



Greentech South - Energy Transition - Triangulated City & Town project

Sustainable integrated Urban development in Cities & Towns across the South

www.psecc.co.uk

leading towards a 1.5 Degree C Consistent (discussion document)

We would like to work with Greentech South on the Triangulated Cities & town project for Portsmouth City, Basingstoke Town and Southampton City by identifying and develop suitable Renewable Energy projects in the South to be jointly owned by each Council and funders. Much needed extra revenue streams have been identified to assist the Sustainable Development Goals, which are the blueprint to achieve a better and more sustainable future for all and will assist in reaching a 1.5 Degree C Consistent Pathway. Identification of five Renewable Energy projects for Basingstoke -Southampton - Portsmouth appx. £970 million plus, and "NO" Council financial outlay with appx. revenue streams of over £2 billion over a twenty-year period. Bankable projects already has attracted our funders to provide the required level of funding for each project and we offer this to Greentech South.

Sustainable Development Goals (SDG's) address the global challenges we face, including those related to poverty, inequality, climate, environmental degradation, prosperity, and peace and justice. The Goals interconnect and in order to leave no one behind, it is important that we achieve each Goal and target by 2030 and they can lead the way to the 1.5 Degree C Consistent Pathway.

Sustainable Development Goals



The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests. Our extra revenues can assist with these SDG's as well as providing funding for other Climate Change Mitigation work, Sea Defences, new housing for example.

Sustainable Development Goals most relevant to our current proposals

Goal 1. Economic growth must be inclusive to provide sustainable jobs and promote equality.

Goal 7. Energy is central to nearly every major challenge and opportunity. Goal 10. Reduced Inequalities

Goal 9. Industry, Innovation and Infrastructure

Goal 11. Sustainable Cities and Communities

Goal 13. Climate Action

Goal 12. Responsible Production and Consumption

Goal 17. Partnerships for the Goals

Goal 16. Peace, Justice and Strong Institutions

Towards 100% renewable energy, a global, fast-expanding movement

PSECC have the "Resource Ownership" concept, in the global effort to fight climate change would like to indicate that cities have some of the greatest potential and can gain revenues from Low Carbon Technology deployment – and the greatest imperative to make a difference. With an increasing global migration into the world's urban areas, which are expected to support at least two-thirds of the total human population by 2050, experts have argued that cities have no choice but to transition toward low-carbon renewable energy systems if they're going to remain sustainable. Greentech South already are embarking upon this programme in the South of England. Energy will need to be a primary focus of that effort. From the expansion of renewable energy sources to the adoption of cutting-edge energy efficiency and storage technologies, cities have the opportunity to drastically reduce their carbon footprints. Cities can integrate renewable energy, as well as energy-saving technologies, into the urban landscape. This can be a challenge, given that cities with their closely packed buildings and dense populations don't always lend themselves to traditional renewable techniques.

No two cities or metropolitan Urban areas are alike. The path towards 100% renewable energy will be different depending on what natural resources are available in the territory and in neighbouring areas and on the priority given to energy efficiency, to particular energy sources (electricity, gas, heat), uses (buildings, mobility) or players (large energy companies, digital businesses, cooperatives). Although there is no right or wrong path - Although there is no right or wrong path there are five main points to note -

Source: (the above & following points were taken from CITIES HEADING TOWARDS 100 % RENEWABLE ENERGY)
RÉSEAU ACTION CLIMAT

1. A VISION OF THE FUTURE

INTEGRATING THE 100% RENEWABLE ENERGY OBJECTIVE INTO A BROADER PERSPECTIVE

Adopting a 100% renewable energy objective exemplifies and draws attention to the city council's political will to commit to a vision of the future that brings hope. It also lays down an official framework for taking action, involving stakeholders and allocating the necessary technical, administrative and financial resources. Such a publicly avowed objective also creates a secure environment for investments. But it will not be understood or shared by local stakeholders unless it is part of a broader perspective: reducing greenhouse gas emissions, resilience, economic development, social justice, reducing vulnerabilities like fuel poverty, quality of life or making the area more attractive.

2. THE URBAN-RURAL LINKAGE - COOPERATING WITH NEIGHBOURING RURAL COMMUNITIES -

In most cases, a city or metropolitan area, due to its density, will not be able to cover its energy needs with 100% renewable energy produced on its territory, even after markedly reducing them. It will therefore have to outsource wood, electricity and biogas, as it already does for food. Here lies an opportunity to create a win-win relationship between urban and rural land area. Cities have an interaction in providing financial or technical support for the development of renewable energy production in neighbouring rural areas, thereby cementing local economic development and resilience

3. TAKING ACTION - ILLUSTRATING SUCCESS STORIES WITH PROJECTS ON THE GROUND

Long-term objectives need to be backed by short-term actions offering tangible results. A 2050 target may be useful to set a course but will seem like hollow words if it does not go along with immediate measures. This is particularly the case of a 100% renewable energy target which requires massive changes to be made as quickly as possible

4. CO-CONSTRUCTION - INVENTING NEW WAYS OF ENGAGING LOCAL STAKEHOLDERS

Setting a 100% renewables course involves not only completely changing the energy model, but also the practices and stakeholders involved. It is a chance to give local stakeholders wider opportunities to participate, create and develop new economic models in relation to the energy transition. Success will depend on the diversity of the solutions, on the capacity of city council departments to work together and on the degree of involvement of local players, a precondition for better accepted and accomplished projects

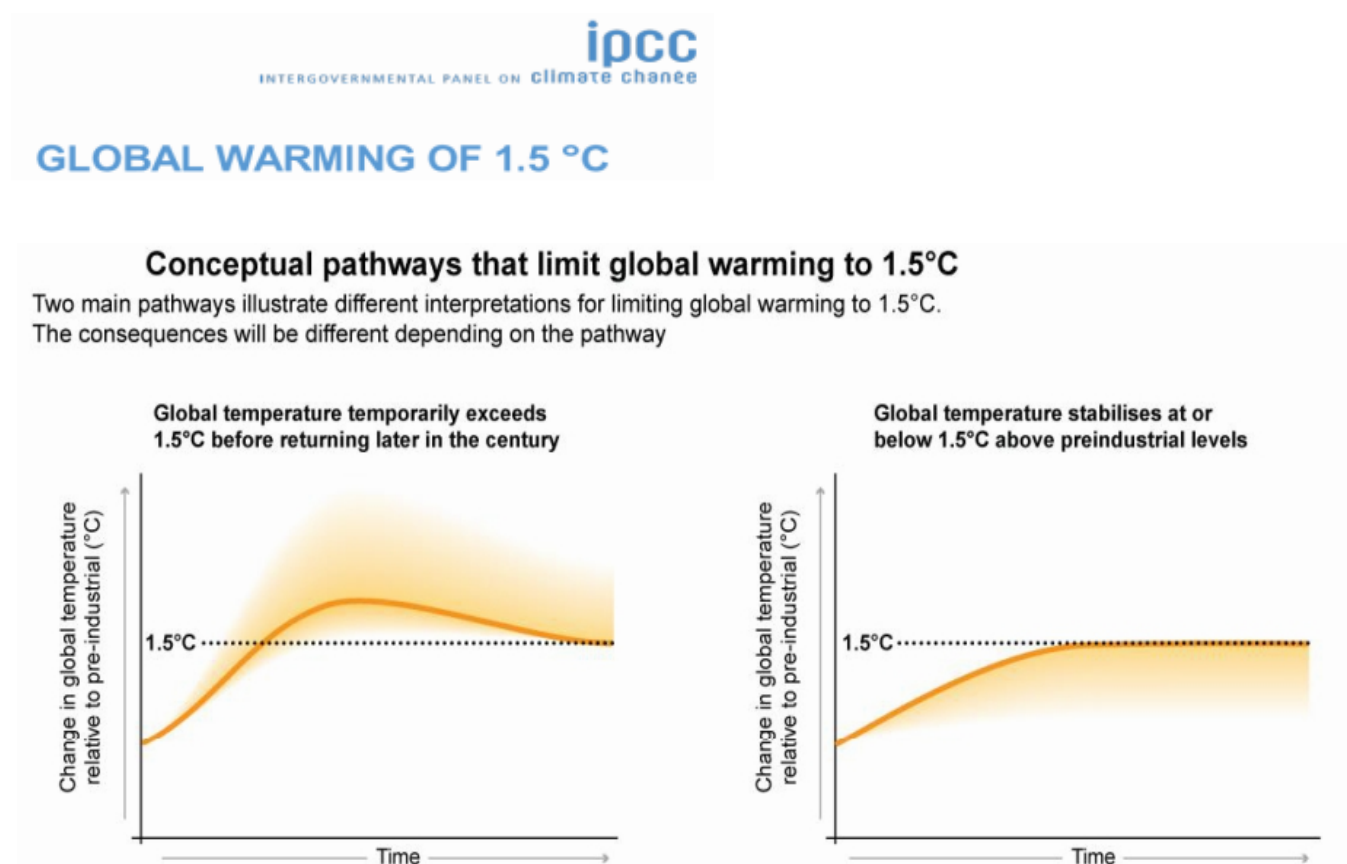
5. FACILITATIONS - HUMAN RESOURCES, THE KEY TO SUCCESS

Whatever the objectives are, it is people who will get the job done. Involving and engaging citizens and local stakeholders, supporting the community and helping new projects emerge, all will require human resources. Without this public engineering, projects will not be able to grow, whether they are private, public or mixed projects. It is therefore essential that the appropriate level at which such engineering can be created or at least made available within the city council is quickly identified.

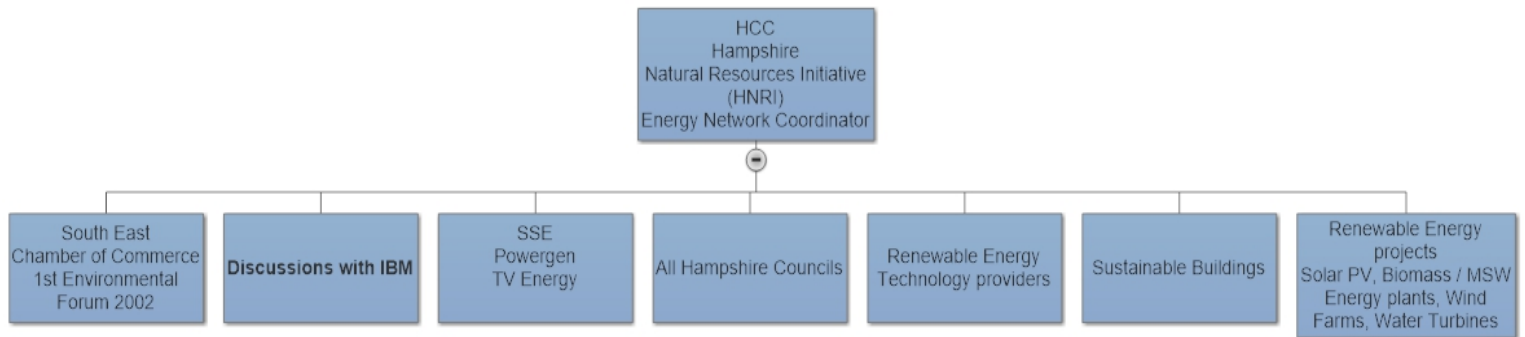
Responsible Production and Consumption is a key Goal and aspiration to try and meet the 1.5 Degree C Consistency pathway. There needs to be a future in which cities provide opportunities for all, with access to basic services, energy, housing, transportation and more. Our approach to the 1.5 Degree C Consistent pathway



PSECC believe that we will be able to raise the £970 million project costs from investors into Bankable Renewable Energy projects based on our development programmes over the past twenty-three years and this will lead to Councils being able to provide Clean Electricity from Renewable's at the same times and generating much needed extra revenues streams from the projects. This approach should make a 1.5 Degree C Consistency Pathway more possible and achievable in the South of England as well as providing much needed additional Council Revenue streams running into £ billions. This approach can help alleviate Poverty, Economic growth, help meet UN & UK Targets on carbon dioxide emission reduction, assist in developing Low Carbon Technology development in the South and provide the additional revenues for Council's to use for new Council Housing stock, Sea Defences etc.



Energy Transition in 2002



WE have researched and written Portsmouth City Energy Policy in 1995, Instigated the adoption of the Policy in 1996 by the Royal Navy and Coordinated the HNRI Energy Network in 2002 to 2004.

PSECC was responsible for taking forward a FREE Solar PV programme for 200 Private homes and seven schools in Hampshire. British Gas then instigated their Free Solar PV programme for schools throughout the UK.

Hampshire Natural Resources Initiative

Hampshire County Council & Local Council's Resource Ownership Concept & Renewable Energy proposals for Major Development Areas (MDA's) in Hampshire



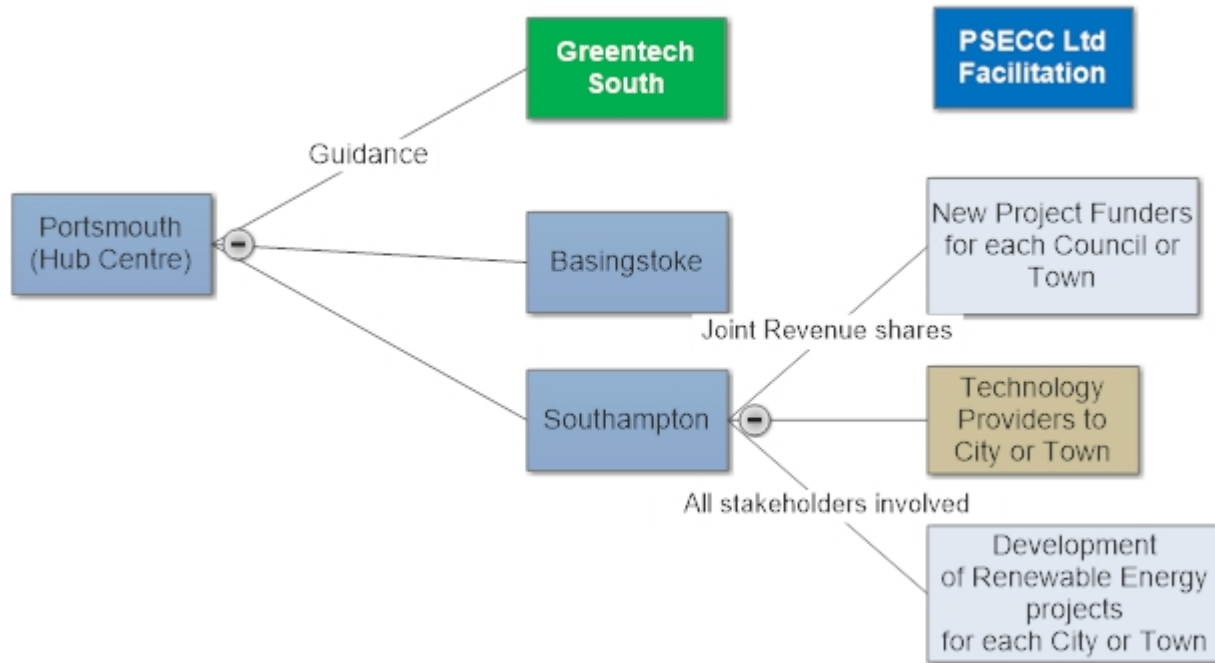
- | | | | |
|-----|--|---|-----------------------------------|
| 1) | Powergen PLC | - | Renewable Energy suppliers |
| 2) | Powergen Renewables | - | Renewable Energy Developer |
| 3) | Bical Ltd | - | Energy Crop Specialists |
| 4) | British Biogen | - | Energy Crop Developer |
| 5) | PMSS Ltd | - | Wind Farm Project Management |
| 6) | GE Wind Ltd | - | Wind Farm Developer |
| 7) | BPSolar Ltd | - | Solar Energy (PV & Hot Water) |
| 8) | PV Facades Ltd | - | Solar Energy installers |
| 9) | Taylorville Holdings Ltd | - | Gasification Plants |
| 10) | Okay Engineering Ltd | - | Recycling Equipment |
| 11) | HLC Hencley Burrows | - | Recycling Developer |
| 12) | IMGroup & HSBC | - | Project Funders & Risk Insurers |
| 13) | Scott Wilson | - | Waste Gasification 'Project Man' |
| 14) | Mott Mac Donald | - | Waste Gasification 'Project Man' |
| 15) | EcoSecurities | - | Carbon Management (CO2) |
| 16) | The Carbon Trust | - | SEEDA – Gary Foster |
| 17) | Sovereign Ltd-Soil Bind | - | Sustainable Construction material |
| 18) | Energy for Sustainable Development Ltd | - | Sustainable Energy Consultants |
| 19) | Centre for Sustainable Energy Ltd | - | Sustainability Advisors |
| 20) | CSMA Consultants Ltd. | - | Sustainable Energy Consultants |
| 21) | Roger Tyme & Partners | - | Planners & Development Economists |
| 22) | Jestico + Whites | - | Sustainable Architecture & Design |
| 23) | Dulas Ltd. | - | Renewable Energy Identification |
| 24) | Hampshire Waste Services | - | Project Integra – existing EFW |
| 25) | Waste to energy Ltd | - | Gasification equipment supplier |
| 26) | Tarmac Recycling Ltd | - | Construction waste recycling |
| 27) | Vital Energie Ltd | - | District Heating |
| 28) | Atkins Power | - | Power Engineers |
| 29) | TVEnergy Ltd | - | Biomass Suppliers |



Working towards a 1.5 Degree C Consistant Pathway can lead to significant Revenue gains by Council's & Towns.

PSECC Ltd would like to offer Greentech South their "Resource Ownership" concept network of companies and funders to facilitate positive transition.

Concept Design - Energy Transition - 2018



In Holland - "the Dutch government's Climate Agreement and existing EU targets aim to reduce CO₂ emissions substantially by 2030 and beyond. To meet these targets, the built environment – next to other sectors – needs to be made more sustainable. While the Dutch case might be unique regarding the dependence on natural gas, European countries face similar challenges regarding the transformation of buildings into sustainable neighbourhoods."

The November 2018 Energy Transition conference in Rotterdam has "focused on successful policy instruments and explored how authorities and other key actors can create societal support for the massive transformation processes. The sessions present the state of play and challenges in the Netherlands and Europe and shed light on policy approaches in different countries". PSECC suggest that our "Resource Ownership" concept is a good policy to adopt in the South and UK in general.

Solar PV for Social Housing
Solar Farms
Biomass & MSW Energy Plants
Water Turbines
Wind Turbines

The Energy Transition will be made much easier if additional funding is made available to Councils to develop Renewable Energy projects and receive revenues from those projects.

Our approach is consistent with URBACT and Energy Transition

"For about 15 years, the URBACT programme has been the European Territorial Cooperation programme aiming to foster sustainable integrated urban development in cities across Europe. It is an instrument of the Cohesion Policy, co-financed by the European Regional Development Fund, the 28 Member States, Norway & Switzerland."

"URBACT's mission is to enable cities to work together and develop integrated solutions to common urban challenges, by networking, learning from one another's experiences, drawing lessons and identifying good practices to improve urban policies".

Triangulated Council's – Portsmouth, Basingstoke & Southampton.

Energy Transition of two Cities & one Town in the South towards 100%

Macro & Micro Low Carbon - Renewable's

Funders will invest into all Renewable Energy projects and will share revenues on a ratio basis with each Council possibly 60%:40% (negotiable)

PSECC Ltd - 1.5 Degree C Consistent pathway - possibility (phase one and two) - £970 million

Initial Concept - inline with "Resource Ownership" concept - HCC - HNRI report 2004

Council's Own Renewable Energy schemes and obtain revenues - Funding can be arranged from investors in the UK Renewable's sector

All stakeholders must be involved in all projects

Rapid Development Biomass or MSW Plant 25MW - cost £200 million
Solar Farm - 10MW
Solar PV Social Housing 5,000 properties Leigh Park & Paulsgrove. cost = £20 million plus
Water Turbines + Wind additional cost £150 million (Long Term within three years)



Portsmouth City

Revenue profit

(Twenty Year revenues)
Solar Farm - £49 million
Energy Plant biomass MSW revenue profit appx. £250 million
5,000 Solar PV Social Housing - PPA set up with residents @ 7 pence KWh revenue profit £49 million
Water & Wind turbine revenue to be determined

First phase
Deployment of Low Carbon Technologies



Greentech South & PSECC Ltd

Basingstoke Town

Revenue profit

(Twenty Year revenues)
Solar Farm - £49 million
Energy Plant Biomass MSW revenue profit appx. £250 million
5,000 Solar PV Social Housing - PPA set up with residents @ 7 pence KWh - revenue profit £49 million
Wind turbine date to be determined

Second phase
Deployment of Low Carbon Technologies



Rapid Development Biomass or MSW Plant 25MW cost £200 million
Solar Farm - 10MW
Solar PV Social Housing 5,000 properties Southam. cost = £20 million
Wind Turbines £10 million



Southampton City

Revenue profit

(Twenty Year revenues)
Solar Farm - £49 million
Energy Plant Biomass MSW revenue profit appx. £250 million
5,000 Solar PV Social Housing - PPA set up with residents @ 7 pence per KWh - revenue profit £49 million
Water & Wind turbine revenue to be determined

Plastic Recycling Plants



Rapid Development Biomass or MSW Plant 25MW cost £200 million
Solar Farm - 10MW
Solar PV Social Housing 5,000 properties Eastleigh cost = £20 million plus
Water Turbines + Wind additional cost £150 million (Long Term within three years)



Solar Farms, Wind Farms and Water Turbines can be located outside of Council areas.

If electricity companies indicate no additional capacity for Renewable Energy projects and if there is a long waiting time for any connection then the sub-stations and possibly private wire (grid) systems built can be costed into project financials.

By increasing the Renewable Energy generation then this can assist a Circular Economy

The Butterfly Diagram (Source: Ellen Mac Arthur Foundation)
Bio-cycle & techno-cycle

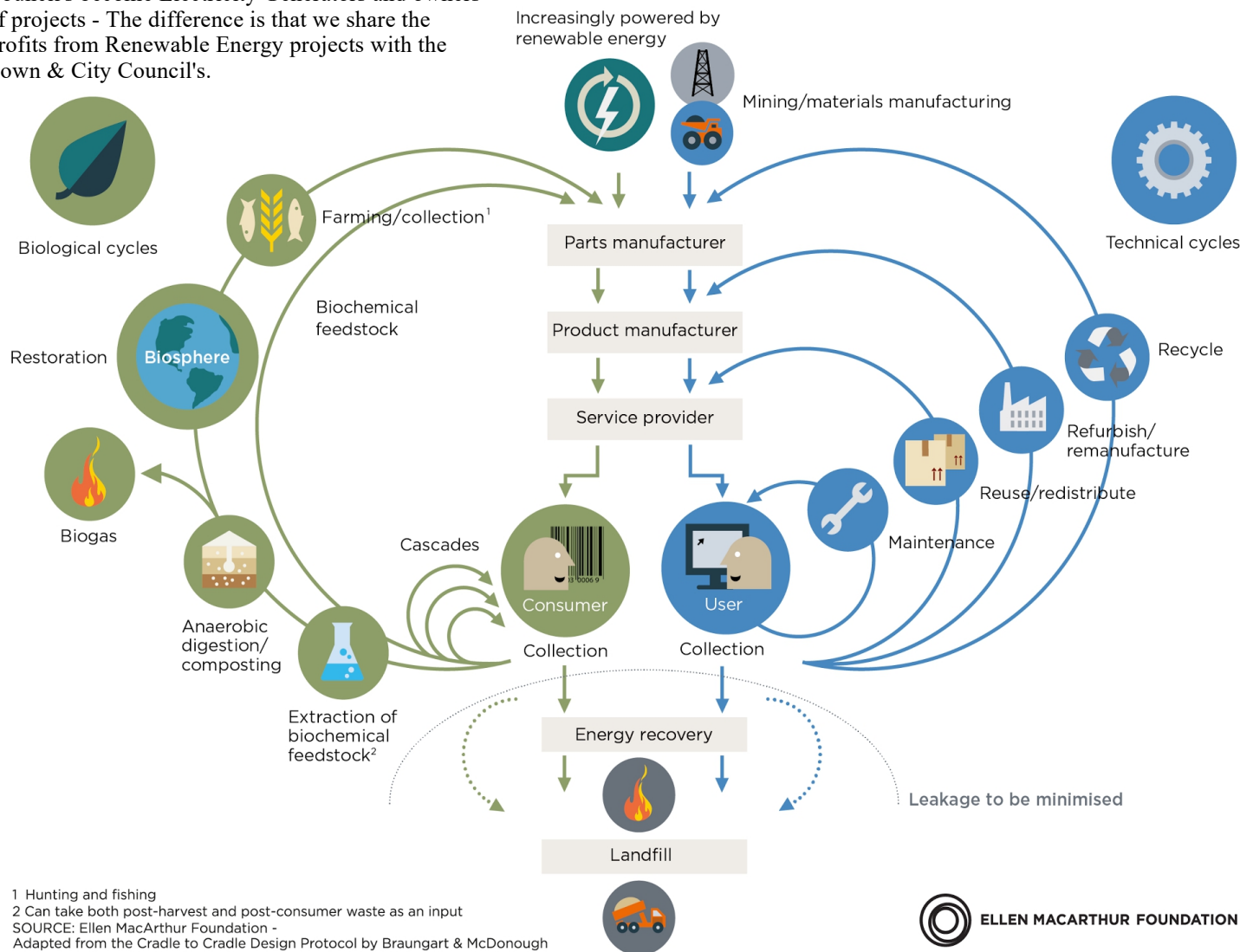
Organic materials follow a different reuse process than synthetic or technical materials. Because of this, it is important to ensure the separation of biological and technical materials after use, so they can each follow a separate reuse process (see figure below).

Technical materials, such as fossil fuels, plastics and metals are finite and cannot be renewed. In the techno-cycle it is important that the finite stock of materials is properly managed. 'Using' materials replaces the 'consumption'. By focusing on value retention, materials are recovered from residual streams after use.

Organic materials, such as cotton, food and water, can be taken up in the ecosystem by means of biological processes. In the bio-cycle it is important to ensure that the ecosystem and biological processes are enabled to function properly. Consumption may take place in this cycle (food, water, fertilizer) as long as the materials flows are not contaminated with toxic substances and ecosystems are not overloaded. When the ecosystem is balanced, organic materials are renewable.

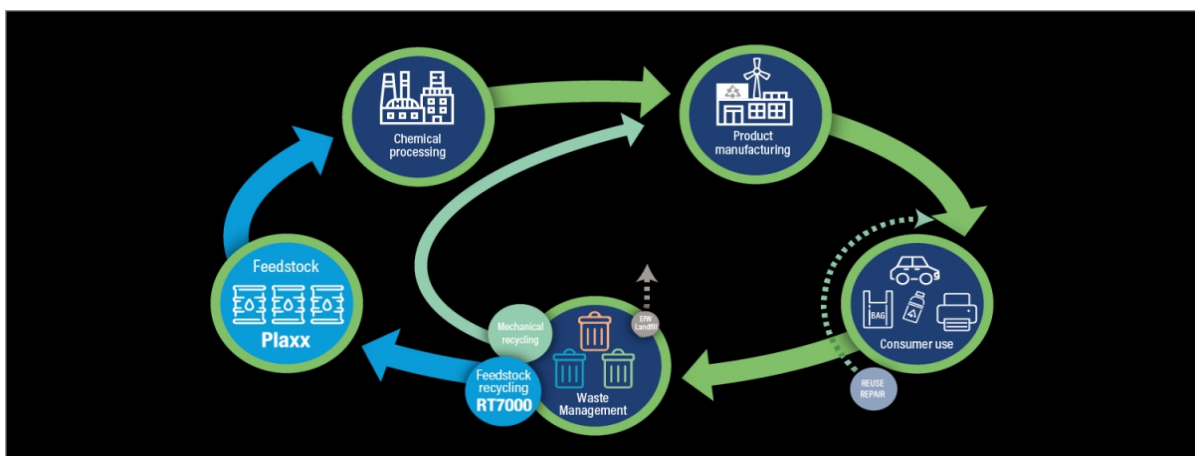
CIRCULAR ECONOMY - an industrial system that is restorative by design

Council's become Electricity Generators and owners of projects - The difference is that we share the profits from Renewable Energy projects with the Town & City Council's.



Wastes that can be dealt with in Gasification Energy Plants

Paper & cardboard	1. Newspaper 2. Cardboard/boxboard 3. Magazines/catalogues 4. Office paper 5. Other/miscellaneous paper
Glass	6. Clear containers 7. Green containers 8. Amber containers 9. Remainder/composite glass
Metal	10. Tin/steel containers 11. Aluminium containers 12. Other ferrous metal 13. Other non-ferrous metal 14. Major appliances
Plastics	15. Clear PET bottles/containers 16. Green PET bottles/containers 17. Amber PET bottles/containers 18. HDPE containers 19. Film plastics 20. Other plastics
Textiles	21. Textiles
Organics	22. Food waste 23. Garden waste 24. Agricultural waste 25. Abattoir waste 26. Remainder/composite organics
Construction & demolition material	27. Concrete 28. Lumber 29. Remainder/composite C&D
Hazardous wastes	30. Paint 31. Hazardous materials 32. Biomedical 33. Batteries 34. Oil filters 35. Remainder/composite waste
Other waste	36. Electrical and electronic equipment 37. Tyres 38. Furniture 39. Ceramics 40. Other



Energy recovery for residual waste

A carbon based modelling approach

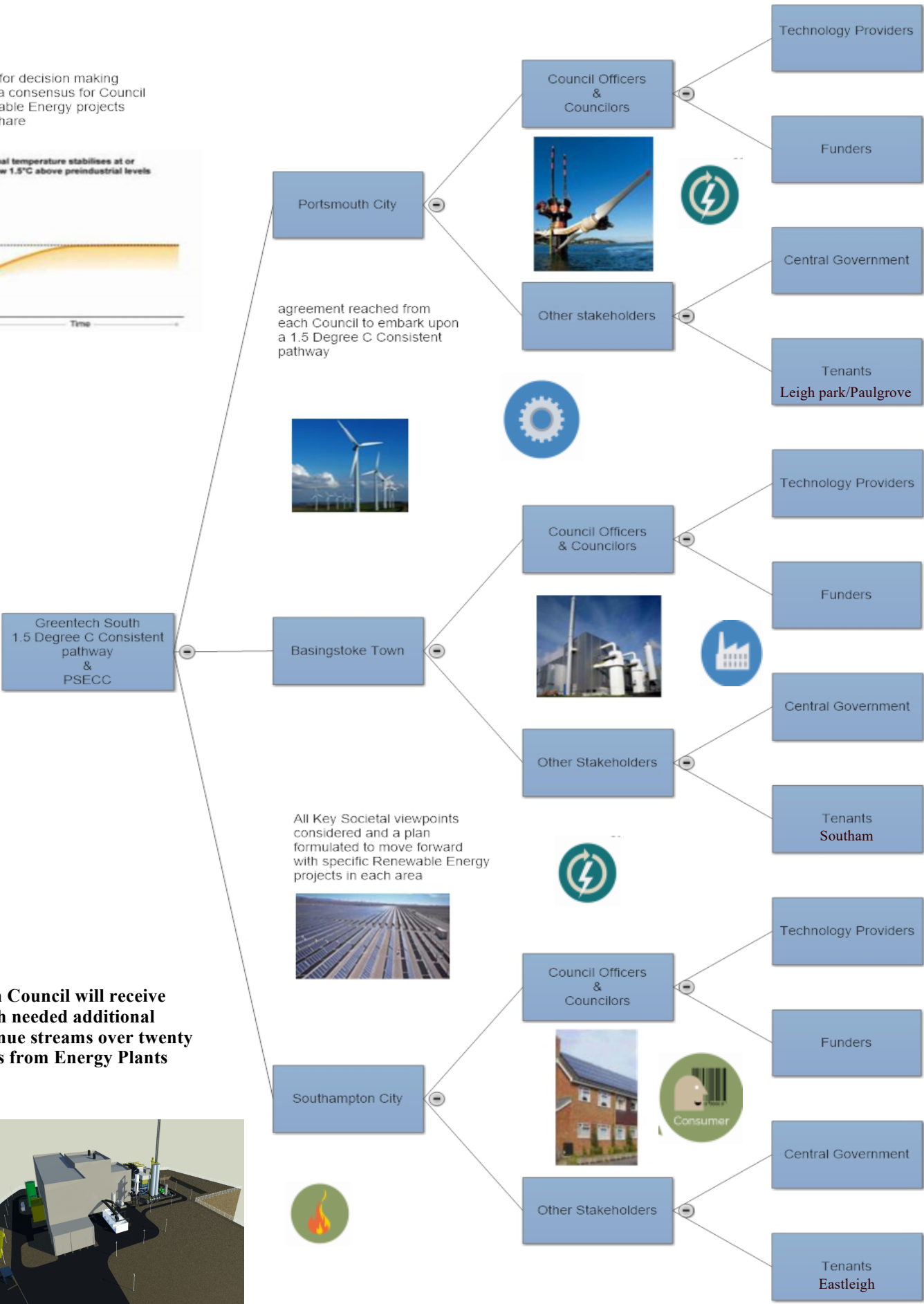
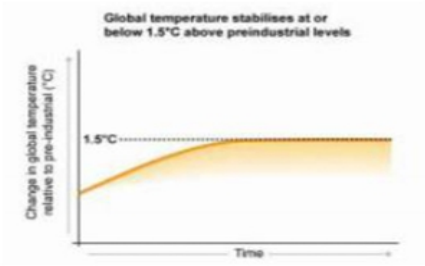
February 2014

Table 3. Waste composition data from the Carbon Balances report

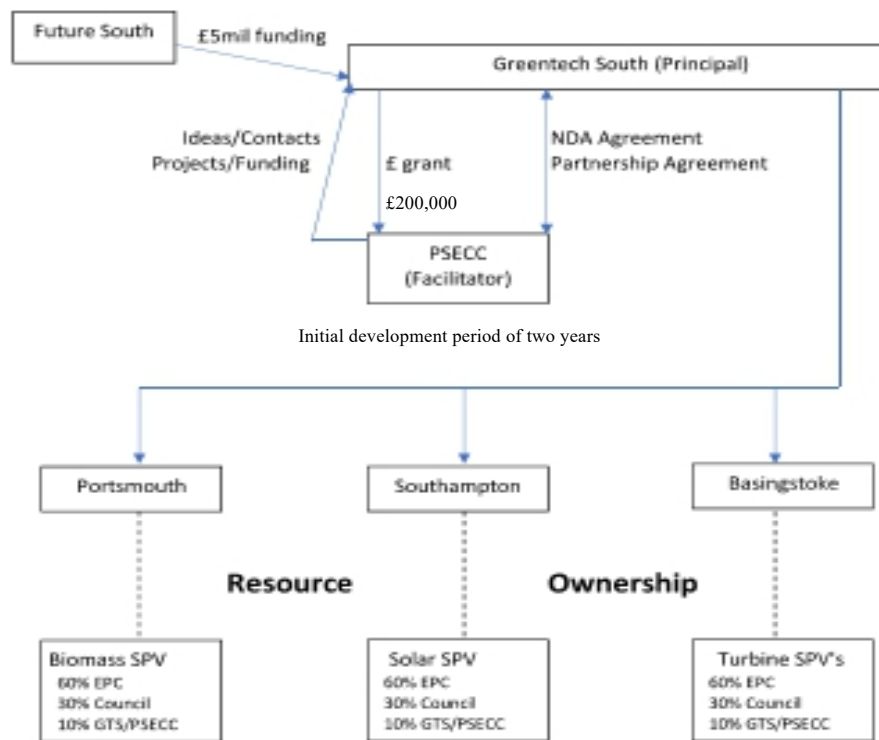
	Total UK arisings (2003/4) kt	Proportion of total arisings	Proportion of waste fraction biogenic C by mass	Proportion of waste fraction fossil C by mass	Gross Calorific value MJ/kg
Paper and card	6462	0.18	0.32		12.6
Plastic film	969	0.03		0.48	23.6
Dense plastic	1313	0.04		0.55	26.7
Textiles	876	0.02	0.2	0.2	16
Absorbent hygiene products	807	0.02	0.15	0.04	8
Wood	1070	0.03	0.44		18.3
Other combustibles	771	0.02	0.19	0.19	15.6
Non-combustible	4262	0.12	0.035	0.035	2.8
Glass	2291	0.06	0.003		1.5
Ferrous metal	719	0.02			0
Non-ferrous metal	186	0.01			0
Kitchen waste	6095	0.17	0.14		5.3
Green waste	6282	0.18	0.17		6.5
Fine material	1395	0.04	0.07	0.07	4.8
WEEE	1394	0.04		0.16	7.6
Hazardous	374	0.01		0.3	12.4
Total	35266	1			

Concept expanded - Key players - Knowledge sharing & Implementation

Main linkages for decision making and obtaining a consensus for Council owned Renewable Energy projects and revenue share



Relationship flowchart



Renewable Energy Projects

Gasification	Cogen + Funding already agreed
Solar	Alpin Sun + Funding already agreed
Wind	TBA
Tidal/Wave	TBA

A plan to compete with the big six energy companies

Taking ownership of Resources such as Waste, Solar, Wind & Water and obtaining additional Revenue streams for Council's.

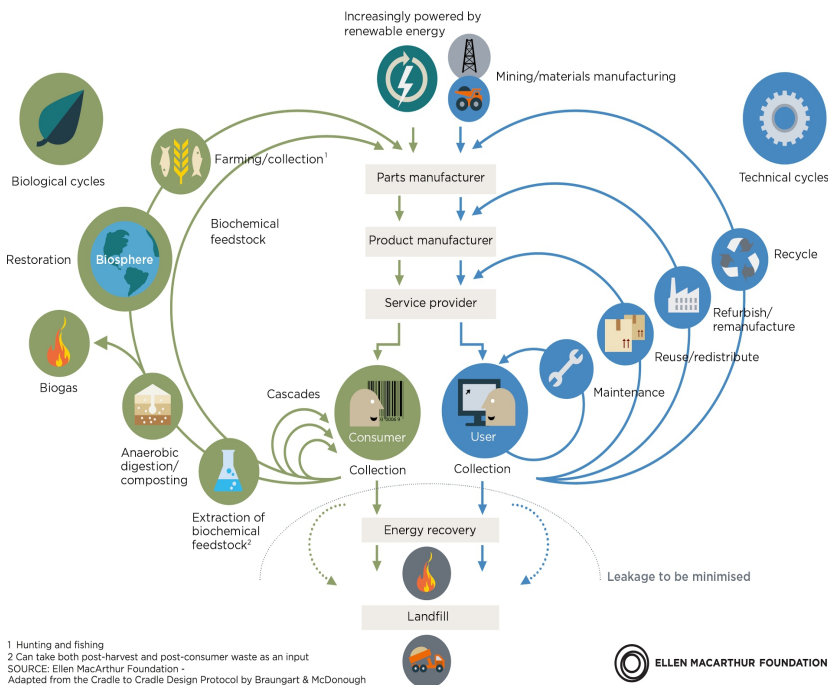
Publicly owned energy companies looks like it is faltering in the face of tough market conditions.

The movement in Portsmouth was dealt a blow this month when a newly Lib Dem-controlled Portsmouth city council scrapped the former Conservative administration's plans for an energy firm.

Victory Energy is to close. The reversal calls into question whether publicly owned energy companies can ever hope to break the stranglehold of the big six suppliers – British Gas, Scottish Power, npower, EDF, E.ON and SSE – which hold about 78% of the market.

Nottingham city council launched Robin Hood Energy in 2015, with Bristol city council following suit with Bristol Energy the next year. They remain the only two fully licensed energy suppliers run by local authorities. PSECC have identified a possible way forward with Renewable Energy projects for the City including much needed funding and revenues streams for the Council.

CIRCULAR ECONOMY - an industrial system that is restorative by design



Funding can be made available for either partly owned Energy plants or partially Council owned schemes.

FREE resources such as the energy in waste produced in a Council area, wind, Solar radiation and water energy - Circular Economy producing more Renewable Energy

PSECC have EPC company partners & funders who can make this possible.

Circular Economy encourages

- Biomass Energy Plants**
- MSW Energy Plants**
- Solar Farms**
- Wind Farms**
- Water Turbine Array**
- Solar PV Housing (fuel Poverty)**

Council owned