

The Scottish Government

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Renewable energy: innovations that can save our planet

First Minister Alex Salmond

Renewable Energy: Innovations that Can Save our Planet

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Ladies and gentlemen, it is an honour to be here at the National Geographic Society in this 120th anniversary year - and to have the opportunity to address such a distinguished and well informed audience.

Since the National Geographic Society was formed in 1888, several generations have seen the world - nature, our people and our wildlife - through your yellow framed window.

And the Society has continued to grow - in ambition and in creativity - to meet your basic purpose of educating and inspiring people to care about this planet.

Today, you reach tens of millions across the world - with your Magazine published in 24 languages, television channels that broadcast to more than 150 countries and a pioneering Education Foundation.

And the Committee for Research and Exploration's support for leading edge scientific research and exploration has constantly expanded our understanding of the world - and helped to unravel its great mysteries.

This is a fantastic achievement and a precious heritage.

So I was delighted to learn that Scots have made a positive contribution to your history.

One of your Society's earliest members - and one of its first Presidents - was Alexander Graham Bell, the inventor of the telephone. Bell believed passionately that pictures were an ideal way to educate people about our world.

It was Bell's son-in-law, Gilbert Grosvenor, who oversaw the growth in your Magazine's circulation from less than one thousand to more than two million.

And it was Grosvenor's grandson, Melville - "the skipper" - who steered the Society as it became the largest non-profit educational organization on earth.

I am certainly not asserting that the National Geographic Society is any kind of Scottish family business, - but it's clear that we have a significant connection.

In reflecting on both the work of the National Geographic Society and the topic of my speech this morning - I want to highlight two vital roles that Scotland can play now, and in the years ahead.

First, I see a role for Scotland as a global advocate in the fight against climate change - the single most pressing challenge our planet faces.

Not just in setting tough targets for action - which we have done - but promoting our work, our ideas and our policies in the world - and working with, and inspiring, nations to follow our lead.

The second role for Scotland, just as important, is one in which we have thrived for centuries - and of which Alexander Graham Bell is but one exponent. That is the role of pioneer and innovator.

Scotland has an outstanding historical tradition of invention and scientific breakthrough - TV, the telephone, the fax machine, the bicycle, penicillin and radar to name but a few.

In the 21st century, that spirit of innovation and invention is alive and well in Scotland.

Working with governments, businesses, engineers and scientists across the world - we are harnessing that spirit and leading a new wave of innovation on renewable energy.



This morning, I want - first of all - to consider why renewable energy is so important both to Scotland and in the global context. And discuss the global leadership that Scotland is showing in the fight against climate change.

Secondly, I want to explain why I believe Scotland is the place to watch for world-leading developments in renewable energy and low carbon technologies.

And thirdly - as part of our passionate commitment to innovation - I'll be making an announcement of huge importance not just to Scottish marine renewables but to the development of that technology globally.

Let me turn first to the outlook for our energy resources, and the growing centrality of renewables.

40 years ago, with the discovery of oil in the North Sea off Scotland's coast, Scotland won the natural lottery.

Today, the oil and gas industry remains vital for our prosperity.

The North Sea still produces significant amounts of oil and gas. It could yield another 25 billion barrels over the next 40 years - and more than half of the economic return from our reserves is still to come.

And we are fortunate that Scotland's energy resources go far beyond hydrocarbons. We have a vast potential in renewable energy - that is unrivalled in Europe.

Our powerful waters and our driving offshore winds are key to our future prosperity.

Because with 25% of Europe's total tidal and off-shore wind resource, and 10 per cent of its potential in wave power - we have won the natural lottery once again.

The Pentland Firth, in particular, demonstrates the renewable wealth within Scotland's grasp. Flowing between Caithness on Scotland's north coast and the Orkney Isles, the Firth is home to some of the fastest tides on the planet - and thus, a huge potential for generating tidal energy.

Taking environmental constraints into account, estimates suggest that as much as 40GW of power could be deployed from that one area alone - and that could be a major understatement.

So it's no wonder that The Pentland Firth can be thought of as "the Saudi Arabia of tidal power" - a lovely phrase which I promised the Caithness Alliance, a group interested in exploiting that resource, that I would certainly use in this address.

Elsewhere, Scotland has new opportunities in hydro-power and abundant biomass resources.

We have real opportunities in solar power too. The reason for that, incidentally, is our long summer evenings.

Looking across the piece, Scotland has an incredible potential in renewable energy generation. In total, we have the potential to generate as much as 60GW from across the sector - 10 times our peak electricity demand.

And the time to develop that potential is right now.

First - and most importantly - because renewable energy will help us in the global fight against climate change.

Over the years, thanks in part to the efforts of the National Geographic Society, there has been a growing global understanding of the science and the threat of climate change.

And with each day, the evidence of climate change - and its destructive power - becomes clearer.

Just last week, a glacier the size of Connecticut began to break free from the Wilkins Ice Shelf in Antarctic - just one consequence of rising temperatures.

Faced with this and an overwhelming body of scientific and economic evidence, we must act.

By our very nature, smaller countries like Scotland have the potential to react quickest - to punch well above our weight. And to spur others around the world on to action.

So earlier this year, we began consulting on proposals to reduce greenhouse gas emissions by 80% by 2050 - and on a framework that would provide the basis for action in Scotland on climate change for the next 40 years.

Alongside that we have begun to work with nations, regions and states around the world on the policies and solutions to halt the advance of climate change.

We have, for example, signed up to the Montreal Declaration. And we are one of the founding members of an Alliance of States and Regions that will take forward the commitments we made under that declaration.

Achieving our own national targets will demand a committed response from all of Scotland - individuals, communities, business and government.

And the move we are making to renewable energy will have a defining contribution.

That's why we've set an ambitious and stretching target for Scotland to meet at least 31% of our electricity demand from renewables by 2011 - and 50% by 2020.

We're not - of course - alone in taking action.

Right across this country, states are sharing our commitment, setting tough emissions targets - and putting renewable energy at the heart of their efforts.

Many US States have already made specific commitments to reduce greenhouse gases - and many have joined [\[1\]](#) with Canadian Provinces and EU countries in the world's first International Carbon Action Partnership.

Almost every state now has incentives in place to promote renewable energy.

And at federal level, we can be certain that your next President will be committed to major reductions in America's carbon emissions.

Hilary Clinton and Barack Obama have pledged to introduce a cap and trade system that would cut greenhouse gas emissions by 80% by 2050.

And John McCain favours a 65% decrease, and has stated that global warming would be one of three key issues for the Presidency.

So America's politicians are acting strongly - at state and federal level - convinced of the scale of the challenge. The need to for urgent and decisive action. And of the central place of renewable energy in America's climate change strategy.

In and of itself, climate change provides sufficient reason to invest in renewable energy.

But renewables also open up the possibility of greater energy security - an issue perhaps not uppermost in energy-rich Scotland's mind but nonetheless one of enormous importance across the European Union and indeed the United States.

Indeed, securing energy and addressing climate change go hand in hand.

There are different points of view about how much oil and gas remains to be found in the world, - and I have already said that we look forward to at least another 40 years worth of output from the North Sea.

However we can be certain that the oil and gas the world uses in the coming decades will come from increasingly difficult to reach areas - whether for reasons of geography, geology or geopolitics - and the price will certainly reflect those difficulties.

And therefore to protect against new energy divides in our societies, we need to focus on developing the alternatives.

Renewable energy is clearly a major part of the answer.

For developed countries, it provides clean and safe technology which can minimise reliance on imports.

And for developing countries, renewable energy offers a route to prosperity - growing the economy in a sustainable way and preserving precious natural heritage.

Already, we see emerging economies starting to embrace this technology. Last year it is estimated that in China alone, more than \$10 billion was invested in new renewable capacity - in wind, solar, hydropower, biomass, and biofuels.

So what are we doing in Scotland to lead the renewables revolution?

As a small, dynamic, forward looking nation - I would argue that one of our greatest strengths will be our ability to build a partnership between government, business, and academia in pursuit of our shared ambitions.

We are a small nation but we have no need to think small. Instead on renewables we will think big - reaching out beyond our borders, sharing ideas, expertise and commercial know-how.

In government, we have put in place the policies and the new investment needed to drive the renewables industry at all levels - from large scale projects to micro-generation schemes.

Businesses and communities are responding to that incentive, investing in projects throughout Scotland.

As a result, Scotland is fast emerging as the place to watch on renewables and low-carbon energy technologies.

As well as our on-shore wind and hydro-schemes, Scotland can boast the UK's largest biomass plant. The world's largest wave-power array. The first community owned renewable hydrogen scheme. And the flagship project for deep offshore wind energy development in Scotland, the UK and Europe.

Elsewhere, some of the world's best scientific talent has been drawn to Scotland to work on research on climate change and almost every aspect of green energy technology. Marine and tidal renewables, deepwater technology, biomass and distributed electricity systems. And low-carbon technologies like Carbon Capture and Storage.

And the purpose of this research - like the work of the Scottish Government - is on building partnerships, in Scotland, the UK

and Europe.

The Scottish Alliance for Geoscience, Environment and Society brings together outstanding scientists from around the world to work on the impacts of climate change - 6 of whom shared in the Nobel Prize awarded to the IPCC last year.

The Scottish Centre for Carbon Storage has the largest group of scientists in the UK working on carbon capture and storage, together with some of the world's largest energy companies.

And with around 250 academics and 600 researchers, Scotland's Energy Technology Partnership is the largest, most broad-based power and energy research partnership in Europe.

At Eday in Orkney we have already in place a superb facility for the research and testing of wave and tidal devices.

Our ambition is to build on the success of that Partnership, and to develop a Scottish European Green Energy Centre, based in Aberdeen - the world's largest energy hub outside Houston.

We want that centre to lead the way in the European Union, driving co-operative research and development into key green technologies, and helping our European partners to meet their ambitious targets.

And within five years, we want this to be established as the EU Energy Research Centre.

In business, Scottish companies are also looking far beyond our borders.

Earlier this morning, I met with Luis Alberto Moreno, the President of the Inter-American Development Bank, to discuss the progress of a project investigating the potential to deploy cutting edge Scottish wave energy devices off the Chilean coast.

And the combined effect of this and other Scottish ventures with the IADB throughout Latin America could bring a potential investment in Scottish marine energy technology of as much as \$1.5 billion.

No less important, Scotland is working with the World Bank in Malawi and the Gambia to bring renewable energy to remote village hospitals and schools.

These new developments have the hallmark of innovation that has characterised Scotland over the centuries.

Now is the time to do more. Therefore today I am announcing the Scottish Government's new Saltire Prize - a call to action, and a challenge to innovate, for researchers and companies on renewable marine energy.

With a value of £10 million, or \$20 million, on offer to the winners, this new Challenge prize will be one of the largest innovation prizes in the world - and almost certainly the largest ever focused exclusively on renewable energy.

In the 20th Century, dozens of innovation prizes in aviation helped to advance dramatically the speed, technology and endurance of aircraft.

Charles Lindbergh's famous solo-flight across the Atlantic in 1927, for example, was made in pursuit not just of the record books, but of the \$25,000 Orteig Prize too.

Now, at the beginning of the 21st century, we enter the second golden age of innovation prizes - this time focused on how we can sustain our planet and ourselves.

In recent months, Richard Branson has launched the Virgin Earth Challenge, the US Congress unveiled the H Prize on Hydrogen technology, and the X Prize Foundation launched a new prize to incentivise increased fuel efficiency.

Challenge prizes have led to amazing technological advances and contributed to hugely impressive returns on investment, such as the Ansari X Prize which saw the launch of private spacecraft and led to \$200m dollars of investment from a \$10m prize fund.

Now, Scotland will play its full part. We have announced a call to action on marine energy, with the launch of a \$20m Saltire Prize challenge that will capture the attention of some of the world's best scientific minds - anybody across the planet who will demonstrate their devices in Scotland.

This will be one of the biggest innovation prizes in history, and the largest ever focused on renewable energy. A prize that we hope will attract the interest of scientists and companies here in America and around the world.

I want to thank the National Geographic for the support you've provided in the development of the Prize.

I know that it is very much in keeping with the inquiring global outlook of your Society.

I'd particularly like to thank Terry Garcia for agreeing to become a member of the judging committee for the Prize.

He joins our Chief Scientific Advisor for Scotland, Ann Glover on the Committee - and will be followed in the near future by other visionary members.

Since its inception, the National Geographic Society has exemplified innovation, and highlighted both the wonders and the challenges of the world.

It will be that same spirit which helps to ensure that Scotland will be the forefront in the battle against climate change, and the move towards the new renewable energy era.

We have set tough, but necessary targets that speak to the world about our level of ambition.

We have deep expertise in the energy sector, immense energy resources and potential and a world class scientific capacity and track record.

We have the technological base - advancing day by day.

And above all, we have the commitment - in our people and in our Government - to seize this opportunity.

Not just for the benefits it will bring to Scotland, but also because of our deep commitment to the world around us.

Scotland is a small country. But we have a global vision and a global ambition.

And we seek to work with our partners everywhere - on renewable energy and on climate change - to make a lasting difference to our world, and in that we believe Scotland can stand proudly side by side with the National Geographic Society in our passion to preserve and protect our planet.

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