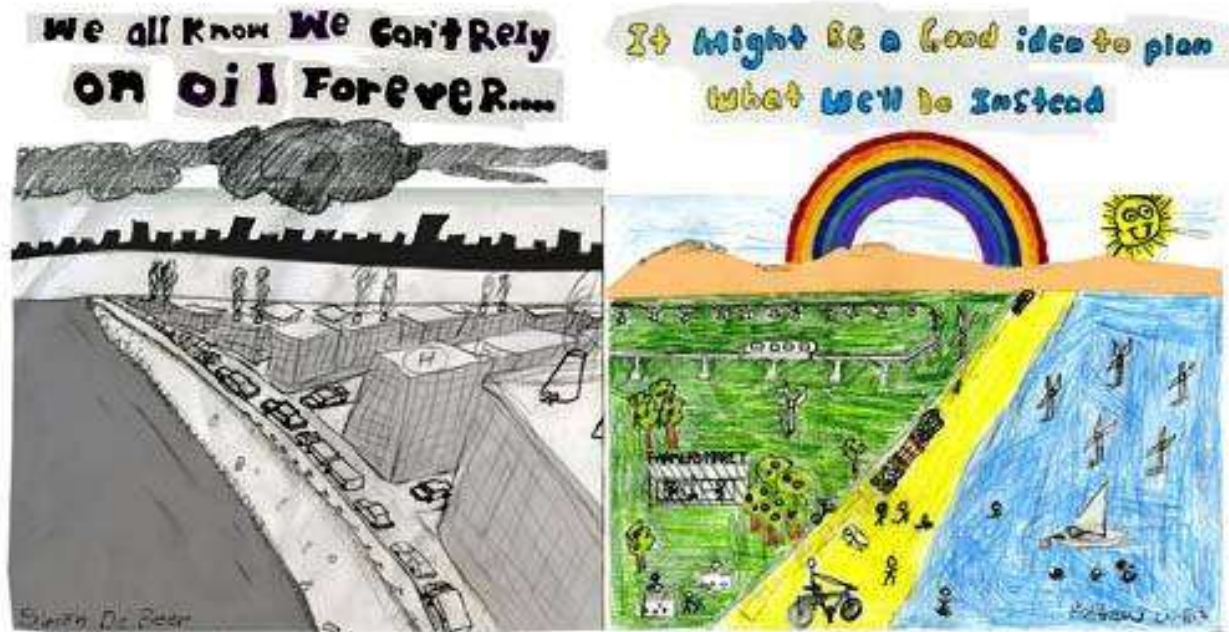


Kerry Sustainable Energy Community Roadmap

Consultancy Proposal by XD Sustainable Energy Consulting Ltd and Associates



Source: Transition Rodney, NZ

Client:
Transition Kerry



Consultancy Team:

XD Sustainable Energy Consulting Ltd
Lead consultants and co-ordinators



Limerick Institute of Technology – Tipperary
Sustainable energy community development specialists



Aalborg University, Denmark
Energy planning specialists



Samsø Energy Academy
100% RE Community pioneers



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Introduction

This proposal by a consortium of experts led by XD Sustainable Energy Consulting Ltd responds to Transition Kerry's tender to undertake a study with the objective of defining a Sustainable Energy Community Roadmap for the county of Kerry. Our proposal has been developed around the concept of the energy planning process described in Transition Kerry's call for tender and illustrated below:



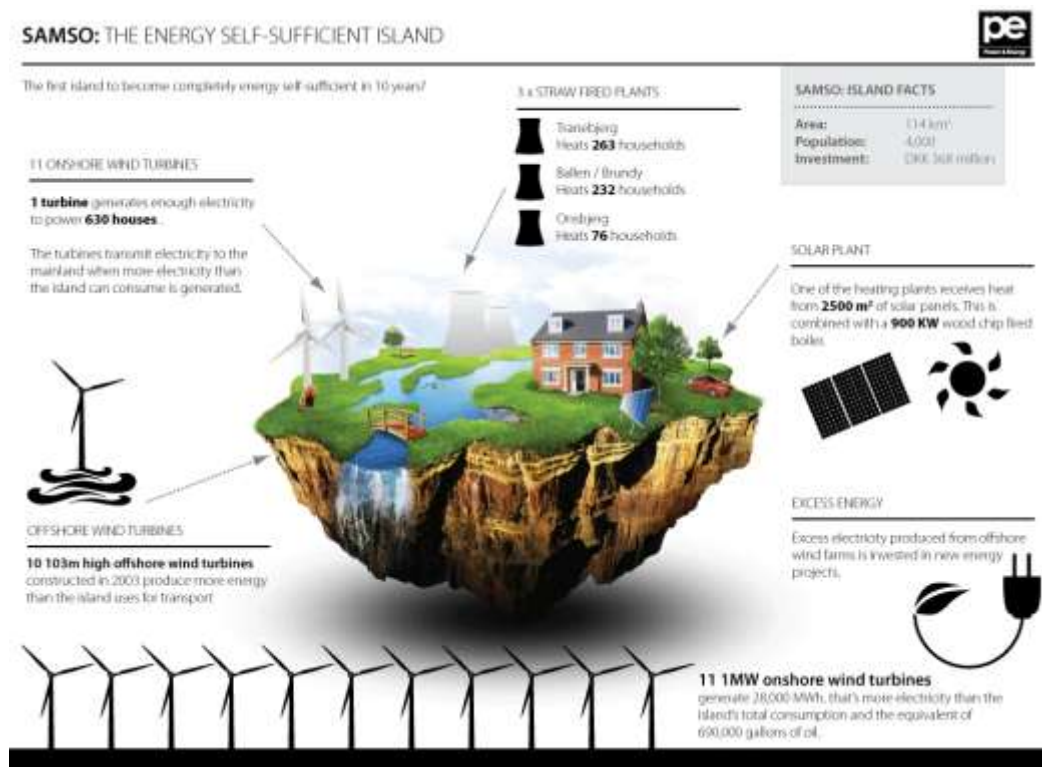
The consultancy team proposed to conduct this study has a combined experience of over 50 years in sustainable energy development and a multi-disciplinary expertise in energy planning unequalled in Ireland. The proposed study is intended to assist Transition Kerry and associated stakeholders in implementing steps 2 (Identify), 3 (Plan) and 4 (Evaluate) of the process above by providing the critical knowledge and tools required.

“Our aim is to help the Kerry community develop a strong, positive vision of their sustainable energy future and plan the journey for its realisation.”

The study and the team will adhere to the core principles of effective local energy planning outlined by Transition Kerry in their call for tender:

- Consider the entire energy system (electricity, heat, and transport) from both a demand and supply perspective;
- Account for the dynamics of the energy system and its internal and external interactions, in particular the intermittency and fluctuations of most renewable energy resources;
- Use a long-term time horizon which allows for (sometimes radical) infrastructural and institutional changes in the region;
- Initiate a participative approach that involves all key stakeholders at a local level and considers the national and European context in terms of key players, policy environment, etc.;
- Establish a process where information is continually improved based on experience and a method of measurement for evaluating progress;
- Reflect the socio-economic perspective of various interest groups, long lifetime of energy infrastructure, and other infrastructural planning requirements (waste, transport, etc.).

The study will be inspired and take the lessons learned from leading Sustainable Energy Communities such as [Samsoe Island](#) (Denmark), [Totnes Transition Town](#) (UK) and other initiatives such as the EU [SERVE¹ Community](#) and [Sustainable Clonakilty](#).



The Proposed Team

The proposed consortium includes:

XD Sustainable Energy Consulting Ltd, lead consultants and coordinators of the project team. XD Consulting is an integrated sustainability consultancy providing multi-disciplinary expertise in the area of renewable energy and energy efficiency. Our mission is to "empower people, organisations and communities in making the transition to a low-carbon, resilient future". XD Consulting was created by Xavier Dubuisson in 2010 on the basis of his 15 year experience as a sustainable energy engineer, having worked with leading organisations in this field, in Ireland, Belgium and other European countries. He was the lead author of the Clonakilty Renewable Energy Roadmap and contributed to the Limerick and Clare Energy Plan.

Limerick Institute of Technology – Tipperary, Sustainable Energy Community development experts. LIT Tipperary has been at the forefront of the implementation of sustainable energy since 1998. Through its work with the Tipperary Energy Agency (TEA) it has been involved in the development of a wide range of sustainable energy projects with and for community, public sector and private sector actors. LIT Tipperary Development Unit has a wealth of experience of working with Authorities at a Local, Regional and National level on strategic and area planning.

¹ SERVE (Sustainable Energy for the Rural Village Environment) is very successful EU-funded project lead by Limerick Institute of Technology – Tipperary.

With sustainable development at the core of its educational mission, it runs both Certificate and Degree Programmes in the fields of energy, environmental management, social studies, business, information/communication technology, and hosts a Centre for Sustainable Energy Development. It is co-ordinator of the EU CONCERTO SERVE project (see below) and runs the National Rural Network on behalf of the Irish Department of Agriculture Food and the Marine.

Aalborg University - Sustainable Energy Planning (SEP) Research Group, energy planning experts.

The group works with an interdisciplinary approach to Sustainable Energy Planning, with a focus on technical and geographical aspects (energy system analysis), as well as economic and institutional (feasibility studies and regulatory environment) seen in the light of technological change. Since the early 1970s, the group has played an active part in the Danish energy planning process and have an ongoing advisory role in policy-making at local and national level. Aalborg University's SEP Research Group has also conducted one of the most comprehensive regional energy planning study in Ireland for Co. Limerick and Co. Clare (see below).

Samsø Island's Energy Academy, have agreed to play an advisory role to the consortium team on demand. The Energy Academy resides on this 100% renewable energy island and hosts Samsø Energy and Environment Office, Samsø Energy Agency and the Samsø branch office of the Danish Energy Service. Together they run a broad spectrum of research and consultancy services in the field of sustainable energy for commercial and private customers, organize guided energy tours, workshops and seminars and generally promote 'energy tourism' for energy professionals.

Together the project team combines multi-disciplinary expertise in sustainable energy, with academic knowledge and practical experience of energy planning as well as community development. Their experience is largely anchored in the rural context (relevant to Co. Kerry) and enriched by their ongoing international collaborations. Finally, ***all have a personal commitment to the development of sustainable energy and have in common the conviction that local communities have a key role to play in the transition to a low-carbon future.***

Core Competences:

Together, the team members bring the following core competences to the project:

- Energy system modelling using the most appropriate methods and tools ([EnergyPLAN](#)) for energy planning towards high penetration of renewables, together with lifecycle cost analysis and socio-economic cost/benefit assessments;
- Feasibility study, design and engineering of renewable energy and energy efficiency projects, including community-scale wind farms, biomass district heating, solar thermal and PV systems, etc.;
- Project management for renewable energy and energy efficiency development, including demonstration projects, awareness-raising and education campaigns, planning and environmental permitting, etc.;
- Analysis of renewable energy resources, using site monitoring data for actual RE projects or macro-data for strategic resource assessments at larger geographical scale;
- Familiarity with the social and cultural dimensions of community transition, as well as know-how in policy-making, behavioural change and community development programme design.

Relevant Experience:

Please find herewith a list and brief introduction of selected projects undertaken by the members of the consortium relevant to this study:

Clonakilty District Renewable Energy Roadmap (2010-2011)



This study, the first of its kind in Ireland, was commissioned by the community group Sustainable Clonakilty with the objective of developing a Renewable Energy Roadmap towards Energy Neutrality by 2020 for the Clonakilty District. The study provides an overall sustainable energy strategy, which encompasses energy demand reduction, community-scale renewable energy generation and distribution, as well as individual renewable energy systems. The study undertaken by consultancy

DWEcoCo with Xavier Dubuisson as main author was designed as an open-source blueprint for local community energy planning. Sustainable Clonakilty continues to actively promoting the RE Roadmap to key stakeholders in the community and participates in awareness-raising initiatives such as the Green Energy Festival, the Clonakilty Bicycle Festival, the Jungle City, etc. Further information is available on <http://www.sustainableclon.com/renewable-energy-study-2011/>

Limerick Clare Energy Plan (2011-2012)



The study was commissioned by the Limerick Clare Energy Agency and its objective was to “develop a local energy plan for Limerick and Clare which is based on a quantified assessment of different sustainable energy measures, in terms of costs, fuel, and carbon dioxide emissions.” The first part of the study was dedicated to establishing a baseline of energy consumption for the region, assess its historic profile and forecast it to 2020 and 2050. This second part of the study investigates how the region can begin the transition to a sustainable energy system by outlining some key actions between now and 2020. A long-term vision is also presented to illustrate how these actions contribute to the final objective of a low-carbon 100%

renewable energy system. The study was undertaken by a consortium led by the Aalborg University SEP Research Group and including XD Sustainable Energy Consulting Ltd. The methodology developed for this study strongly informs the methodology proposed herewith for the Kerry Sustainable Energy Community Roadmap. The study report is not yet published.



SERVE (Sustainable Energy in the Rural Village Environment) Community (2007-2012)

LIT-Tipperary is the coordinator of the SERVE Community Project funded by the EU CONCERTO programme. This €10.5m project has resulted in the retrofitting of 400 buildings, installation of 500 RES systems, 2 district

heating systems and 2MW of biomass heating. It is focused on creating a sustainable region in North Tipperary. The work with the SERVE project will inform the action plan in terms of viability from an economic, strategic and practical view point. Further info on <http://servecommunity.ie/>

ISLE-PACT (2009-2012)

Samsø's Energy Academy plays a prominent role in the ISLE-PACT project is committed to developing Island Sustainable Energy Action Plans and a pipeline of bankable projects with the aim of meeting or exceeding the EU sustainability target of reducing CO2 emissions by at least 20% by the year 2020. The ISLE-PACT project is an initiative of 12 groups of European island authorities.

<http://www.islepact.eu/html/index.aspx>

The Experts

The following professionals will form a dedicated team for the implementation of the study with the quality standards reflecting their professional experience and personal commitment to help make it a ground breaking project:

Xavier Dubuisson Eng. MSc. is an engineer with 15 years' experience in the field of sustainable energy in Ireland and Belgium. Xavier has worked with Sustainable Energy Ireland for over six years where he was technical manager of SEI's Renewable Energy Office. In that capacity, he was instrumental in expanding the Irish renewable heat market from a low €200,000 to €30 million strong by 2007. During that period, he has played a significant part in securing funding for and delivering support programmes in the area of training, education and promotion for sustainable energy technologies. Xavier worked for 3 years with DWecoCo, an Irish Integrated Sustainable Design consultancy, as technical manager of their Cork office. He then created XD Consulting and continues to provide technical assistance and business development support to organisations and communities in Ireland and abroad at the front-end of the transition to the low-carbon economy. Find out more about Xavier on [LinkedIn](#).

Seamus Hoyne B.Eng, M.Eng, MSc, MIEI, Chartered Engineer. Seamus has been involved in the field of sustainable energy since 1993, has coordinated many EU projects and currently is coordinator of EU SERVE Project under FP6. He is also the Managing Director of the Tipperary Energy Agency and has accumulated a wealth of practical experience in project development, management and implementation. He has been involved in a number of sustainable transport projects including MOVE and CLEAN Drive. Find out more about Seamus on [LinkedIn](#).

Ciaran Lynch B.SocSc, Dip TP, Dip Ad Sc, MSc (Econ), MIPI. Ciaran is a Town Planner by profession and worked as the Chief Planner in one of Ireland's Local Authorities for 13 years. In that role he was heavily involved in the development of land-use and environmental policies as well as the assessment of development proposals including those in the field of sustainable energy. Mr Lynch led the development of the 2004 Regional Planning Guidelines for the Mid West Regional Authority (MWRA) and has close links to the local authorities and other agencies within and beyond the region. He also led the recently completed SEA and HDA for the 2011 Guidelines. He is the coordinator of the Rural Development Support Unit (RDSU) which provides supports to a network of Rural Development Companies throughout Ireland (<http://www.nrn.ie/>). Find out more about Ciaran on [LinkedIn](#).

David Connolly PhD is Assistant Professor at Aalborg University. David specialises in the design and analysis of renewable energy systems, with the overall objective to identify how Ireland can become 100% renewable. As part of his research, he develops computer models of different energy systems, which account for the electricity, heat, and transport sectors. He has also co-developed a new programme that locates potential sites for large-scale energy storage in the form of pumped-hydroelectric. He is a specialist of EnergyPLAN and was the main author of the Limerick Clare Energy Plan study described above. Details of his research can be found on his website (www.dconnolly.net) or on his research group's website (www.EnergyPLAN.eu).

Peter Christensen (project manager) and Sören Hermansen (director) are our key contacts at the Samsø Energy Academy and have over 20 years of experience, both technical and managerial, in sustainable energy community development. [Soren's](#) and [Peter's](#) profiles can be found on LinkedIn.

Proposed Methodology

Project Management

The team will be coordinated by XD Consulting's Xavier Dubuisson who will be managing the project on behalf of the client. The coordinator will ensure that the project is delivered on schedule and on budget, and to the satisfaction of the client. An online project management platform will be used to plan the project, monitor progress, manage resources and share files. The team will also have regular coordination meetings. While roles and responsibilities will be clearly allocated at the beginning of the project, the team will take a dynamic, participative and flexible approach to conducting the study in order to foster co-operation and creativity.

It is also proposed to establish a **project steering committee** made of representatives from Transition Kerry, Kerry County Council and other key stakeholders at the onset of the study. The role of the steering committee will be to review progress at key stages in the study, provide direction and facilitate access to local stakeholders for the consultant when necessary. A representative among the steering committee will be appointed main contact person for the consultant for day-to-day activities.

Participative Approach

The team will endeavour to maintain a transparent research and open communication process throughout the project. In doing so, it will aim at facilitating the client and its community input into the study, notably via the steering committee. The methodologies used will be documented and the results explained and illustrated adequately to facilitate a range of readers. The tools developed will be made open-source and appropriate for ongoing use by the community.

On the other hand, the consultancy team will expect the client and the steering committee to fulfil the following roles during the study implementation, to which it is assumed the client will commit on appointing the consultancy team:

- Undertake the steering committee's roles of supervision and guidance in the best interest of the project;
- Facilitate access to data, information and knowledge available locally;

- Assist in ‘opening doors’ and establishing contact with key local stakeholders;
- Organise and facilitate consultation with the community at critical stages of the project.

In addition, it is our understanding that Kerry County Council’s staff will co-operate with the consultancy team, notably by sharing data and human resources dedicated to the feasibility study of their two biomass heating projects and the preparation of the Covenant of Mayors’ SEAP. In turn, the consultancy team will complement their work in that regard by contributing to the associated data and analysis.

Study Methodology

The methodology below has been elaborated to meet the scope of work defined by Transition Kerry in their call for tender. The following methodology statement provides an outline of the approach proposed to fulfil it, based on the experience of the team in conducting such studies in Ireland and abroad. However, flexibility will be exercised to allow the methodology evolving as local data and knowledge becomes available and challenges present themselves.

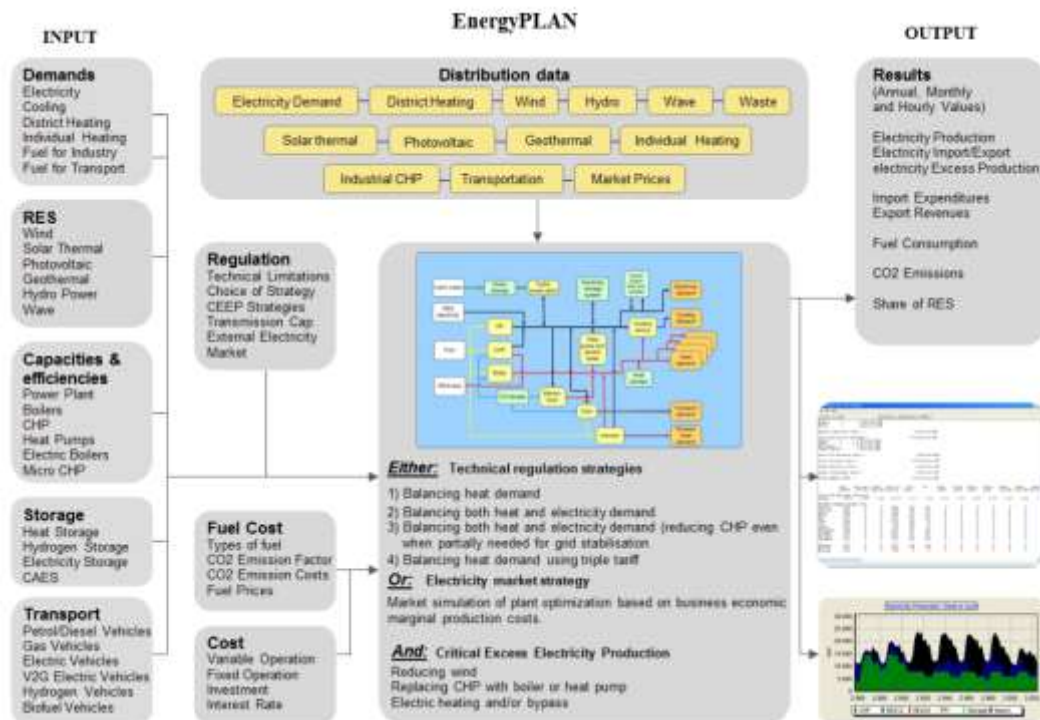
A. ENERGY AND EMISSIONS BALANCE FOR KERRY COUNTY (IDENTIFYING)

- 1) A detailed review of the data available will be undertaken at the beginning of the study, in conjunction with Kerry County Council and Transition Kerry to maximise the use of local data;
- 2) Energy use data from the EU SERVE Community project co-ordinated by LIT, as well as Sustainable Clonakilty’s energy audit data, will also provide a robust basis for developing an accurate energy usage profile in rural areas for the residential sector at least;
- 3) ‘Bottom-up’ data from the above sources will be privileged in developing the energy consumption profile of the county, which will then be calibrated on the basis of top-down data available from national statistics by SEAI, CSO, etc. (notably to establish historical trends);
- 4) The impact of large energy users (industry) on the county energy demand will be assessed and a methodology to allow a fair accounting of their energy demand in the county energy and emission balance will be recommended;
- 5) In addition, a profile of the local energy (electricity, heat, transport) mix will be developed taking into consideration RE generation based in the county and the national energy mix. Equally, the role of large fossil fuel based generation plant in local energy demand and supply will be evaluated and the methodology to account for their contribution to the county energy balance will be recommended;
- 6) Potential targets for energy demand reduction for 2020 and 2050 will be established on the basis of current national and European policy, as well as a review of best practice among similar local, community-based initiatives in Ireland and abroad. Energy saving targets for the county energy planning process will be agreed in consultation with the study steering group;
- 7) A high-level review of existing energy infrastructure (in particular electricity generation, transmission and distribution, as well as district heating and natural gas infrastructure) and investment programmes planned for the period to 2020 will be conducted in consultation with relevant utilities, energy companies and government departments. This will inform the county energy system modelling and planning undertaken in the next step;

- 8) The consortium will assist Kerry County Council in preparing their Sustainable Energy Action Plan for the Covenant of Mayors, including for establishing the county’s energy usage & emissions baseline, quantifying energy savings achieved and targeted. We will also assist the council in formulating its energy demand and emissions reduction strategy;
- 9) A report on this first part of the study will be presented for review to the Steering Committee before mid-December 2012.

B. SUSTAINABLE ENERGY PLAN FOR COUNTY KERRY (PLANNING AND EVALUATING):

- 1) A review of best practice in energy planning methods and tools will be undertaken and the methodology for this part of the study established on that basis;
- 2) Based on previous experience within the team in this area, it is anticipated that the energy system planning model EnergyPLAN will be used. EnergyPLAN is a freeware developed by the Sustainable Energy Planning Research Group at Aalborg University. It has been used extensively for national (e.g. it was used to develop the Danish 2030 Energy Plan) and regional energy planning. The team has considerable experience in using EnergyPLAN, notably for the Clare and Limerick Energy Plan. It is reliable (deterministic, analytical, 1-hour step modelling), free of charge, user-friendly and very well documented in English, appropriate for learning and future update by skilled community-based users, etc.;
- 3) EnergyPLAN covers comprehensively the entire energy system including electricity, thermal energy, transport, etc. and reflects the complex interactions between its multiple components, illustrated by the figure below:



For further information on EnergyPLAN, visit www.energyplan.eu

- 4) Two time-scale and associated sustainable energy objectives will be proposed for analysis and agree on with the Steering Committee. One reflecting short-term targets (2020) at least complying with current national & EU policy, and a long-term target (between 2030-2050) representing full transition to a low-carbon energy system. For both timescales, the

sustainable energy scenarios modelled will be benchmarked against a ‘business as usual’ scenario in order to measure their impacts;

- 5) The following core principles will be adhered to when completing the analysis:
 - a. The analysis must consider all sectors and components of the energy system, and their complex, dynamic interaction notably in the context of the intermittency and fluctuations of certain renewable energy resources (hence the hourly simulation step);
 - b. Given the long lifespan of energy infrastructure (up to 100 years), a long-term horizon must be considered to ensure that short-term actions fit and to be able to integrate possible radical technological and regulatory changes;
 - c. The analysis must be completed from a socio-economic perspective and internalise critical factors such as security of supply, GHG emissions, resource depletion, land-use change, etc. Key metrics used to assess the scenarios will include lifecycle energy costs, job creation, regional balance of payment, resource use, etc;
 - d. Energy systems will be designed and modelled to achieve energy balance within the county (system operates in ‘island’ mode with no import/export) to ensure that they can be developed without being constrained by the national energy system limitations or being dependant on energy import;
 - e. Energy systems compatible with high community participation in their development and operation, again reinforcing local society gains and reducing local negative impacts.
- 6) Assess the potential renewable energy resource of the county, including on-shore and off-shore wind, biomass (from agricultural, forestry, municipal, industrial and possibly marine sources), geothermal energy (shallow and deep, as well as ambient heat sources), solar energy (photovoltaic and thermal), wave and tidal energy. The assessment will largely be desk-based, using published national (CSO, SEAI, Dept Agriculture, Teagasc, DoE&LG, etc.) and local sources (Kerry CoCo, Tralee IT, etc.). This will be complemented with interviews and discussions with local stakeholders (e.g. Kerry CoCo, wind farm operators, local utility officers, etc.) in order to try and harness local knowledge;
- 7) In addition, a high-level SWOT analysis of each resource and associated energy technologies will be conducted to enable readers develop quickly an understanding of the key aspects of their development. Recommended references will be listed to enable readers acquire further knowledge in this area;
- 8) For both the short-term (2020) and long-term horizons, a series of sustainable energy scenarios will be defined, the associated energy system will be built and simulated with EnergyPLAN. The EnergyPLAN simulations will enable us to quantify their impacts in terms of primary energy supply (PES) & CO₂ emissions, renewable energy production, annualised lifecycle costs, job creation, and balance of payment. All Sustainable Energy scenarios will be benchmarked against ‘baseline/business as usual’ scenarios;
- 9) A matrix of the different scenarios simulation results will be built to allow a comparative analysis of these scenarios, from which recommendations on the most appropriate scenarios will be drawn and debated. Recommended scenarios for 2020 will have to fit within the recommended long-term scenarios in terms of energy infrastructure choices. Equally, the impact of the recommended energy scenarios and associated systems on the national & European energy system will be discussed;

- 10) A preliminary report will be presented to the Steering Committee by mid-December with initial recommendations on the 2020 Sustainable Energy Scenario in order to facilitate Kerry CoCo's SEAP preparation for the Covenant of Mayors;
- 11) A full report for this second part of the study will be presented for review to the Steering Committee by the beginning of March 2012. It is recommended that the report is circulated to key stakeholders for consultation. The consultancy team will be available to present the report and its analysis at a public meeting to facilitate the consultation process;
- 12) A one-day workshop will be organised by the consultants with a local technical team assembled by the steering committee for a thorough introduction to the methodology and tools of the study. The aim of this workshop would be to quick-start the acquisition by the community of the know-how required to continue refining and updating the roadmap as new information and knowledge becomes available.

C. Sustainable Energy Community (SEC) Roadmap (EVALUATING):

- 1) A review of the key aspects of the Sustainable Energy Plan implementation will be conducted and presented as a SWOT² matrix, including:
 - Policy and regulatory environment;
 - Human resource, organisational and institutional development;
 - Funding strategies and financial management;
 - Energy infrastructure development incl. associated planning and environmental obligations;
- 2) A map identifying key stakeholders for the plan implementation and their role will be prepared in the form of a mind map, to illustrate roles, interactions, constraints and opportunities, etc.;



Source: Totnes Transition Town.

- 3) A review of best practice in SEC development will be conducted to determine key barriers & success factors, models of community participation and associated energy systems. Particular emphasis will be given to the SERVE Community project, Danish Samsøe Island (100% RE community) and Totnes Transition.
- 4) A draft Kerry SEC Roadmap for the implementation of the 2020 Sustainable Energy scenario retained by the Steering Committee will be developed on behalf of Transition Kerry. The draft roadmap will recommend and outline plans for:

² Strengths Weaknesses Opportunities Threats, see http://www.mindtools.com/pages/article/newTMC_05.htm for details.

- 5) Awareness raising campaigns targeting key sectorial groups (such as agriculture, industry, local and national authorities, residential and services, etc.) with a view to generate buy-in from local communities and authorities;
- 6) Setting-up organisational and managerial structures appropriate for community-based projects;
- 7) Energy system project development, prioritising potential projects which offer early, quick wins and demonstrate best practice in SEC initiatives.
- 8) Public funding in the framework of research & development and demonstration programmes that can support the implementation of the Kerry SEC Roadmap and address knowledge gaps identified in this study.
- 9) The draft Kerry SEC Roadmap will be consigned in a third report and submitted to the Steering Committee by the end of March. We would suggest that this report is used for initial consultation with a key stakeholder representative group, which we would be happy to assist with.
- 10) A final report combining all three parts of the study will be compiled, integrating the feedback provided by the initial consultations and submitted at latest at the end of April.

D. Optional Services:

The following optional services are proposed outside of the scope of work identified above and the project consultancy fee set hereafter. We feel they would make a

Energy mapping:

Energy mapping is used to spatially depict the energy potential for various renewable energy sources as well as to map the energy consumption across a geographical area. When portrait together the maps of energy supply versus demand will highlight areas of renewable energy opportunities. It is a very useful tool to help decision makers and planners to better understand how energy and land-use planning in cohort can contribute to meet the energy demand reduction and renewable energy supply targets of Co. Kerry.

While every effort will be made to illustrate the spatial distribution of energy demand and renewable energy resources using available mapping tools (SEAI's RES maps, PVGIS, etc.), we would like to suggest that additional work in spatial analysis and production of essential energy maps would provide an important decision-making tool for the community. The extent of the work involved would require a more detailed assessment of the number of maps, their resolution and the nature of the data presented. However, a provisional budget under €5,000 would cover adequately the provision of heat and electricity usage maps, as well as maps on the wind energy, bioenergy and hydropower resources.

Study tour to Samsø Energy Island:

Samsø Island, as discussed before, hosts a pioneering island community would has lead the transition to 100% Renewable Energy for almost 2 decades. The Energy Academy proposes a four-day study tour programme, the Energy Safari, combining workshops, visits to demonstration plants, meetings with local stakeholders, etc. and enjoying the beautiful landscapes of the island and the hospitality of its people. Further details on the Energy Safari are available on <http://energiakademiet.dk/en/viden/energi-safari/> . An indicative budget of €1300 per person for a group of at least 10 participants, will cover the study tour as well as local accommodation, food and

transport. XD Consulting can take care of the co-ordination of the study tour organisation for a small additional administrative fee.

Proposed Schedule

The chart below indicates the proposed project schedule. Assuming a start date in October, we plan that the project will be completed by end of April 2013.

Project Plan								
Duration	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	
Estimated start/completion	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	
Tasks & Milestones	Part A. Energy & Emissions Balance							
<i>Data collection & analysis</i>	█							
<i>Historical E&E balance</i>		█						
<i>E&E forecast & targets</i>		█						
<i>Energy infrastructure review</i>			█					
<i>E&E balance Report</i>			█					
	Part B. Sustainable Energy Plan							
<i>RE Resource Assessment</i>			█					
<i>2020 Scenario analysis</i>			█	█				
<i>Long-term Scenario analysis</i>				█	█			
<i>Reports</i>					█	█		
<i>Consultation & workshop</i>						█	█	
	Part C. SEC Roadmap							
<i>SWOT assessment of plan</i>					█			
<i>Best practice review</i>						█		
<i>SEC Roadmap development</i>							█	
<i>SEC Consultation and Report</i>							█	
Optional services								
<i>Energy mapping</i>			█					
<i>Study Tour</i>					█			
Final Report & Project Completion							█	

Outline of Roles and Fee Proposal

XD Consulting will be the main consultant and co-ordinator of the study. It will provide the main body of work for the Part A (Energy & Emissions Balance) and Part B (Sustainable Energy Plan), and will also lead Part C (Roadmap). XD Consulting will be in charge of preparing reports and will be the main contact point for the team.

LIT Tipperary will contribute to Part A by providing access to benchmark data on building energy usage and energy retrofitting costs, to Part B with benchmark data on biomass & solar district heating, on the basis of their direct experience with the SERVE Community project. LIT Tipperary will also assist with the development of the SEC Roadmap (Part C) by doing research and providing advice on policy, regulatory, planning and organisational aspects, again bringing in the benefit of

their practical experience in this area. Should the option of Energy Mapping be taken by the client, LIT Tipperary will carry out the GIS work require and deliver selected maps.

Aalborg University will provide an overall advisory role on energy planning and will provide technical assistance on the development of the Energy & Emissions Balance and modelling with EnergyPLAN.

Samsø Energy Academy will provide general guidance and peer review for Part C of the study (SEC Roadmap). Should the option of a study tour to Samsø be taken by the client, they will be in charge of its preparation and delivery on the ground.

The table below presents the overall consultancy fee proposal and split between the consortium partners.

Partners	Daily rate	man.days	Staff cost	Other expenses	Total (excl.VAT)	VAT	Total (incl.VAT)
<i>XD Consulting</i>	€ 350	50	€ 17,500	€ 1,000	€ 18,500	0%	€ 18,500
<i>LIT-Tipperary</i>	€ 350	8	€ 2,800	€ 300	€ 3,100	23%	€ 3,813
<i>Aalborg University</i>	€ 300	3	€ 900	€ 300	€ 1,200	0%	€ 1,200
<i>Samsø Energy Academy</i>	€ 450	2	€ 900		€ 900	25%	€ 1,125
Totals		63	€ 22,100	€ 1,600	€ 23,700		€ 24,638

The proposed schedule of payment is:

- 30% on official appointment of the team;
- 20% on completion of Part A (report on month 3);
- 30% on completion of Part B (report on month 6);
- 20% on completion of Part C and project (final report on month 7).