



# Securing a Renewable Future: Scotland's Renewable Energy



SCOTTISH EXECUTIVE

**Making it work together**



## Securing a Renewable Future: Scotland's Renewable Energy



Last autumn, I asked for views to help the Executive develop a balanced and sustainable renewable energy policy. Our aim is to develop a policy that takes full advantage of Scotland's massive renewables potential at an affordable cost to consumers and whilst safeguarding our natural heritage. I asked if consultees shared the Executive's view that Scotland could comfortably expect to meet or indeed even exceed our current aim of 18% renewables generation by 2010. Beyond that target, I invited comment on the proposition that as much as 40% of Scotland's electricity might be generated from renewable sources by 2020. And I asked consultees to tell me what measures they thought were needed to realise Scotland's considerable renewables potential. Over 100 responses were received, a summary report of which is available separately.

Most respondents agreed that the 2010 target would be met. They also acknowledged the potential benefits of setting a new longer-term target now, as a means of stimulating further renewables development and to help deliver our Programme for Government commitment to make an equitable contribution to the UK's obligation under the Kyoto Protocol. Having considered the views expressed by consultees, **we have decided that Scotland should aspire to generate 40% of its electricity from renewable sources by 2020.** The actions set out in this paper are intended to help create a policy, planning and economic environment that will support this ambitious objective, while having due concern for important environmental issues.

**Ross Finnie, MSP**  
Minister for Environment and Rural Development



# Securing a Renewable Future: Scotland's Renewable Energy

## The Policy Objectives

1.

The Executive's commitment to renewable energy is driven both by environmental imperatives and by the potential for new economic development. An increase in renewable electricity generation as a means of reducing carbon emissions forms an important part of Scotland's efforts to tackle climate change. More renewables can also provide greater diversity in our energy mix, which will be vital to ensuring security and continuity of supply as fossil fuels continue to deplete.

2.

A thriving renewables sector also has the potential to enhance Scotland's manufacturing capacity, to develop new indigenous industries, particularly in rural areas, and to provide significant export opportunities. Our strategy, therefore, is to encourage the development of renewable energy both as a response to our climate change commitments and as a measure to promote the Scottish economy.

3.

The progress made to date in developing renewable energy in Scotland has only been possible with the advice, support and commitment of the many stakeholders involved. Further progress depends on the continued commitment of developers, national agencies, local authorities, the

academic sector, and, crucially, the financial sector. In moving forward, the key challenge for all stakeholders is to increase public awareness and support for the development of renewables. It is this partnership approach which lies at the heart of the Executive's strategy for securing Scotland's renewable future.

## What Has Been Done So Far

4.

We are still in the early stages of what will be a long process, but already several key actions have been taken. These provide a solid foundation upon which we now intend to build. They demonstrate the determination of the Executive to encourage the development of renewables, while having proper regard to the need to ensure that natural heritage issues are fully taken into account. Examples of key actions taken so far include:

- In Programme for Government 2 (PfG2), the Executive set a target of 18% of electricity generation in Scotland from renewables by 2010.
- In 2000, the Executive published revised policy planning guidelines, which made a more positive provision for renewable energy. The relevant Planning Advice Note was also revised and was reissued in January 2002.

- In April 2002, the Executive put in place the Renewables Obligation (Scotland), (the ROS), which places a legal obligation on every electricity supplier in Scotland to supply electricity generated from renewable sources. This builds on the success of the previous Scottish Renewables Obligation (SRO), which has so far delivered over 30 renewables projects, now generating electricity from wind, wave, hydro, biomass and landfill gas.
- The ROS has created a huge demand for renewable electricity, which developers are moving to meet. Scotland currently has 10 wind farms in operation with further developments approved by local authorities and awaiting construction. Applications for consent for both wind and hydro projects currently being considered by the Executive are listed in the Annex to this document.
- This demand has already brought new investment to Scotland, and distributed high quality jobs to some remote





## Securing a Renewable Future: Scotland's Renewable Energy

parts of the country. Vestas has established a turbine manufacturing base at Campbeltown, bringing 130 jobs to the area, whilst it is expected that investment in a wind turbine tower and offshore pile manufacturing and assembly operation by Cambrian Engineering will bring 65 jobs to Arnish, Lewis. These jobs are important at a time when employment in other parts of the energy sector, particularly oil and gas, is declining.

- The Executive recently launched the Scottish Community Renewables Initiative (SCRI). This Scotland-wide advisory service provides expert guidance, monitoring and aftercare for renewable energy projects. The Executive is also providing significant new grant funding under the SCRI for households and communities interested in installing or developing renewable energy projects. The SCRI will benefit communities and householders across Scotland, by reinforcing the message that renewable energy is a practical and environmentally responsible solution in both rural and urban areas.
- The Energy Intermediary Technology Institute (EITI) announced at the end of 2002 should be up and running in Aberdeen by autumn 2003. The Executive is committing £150 million to the Institute over the next 10 years. A major focus of the Institute's work will

be on renewables. The EITI offers several potential benefits, including the retention of graduate/professional skills in Scotland, and the reinforcement of key clusters.

### 5.

Through these actions, Scottish Ministers have demonstrated their commitment to realising Scotland's potential and becoming a world leader in renewable energy.

## A Challenging Target for 2020

### 6.

The ROS, along with its England and Wales equivalent, obliges licensed suppliers across Great Britain to provide more of their electricity from renewable sources. The levels of both obligations increase year by year until 2010 when, if the obligations are met, 10% of electricity **supplied** in GB will come from new renewable sources.

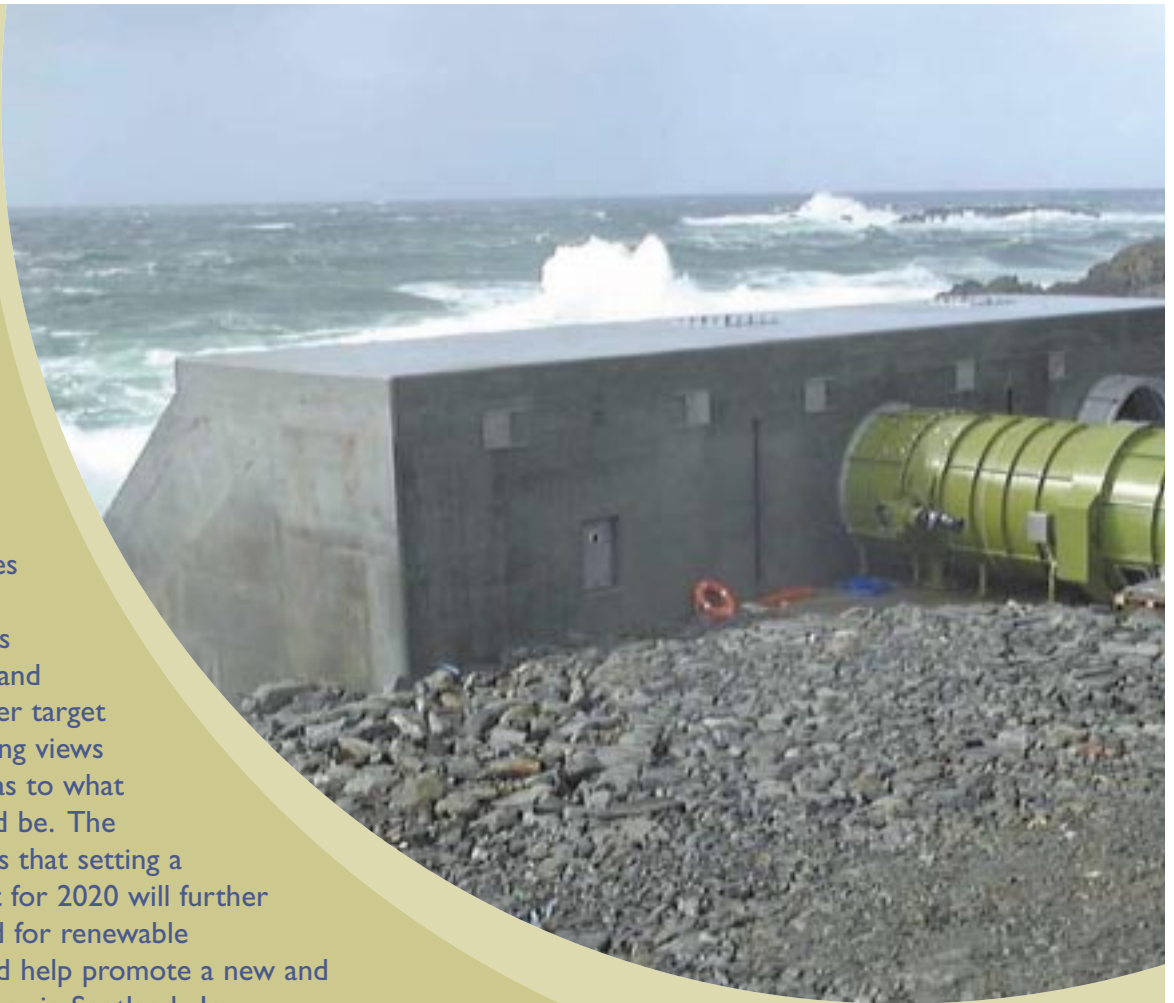
### 7.

The Executive has already set a target for electricity **generated** within Scotland by renewable means. The Scottish target is **18%** by 2010, which most of the respondents to our consultation exercise who commented on this point, believe will be met.

### 8.

Our consultation paper sought views on whether Scotland could achieve a position

whereby as much as 40% of our electricity is generated from renewable sources by 2020. While most respondents agreed that Scotland should set a higher target for 2020, no strong views were expressed as to what that target should be. The Executive believes that setting a challenging target for 2020 will further stimulate demand for renewable developments and help promote a new and sustainable industry in Scotland. In considering what target to set, Ministers have taken into account the current level of wind and hydro developments and the enormous potential for emerging new technologies such as marine energy. We can expect established technologies such as on-shore wind and hydro to continue to play a major part in achieving our 18% target by 2010. However, the cumulative impact of on-shore wind farms, coupled with the scarcity of suitable remaining hydro sites, make it unlikely that Scotland could achieve a substantially increased target by 2020 based on these technologies alone. Instead, the key to exploiting Scotland's renewable future to the full is likely to lie in our ability to promote the development of new technologies such as offshore wind, biomass, wave and tidal power. It is this





## Securing a Renewable Future: Scotland's Renewable Energy

potential to achieve a diverse mix of renewables technologies which has led Ministers to conclude that **Scotland should aspire to generate 40% of its electricity from renewable sources by 2020.**

### 9.

Since 1990, a little over 200MW of new renewable generating capacity has been developed and installed around Scotland, mainly comprising schemes built under the SRO. We believe that to reach our interim target of 18% by 2010 will require an additional 1000MW of generation by 2010. In itself, this represents an increase in build rate of around 500% over the previous decade. The level of renewables generation which will be required to meet a 40% target will depend on variables such as our ability to reduce overall demand, and the contribution by then from conventional power sources. However, by way of illustration, current peak demand in Scotland is met by around 6000MW of capacity. Subsequently, if we postulate demand growth ranging between 0% and 1% per annum, and a capacity margin of 25%, it seems reasonable to assume that Scotland would require at least around 2000-2500MW of new renewables generation by 2020. This represents a constant build rate of around 120MW-150MW per annum between now and 2020.

### 10.

We recognise that higher levels of renewable electricity generation need to be accompanied by affirmative action to reduce the overall demand for energy. Energy efficiency has a crucial role to play if we are to achieve significant cuts in carbon emissions. Energy efficiency is already a key strand of our Scottish Climate Change Programme. It is also vital to improving Scotland's economic performance and business competitiveness. We need to understand better how energy is supplied and used in Scotland in order to help inform how we balance our supply and demand requirements in the future.



### Action

The Executive will commission a study into energy supply and use in Scotland to inform the development of an integrated strategy for demand side management and renewable generation.

## In support of a 40% objective

### The ROS

#### 11.

The Renewables Obligation (Scotland) provides a powerful incentive for generators to supply progressively higher levels of renewable energy. It is the market mechanism that encourages developers to bring forward new renewable energy schemes. The Executive remains fully committed to the ROS and will maintain the level of support that it provides as planned until 2027. We appreciate, however, that it might be necessary at some stage to amend the ROS in order to ensure that our 2020 target is met. **We will therefore review the ROS in 2005-06, in order to ensure that it remains responsive to the needs of the market and the emergence of new renewables technologies.**

## Forum for Renewable Energy Development in Scotland

#### 12.

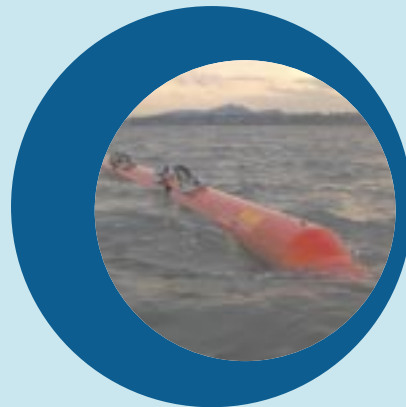
Developing a thriving renewables sector in Scotland will require a partnership between Government and the industry. The Executive alone cannot dictate the pace at which new technologies, such as wave and tidal, will mature. But Government does need to create an environment which supports and promotes innovation and enterprise. To help us do this, we propose to establish a new high level forum, which will, under Ministerial chairmanship, bring together representatives from the new renewables industry, the established energy industry, academia, and other stakeholders. Drawing on a wide range of experience and expertise, the forum will be charged with promoting the development of Scotland's renewable energy industry. We envisage that one of the key outputs will be the setting of target milestones in the areas of generation, technology development, jobs and exports. The group will also be tasked with taking forward work in many of the key areas outlined below, establishing action plans and monitoring progress against these plans.



## Securing a Renewable Future: Scotland's Renewable Energy

### Action

We will establish a Forum for Renewable Energy Development in Scotland, which will play a key role in identifying, co-ordinating, and facilitating actions to promote the development of Scotland's renewable energy industry. The Forum will hold its first meeting during summer 2003.



### Marine Energy

#### 13.

The "Opportunities for Marine Energy in Scotland" report commissioned by the Scottish Executive and prepared by Future Energy Solutions in 2002, concluded that Scotland already possesses many of the skills and capabilities required to develop a marine energy industry. It is essential that priority is given to developing this potential so that **Scotland can become a world leader and exporter of marine power technology.**

#### 14.

The Executive has already provided support for the world's first commercial wave energy scheme, in operation in Islay. We further demonstrated our commitment to the development of emerging marine technologies by working in partnership with Highlands and Islands Enterprise, the Carbon Trust, Orkney Islands Council, Scottish Enterprise and the DTI, to establish a Marine Energy Test Centre in Orkney. The centre, which is scheduled to open during 2003, will represent a unique testing facility for marine power technology. It will allow companies to design, develop and manufacture devices, and, with practical assistance from the Enterprise Networks, will help create a cluster of high value, technology-based companies in Scotland.

#### **Action**

The Executive will provide £2.125m towards the cost of constructing a Marine Energy Test Centre in Orkney.

#### **Action**

The Executive will work with our funding partners and the appropriate certification and accreditation body to ensure that the Orkney test centre becomes the premier facility for testing marine energy devices.

#### **Action**

Through the Forum for Renewable Energy Development in Scotland, the Executive will work with the industry, academia and the new Energy ITI to produce an action plan for the development of a thriving marine energy industry in Scotland.

#### **Action**

The Forum for Renewable Energy Development in Scotland will give particular attention to the potential to build on synergies between Scotland's existing offshore expertise from the UKCS, and the commercialisation of new offshore renewables technologies, including offshore wind, wave and tidal technologies.

## **Offshore Wind**

### **15.**

Offshore wind offers considerable opportunities for new renewable generation, not only in the relatively shallow and sheltered territorial waters, but also in deeper waters on the Continental shelf. It has been estimated that the UK has over 33% of Europe's potential offshore wind resource. Much of that resource lies off the coast of Scotland. Harnessing it can make a very significant contribution towards meeting our 2020 target for renewables. Offshore wind offers the opportunity for much greater capacity on a site-by-site basis than can be developed on shore. The Executive is committed to working with the energy sector and harnessing the experience of the offshore oil and gas industry to develop the potential for deepwater wind farm developments. The DTI has undertaken a consultation exercise about the way ahead in developing the next stage of the UK's offshore renewable energy resource.

#### **Action**

The Executive will work with the Department of Trade and Industry to create an appropriate consents regime for waters outwith the 12-mile limit.



## Securing a Renewable Future: Scotland's Renewable Energy

### Biomass

#### 16.

Of those respondents who expressed a view on the development of biomass, many believed that it could bring real benefits to Scotland by providing a valuable source of flexible and predictable generation. Biomass projects can encourage co-operation between local stakeholders, and provide opportunities for rural regeneration, job creation, and the development of sustainable communities. Forestry representatives and industry sources also highlight the potential to utilise Scotland's considerable forestry residue resource. The Executive, together with colleagues in DEFRA and the other devolved administrations, is finalising the details of a UK Biomass Infrastructure Grant Scheme to help farmers develop the supply chains required to harvest, process and supply bio-energy end users. We accept that a more focused and managed approach will be required to secure benefits.

#### Action

**The Scottish Executive will fund a study to review the current forms of biofuel available in Scotland, with an emphasis on heat and electricity generation from non-food crops, short rotation coppice and residues from timber operations and agricultural activities.**

#### Action

**The Forum for Renewable Energy Development in Scotland will use this study to inform an action plan to promote and accelerate the penetration of biomass technology in Scotland.**



### The Challenges

#### Infrastructure

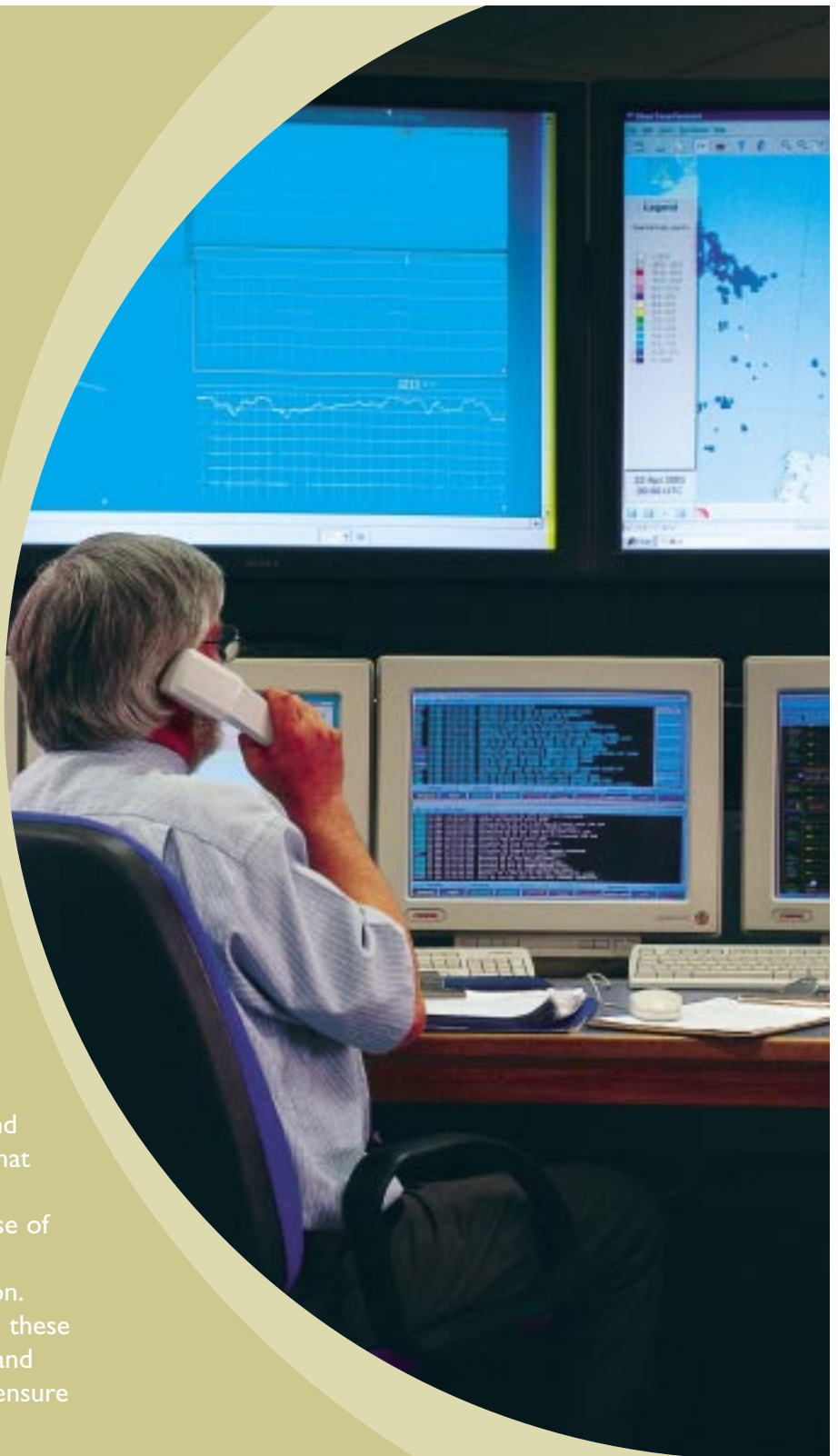
#### 17.

Both Government and industry recognise the importance of grid upgrading if the renewables sector is to reach its full potential. A lot of work has already been done jointly by Government and the transmission owners to identify the investment that is required. There are

encouraging signs of progress in discussions with the regulator about how this investment should be funded. It is important that the preparatory work needed to deliver the necessary upgrades to the grid is allowed to proceed as quickly as possible. The Executive will continue to press to have these issues resolved quickly.

## 18.

The Executive is fully committed to the principles underlying the forthcoming British Electricity Transmission and Trading Arrangements (BETTA). We are aware of the concerns that have been expressed regarding BETTA's potential impact on renewables through changes to the current arrangements for system balancing and transmission losses. It is important that the economic benefits underpinning BETTA are not realised at the expense of undermining the Government's commitment to renewables generation. Scottish Ministers have already raised these concerns with the UK Government, and will continue making every effort to ensure that the new arrangements support renewables development in Scotland.





## Securing a Renewable Future: Scotland's Renewable Energy

### 19.

The likely increase in renewable generation in the period to 2020, set against a background of major change in the pattern of conventional generation in Scotland, means that the control, operation and dispatch of the various energy sources will become increasingly complex. The industry needs to understand better how this change should be managed and the Executive will work with academia and the transmission companies to determine how this should be done.

#### Action

Through the Distributed Generation Co-ordination Group, we will work with the industry to optimise the potential for small-scale distributed generation.

#### Action

The Executive will fund a study by the academic sector and the Scottish transmission companies to determine how renewables generation can be matched with demand.

### Small-scale renewables developments



### 20.

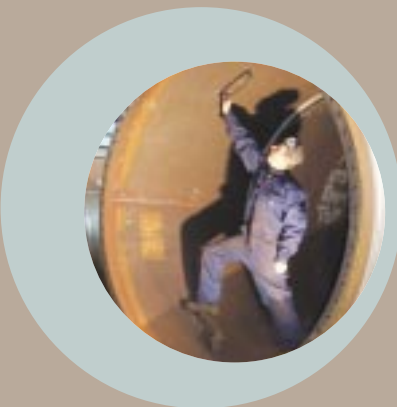
The Scottish Community Renewables Initiative (SCRI) provides a tremendous incentive for communities and householders to develop small-scale renewables projects. Local support provided by “one-stop shop” advice and funding through the SCRI will ensure effective and inclusive community project development across Scotland. The initiative will be an important tool in encouraging local participation in, and awareness of, renewables developments and technologies. The SCRI supports a wide range of renewable technologies, including micro hydro, micro wind, heat pumps and solar. Indeed it is the first grant scheme to support off-grid solar/PV. The Executive has committed £4.7 million to support the SCRI over the period to spring 2005.

### **Actions**

**The Executive will work with the SCRI partners – the Energy Saving Trust and Highlands and Islands Enterprise –**

- **To publish examples of small-scale community renewable energy best practice.**
- **To increase the numbers of householders and communities securing grant funding for small-scale renewable energy projects in Scotland.**

## **Economic Development and Skills**



### **21.**

As we have made clear, we believe that Scotland has huge potential to develop a renewables industry that makes a major contribution to our economy. In order for that to happen however, we need to actively scope potential markets, both within the UK and overseas. In this, the Executive is working closely with Renewables UK, the body set up to help secure benefit for UK industry in the global renewables market.

### **Action**

**The Executive, in partnership with Renewables UK, will undertake and publish the findings of a study that will examine the capability of Scottish industry to meet an expansion in renewables generation and manufacturing.**

### **22.**

Energy industries in Scotland account for around 12% of our national production GDP. A vibrant energy sector lies at the centre of Scotland's economy. We recognise that a greater drive towards clean and sustainable electricity, coupled with the medium-term closure of some thermal stations, means that the energy industry must be prepared for change. Action will be needed to ensure that Scotland's workforce is ready to take advantage of the opportunities renewable electricity development will provide.



## Securing a Renewable Future: Scotland's Renewable Energy

### Action

**The Executive, in partnership with Renewables UK, will undertake a skills audit to identify the extent of renewable energy expertise available in Scotland so that action can be taken by the industry to match skills to demand.**

### Public Awareness

#### 23.

Scotland's landscape is characterised by some features of unique, natural beauty which people are, quite rightly, anxious to preserve. The Executive shares this concern, which is why we are committed to ensuring that our policies are sensitive to the need to protect Scotland's landscape and important aspects of our natural heritage. Developers have a responsibility to address these issues sensitively. We concur with the view expressed by many respondents that there is a clear need to strengthen the link between renewable energy and action on climate change. We believe that there is a need to address levels of awareness regarding the different sources and practical uses of renewable energy. It is clear that people do not know enough about the reasons why the development of renewable energy is important. This must change.

#### 24.

A number of respondents expressed concern that the present policy will simply result in a proliferation of onshore wind developments. There is no doubt that wind energy (onshore and offshore) will make an important contribution to Scotland's renewable energy output. However, as we have made clear, we wish to support and promote **all** renewables technologies, and we believe that methods of generation other than on-shore wind will make an increasing contribution to the amount of renewable energy generated in Scotland.

### Action

**The Executive will participate in a UK Government study designed to measure public perceptions and awareness of renewable energy. The findings of this study will be used to inform further actions on addressing public awareness of the benefit of renewables.**

### Action

**By June 2003 the Executive will publish the results of a new survey of public attitudes to wind farms.**



**Action**

**The Executive intends to establish a web-based renewable energy database containing updated information about existing and planned renewables developments.**

**Action**

**The Executive will join with the Scottish Council for Development and Industry and the DTI in sponsoring a programme of seminars in the cities to disseminate information on and discuss renewable energy matters**



## Securing a Renewable Future: Scotland's Renewable Energy

### Planning

#### 25.

Over half of all respondents highlighted the continuing importance of the planning regime to the intelligent deployment of renewable energy. The majority welcomed the revisions already made to the renewable energy planning guidance in Scotland, and only a small number felt that further change was necessary. There were some calls for greater understanding of the technical and policy issues at local levels.

#### 26.

It is vital that in promoting renewable energy, we continue to take full account of extremely important natural heritage issues. We have to meet our international and national statutory obligations to protect designated areas, species and habitats of natural heritage interest, and the historic environment. We will continue to ensure, through the planning process, that these issues are fully taken into account.

#### 27.

Scottish Executive Ministers and officials have taken, and will continue to take, an active part in discussions at the national level aimed at addressing the difficulties encountered by some wind schemes with regard to Ministry of Defence interests. The Executive is also represented on the Aviation Interests Working Group, a Government/industry forum whose remit

is to evaluate and develop appropriate solutions to issues arising between defence and aviation interests and those of the wind energy industry.



#### 28.

Some respondents raised the issue of locational guidance for developments. Local development plans have an important role to play in guiding developers to locations where renewable energy developments are likely to be permitted after taking account of environmental and amenity considerations. This is already confirmed in National Planning Policy Guideline 6: Renewable Energy Developments (published November 2000) which explicitly states that “development plans should define broad areas of search suitable for wind and other renewable developments and, where appropriate, identify specific sites in local plans”.

However, this should not be seen to rule out the potential for exploiting other sites where proposals can be accommodated in a satisfactory manner.

## 29.

Concerns were also voiced about the cumulative impact of a number of wind farm developments within a small area of the country. The planning process already provides for issues of cumulative impact to be taken into account in considering applications for consent. As the pace and scale of on-shore wind developments in particular increases we would expect increased significance to be attached to consideration of cumulative impact in specific areas.

### Action

**During 2003, the Executive will consult on practical measures to improve the section 36 consents process.**

### Action

**Although no immediate revision of planning guidelines is proposed, the Executive will continue to keep the situation under review, and will produce further guidance as appropriate.**

### Action

**The Executive will, in partnership with Renewables UK, conduct a series of seminars on renewable energy policy, planning issues and renewables technologies, for local planners, to be held during spring 2003.**



# Securing a Renewable Future: Scotland's Renewable Energy

## Conclusion

### 30.

As we said in our consultation document, the Executive is committed to creating a policy, economic, and planning environment which places this country in the vanguard of a new sustainable energy industry that could bring with it considerable economic benefit to Scotland. The building blocks are in place. It is now for industry, academia, developers and planners to find innovative ways to overcome the technical and environmental challenges that respondents to our consultation exercise have identified. We are confident that the setting of an ambitious, but achievable target for the period to 2020, together with the measures that we have outlined in this document, will set Scotland on a path that will not only result in significant reductions in carbon emissions, but will lead to increased economic activity, particularly in the remoter areas.



## ANNEX A

### RENEWABLE ENERGY DEVELOPMENTS: APPLICATIONS FOR CONSENT CURRENTLY BEING CONSIDERED BY THE EXECUTIVE

Development	Local authority area	Installed capacity (MW)
Whitelee Wind Farm	South Lanarkshire, East Ayrshire, East Renfrewshire	322
Black Law Wind Farm	South Lanarkshire, North Lanarkshire, West Lothian	134
Paul's Hill Wind Farm	Moray	56
Windy Standard Wind Farm Extension	Dumfries & Galloway	90
Farr Wind Farm	Highland	112.5
Braes O' Doune Wind Farm	Stirling	100
Crystal Rig Extension	Scottish Borders	62.5
	<b>Total (on-shore wind)</b>	<b>877.0</b>
Solway Firth Offshore Wind Farm	Dumfries & Galloway	180-200
	<b>Total (off-shore wind)</b>	<b>180-200</b>
Braevallich Hydro	Argyll & Bute	2.5
Kingairloch Hydro Scheme	Highland	3.5
Garrogie Hydro Scheme	Highland	2
Ben Glas Burn Hydro	Stirling, Argyll & Bute	1.01
Allt Fionn Ghlinne Hydro	Stirling	1.4
Refurbishment at Loch Ericht, Tummel/Garry HE Station	Highland, Perth & Kinross	0
River E Hydro	Highland	2
	<b>Total (hydro)</b>	<b>12.41</b>
	<b>All projects</b>	<b>1069.41-1089.41</b>

## **ANNEX B**

### **LIST OF ACCREDITATION**

#### **PAGE**

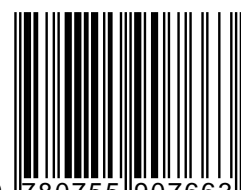
<b>3</b>	<b>HAGSHAW HILL WIND FARM, COURTESY OF SCOTTISH POWER PLC</b>
<b>5</b>	<b>THE LIMPET WAVE ENERGY CONVERTER ON THE ISLAND OF ISLAY, COURTESY OF WAVEGEN, INVERNESS</b>
<b>6</b>	<b>SOLAR PARKING METER, CADOGAN STREET, GLASGOW</b>
<b>8</b>	<b>1/7th SCALE PROTOTYPE WAVE ENERGY CONVERTOR BEING TESTED IN FIRTH OF FORTH, OCTOBER 2001, COURTESY OF OCEAN POWER DELIVERY LTD</b>
<b>10</b>	<b>A BAG OF WOODCHIPS, TORREN ENERGY LTD, COURTESY OF TORREN ENERGY LTD, GLENCOE</b>
<b>11</b>	<b>SCOTTISH AND SOUTHERN ENERGY'S ENERGY MANAGEMENT CENTRE, COURTESY OF SCOTTISH AND SOUTHERN ENERGY PLC</b>
<b>12</b>	<b>PROVEN 6KW WIND TURBINE – SKEGNESS GRAMMAR SCHOOL WIND/PV STUDY FACILITY, COURTESY OF PROVEN ENGINEERING PRODUCTS LTD</b>
<b>13</b>	<b>TOWER MANUFACTURE AT VESTAS-CELTIC, COURTESY OF VESTAS-CELTIC WIND TECHNOLOGY LTD</b>
<b>15</b>	<b>PHOTOVOLTAIC AND WIND TECHNOLOGY, BERNERAY PASSENGER WAITING FACILITY, NORTH UIST, COURTESY COMHAIRLE NAN EILEAN SIAR</b>
<b>16</b>	<b>CUILEIG HYDRO-ELECTRIC POWER STATION NEAR ULAPOOL, COURTESY OF SCOTTISH AND SOUTHERN ENERGY PLC</b>

Further copies of this report are available from  
The Stationery Office Bookshop  
71 Lothian Road · Edinburgh EH3 9AZ  
Tel 0870 606 5566

© Crown Copyright 2003      Astron B29409 3/03

This document is produced from 100% elemental chlorine-free,  
environmentally-preferred material and is 100% recyclable

I S B N 0 - 7 5 5 9 - 0 7 6 6 - 3



9 780755 907663