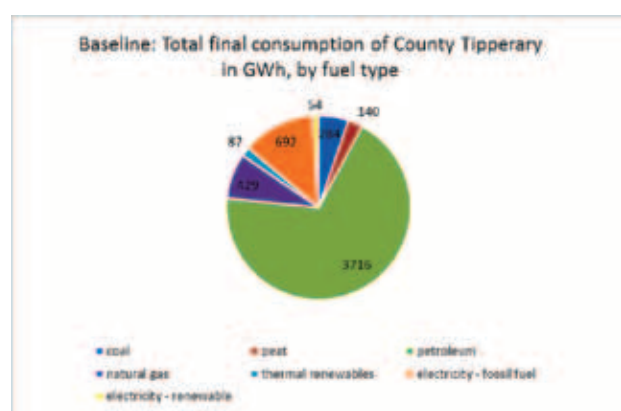


Figure 4: Baseline: Total final consumption of County Tipperary in GWh, by fuel type

It is apparent from Figure 5 that, as in the case of consumption, petroleum makes up the majority of carbon dioxide emissions for County Tipperary, although it is a smaller portion compared to its share of the energy consumption. Although it emits carbon dioxide, on a per kilowatt hour basis, petrol emits less carbon dioxide than other fuels like peat, or coal.

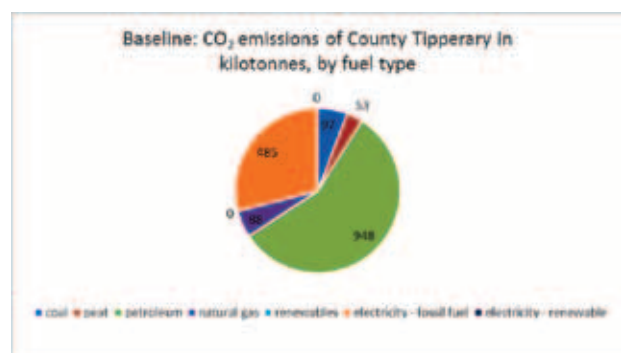


Figure 5: Baseline: CO₂ emissions of County Tipperary in kilotonnes, by fuel type

6.4 Tipperary's 1990-2014 consumption

It is apparent from Figure 6 that County Tipperary's total final consumption peaked around 2008. Growing public awareness of energy efficiency, combined with economic recession led to a significant decrease in the following years. The share of renewable energy has also grown steadily since 1990, starting at 2.5% of total final consumption, to 7.5% in 2014. There has also been a gradual reduction in both coal and peat use since 1990; peat and coal comprised 24% of consumption in 1990, but only 5.3% in 2014.

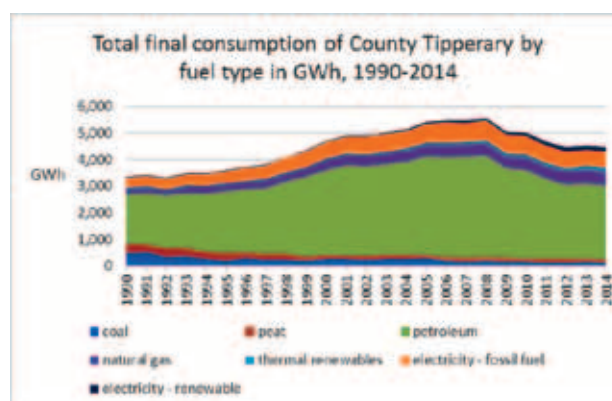


Figure 6: Total final consumption of County Tipperary by fuel type in GWh, 1990-2014

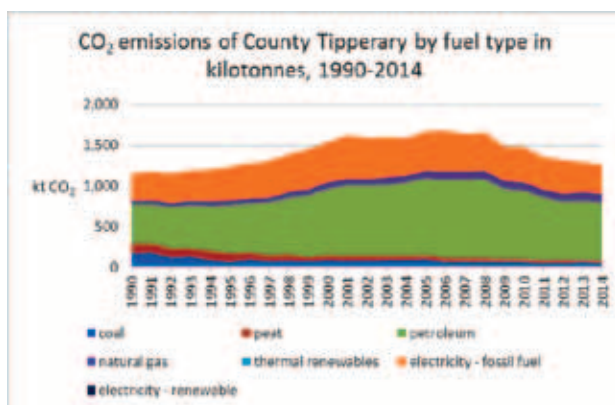


Figure 7: CO₂ emissions of County Tipperary by fuel type in kilotonnes, 1990-2014

There has been a similar reduction in CO₂ emissions since a peak in the mid-2000s, as illustrated in Figure 7. The fall in carbon emissions is greater than that of energy consumption. This can be explained by the growth in energy from renewable sources, which creates significantly less carbon emissions than conventional fuel sources. In order to continue to pursue economic growth unhindered by the natural limitations of the environment, energy consumption must continue to be decoupled from emissions.

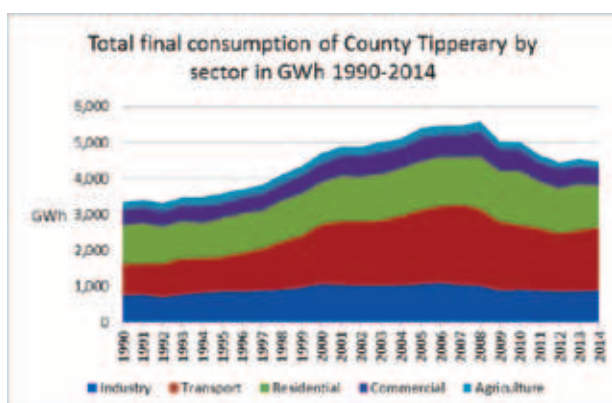


Figure 8: Total final consumption of County Tipperary by sector in GWh 1990-2014

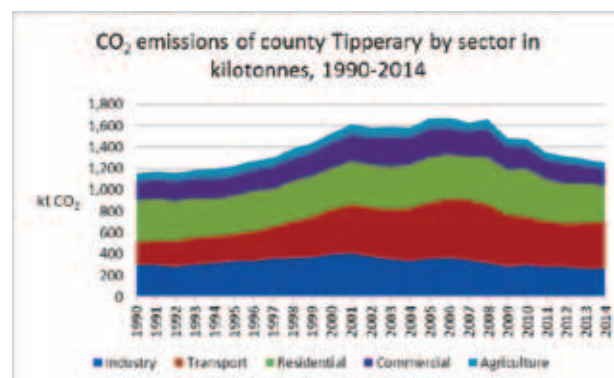


Figure 9: CO₂ emissions of County Tipperary by sector in kilotonnes, 1990-2014

It is apparent from Figure 8 that the transport sector represents the highest consumer of energy. However, there has been a considerable level of fluctuation in energy consumption since 1990, peaking in the late 2000's. There also appears to have been a general growth in energy consumption, beginning in the early 90's and falling sharply in late 2007 and early 2008. This mirrors precisely the strongest period of economic growth in Irish history and clearly demonstrates the importance of decoupling energy consumption from emissions. These statistics clearly demonstrate the importance of increasing the amount of renewable energy on the grid and the need to accelerate the provision of energy efficiency measures. As with total final consumption, Figure 9 illustrates that the transport sector makes up the largest share of carbon emissions.

7 ACTIONS

7.1 Planning

Tipperary County Council Planning Authority will play an important role in influencing energy consumption and the delivery of the SEAP. The Planning Authority has the responsibility for preparing the land use planning frameworks for the county and for assessing planning applications for development. The challenge for the Planning Authority is one of educating and making planning applicants and their agents aware of current legislation and the available options in respect of energy efficiency and renewable energy options and measures.

Action 1	<i>Develop a heat demand map and a sustainable heat strategy for the county</i>
Description	<i>Develop a map of heating demand and a supporting strategy to deliver sustainable heating solutions for communities of Tipperary</i>
Responsible party	<i>Tipperary County Council Planning Authority, Tipperary Energy Agency, LIT</i>
Timing	<i>2017</i>
Cost	<i>To be determined</i>
Impact	<i>This action will not have any direct carbon emissions savings in its own right, but it will help to bolster savings from other actions.</i>

A heat map which describes the heating demands of local areas within Tipperary will be developed. This map will help facilitate the development of feasibility studies for projects such as District Heating, biomass boilers and heat pumps. The map will draw on publicly available statistics from the CSO as well as on Building Energy Ratings (BER) data. When mapping is completed a sustainable heating strategy will be developed with the goal of identifying and helping to deliver sustainable heating solutions to Tipperary and replacing existing or proposed carbon intensive systems, such as gas or oil.

Action 2	<i>District Heating Guideline</i>
Description	<i>Prepare an easy to follow guideline document to streamline the planning process and encourage the deployment of district heating systems.</i>
Responsible party	<i>Tipperary County Council Planning Section</i>
Timing	<i>2017</i>
Cost	<i>€20,000</i>
Impact	<i>This action won't have any direct carbon emissions savings itself, but it will help bolster the savings from other actions.</i>

District heating is a technology which has not yet been widely developed in Tipperary or at a national level, but it has great potential to reduce carbon emissions. There is no guidance at national level to encourage the use of District Heating but Tipperary County Council will develop guidance at county level to help identify options for District Heating and guidance for setting out land use planning considerations.



Action 3	Energy Efficiency in House Design
Description	<i>Tipperary County Council has proposed to run a clinic for planning agents on building energy efficient rural housing and to prepare a public awareness programme including guidance leaflets, webpage and social media campaign.</i>
Responsible party	<i>Tipperary County Council Planning Authority</i>
Timing	<i>Clinic to be held annually, starting in 2017</i>
Cost	<i>€5,000/year</i>
Carbon Savings	<i>230 MWh/year 80.5 tonnes CO₂/year</i>

Traditionally, buildings in the countryside were positioned to take advantage of available shelter, such as in the natural folds in the landform, orientating the building in relation to the prevailing winds and the path of the sun and using sheltered areas next to woodlands. Such factors are equally relevant today for energy conservation reasons. Many agents are well versed in these principles, the challenge now is to have all agents using best practice design. The public also needs to be informed of the benefits of energy efficient rural house design such as mitigating climate change, saving money on energy bills and creating a more comfortable home to live in.



Action 4	Renewable Energy Capacity Building for Development Management
Description	<i>Tipperary County Council has proposed the creation of a professional development training programme for staff in renewable energy technologies and planning assessments. The training programme will include courses, site visits and workshops.</i>
Responsible party	<i>Tipperary County Council Planning Authority</i>
Timing	<i>2017</i>
Cost	<i>€5,000</i>
Carbon Savings	<i>38 MWh/year 13.3 tonnes CO₂/year</i>

The importance of having well-trained Planning Authority staff is of significant importance if Tipperary is to build upon its previous successes in renewable energy deployment. Other European countries have excellent knowledge and experience in relation to the planning and development of renewable energy. Peer to peer learning would also be an ideal way to learn from others' successes and failures.

7.2 Agriculture

Approximately 73% of County Tipperary vis. 7739 farms covering 0.314 million hectares, is used for agriculture. There is scope on many farms to reduce energy usage per unit of output and also an opportunity for farmers to invest in renewable energy.

Action 5	Energy in Agriculture Event
Description	Prepare and run an event which demonstrates opportunities which exist for farmers in renewable energy, show how farming can be more energy efficient, help farmers to understand how to finance energy projects and advise on the planning and regulatory processes.
Responsible party	Tipperary County Council Planning and Environment Sections, Teagasc, Tipperary Energy Agency
Timing	Annually
Cost	€20,000
Carbon Savings	36 GWh/year 16.8 kilo tonnes of CO ₂ /year

The aim of the event is to highlight the opportunities for farmers with regard to renewable energy and how farms can operate in a more sustainable manner. The event will feature renewable energy case studies, practical on-farm demonstrations of renewable energy installations and exhibitions of relevant industry suppliers and organisations. A feed-in tariff for solar energy is expected to be introduced within a couple of years and farmers are one of the groups who are best positioned to avail of the tariff by developing solar farms on their land. Solar photovoltaic will be a core theme of the event.



Action 6	Improve the Targeted Agricultural Modernisation Scheme (TAMS) to take account of energy efficiency and renewable energy
Description	Alter existing TAMS requirement to account for energy performance
Responsible party	Teagasc
Timing	2017
Cost	€18,000/year
Carbon Savings	1000 MWh/year 350 tonnes CO ₂ /year

Teagasc and the Tipperary Energy Agency will work with the Department of Agriculture to improve existing specifications for the Targeted Agricultural Modernisation Scheme (TAMS) to account for energy efficiency and renewable energy.

Action 7	Update Energy Advice sheets for farmers
Description	Teagasc will update existing advice leaflets which will detail the energy and carbon savings opportunities in agricultural processes.
Responsible party	Teagasc
Timing	2016
Cost	€10,000
Carbon Savings	640 MWh/year 225 tonnes CO ₂ /year

Teagasc have a number of leaflets that are distributed to farmers showing the latest technological advances in the energy sector, and the opportunities in the renewable energy generation at farm scale. Advice and information sheets on farm AD plants, solar farms, bio-mass production, and energy conservation measures will be revised to detail energy carbon saving opportunities.

Action 8	<i>Energy in Agriculture Capacity Building and Knowledge Transfer</i>
Description	<i>Educate Teagasc staff and farmers on energy efficiency and renewable technologies in agriculture and include these topics in farm walks and farm discussion groups.</i>
Responsible party	Teagasc
Timing	2017 – 2020 Annually
Cost	€5,000
Carbon Savings	710 MWh/year 250 tonnes CO ₂ /year

Teagasc currently offers farm walks, at which farmers are given advice on the various factors and practices which contribute to the success of a highly productive farm. It is proposed that these walks would include farms that are energy efficient or those that take part in renewable deployment, so that farmers can see how best to manage their own energy use.



7.3 Residential

The average Building Energy Rating (BER) in Tipperary in 2016 is 290 kWh/m²/yr, which is approximately 11% or 30 kWh/m²/yr above the national average. As residential related emissions in 2005 constituted 25% of Tipperary's total carbon footprint, the importance of this type of analysis is clear. The actions detailed below will help to contribute to a more energy efficient and environmentally conscious Residential Sector in County Tipperary.

Action 9	<i>Utilise Better Energy Communities (BEC) funding to generate investment in energy infrastructure in Tipperary</i>
Description	<i>Secure BEC funding from the Sustainable Energy Authority of Ireland (SEAI) and implement energy projects.</i>
Responsible party	NTLP, Tipperary Energy Agency, Tipperary County Council
Timing	Annual basis
Cost	€5,000,000
Carbon Savings	1800 MWh/year 940 tonnes CO ₂ /year

The Better Energy Communities (BEC) programme offers up to 50% funding towards costs associated with energy efficiency upgrades of community facilities such as schools, community halls and sports clubs and 30% funding towards private sector facility upgrades. Included in this programme is the 'Insulate Tipp' scheme. The scheme enables fuel-poor households to get a stove and insulation installed at a heavily discounted rate. 'Insulate Tipp' is also available to non-fuel-poor households, though at a more modest discount.

The BEC programme is an opportunity for individuals to reduce their energy bills as well as their carbon footprint. It is, however, important that the public in Tipperary is aware of their eligibility for this scheme and to what extent. The Tipperary Energy Agency will draft a document detailing the nature of the funding that is available and the conditions under which funding is offered and disseminated to communities in Tipperary.

Action 10	<i>Retrofit homes through the SuperHomes Ireland Scheme</i>
Description	<i>Continue to deliver the SuperHomes Ireland Scheme, upgrading homes to a high level of energy performance</i>
Responsible party	<i>NTLP, Tipperary Energy Agency</i>
Timing	<i>Annual</i>
Cost	<i>€1,000,000/year</i>
Carbon Savings	<i>5000 MWh/year 1500 tonnes CO₂/year</i>



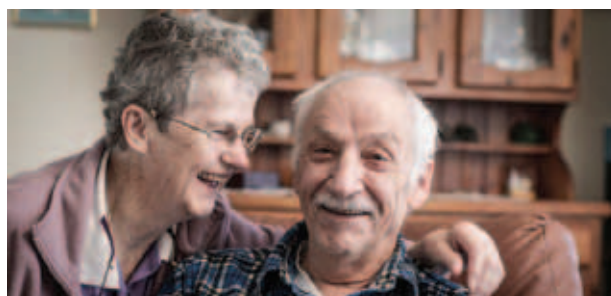
A SuperHome is an energy efficient home that has implemented all the cost effective and sensible energy measures available. Such work includes insulation, air tightness and advanced ventilation. Heat and hot water is provided by renewable energy technologies such as solar photovoltaic panels and heat pumps.

Tipperary Energy Agency aims to increase the number of households in Tipperary availing of the scheme threefold, from approximately 30 in 2016, to a total of 225 houses in 2017-2020.

Action 11	<i>Energy Retrofit for Public Health</i>
Description	<i>Provide elderly individuals at risk of health complications resulting from poor heating systems, with an energy upgrade</i>
Responsible party	<i>NTLP, STDC, Tipperary Energy Agency</i>
Timing	<i>2018</i>
Cost	<i>To be decided</i>
Carbon Savings	<i>2500 MWh/year 750 tonnes CO₂/year</i>

The lack of a well-functioning heating system can be extremely detrimental to the health of the elderly. Tipperary County Council will identify houses which are a health risk due to poorly functioning heating systems.

In order to avoid growing public health costs, and provide the most vulnerable in our society with the comfort and dignity they deserve, these households will receive a heating upgrade.



Action 12	Social Housing Energy Upgrade
Description	<i>Continue with social housing upgrades</i>
Responsible party	<i>Tipperary County Council</i>
Timing	<i>Ongoing</i>
Cost	<i>To be decided</i>
Carbon Savings	<i>15000 MWh/year 4500 tonnes CO₂/year</i>

Much of Tipperary County Council's social housing stock is currently being renovated and its energy performance being upgraded. It is planned to continue with the housing stock retrofit programme in the coming years until the entire housing stock meets current standards.

Action 13	Active Energy Citizen
Description	<i>Encourage citizens to become more energy conscious and to organise energy days in co-operation with the European Commission</i>
Responsible party	<i>PPN/ Tipperary Energy Agency</i>
Timing	<i>2017</i>
Cost	<i>€5,000</i>
Impact	<i>This action will encourage citizens to avail of local and national retrofit funding schemes, resulting in lower carbon emissions.</i>

The PPN has proposed the setting up of a workshop offering an environmental focus within its "Active Citizenship" scheme aimed at producing 'Active Energy citizens'. The workshops will aim to make 'Energy Champions' of the participants, who will go back to their communities and inform them of what they learned at the workshops. The Tipperary Energy Agency will consider funding opportunities to help bolster these workshops, while also providing the energy content for the presentations, with a focus on free/low cost means of reducing energy consumption and resulting carbon emissions.



Action 14	Encourage Near Zero Energy Buildings (NZEB) Awareness
Description	<i>Promote the awareness of the NZEB standards through an NZEB open doors event facilitated by Tipperary County Council</i>
Responsible party	<i>Tipperary County Council Planning Authority</i>
Timing	<i>Twice/year</i>
Cost	<i>€1000</i>
Impact	<i>This action will encourage citizens to avail of local and national energy efficiency funding schemes, resulting in lower carbon emissions from Tipperary's housing stock.</i>

The European Energy Performance of Buildings Directive Recast (EPBD) requires all new buildings to be Near Zero Energy Buildings by 31st December 2020 and all buildings acquired by public bodies by 31st December 2018. This open-door event is aimed at promoting the construction of NZEB houses. This event can also serve to promote the advantages of a more energy efficient home i.e. comfort and lower energy costs.



7.4 Commercial sector

The majority of commercial enterprise in County Tipperary consists of small/medium-sized business, with a small hospitality sector. This sector has, to date, been relatively uninvolved in the promotion and/or adoption of energy efficient technologies and practices. This is due to the fact that many of these SMEs are focused on remaining financially buoyant in an economy with relatively low consumer expenditure, ensuring that their economic perspective remains firmly rooted in short run business cycles. Thus, with survival as the main objective, these businesses have little or no time/capital to dedicate to energy upgrades. Energy efficient upgrades require expenditure in the short-term and provide benefits over a prolonged period of time. Thus, energy efficient upgrades represent a dilemma for firms struggling to remain sufficiently capitalised in a contracted consumer economy.

However, the importance of ensuring the long term sustainability of Irish commerce cannot be understated and thus SME's must be encouraged/enabled to make long-term investment decisions. SMEs must be made aware of the benefits of greater energy efficiency, not only in terms of climate change abatement, but also in terms of how it can contribute to reducing their costs in the present. Thus, a central aim of the SEAP is to raise awareness about the financial benefits of energy efficiency for SME's and the actions outlined below will help to deliver this aim.

Action 15	SME Energy Survey
Description	Compose, distribute and analyse the results of a survey for SMEs, on their energy needs and awareness.
Responsible party	Tipperary Energy Agency, Local Enterprise Office Tipperary, Tipperary County Council Community & Enterprise Unit, Enterprise Ireland
Timing	2017
Cost	€2000/year
Impact	The energy and carbon savings from this action is hard to quantify, but this will no doubt have a positive impact.

A questionnaire will be distributed to small and medium-sized enterprises in Tipperary. The purpose of this survey is to gauge the energy issues experienced by these companies and what supports they may require in the future. This will enable a better understanding of how to engage SMEs in the area of energy efficiency. There are supports available to SMEs for energy efficiency upgrades and the survey will help ascertain their level of awareness of these funding sources. The survey will also be used to inform the content of the SME Energy Expo and potential future actions for engaging SMEs in energy efficiency projects.

Action 16	SME Energy Expo
Description	Host an Energy Expo to educate SMEs on energy efficiency
Responsible party	Tipperary Energy Agency, Local Enterprise Office Tipperary, Tipperary County Council Community & Enterprise, Enterprise Ireland
Timing	2017
Cost	€30,000/year
Impact	The energy and carbon savings obtained as a consequence of holding this event is hard to quantify, but by educating SMEs on energy efficiency they can make their businesses more energy efficient and in turn reduce their energy consumption and carbon emissions.

The Energy Expo for SMEs in Tipperary will raise awareness about the potential for reducing costs by becoming more energy efficient. The event will be held in 2017 and may be run on an annual basis pending demand. Tipperary Energy Agency, Teagasc and Tipperary County Council ran a very successful Energy Expo targeted at the Agriculture Sector in 2016. A similar approach will be taken in an effort to engage SMEs in energy efficiency. This will provide informative talks on energy efficiency and will accommodate representatives from various energy service providers.

Action 17	Business Energy Seminars
Description	Run energy seminars for various business organisations around the county
Responsible party	Tipperary Energy Agency, Tipperary County Council Community & Enterprise, Local Enterprise Office
Timing	Annually
Cost	€5000
Impact	The energy and carbon savings obtained from running this event is hard to quantify but by educating SMEs they can make their businesses more energy efficient and in turn reduce their energy consumption

In an effort to raise awareness about energy efficiency, energy seminars will be organised for business organisations around the county on an annual basis. These events will focus on raising awareness of the funding available for energy upgrades and will provide information on how to reduce energy consumption and costs as well as advice on how to read energy bills. The first of these seminars was held earlier in 2016.



Action 18	Energy Support Centre
Description	Explore the opportunities for a shared Energy Manager for small and medium business, whose energy consumption does not justify a dedicated person
Responsible party	Tipperary Energy Agency, Tipperary County Council C&E, LEO Tipperary, Enterprise Ireland
Timing	2017
Cost	Self-funded
Carbon saving	1500 MWh/year 525 tonnes CO ₂ /year

SMEs, as commercial entities which tend to have rather limited resources available for the purpose of ensuring energy efficiency will rarely, if ever, employ a full-time Energy Manager. Northern Austria has been effective in engaging with SMEs in this fashion and an attempt will be made to replicate this model. Different types of business can come to one dedicated centre in order to receive advice on energy bills, upgrades and to make general enquiries about energy efficiency. By providing one specialised centre which is available to all SMEs, the economies of scale necessary may be achieved to provide a quality service at an affordable price.

Action 19	Engage local enterprise in sustainable energy practices
Description	Supporting local enterprises to become more sustainable from an energy perspective
Responsible party	Tipperary Energy Agency, Tipperary County Council Community & Economic Development unit, LEO
Timing	Ongoing
Cost	€0
Carbon saving	This action will encourage uptake of investment support for businesses, resulting in better energy performance and thus reduced carbon emissions.

Tipperary County Council Community and Economic Development unit aims to improve the sustainability of the county's energy use by supporting SMEs in the use of energy efficiency technologies. The purpose of this initiative is to maximise the competitiveness of SMEs and to educate companies and individuals about best practice energy management.

This will involve the provision of energy management training across all sectors (manufacturing, tourism, retail and agriculture), piloting of energy programmes and sustainable transport initiatives. This action also entails the provision of research funding, education and training for the purpose of a greater understanding of sustainable energy technologies.

7.5 Renewable Energy

One of the key aims of this SEAP is to facilitate the growth of renewable energy generation in Tipperary. Tipperary has abundant renewable energy resources, which can be exploited to reduce Tipperary's dependence on imported fossil fuels. Tipperary has significant potential for growth in wind energy, biomass and the solar energy sector. Fossil fuel prices have been historically volatile, so decoupling Tipperary's energy consumption from these price fluctuations would be beneficial for the economic stability of the region.

Action 20	Renewable energy feasibility studies and resulting projects
Description	Conduct renewable energy feasibility studies
Responsible party	NTLP, STDC, Tipperary Energy Agency
Timing	2017-2020
Cost	€2,000,000 (40% funded by NTLP)
Energy Savings	5450 MWh/year 1700 tonnes CO ₂ /year



North Tipperary Leader Partnership (NTLP) and South Tipperary Development Company (STDC) have collaborated and allocated funds for the purpose of conducting 14 feasibility studies, for large and small scale renewable projects. These studies will assess the potential of solar, wind, and biomass projects and will be open to both community and privately owned developments. Successful projects may be incorporated into the Better Energy Communities (BEC) and Sustainable Energy Community (SEC) schemes.

Action 21 *Develop and support community energy through the Sustainable Energy Community network*

Description *Maximise the benefits of sustainable energy communities network and associated funding opportunities*

Responsible party *NTLP, STDC, Tipperary Energy Agency*

Timing *2017-2020*

Cost *€200,000*

Impact *This action will support groups to access other sources of funding, cutting carbon emissions.*

Tipperary Energy Agency, in partnership with the NTLP and STDC, will seek to access SEAI funding to assess energy use at a local level. The purpose of this will be to highlight energy efficiency measures which are appropriate for implementation in Tipperary.

Action 22	Local biomass supply chain development
Description	<i>Develop the local biomass supply chain, from production to consumer</i>
Responsible party	<i>NTLP, Tipperary Energy Agency, STDC</i>
Timing	<i>2017 onwards</i>
Cost	<i>€50,000</i>
Impact	<i>This action will enable the switch to local sustainable resources, away from imported carbon intensive fuels.</i>

This would allow for a steady local biomass supply, avoiding external supply risks, and ensuring money spent on heating stays within Tipperary's communities. This programme is likely to run in conjunction with the Local Authority Renewable Energy Action Strategy (LARES) and Smart Reflex (a European project whose aim is to help spur on the development of biomass across Europe), of which the Tipperary Energy Agency are project partners, and will be open to privately run projects.

Action 23	Energy upgrades to community centres
Description	<i>Improve energy efficiency of community centres in Tipperary</i>
Responsible party	<i>NTLP, STDC, Tipperary Energy Agency</i>
Timing	<i>2017</i>
Cost	<i>€10,000</i>
Impact	<i>This action will encourage community halls to utilise available sources of funding to lower carbon emissions.</i>

Many of the Community Centres in Tipperary are old and have high energy costs. NTLP will look to fund energy upgrades of these buildings, while also supplementing funding with the BEC scheme.

7.6 Education

The general public's knowledge of energy efficiency has grown in recent years. The SEAP is dedicated to ensuring that this trend continues by educating the public about energy efficiency. The ultimate aim is to provide the Tipperary energy sector with an appropriately educated work force in order to sustain the county's energy transition.

Action 24	Energy related programme development & delivery
Description	<i>Develop courses to build capacity of organisations, individuals and communities in relation to energy management and renewable energy</i>
Responsible party	<i>LIT, Tipperary Energy Agency</i>
Timing	<i>2017-2019</i>
Cost	<i>€15,000</i>
Impact	<i>This action will result in greater uptake of other carbon reducing actions detailed throughout this section.</i>



LIT will begin to offer courses specifically aimed at educating a new generation of energy-related experts. This will involve the setting up of new programmes as well as the adaptation of existing ones. Public sector energy management and community renewable energy development have been highlighted as two programmes with enormous potential, however demand would have to be gauged. These programmes could be offered on a part-time, night-time, or flexible learning basis.

Action 25	Energy & carbon research activities
Description	Complete a number of research projects by utilising a range of funding and other resources in LIT. This will range from final year projects to a research degree such as Masters by Research
Responsible party	LIT, Tipperary Energy Agency
Timing	2017-2020
Cost	€500,000
Impact	This action will result in better and more robust energy and carbon savings in future energy projects.

LIT operates a highly successful graduate research office with over 100 post-graduate students completing research across a range of fields in the Institute. LIT and the Tipperary Energy Agency will seek to access a range of funding mechanisms, both internal and external, to conduct research into identified areas. Such research would address energy related topics, which could be beneficial for the development of national policy and best practice. There is also a possibility that this work could be carried out in conjunction with Horizon 2020 or Erasmus funding (refer to section 8). This research may help to inform future energy policy as well as shedding some light on the benefits of energy upgrades.

Action 26	Enterprise Development
Description	Support enterprise development through promotion of LITs Enterprise Centres and Enterprise Support Programme
Responsible party	LIT, Tipperary Energy Agency
Timing	2017
Cost	Yet to be determined

Carbon saving	Yet to be determined
LIT has a range of enterprise centres across the region that it supports (Thurles, Clonmel, Limerick City, Croom). Each centre has the potential to house start-up companies and there are a range of supports available through LIT's Enterprise Ladder which serves to maximise the potential development of such companies. LIT will continue to work with Tipperary Energy Agency and other stakeholders in Co. Tipperary to promote and develop companies providing energy services in the region.	

Action 27	PPN Energy Network
Description	Engage citizens in energy awareness via the Public Participation Network.
Responsible party	PPN, Tipperary Energy Agency
Timing	Ongoing
Cost	€2000/year
Carbon saving	1 MWh/year 0.45 tonnes/year

The Public Participation Network (PPN) has proposed to improve citizen participation in the development of local energy and food projects in County Tipperary. This organisation has begun to host information seminars and annual visits to projects, which demonstrate excellent energy performance such as the Cloughjordan Eco Village. The purpose of these events is to raise awareness



about energy issues and to improve citizen participation in the development of local energy and food projects in County Tipperary.

Action 28	Consultation, Information Sharing and Communications
Description	<i>Update the public on all pertinent information regarding the SEAP.</i>
Responsible party	PPN, Tipperary Energy Agency
Timing	<i>As arises</i>
Cost	€1,000
Carbon saving	None

The PPN aims to ensure that its members are made aware of all of the information contained in the SEAP. The SEAP was assembled by the stakeholders but without public consultation, as it is the stakeholders who have the responsibility for undertaking the actions. However, in order to ensure that the public is made aware of the various actions therein, the PPN will publicize the SEAP.

Action 29	Inform Public on available energy grant schemes
Description	<i>Help raise public awareness of exiting grant opportunities</i>
Responsible party	PPN, Tipperary Energy Agency
Timing	<i>Early 2017</i>
Cost	€2,000/year
Carbon saving	<i>This action will result in greater uptake of other sources of funding for energy upgrade projects, resulting in lower carbon emissions.</i>

There are many available sources of funding for upgrading energy in existence already, but the public awareness of many of these schemes is low. The PPN will disseminate information provided to them by Tipperary Energy Agency, at opportune times, to help make people aware of available grants.

7.7 Transport

Transport is one of the more difficult sectors to progress as Tipperary's transport emissions are directly linked to many factors outside of the county, while also requiring significant behavioural change from the public. However, there are some actions that can be taken to reduce carbon emissions in this sector.

Action 30	Consider feasibility of Park-and-Ride Facility
Description	<i>Undertake a survey to assess feasibility of a park-and-ride facility</i>
Responsible party	Tipperary County Council
Timing	2017
Cost	€2,000
Impact	<i>This action won't result in direct carbon reductions, but may enable a future project resulting in substantial carbon savings.</i>

An assessment of the viability of a Park-and-Ride facility adjacent to a motorway, to facilitate carpooling will be undertaken. This facility would give car-poolers a convenient meeting point for ride sharing and the space to park cars that are not making the journey, resulting in less carbon emissions and less traffic.

7.8 Local Authority

Tipperary County Council has substantial influence over energy consumption and resulting carbon emissions in the county. The Council's own carbon emissions alone are significant. It is legally obliged to lower its primary energy consumption by 33% from 2006-2008 levels by 2020.

Action 31	<i>Continue implementation of an annual Energy Action Plan</i>
Description	<i>Continue to lower carbon emissions from Tipperary County Council and implement plans and programme to deliver 33% energy efficiency improvements by 2020</i>
Responsible party	<i>Tipperary County Council</i>
Timing	<i>Ongoing</i>
Cost	<i>€400,000/year</i>
Carbon saving	<i>3.4 GWh 1550 tonnes CO₂</i>

Tipperary County Council has been successful so far in reducing its energy consumption and resulting carbon emissions. This has been largely through energy efficiency upgrades, as well as some onsite renewable energy generation. Implementation of the Energy Action Plan is ongoing and proposes to continue with the development of new and maintenance of existing energy efficiency and renewable energy projects.

7.9 Funding

Action 32	<i>Apply for ELENA assistance for implementation of this SEAP</i>
Description	<i>Investigate potential for ELENA assistance to support the implementation of this SEAP</i>
Responsible party	<i>TEA/ Tipperary County Council</i>
Timing	<i>2017</i>
Cost	<i>€15,000</i>
Carbon saving	<i>none</i>

A description is provided in Section 8.

8 FUNDING

8.1 Better Energy Communities

The Better Energy Communities (BEC) is an energy efficiency grant scheme available through the SEAI and administered by the TEA in partnership with NTLP.

BEC energy efficiency grant aid is available:

- Up to 50% funding for community facilities such as community halls, resource centres, schools, sports clubs etc.
- Up to 30% funding for private sector facilities such as SMEs, large commercial buildings, private nursing homes and hotels.

The BEC programme is managed by SEAI and it is financed by Ireland's structural funding programme, which in turn is co-funded by the Irish Government and the European Union (EU). The BEC programme supports high quality improvements in energy efficiency within Irish communities.

8.2 Insulate Tipp

The Insulate Tipp Scheme (formerly Tipperary Warmer Homes Scheme) provides house insulation and stove grants to homeowners in Tipperary. It is managed by the TEA and is co-funded by the BEC programme and Electric Ireland.

8.3 North Tipperary Leader Partnership (NTLP)

NTLP provides a broad range of community supports ranging from grant aid for village enhancement and community facilities to the provision of community development activities. NTLP objectives are to:

- improve the quality of life of individuals, groups and communities in North Tipperary and encourage economic diversification and promote social inclusion
- provide appropriate supports to enhance the economic and social attractiveness of villages, small towns and the surrounding countryside
- provide an integrated approach to the protection of the local heritage through a suite of related preservation actions, complemented by a range of initiatives designed to develop the sustainable economic contribution of the natural heritage.

8.4 European Funding opportunities

• Cohesion Policy

Cohesion Policy is the EU's main investment policy. It targets all regions and cities in the European Union in order to support job creation, business competitiveness, economic growth, sustainable development, and improve citizens' quality of life. By 2020 the EU aims to meet five concrete objectives – on employment, innovation, education, social inclusion, and climate/energy. Each Member State has adopted its own national targets in these areas. In order to reach these goals and address the diverse development needs in all EU regions, EUR351.8 billion – almost a third of the total EU budget – has been set aside for Cohesion Policy for 2014-2020.

• Horizon 2020

Horizon 2020 is the biggest EU Research and Innovation programme ever with nearly €80 billion of funding available over 7 years (2014 to 2020) – in addition to the private investment that this money will attract. It promises more breakthroughs, discoveries and world-firsts by taking great ideas from the lab to the market.

- **Interreg**

Interreg Europe helps regional and local governments across Europe to develop and deliver better policy. By creating an environment and opportunities for sharing solutions, its aim is to ensure that government investment, innovation and implementation efforts all lead to integrated and sustainable impact for people and place. Interreg Europe aims to get maximum return from the EUR 359 million financed by the European Regional Development Fund (ERDF) for 2014-2020. This time round, it's still about doing good, but doing it better.

- **LIFE (2014-2020)**

The LIFE (the Financial Instrument for the Environment) Regulation, which was published on 20 December 2013, sets a budget for the next funding period, 2014–2020, of €3.4 billion. The LIFE programme is the EU's funding instrument for the environment and climate action. The general objective of LIFE is to contribute to the implementation, updating and development of EU environmental and climate policy and legislation by co-financing projects with European added value.

- **ELENA (European Local ENergy Assistance)**

ELENA is a technical assistance programme of the European Commission supporting regions and cities in the preparation of major investment projects, and the programme is operationally maintained by the European Investment Bank - EIB on behalf of the European Commission. This Funding covers only the personnel to develop the investment (energy audits/ procurement etc.) not the capital costs

- **The Erasmus Programme**

The Erasmus Programme is an EU exchange student programme that has been in existence since the late 1980s. Its purpose is to provide foreign exchange options for students from within the European Union and it involves many of the best universities and seats of learning on the continent. The programme is aimed at cross-border cooperation between states to aid the growth of international studying.

9 MONITORING AND REPORTING

Monitoring and reporting is a key aspect of a successful SEAP process. Regular monitoring will allow the plan to be adapted and improved upon throughout the lifetime of the process. The TEA will monitor, review and adapt the SEAP as needed. Every second year an implementation report will be submitted for evaluation, monitoring and verification purposes. The first monitoring report will be submitted in January 2019. The implementation report will include an updated CO₂ emissions inventory.



10 COMMUNICATION PLAN

The messages for our stakeholders include the following:

- Provide regular updates on the current energy mix in Tipperary and our reliance on fossil fuels.
- Circulate regular updates on progress in relation to energy efficiency and renewable energy projects.
- Identify energy efficiency and renewable energy opportunities to generate employment.
- Promote the financial rewards gained from reducing energy consumption.
- Highlight our energy obligations as a county.
- Raise awareness and encourage all citizens to embrace their social responsibility with regards to energy consumption.

We want our stakeholders and the wider public to be informed of our progress on the implementation of this strategy to maintain commitment and engagement with the CoM SEAP

10.1 COMMUNICATIONS CHANNELS

We will use some of the following communication channels:

- Online presence with a dedicated website 'Sustainable Tipp'.
- Case studies and stories of communities and citizens reducing their consumption.
- Launch website, local PR, and launch event with County Manager and Mayor.
- Social media campaigns
- Local radio and press
- Infographics (See Appendix 12.2)
- Online newsletter



11 CONCLUSION

All of the SEAP partners collaborated well in producing the SEAP, demonstrating a strong commitment to sustainability and this approach will need to be maintained to ensure that the SEAP is implemented. If all the actions in the SEAP are delivered as planned, by 2020 Tipperary will have reduced its annual carbon emissions by 87.5 kilotonnes, thereby lowering its carbon emissions by 30% from 2005 levels and thus will achieve the primary objective of the SEAP.

Through the successful implementation of the SEAP, Tipperary will have helped to do its part in the global fight against climate change, while also providing an example to other municipalities of a means to lowering their own carbon emissions.



12 APPENDIX

12.1 Sectoral Analysis

12.1.1 INDUSTRY

Figure 10 shows that total final consumption in the industrial sector peaked in 2000 and has decreased substantially since then. Most of this reduction has been in the use of petroleum-based fuels. However, the use of renewable fuels is still relatively small. Figure 11 shows that carbon emissions for the sector have dropped, largely due to the decreasing carbon-intensity of the electrical grid. Industrial production is almost unavoidably tied to energy consumption and despite opportunities to encourage and promote energy efficiency, reduced carbon emissions will largely depend on securing a clean energy supply. To-date Tipperary has demonstrated a strong capacity for wind and solar photovoltaic deployment, both in terms of developer led projects and community orientated projects.

Micro-generation will also be central to the provision of clean energy supply, a mode of production which is beneficial in a number of ways, it reduces the reliance on foreign fuel sources, which serves to improve Ireland's balance of trade, ensures security of supply, it creates local value and investment opportunities which may act as a lifeline to Tipperary's communities and it reduces the amount of carbon being emitted into the atmosphere.

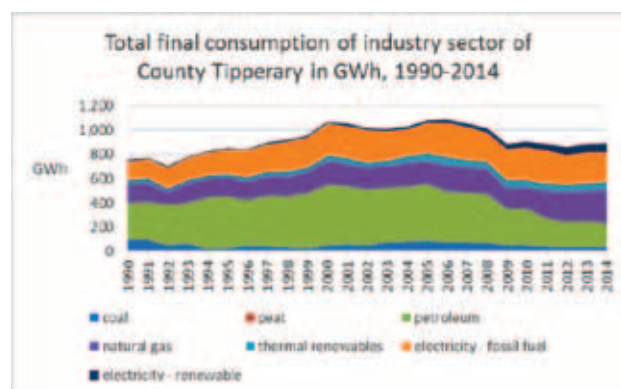


Figure 10: Industry total final consumption 1990-2014

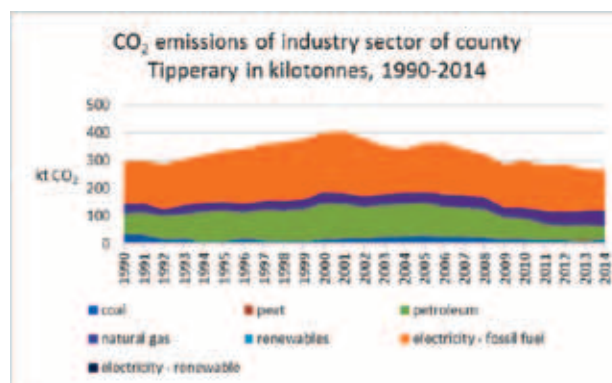


Figure 11: CO₂ emissions of industry sector of County Tipperary in kilotonnes, 1990-2014

12.1.2 TRANSPORT

Figure 12 shows that the transport sector is fuelled almost entirely by petroleum based fuels, with a negligible amount powered by thermal renewables in the form of bio-fuels and an even smaller amount fuelled by grid electricity. Similarly, Figure 13 shows that carbon emissions from the agricultural sector are entirely from petroleum based fuels.

The biggest opportunity to reduce carbon emissions in this sector is by increasing the number of electric cars on the road and continuing to increase the mix of bio-energy in transport. However, given the nature of the Electric Vehicles (EV) market at present, increasing the number of EVs will require consumers to change their habits. Car manufacturers Tesla and Nissan are leading the way by making a substantial investment in research and development and are likely to be in a prominent position to capitalize on a market which, given the increasing importance of going green and the size of the auto motor industry, has the potential to be extremely lucrative for these organizations. In order for Tipperary's usage of EVs to grow, an increase in consumer knowledge, the number of charging points and soft supports is required.

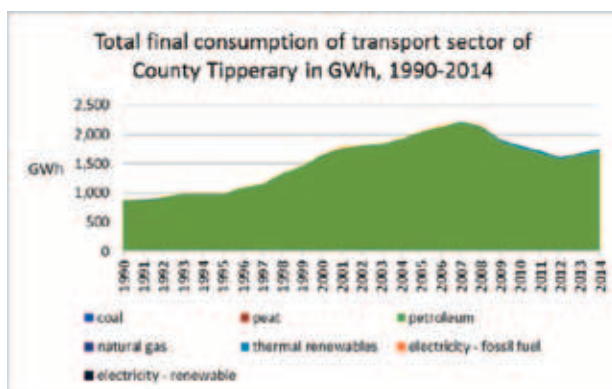


Figure 12: Total final consumption of transport sector of County Tipperary in GWh, 1990-2014

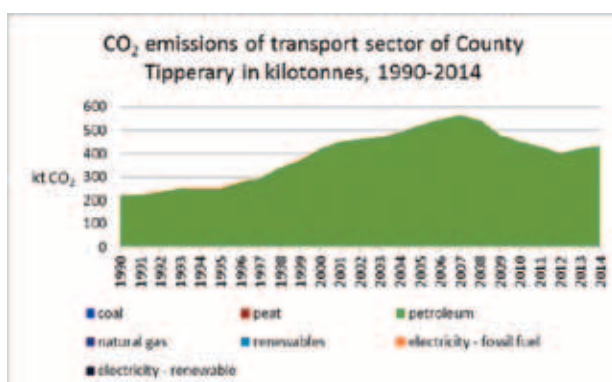


Figure 13: CO₂ emissions of transport sector of County Tipperary in kilotonnes, 1990-2014

12.1.3 RESIDENTIAL

As can be seen in Figure 14, there was a steady increase in energy demand in the residential sector between 1990 and 2010, but this has fallen sharply since then. The use of carbon-intensive fuels in the residential sector, such as coal and peat, has been in decline over the past two decades. These have been replaced by petroleum fuels, resulting in a reduction in carbon emissions. This trend is illustrated in Figure 15. Despite the substitution of one fossil fuel for another and the use of less carbon-dense fossil fuel, oil still contributes to global climate change. As the use of oil-reliant heating systems is prevalent in Tipperary, in order to reduce emissions from the residential sector, heating systems must begin to transition to biomass boilers and the use of heat pumps.

Also of note is the growth in the use of natural gas, which makes up some of the energy gap created by reductions in coal and peat consumption. Natural gas is one of the least carbon-intensive fossil fuels on the market and as such its use represents a positive occurrence in Tipperary's energy balance. However, it is still a carbon emitter and thus it will ultimately have to be replaced by renewable energy sources.

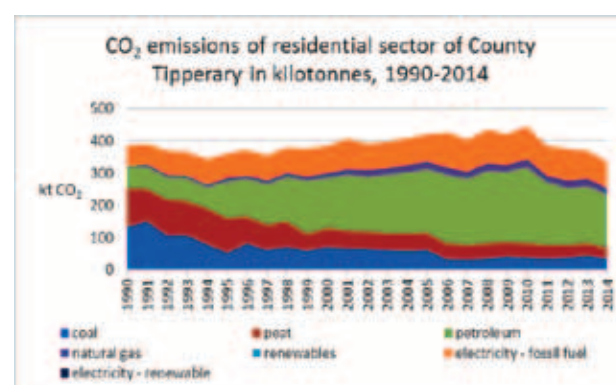


Figure 14: Residential total final consumption, 1990-2014

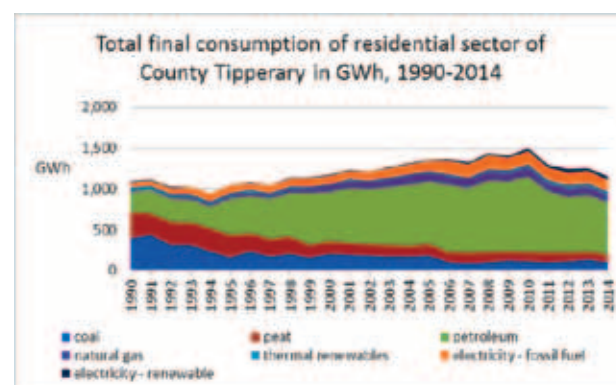


Figure 15: Residential carbon emissions, 1990-2014

12.1.4 COMMERCIAL

As illustrated in Figure 16, total final consumption in the commercial sector peaked in the late 2008 and has been in decline since then. This is likely to be related to economic factors. There has also been some growth in the consumption of thermal renewables since the mid 2000's and growth in this area needs to be encouraged.

As shown in Figure 17, the majority of commercial emissions come from grid electricity and thus the ability of the commercial sector to reduce its carbon footprint is largely limited by the fuel mix used on the grid.

Small and medium-sized enterprises (SMEs) need to be engaged and made aware of the potential benefits of energy efficiency, both in terms of their carbon footprint as well as the potential monetary gains in the form of reduced electricity bills. The inability of SMEs, for financial reasons, to obtain personalized energy efficiency assessments would suggest it may be beneficial for state bodies in Tipperary to host informative meetings for the purpose of encouraging and educating SMEs to be more energy conscious.

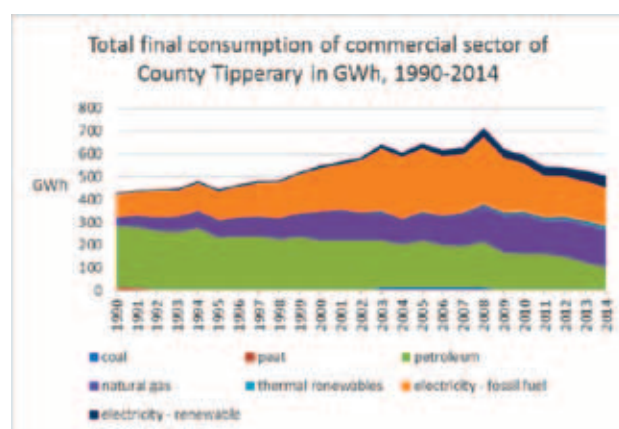


Figure 16: Commercial carbon emissions, 1990-2014

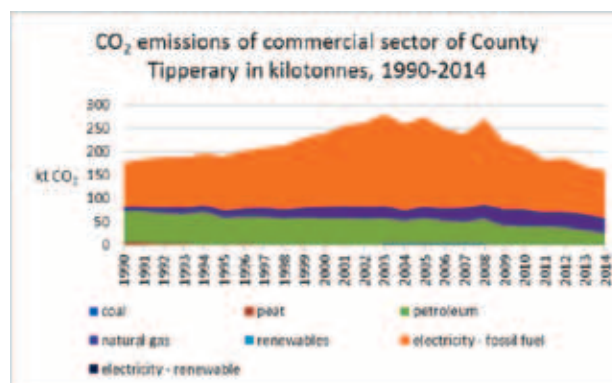


Figure 17: CO₂ emissions of commercial sector of County Tipperary in kilotonnes, 1990-2014

12.1.5 AGRICULTURE

As illustrated in Figure 18, agricultural consumption is dominated by petroleum and grid electricity usage. Emissions from the agricultural sector have declined steadily over time, as shown in Figure 19. However, encouraging farmers to become more energy efficient and conscious of limiting their emissions is key to continuing emissions reduction. The Tipperary Energy Agency, in conjunction with Teagasc, has been working to raise awareness among the farming community about the importance of energy efficiency in agriculture and the potential for farmers to benefit from renewable generation. However, given current available technology and the nature of the agricultural production process, which is heavily dependent on large machinery, it will be difficult to obtain a reduction in the use of petroleum and other fossil fuels.

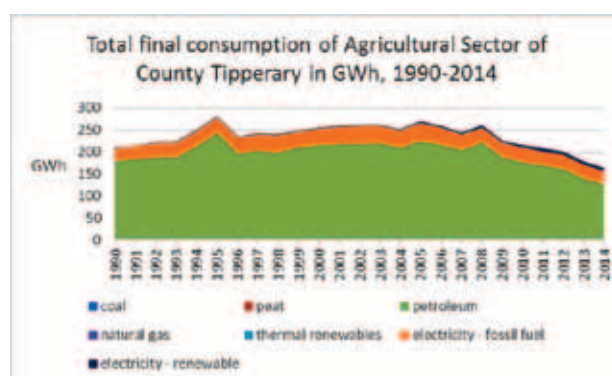


Figure 18: Total final consumption of Agricultural Sector of County Tipperary in GWh, 1990-2014

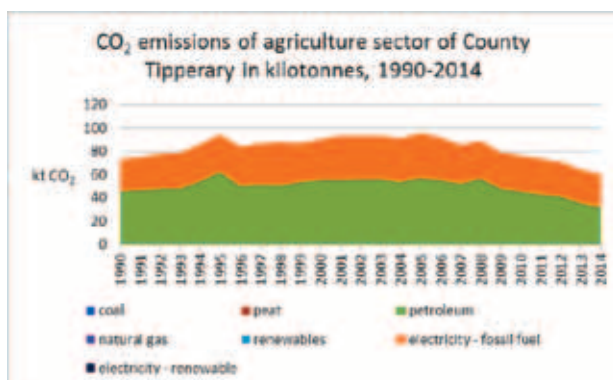


Figure 19: Agricultural carbon emissions, 1990-2014

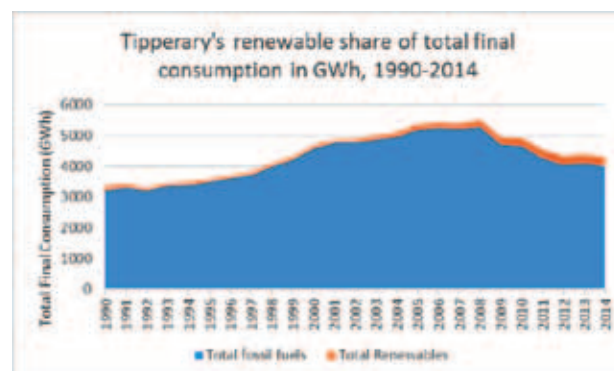


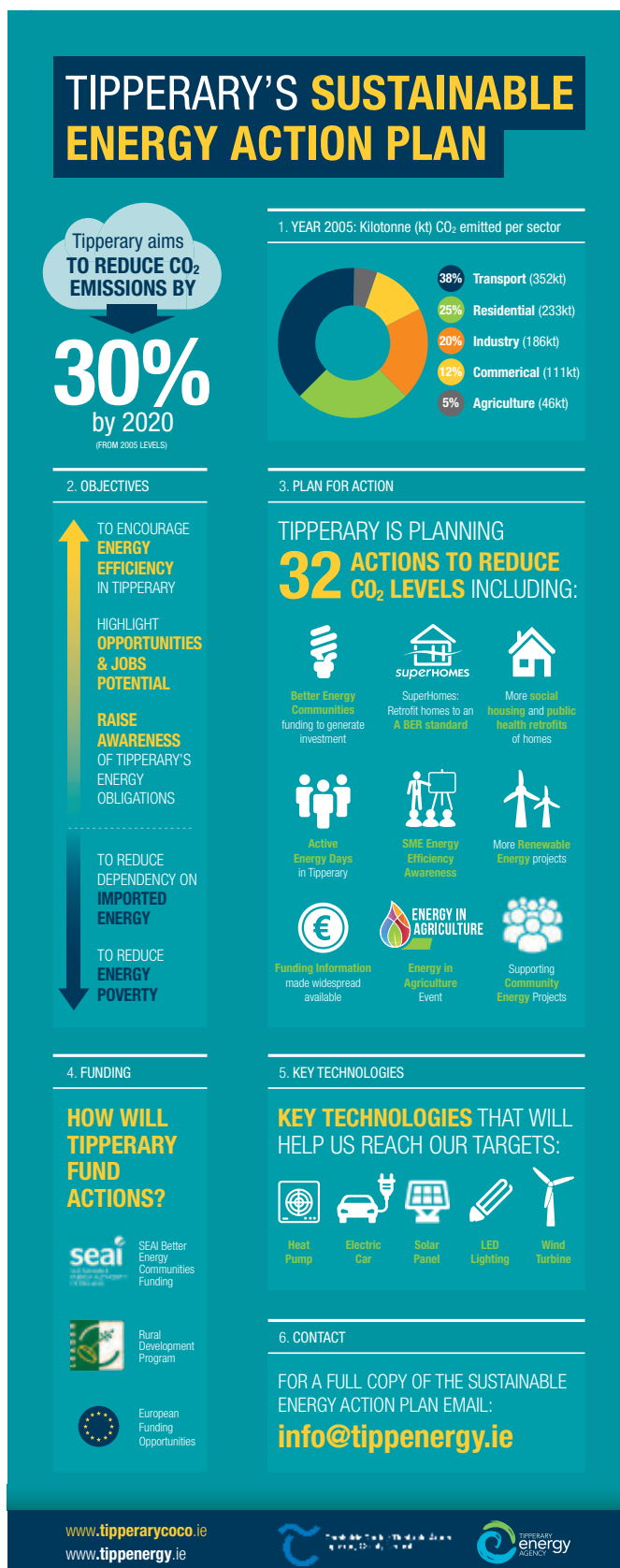
Figure 20: Renewables and fossil fuel usage in Tipperary

12.1.6 CLEAN PRIMARY ENERGY SUPPLY

All sectors are dependent, either directly or indirectly, on grid electricity. Thus, if Tipperary is to decouple energy consumption from emissions and thereby reduce the ecological fallout from energy use in each of the above mentioned sectors, then a considerable increase in renewable energy capacity will be required. Further capacity may come in the form of solar farms. The share of total renewable energy to fossil fuel usage in terms of total final consumption can be seen in Figure 20.

Tipperary has been reasonably successful at deploying renewable infrastructure, with 267.9 MW of wind capacity installed in the county, which represents 8.6% of Ireland's total capacity.

12.2 SEAP Infographic



NOTES

NOTES

