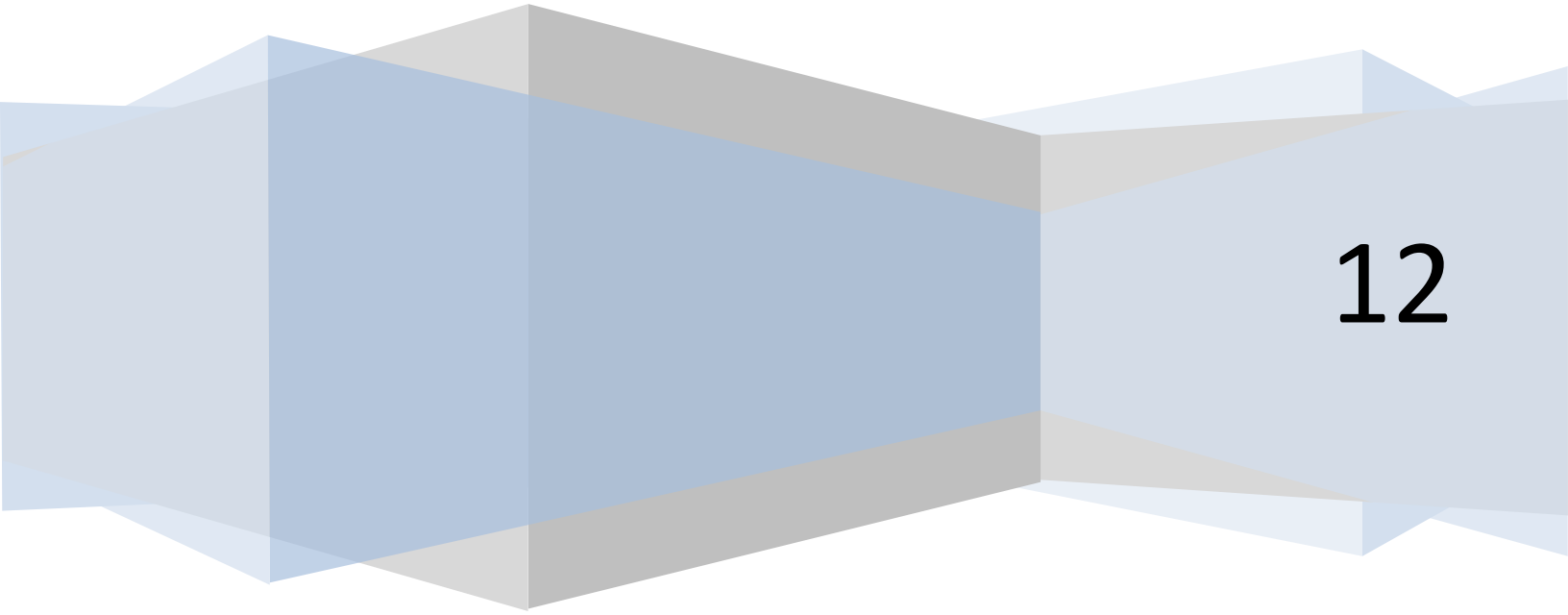
Waterford County Council

Waterford County Council Sustainable Energy Action Plan 2012-2020

Covenant of Mayors

Cllr. Liam Brazil, Mayor of County Waterford



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1. Covenant of Mayors

Introduction by Councillor Liam Brazil, Mayor of County Waterford.

Waterford County Council is committed to sustainable development. Waterford County Council is the first local authority in Ireland to prepare and implement a Climate Change Strategy; the Green Economy is an important pillar of our Economic Plan 2010 - 2014; and the County Development Plan 2011 – 2017 provides a framework for sustainable spatial development of our local area. Over the last number of years our commitment to the green economy yielded significant results for Waterford County Council:

- We have found more efficient ways of conducting business and providing services to our communities;
- We have reduced our carbon footprint; and
- We have achieved financial savings.

These results have been delivered as a result of creative thinking, a flexible workforce and meaningful engagement with local communities. For example:

- Working with communities, Waterford County Council has piloted and tested the concept of Integrated Constructed Wetlands as a carbon neutral way to address waste water treatment and landfill site remediation.
- Waterford County Council is currently implementing a €7.2million programme to deliver Smarter Travel initiatives in the County.
- Waterford County Council has three micro wind turbines at remote pumping stations generating electricity.
- Waterford County Council have installed renewable energy technology in our buildings/housing and also improved the energy efficiency/rating of these buildings.
- Waterford County Council has an Energy Agency, which facilitates the development of renewable and energy efficient technologies in Waterford, through the implementation of projects / strategies.

These are some examples of our commitment to sustainable development. Our achievements are broadly recognised, and our approach is used by the United Nations as a case study for the Rio 20+ Summit and by the EU for our success in green procurement.

However, Waterford County Council recognises that we must continue to reinforce our commitment to sustainable development, specifically to a reduction in energy consumption and carbon emissions. Our ambition is to act as an exemplar organization by illustrating to both public and private sector organisations the benefits that a focus on sustainable development can yield. In doing so, we will improve the attractiveness of County Waterford as a place to conduct business and to live.

To this end, my predecessor, the former Mayor of County Waterford, Councillor Paddy O'Callaghan, signed the Covenant of Mayors. Councillor O'Callaghan had cross-party support to do so, and as the current Mayor of County Waterford, I am delighted to present this Sustainable Energy Action Plan. This

plan is ambitions, innovative and achievable. The Council has established an in-house multi-purpose team of engineers, environmental specialists, and economists to coordinate the delivery of the plan in conjunction with the community and business interests in the County.

The objectives of the plan are to reduce the Council's energy related CO^2 emissions by 33% and to support the 20% reduction target of the energy related CO^2 emissions in County Waterford as a whole by 2020. This plan quantifies the current consumption, sets out the targeted reduction in carbon emissions over the period and outlines the level of public and private sector investment needed to achieve these targets. We have identified specific actions in energy consumption, procurement, construction, planning, transport and waste management. We are acutely aware that we cannot deliver these targets in isolation, but require the buy-in from industry, local community groups and individuals. To this end, our plan includes a series of energy awareness / behavioural change actions.

As Mayor of County Waterford, I want to reiterate our commitment to the Covenant of Mayors. The submission of this Sustainable Energy Action Plan is one of our commitments to the Covenant of Mayors. This is just a baseline and plan; the challenge will be to deliver it. Thus, we will measure our progress and submit a report at least every second year. We also look forward to exchange of best practice by organising Energy Days, and by contributing to the EU Conference of Mayors for Sustainable Energy Europe.

This is an important initiative for Waterford County Council. We have made significant progress in ensuring that we are a sustainable development oriented organisation. This means we strive to ensure that our staff, elected representatives and communities prioritise sustainable development in their thinking and actions. We acknowledge that we have a long way to go, on this quickly evolving environment, and to this end believe that our participation with the Covenant of Mayors plays a central role in delivering our development objectives for County Waterford.

Cllr Liam Brazil,

Mayor of County Waterford

2. Introduction

Waterford County Council signed up to the Covenant of Mayors in May 2011. The Covenant of Mayors is a European Initiative, by which towns, cities and regions voluntary commit to reducing their CO^2 emissions beyond a 20% target by 2020. There are currently 2,000 Towns, Cities and Regions signed up to the Covenant of Mayors all of which are committed to the principles of best energy policy. Waterford County Council is committed to facilitating the County of Waterford as a whole to achieving greater than this target and also the national adopted specific target reduction for Local Authorities energy related emissions of 33% by 2020. Waterford County Council is meeting obligations in signing up to the "Covenant of Mayors" through the preparation of a Baseline Emission Inventory (BEI) for 2008 and a Sustainable Energy Action Plan (SEAP).

The County Waterford SEAP analyses the County's current energy use and carbon dioxide emissions and sets out how County Waterford can reduce energy consumption through improvements in efficiency in buildings, both commercial and residential, transport, industry, agriculture and by increasing the level of energy generated from renewable energy sources.

The development and implementation of the County Waterford SEAP 2010-2020 falls under the remit of Waterford County Council, Planning and Environment Department. This Department co-ordinates the Council's Climate Change Committee that will oversee the implementation of this Plan and Climate Change Strategy, within the four directorates of Waterford County Council. Progress reports relating to the implementation of the plan will be made periodically to the Waterford County Council's Planning and Environment Strategic Policy Committee and to the Town Councils of Dungarvan, Tramore and Lismore. In addition, a report on implementation will be prepared annually and will review successes / failures against the baseline reduction targets and annual consumption figures.

The application to the Covenant of Mayors by Waterford County Council is supported by the three Town Councils of Waterford, including Dungarvan, Tramore and Lismore.

The implementation of the Covenant of Mayors target is the first step in implementing the Road Map, of possible actions up to 2050, which would enable Waterford County Council to meet the EU target to deliver energy related CO^2 emission reductions in line with the 80% - 95% agreed reduction targets.

3. Structure and Financial Resources for Implementation of Sustainable Energy Action Plan

Waterford County Council SEAP Implementation Committee
• Cllr. Liam Brazil, Mayor of County Waterford • Cllr. John Carey, Chair of Planning & Environment Strategic Policy Committee • Brian White, Director of Services, Planning and Environment • Gabriel Hynes, Senior Engineer, Planning and Environment • Luke O Brien, Staff Officer, Planning and Environment • Ann Kiely, Senior Engineer, Housing and Corporate Affairs • Fearghal Reidy, Business Development Officer, Community and Enterprise • Ann Sullivan, Environment Education Officer, Planning and Environment • Paul Daly, Senior Engineer, Transport and Infrastructure • Liam Fleming, Manager, Waterford Energy Bureau

A total of 400 hours of SEAP committee member's staff time will be allocated to implementing the SEAP on an annual basis, with Waterford Energy Bureau allocating 1000 hours annually towards implementing specific actions within SEAP. The SEAP implementation committee will meet every 3 months to review progress and plan for future project implementation.

An annual internal administration budget of €80,000 per year is allocated for the organisational aspects of SEAP. Funding for activities under the SEAP Plan will be sourced from the National Development Plan, Waterford County Council own resources, Private Investment, EU commission funded programs and the Regional Development Fund; INTERREG. It is envisaged that between €600 to €700 million Euro will be spent on energy efficiency / transport /renewable energy related projects by 2020 in Waterford.

4. Overview of County Waterford Sustainable Energy Action Plan

The overall objectives of the SEAP include;

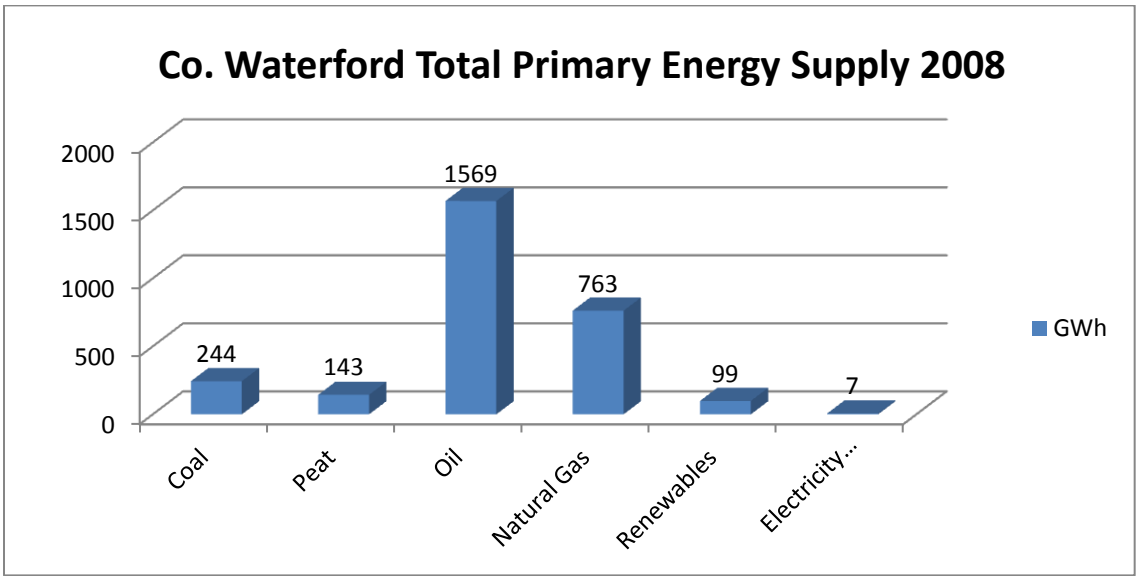
- Reduce Waterford's energy related CO2 emissions per capita from 10.14 tonnes in 2008 to less than 8.11 tonnes by 2020.
- Reduce the percentage of energy imported into County Waterford.
- Reduce the overall percentage of income spent on energy within County Waterford.
- Increase the levels of renewable energy generated within the County.
- Increase the levels of energy generated within the County.
- Reduce energy costs to businesses and assist in the green economy development.
- Contribute to reducing the risk of fuel poverty within the County.
- Develop and implement Sustainable Energy Planning Policies.
- Increase knowledge and understanding of community groups of the need for a SEAP

Actions within the SEAP will include the following areas:

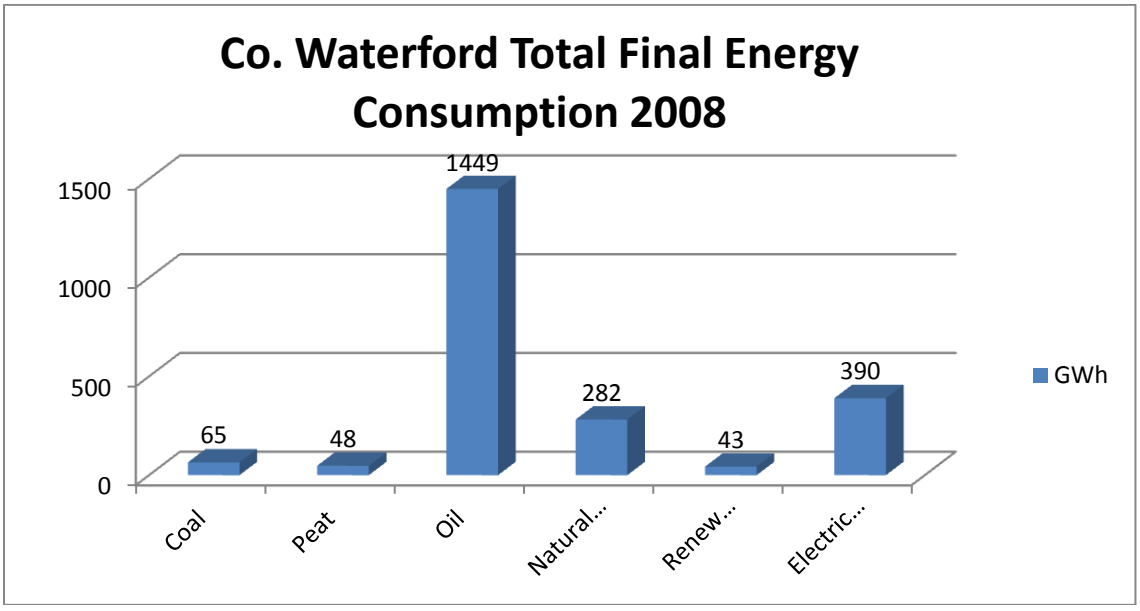
- Actions to assist industry in achieving the targeted energy related CO^2 emissions savings of by 2020.
- Actions to reduce Transport energy related CO^2 emissions to the 2020 target.
- Actions to reduce Residential Energy related CO^2 emissions to the 2020 target.
- Actions to reduce Commercial / Public Services energy related CO^2 emissions to the 2020 target.
- Actions within the Agricultural industry to achieve the energy related CO^2 emissions by the 2020 target.
- Actions relating to Waterford County Council achieving greater than 33% energy related CO^2 emissions reductions by 2020.
- Quantify CO^2 emissions per capita on a bi-annual basis up to 2020 and report results to Covenant of Mayors.

5. County Waterford Energy Consumption and CO^2 Emissions

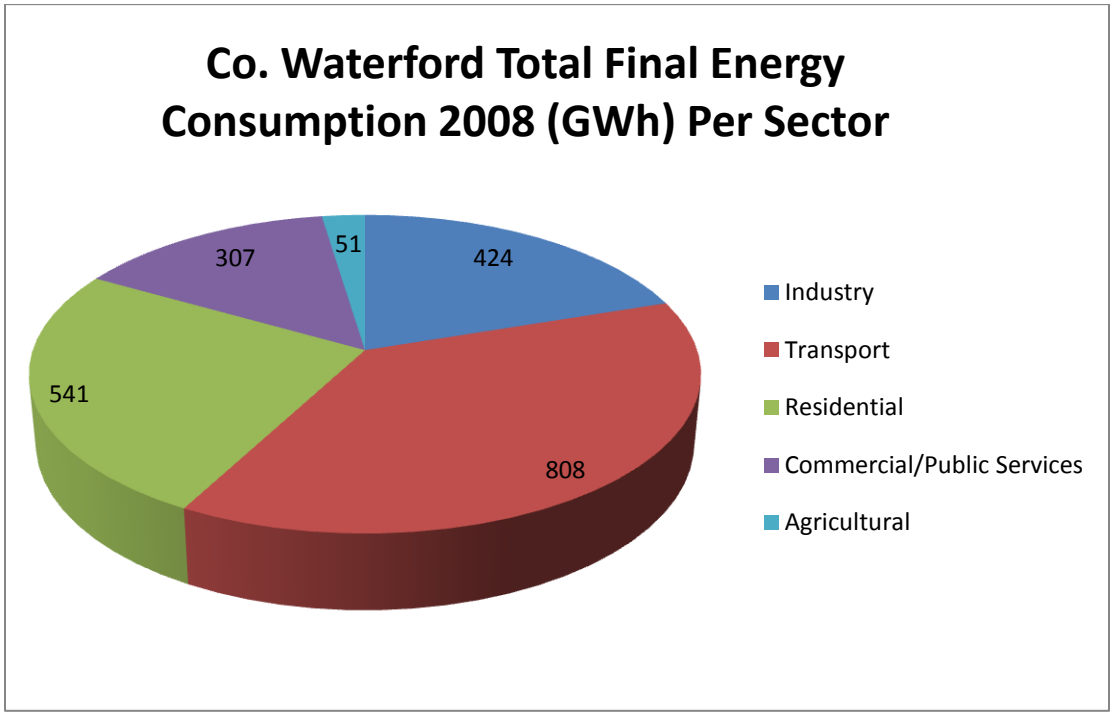
County Waterford consumed approximately 2825 GWh of primary energy in 2008, which is equivalent to 243,000 tonnes of oil per year, in the form of oil, natural gas, fossil fuels and renewable energy. This sum equates to 711,808 tonnes CO^2, which represents 10.14 tonnes CO^2/Capita/Year (2008 figure).



Note: Total primary energy supply (TPES) is made up of production + inputs from other sources + imports – exports – international marine bunkers +/- stock changes.



Note: Total Final Energy Consumption (equal to the sum of the end-use sectors' consumption) implies that energy used for transformation and for own use of the energy producing industries is excluded. Final consumption reflects for the most part deliveries to consumers.



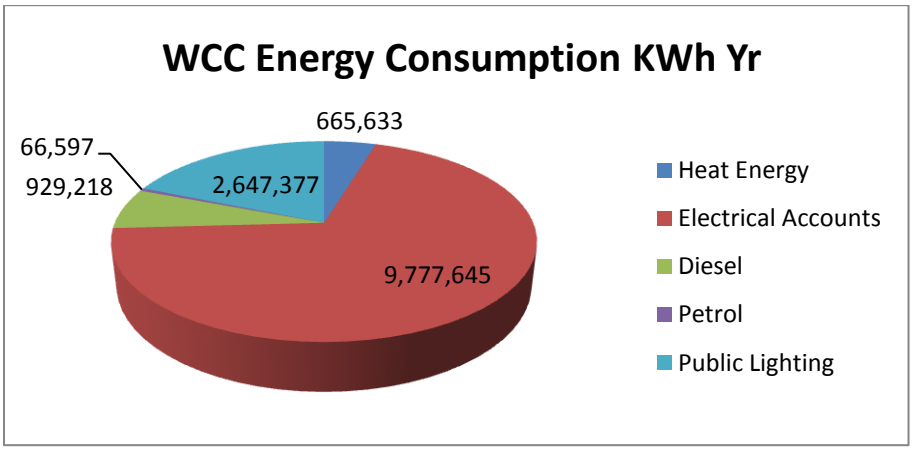
Total Final Energy Consumption in Waterford 2008 per sector			
Sector	**ktoe**	**GWh**	**%**
Industry	36.4	424	20%
Transport	69.5	808	38%
Residential	46.5	541	26%
Commercial / Public Services	26.4	307	14%
Agricultural	4.4	51	2%
	183.2	2131	

5.1 Waterford County Council Energy Consumption and CO^2 Emissions

Waterford County Council's energy related consumption includes electrical consumption in areas such as public lighting, water / waste water treatment, water /waste water pumping, offices etc. The energy consumed by the Council's transport fleet includes Local Authority service vehicles, which are powered by diesel and petrol. Heat energy provided in the Council's offices is in the form of oil heating, and a number of forms of renewable technologies and electrical energy is from the national grid and from micro generation.

In 2008 Waterford County Council as an organization consumed 18,583 MWh per year and 8,047 tonnes CO^2 which is equivalent to 129 kgCO^2/Capita/Year.

Waterford County Council Energy Consumption, CO^2 Emissions and Energy Costs 2008				
	Litres	**KWh**	**Tonnes CO^2**	**Annual Energy Cost**
Heat Energy	69,829	736,697	194	€58,028
Electrical Accounts	n/a	9,276,842	4,945	€1,375,399
Diesel	567,137	6,068,365	1,602	€656,352
Petrol	9,425	90,478	21	€11,633
Public Lighting	n/a	2,411,035	1,285	€313,471
		18,583,417	8,047	€2,414,884



For further information relating to Waterford County Council's 33% energy related emission reduction targets, refer to Appendix 4.

5.2 Emission Reduction Targets and CO^2 Abatement Costs

Energy Consumption, Emissions and Costs in Waterford per Sector 2008 /2020							
Sector	**ktoe**	**2008 Energy Consumption (GWh)**	**Projected 2020 Energy Consumption (GWh)**	**2008 CO^2 Emissions (tC02)**	**2008 Energy Costs**	**CO^2 Emissions Saving Target (tCO2) by 2020**	**CO^2 Emissions Target (tCO2) by 2020**
Industry	36.4	424	453	132,594	€35,217,088	26,519	106,076
Transport	69.5	809	608	196,409	€108,700,158	39,282	157,127
Commercial/ Public Services	26.4	307	259	114,232	€33,780,217	22,846	91,386
Housing	46.5	540.8	567.8	176,126	€43,929,542	35,225	140,901
Agricultural	4.4	51	60	15,640	€4,958,641	3,128	12,512
Total	183.2	2131	1948	635,002	€226,585,647	127,000	508,002
Energy Generated from RE		38	121.9				
Energy Generated from non-renewable		2093	1826	635,002	€226,585,647	127,000	508,002

The reduction in energy related CO^2 emissions by 20% in County Waterford including a 33% reduction target for Waterford County Council is attainable and necessary to ensure competitiveness. Energy intensity in industry, transport, housing and public service has continued to drop since 1990, with the adoption of more energy efficient practices.

The growth rate of the utilisation of renewable energy technology for electrical generation at 6.4% in 2008 to 40% by 2020 will significantly contribute to the reduction in energy related CO^2 emissions. Further to this, the utilization of more energy efficient electrical generation technologies has assisted in the CO^2 emissions reduction per KWh from 0.9 kgCO^2/KWh in 1990 to 0.582 kgCO^2/KWh in 2008. The estimated level of CO^2 emitted in 2020 per KWh of electricity is expected to be less than 0.30 kgCO^2/KWh.

The installation in Waterford of wind turbines with electrical generation capacity of between 150MW-200MW would contribute to between 447 GWh/yr - 637 GWh/yr of electrical energy. This equates to between 60-91 wind turbines with an electrical output of 2.2 MW per turbine. The typical height of these turbines is approximately 80 -100 metres.

Energy from industry, agriculture and commercial/public service sector will be displaced by energy generated from renewable energy sources.

5.3 Energy / CO^2 Consumption Reduction Targets for Housing

20% Energy/CO^2 Consumption Reduction for Housing in County Waterford by 2020						
Measure	**Total number of installations**	**Total Energy Savings (GWh)**	**Total CO^2 Emissions Savings (tCO2)**	**Cost Savings (€)**	**Total Investment (€)**	**Typical payback on Investment (yrs)**
Low-energy lighting	11000	4.4	2,345	€968,000	€1,650,000	1.7
Boiler upgrades	3000	4.5	1,188	€450,000	€5,400,000	12.0
Attic Insulation	3500	3.5	924	€350,000	€2,310,000	6.6
Wall Insulation - internal	5000	9.0	2,376	€900,000	€12,000,000	13.3
Wall Insulation - external	5500	17.6	4,646	€1,760,000	€26,400,000	15.0
Window Replacement	6500	19.5	5,148	€1,950,000	€39,000,000	20.0
Bio energy Boiler	1200	14.4	3,802	€1,440,000	€6,000,000	4.2
Heat Pumps	800	9.6	2,534	€960,000	€6,400,000	6.7
Solar Water Heating	2000	3.6	950	€504,000	€5,000,000	9.9
Biomass Stoves	12000	48.0	12,672	€4,800,000	€9,600,000	2.0
User behaviour	3050	1.5	403	€152,500	€305,000	2.0
		135.6	36,989	€14,234,500	€114,065,000	

Note: The implementation of national programmes on energy efficiency and CO^2 reduction processes will contribute to reaching these reduction targets. However additional levels of funding will be sourced from EU funding programmes to assist in reaching/exceeding these targets. WCC and Waterford Energy Bureau (WEB) will act within their functions to implement and assist in the uptake of Energy Efficient and Renewable Energy Technologies which will contribute to reaching these reduction targets.

- It is noted that some of the items above will be life cycle replacements with energy efficient/renewable technologies and each payback is on a case by case basis.
- It is assumed that there will be a growth rate of 5% in the housing sector.

5.4 *Energy / CO^2 Consumption Reduction Targets for Transport*

20% Energy/CO^2 Consumption Reduction for Transport in County Waterford by 2020			
Measure	**Total number of vehicles**	**Total Energy Consumption(GWh)**	**Total CO^2 Emissions (Tonnes CO^2)**
Fuel efficient vehicles (Private)	32818	175.0	43,866
Fuel efficient vehicles (non private)	9128	386.0	100,406
Improved Public Transport		15.4	4,000
Electric Vehicles	3646	13.7	4,112
Use of Biofuels		18.2	4,743
Use of Cycle Lanes		0.0	-
		608.4	157,127

Note:

- A total of 7% of fuel consumption will include Biofuels such as bio-diesel and bio-ethanol. This equates to providing 100% of the fuel requirement for 3053 vehicles.
- The average fuel efficiency of domestic vehicles is expected to reduce from 158 gCO^2/km to 80 gCO^2/km and for commercial vehicles from 700 gCO^2/km to 500 gCO^2/km.
- A factor for electric vehicles has been included that 10% of all vehicles will be powered by electricity by 2020.
- A growth rate of 16.3% has been included for the transport sector (Source: SEAI, Energy Forecasts for Ireland to 2020, 2011 Report), however with improvements in fuel efficiency, energy related emissions will reduce in excess of the targeted sum.

5.5 Energy / CO^2 Consumption Reduction Targets for Industry, Public Sector and Agriculture

20% Energy/CO^2 Consumption Reduction for Industry in County Waterford by 2020		
Measure	**Total Energy Savings (GWh)**	**Total CO^2 Emissions Savings (tCO^2)**
Improved Energy Efficiency	23.8	6,935
Use of Renewable Technologies	71.5	20,805
	95.3	27,740
20% Energy/CO^2 Consumption Reduction for Public Service / Commercial Activities in County Waterford by 2020		
Improved Energy Efficiency	13.6	5,712
Use of Renewable Technologies	40.9	17,135
	54.6	22,846
20% Energy/CO2 Consumption Reduction for Agriculture in County Waterford by 2020		
Improved Energy Efficiency	3.2	782
Use of Renewable Technologies	9.5	2,346
	12.6	3,128

Note: 25% of the estimated required energy efficiency savings that will be made by 2020 will be from improvements in energy efficiency and factors an increase in energy consumption for the different categories.

Note: 75% of the estimated requirement for energy savings will be displaced by energy generated from renewable energy technologies such as commercial wind farms.

A growth rate of 12.4% has been included for the Industry sector. It is assumed the Public Service sector will shrink by 11.1% while Agriculture will grow by 23.8%. These figures have been taken from the SEAI's 2011 Report on Energy Forecasts for Ireland to 2020.

5.6 *Renewable Energy Installations required by 2020 in order to substitute emissions made by Industry, Commercial / Public Service and Agriculture*

Table of Displacement of fossil fuel energy by renewable energy	Industry	Commercial / public Service	Agriculture	Total
GWh	71.46	40.92	9.46	121.83
Category	Energy Generated from Renewable Energy Sources GWh	Equivalent MW size of equipment	Investment Cost per MW	Total Investment Cost
Large scale wind farms	80	27	€1,500,000	€40,000,000
Industry Wind Turbine Auto Production	10	3.57	€1,800,000	€6,428,571
Micro Renewable wind turbines	0.58	0.22	€2,000,000	€446,154
Bio-energy Installations	30	7.5	€400,000	€3,000,000
Anaerobic Digestion Facilities	1.5	0.375	€850,000	€318,750
Solar Water Heating	0.5	0.1	€900,000	€90,000
Solar Photo Voltaic	0.75	0.4	€850,000	€340,000
Heat Pump Installations	2.5	0.5	€800,000	€400,000
	125.83	39		€51,023,475

Energy Efficiency Equipment and Renewable Energy Technology Costs between 2008-2020	
Category	Cost
Industrial	€39,592,938
Transport	€447,636,000
Commercial / Public Service	€27,000,000
Housing Upgrade	€114,065,000
Agriculture	€6,400,000
Renewable Energy Installations	€51,023,475
	€685,717,413

The figure above is a guide sum and is an indication of the scale of investment that will have to be made in order to reach the 2020 goals. The further decoupling of economic development and CO^2 emissions will contribute in reaching this target without harming economic development.

6. Actions for Implementation in Waterford 2012-2020

The actions for implementation within Waterford are broken down into the following categories;

a. Energy Related Actions 2012-2020
b. Procurement related Actions 2012-2020
c. Energy Awareness Actions 2012-2020
d. Housing & Building Actions 2012 -2020
e. Planning Related Actions 2012-2020
f. Transport Related Actions 2012-2020
g. Waste Management Actions 2012-2020
h. Other related actions to be under taken between 2012-2020

6.1 Energy Reduction Actions 2012 -2020

- Continue to support the actions of Waterford Energy Bureau in activities with Waterford County Council, among the community and with SME's in Waterford.
- Report annually on Waterford County Council Energy Consumption and related CO^2 Emissions in annual report and to the relevant Government Departments.
- Implement projects within Waterford County Council to assist meeting national target of reducing energy related CO^2 emissions by 33% by 2020.
- Implement National Policies and practices that assist the communities of Waterford in reducing energy consumption and related emissions.
- Implement National Programs on the retrofitting of buildings with energy efficient upgrades and renewable energy technology.
- Support initiatives that help reduce Waterford's dependency on energy imported into County Waterford.
- Support the realization of alternative sources of energy that will provide cost effective renewable energy to industry, such as district heating schemes in industrial estates.
- Waterford County Council will strive to source funding for infrastructure that will meet the objectives and actions of the SEAP, from local, national and international sources.

6.2 Procurement related Actions 2012-2020

- Waterford County Council will implement National Green procurement policies and promote best practice throughout Waterford.
- Waterford County Council will establish a position of Procurement Officer and develop a Procurement Plan.
- The Procurement Plan will contain specific objectives in relation to Green Procurement.

6.3 Energy Awareness Actions 2012-2020

- WCC proposes to continue to support Waterford Energy Bureau, whose role is to promote and actively assist through energy related project in the development of renewable energy and energy efficiency throughout Waterford County and City with special emphasis on both Local Authorities of Waterford, the General Public and Small to Medium Enterprises (SMEs).
- Continue to update the Waterford Energy Bureau Web Site including information and advice about renewable energy for general public.
- WCC will continue to implement the Green Schools Program in County Waterford and assist the schools in reaching their targets.
- WCC will continue to support Environmental Awareness Initiatives as under taken by the Environmental education officer.
- WCC will undertake an energy event each year to assist realization of commitments included with the "Covenant of Mayors".
- WCC will continue to consult with the County Waterford Community Forum and seek their participation in related projects.

6.4 Housing & Building Actions 2012 -2020

- Waterford County Council will construct new local Authority houses to have an energy rating greater than "A3".
- WCC plan to continue to implement its activities in the retro fitting of existing 2,000 LA housing stock with energy efficiency measures and to achieve a minimum target of an average energy rating of "C" for Houses. As a means of implementing these measures, WCC plan source national / European Funding to assist in the delivery of these upgrades.
- All Local Authority Boilers in houses and buildings will be serviced annually to reduce CO^2 emissions and ensure that boilers are operating at optimum efficiency and comply with safety standards. Where boilers have reached the end of life cycles an energy efficient alternative will be installed or a renewable energy technology solution will be utilized.
- WCC will contribute to the elimination of the risk of fuel poverty occurring in WCC housing stock and among the General Public of Waterford. Through the support of community insulation schemes and energy efficiency technology installation.
- All new local Authority non domestic buildings will have a minimum "A2" Energy labelling under the Building Energy Directive.
- WCC will publish a one-off housing guideline that will assist designers and persons build houses with a minimal carbon footprint.

6.5 Planning Related Actions 2012-2020

- The County Waterford Wind Map will be updated to match changes in national policy and continue to be a guide for proposed wind farm development. WCC acknowledges that there is potential to develop 200 MW of commercial wind farms and significant auto-production potential within Waterford. The renewable energy generated by wind turbines will significantly contribute to meeting national renewable energy targets and CO^2 reduction targets for Waterford as committed under the Covenant of mayors.
- WCC will implement national and international sustainable energy policies in County Development Plan and Local area plans where applicable and include national / international Climate Change Obligations.
- Integrate sustainable energy measures and Climate Change obligations in Regional Development Plans developed in partnership with other bodies.
- Enforce National Building Regulation Standards and planning obligations in regards to Document "L" of the Building Regulation Standards and in particular enforcement building energy rating obligations in regards to new and existing buildings and the utilization of renewable energy technology.
- Flood-mapping of Waterford will be made available electronically and knowledge and understanding of global warming impacts or flooding will be provided.

6.6 Transport Related Actions 2012-2020

- Waterford County Council will influence the improvement of the public transportation network in order to increase the number of trips made by public transport and to reduce the dependency on private cars.
- The Waterford Rural Transport Initiative has made large savings in energy by providing a sustainable transport service to communities of Waterford. Every person utilizing the service saves on average $2KGCO^2$ per trip. WCC will support WRTI continued expansion to service the community of Waterford.
- WCC will facilitate the role out of electrical vehicle infrastructure including charging points to comply or exceed national targets and promote the concept of electrical vehicles in Waterford ensuring that in excess of 10% of all vehicles by 2020 will be powered by electricity. WCC will update its portfolio of vehicles by purchasing / leasing electrical vehicles that are matched against work requirement.
- Facilitate the installation of alternative transport systems and increase the length of cycle lanes in county Waterford in all new urban roads and in the proximity of Schools.
- Facilitate the role out of the Dungarvan Smarter Travel Initiative and source funding for additional sustainable transport activities throughout Waterford.
- Develop strategies in order to save CO^2 from car transportation by County Council staff by the implementation of video conferencing facilities and for the general public in improving the online services available on WCC web site.
- Continue to implement initiative to purchase bicycles for staff as part of Department Directive.

- The implementation of health and Cycling activities by Waterford Sports Partnership will help reduce dependency on fuel emitting transport systems.

6.7 Waste Management Actions 2012-2020

- WCC will increase the role out of constructed Wetlands for effluent treatment within Waterford from the current number of seven.
- Continuous reduction in waste generation within the County to 400kg per capita per year.
- WCC is committed to increase its recycling rates from the current rate of 39% to 60% by 2020.
- WCC is committed to increase the reuse of waste resources from current levels of 41% to 80%, with installations such as AD plants.

6.8 Other related actions to be under taken between 2012-2020

- Continue to support community renewable energy projects, such as community wind farm project development and utilizing the bio energy potential of Waterford.
- Implement aspects of the WCC Bio-Diversity Plan 2008-2013 and subsequent reviews of the plan.
- Implement aspects of the WCC Heritage Plan 2006-2010 and subsequent reviews of the plan.
- Implement aspects of MISE INTERREG Project 2011-2014 and subsequent projects relating to habitat management and climate change.
- Utilize WCC asset portfolio to plant trees, which will act as carbon sinks to absorb CO^2 emissions.
- Assist in the development of green tourism within Waterford.
- Implement initiatives to assist in the development of the Green Economy and employment within the green economy in Waterford.

7. Projects currently being implemented within County Waterford

7.1

	Dungarvan Smarter Travel	

Waterford County Council and Dungarvan Town Council have received funding of €7.6 million over a 5-year period 2012-2017 to transform Dungarvan into a Smarter Travel Area. Sustainable transport mechanisms will be supported under the scheme with the promotion of cycling and walking, the use of public transport, and reducing car travel. This scheme will, reduce congestion and pollution, improving road safety, creating local employment opportunities, and improving people's health and fitness, as well as enhancing town and streetscapes locally."

Activities under the scheme will include;

- Improved cycling ways, including safe routes to school, businesses and workplace zones.
- Secure cycle parking in town centres or at public transport nodes;
- Better walking facilities, including pedestrian streets.
- Lower speed limits in residential and town centre areas;
- School and workplace travel planning
- E-working
- Car clubs

7.2

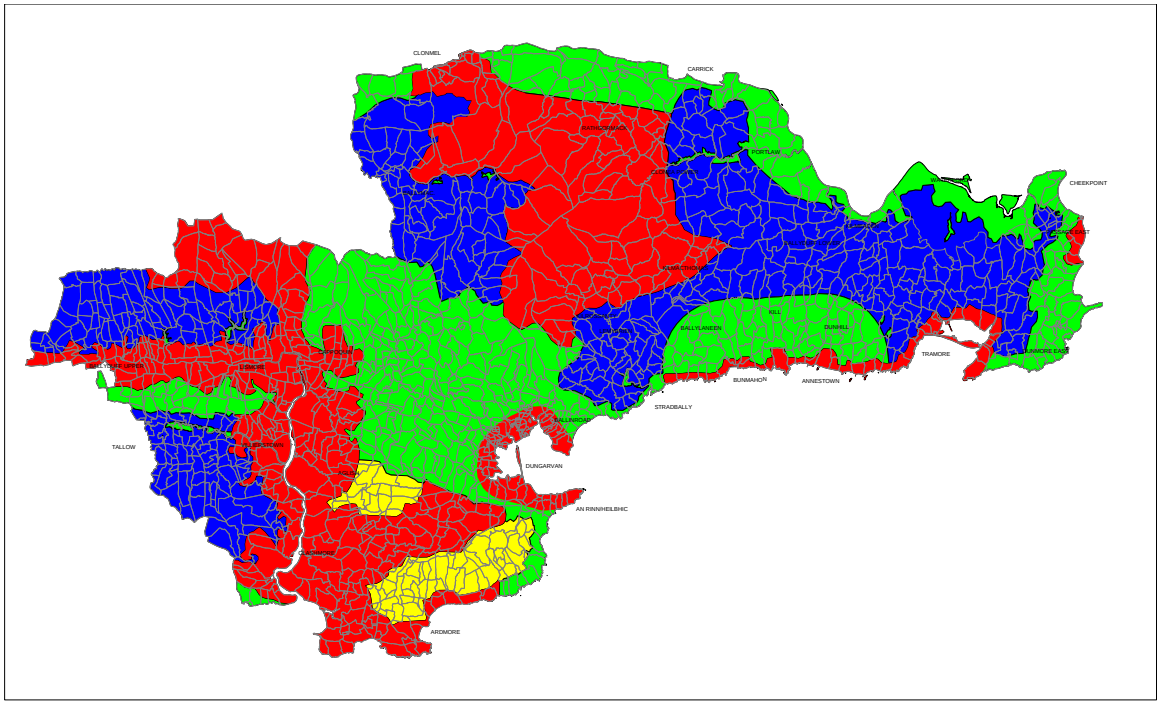
Waterford Renewable Energy CO-Operative Society Ltd

WRE was formed by Waterford County Council / Waterford Energy Bureau in 2007, through funding from Intelligent Energy for Europe ALTERNAR Program. The Co-Operative currently has 52 members which include farmers and business people of Waterford. To date the co-operative is facilitating the developing bio-energy projects and maximizing the forestry energy potential of Waterford. WRE are in partnerships with community enterprises in the development of three community wind farms, which have a proposed size of 80 MW. The maximization of bio-energy and wind energy within the county will significantly contribute to the security of energy supply and contribute to the reduction of CO^2 emissions per capita.

7.3

Waterford County Council Wind Map

The Waterford County Council Wind map was developed in 2004 as a means of zoning areas specifically for wind farm development. The map zones the county into four separate planning standards for wind farm development, which include 1) Strategic, 2) Preferred areas, 3) Areas open to consideration, 4) No-go areas.



The wind map can be used by wind farm developers / interested parties in their selection of the most appropriate site to develop wind farms. Objects can also review the map and comment on the suitability of proposed wind farm sites.

7.4

Splashworld Tramore
Energy Efficiency Upgrades

Funding of €400,000 was received from the Department of Transport, Sports and Tourism for energy efficiency and disabled access upgrades at Splashworld Tramore. WCC also contributed €102,000 to the upgrades, which included new energy efficient boiler's, air-handling unit upgrade, pump replacement, control system upgrade, cladding of building, and improved disabled access etc. All works were completed during a shut down period in December 2011. Energy efficiency improvements of between 20%-40% are being made following the completion the upgrades.

WCC are working with Splashworld to continue to improve the energy efficiency of the leisure centre and hope to achieve a "B" Energy Rating for the leisure centre after further infrastructural investment.

7.5

	Constructed Wet Lands in County Waterford	

Since 1993, Waterford County Council has been at the forefront of developing Constructed Wetlands to treat polluted water sources in particular farmyard soiled water, landfill leachate and municipal sewerage. Wetlands, both natural and constructed, have an innate ability to cleanse water through physical, chemical and biological processes. Integrated Constructed Wetlands (ICW) are a specific design approach to constructed wetlands as they are designed to facilitate the widest possible range of ecological conditions normally found in natural wetlands, including those of soil, water plant and animal ecology. To this end, the approach is based on the science of restoration ecology, and applies principles **Ecosystems Approach** which is advocated by the **United Nations** and the **Convention on Bio Diversity**. Waterford County Council's ICW approach to environmental enhancement and sustainable social, economic and cultural development. Constructed Wetlands system is used to treat sewerage from 8 villages. The system is also used to treat leachate from the former 16.5 acre landfill site in Dungarvan, County Waterford. This is proving to be an effective way to remediate the landfill site and to turn the site into an amenity. Integrated Constructed Wetlands are proposed for 8 more villages throughout the County with a combined population of over 2,000.

7.6

County Waterford Environmental Education Initiatives

The Waterford County Council Awareness Officer will continue and expand on a range of activities to promote the reduction in CO^2 Emissions in Waterford.

Activities planned between 2012 up to 2020 include;

- National tree week activities,
- Energy efficiency / renewable energy related activities relating to the green schools program.
- Promotion of the recycling of waste cooking oil into bio-diesel.
- News paper articles relating to climate change, renewable energy and energy efficiency.
- Encourage the use of Rainwater Harvesters in Community Groups.
- Continue to promote EcoCert and Green Business initiatives for all local businesses which include an aspect of energy efficiency reduction.
- Promotion of carbon neutral school competition.
- Participation in the Annual Energy Days activities to comply with obligations within the Covenant of Mayors.
- Green Schools Programme.
- Unesco Schools and Childrens Programme.

8. Conclusion

Issues relating to Climate Change, securing a cost effective energy supply and the development of technologies that will replace carbon based energy sources is one of the biggest challenges and opportunities of the 21st century. Energy Efficiency is at the core of all energy related activities and the commitment by Waterford County Council in assisting in the reduction of energy related emissions in excess of 20% by 2020, will help Waterford in being one of the most sustainable Local communities in Ireland. Also the commitment by WCC to reduce energy related emissions by 33% by 2020 is a significant challenge.

Energy Efficiency

The adoption of cost effective efficient solutions for energy consuming categories such as housing, industry, transport, commercial / public services and agriculture between 2012-2020, will reduce energy related costs and emissions significantly year on year. The retro fitting of renewable energy / energy efficiency technologies will also create significant employment opportunities within the Green Economy and will contribute to keeping Waterford's energy spend within the county, which otherwise would have been spent on energy imports into the county.

Renewable Energy Technologies

It is acknowledged that as a rural county the potential for renewable energy development is significantly higher than that of other counties / cities. The installation of large scale wind farms, hydro electrical schemes, bio-energy installations, geothermal energy and solar energy, will contribute to replacing imported fossil fuels and will displace carbon based CO^2 emissions.

Investment in Infrastructure

A total investment in renewable energy technologies, energy efficient equipment / vehicles and other related infrastructure is required in order to deliver the 20% energy related emissions reduction target by 2020.

Participation from all Sectors

The delivery of a low carbon society will only be achieved by collaboration and participation from all groups within Waterford. Participants will include community groups, schools, businesses, industry, public bodies, private individuals, transport companies and the agricultural community of Waterford. In particular the large energy users will be targeted from implementation of energy related CO^2 reduction measures. In certain cases Waterford County Council will lead by example through implementing initiatives and in other cases, WCC will support practices that will assist in meeting the 20% energy related emission reduction targets.

9 Appendix 1

SEAP Sustainable Energy Action Plan

Energy Related Actions 2012-2020 as part SEAP Plan			
Buildings, Equipment/Facilities & Industries	Key Actions	Responsible Person / Department	Implementation Start /End Time
Municipal Buildings, Equipment / facilities	Install Renewable energy technology in County Council Buildings	WEB, H&C (AK /LF)	2012-2020
	Improve Energy Efficiency of water / waste water facilities	T&I/WEB (PD/LF)	2012-2020
	Install renewable energy technology in water / waste water facilities	WEB (PD/LF/Mayor LB)	2012-2020
	Product Display Energy Certificates for Civic Office buildings to comply with BER Directive	WEB (LF)	2012-2020
Collection of Grey Water	Continue program of installing constructed wet lands as a means of water / waste water treatment	T&I/WEB (GH/PD)	2012-2020
Tertiary (non municipal) buildings, equipment / facilities	Support installation of energy efficient technologies	WEB (LF)	2012-2020
	Support installation of renewable energy technologies in Businesses	WEB (LF)	2012-2020
	Support development of bio-energy in Waterford	WEB (LF)	2012-2020
	Support business installing / manufacturing renewable energy / energy efficiency technologies	WEB (LF)	2012-2020
Residential Buildings	Improve energy rating of WCC housing Stock	WEB (AK /LF)	1999-2020
	Integrate renewable energy in WCC housing stock	H&C (AK/LF)	2012-2020
	Minimum BER spec for new lease housing	H&C (AK)	2012-2020
	Implement aspects of building energy directive	P&E (GH/LF)	2012-2020
Home Composting Collection and Re-Use of Grey Water	Support energy efficiency and renewable upgrades in private housing stock	WEB (GH/LF)	2012-2020
	Facilitation of new zero carbon buildings	WEB (AK/LF) (Mayor LB)	2012-2020
Municipal Public Lighting	Upgrade public lighting infrastructure as part of national program	WEB/T&I. (AK/LF)	2015-2020
Industries	Support energy efficiency / renewable energy technologies installations through Eco-cert / other programmes	AS/WEB (AS/LF/Mayor LB)	2012-2020
	Support large scale renewable energy generation projects to support industries, which provides cost effective energy.	WEB (LF) (Mayor LB)	2012-2020

Transport Related Actions 2012-2020 as part SEAP Plan			
Transport	Key actions	Responsible Person / Department	Implementation Start /End Time
Municipal Fleet	Procurement of more fuel efficient vehicles	T&I (PD)	2010-2020
	Utilization of Biodiesel in LA fleet	T&I (LF/PD)	2012-2020
	Implementation of electric vehicle use	T&I(PD/LF)	2012-2020
Public Transport	Continued operation of Waterford Rural Transport Imitative	C&E (FR) (Mayor LB)	2010-2020
Private and commercial transport	Dungarvan Smarter Travel Initiative	DTC (FR)	2012-2020
	Assist the role out of Electric Vehicles	WEB (AS/LF)	2012-2020
	Facilitate the role out of Electric Vehicle Infrastructure	T&I (PD)	2012-2020
	Increase number of cycle lane installations in County Waterford	T&I (PD) (Mayor LB)	2012-2020
	Promote the usage of more fuel efficient vehicles	P&E (LF /AS)	2012-2020

Renewable Energy Related Actions as Part of The SEAP Plan			
Local Electricity Production	Key actions	Responsible Person / Department	Implementation Start /End Time
Hydroelectric Power	Facilitate the development of hydro-electrical projects in Waterford	WEB (LF)	2003-2020
Wind Power	Support wind farm developments within the County	WEB/P&E (Mayor LB) (GH,BW,LF)	2012-2020
	Micro renewable wind energy technology installations	WEB (LF/GH)	2012-2020
	Auto production wind turbines for commercial installations	WEB (LF/GH)	2012-2020
	Wind turbine installations at council facilities	WEB (LF/GH)	2012-2020
	Support community owned wind farm development via WRE	WEB (LF)	2012-2020
Photovoltaic	Install photovoltaic where applicable at locations in Waterford	WEB (LF)	2012-2020

Combined heat and Power	Support CHP Installations	WEB (LF)	2012-2020

Local District Heating / Cooling Related Actions as Part of The SEAP Plan			
Local District Heating/Cooling, CHPS	Key actions	Responsible Person / Department	Implementation Start /End Time
District Heating Plants	Install district heating networks in industrial estates / other locations	WEB (LF/FR)	2012-2020
Combined heat and power	Bio-energy CHP Installations	WEB (LF)	2012-2020

Land Related Actions as Part of The SEAP Plan			
Land Use Planning	Key actions	Responsible Person / Department	Implementation Start /End Time
Strategic Urban Planning	County development plan including reference to COM and obligations	P&E (BW/GH) (Mayor LB)	2002-2020
	Local area plans including reference to COM	P&E (BW/GH) (Mayor LB)	2002-2020
	Wind Map for County Waterford	WEB (BW) (Mayor LB)	2012-2020
Transport / Mobility Planning	Implement Dungarvan Smarter Transport Plan and other sustainable transport plans	DTC/T&I (PD) (Mayor LB)	2012-2020
Standards for refurbishment and new development	Implement BER Directive, changes to building regulation standards, which includes low carbon buildings by 2016	P&E, FS, H&C & WEB (BW/AK)	2012-2020
	Source funding for retrofitting of existing public and private housing stock to high energy performance standards	P&E, H&C, WEB (GH/LF&AK)	2012-2020

Procurement Related Actions as Part of The SEAP Plan			
Public Procurement of Products & Services	Key actions	Responsible Person / Department	Implementation Start /End Time
Energy efficiency requirements/standards	Procure certified energy efficiency technologies	WEB T&I (PD&LF)	2012-2020
Renewable energy requirements/standards	Procure certified renewable energy technologies	WEB (LF)	2012-2020

Citizens Related Actions as Part of The SEAP Plan			
Working with the Citizens and Stakeholders	Key actions	Responsible Person / Department	Implementation Start /End Time
Advisory Services	WEB to continue advisory services to GP, SME, Industry and communities of Waterford	WEB / P&E(LF&AS)	2003-2020
Financial support and grants	Promote grant schemes and source funding for community based projects	WEB /P&E/CF (LF&AS)	2002-2020
Awareness raising and local networking	Provide awareness raising to the GP, Businesses and Schools of Waterford	WEB /P&E/CF (LF&AS)	1999-2020
Training and Education	Develop training courses on EE/RE technologies	WEB/P&E/CF (LF&AS)	1999-2020

Abbreviations

- WEB Waterford Energy Bureau
- P&E Planning and Environment
- T&I Transport and Infrastructure
- H&C Housing & Corporate Affairs
- DTC Dungarvan Town Council
- FS Fire Service
- CF Community Forum